Innovation

Invention, Knowledge Transfer, and Innovation

Supplemental Tables

Supplemental Tables

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Table SINV-1

USPTO utility patents granted, by sector: 1998–2020

(Number)

Owner and sector	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	147,576	153,592	157,595	166,158	167,400	169,077	164,384	143,891	173,822	157,331	157,788	167,463	219,848	224,871	253,633	278,518	301,643	299,382	304,126	320,003	308,852	355,923	353,701
Assigned to foreign owner	63,777	66,202	69,256	75,265	77,848	79,059	78,097	67,626	82,256	76,216	78,230	83,072	109,184	113,104	128,664	139,394	150,264	151,227	152,935	159,868	154,878	177,819	177,452
Assigned to owner from unknown location	48	28	49	45	50	37	23	20	33	47	26	28	33	33	26	35	53	29	39	25	19	25	35
Assigned to U.S. owner	83,752	87,362	88,289	90,848	89,502	89,981	86,264	76,245	91,533	81,069	79,533	84,363	110,632	111,734	124,944	139,090	151,326	148,126	151,152	160,110	153,955	178,079	176,214
Academic	3,468	3,705	3,386	3,501	3,496	3,497	3,261	2,876	3,518	3,213	3,022	3,264	4,514	4,413	5,037	5,618	6,079	6,177	6,625	7,000	6,883	7,781	7,834
Government	1,147	1,104	1,057	1,148	1,122	1,078	1,019	844	1,008	946	905	931	1,257	1,195	1,359	1,446	1,430	1,376	1,299	1,342	1,311	1,429	1,224
Individual	16,387	16,694	16,102	15,182	14,116	13,535	12,173	10,473	11,996	10,034	9,197	9,204	12,546	11,892	12,789	13,903	14,397	14,060	13,875	14,330	13,572	14,890	14,373
Other	511	471	396	437	406	383	361	292	371	303	262	300	449	446	491	562	565	540	484	612	556	725	690
Private	61,980	65,098	67,067	70,482	70,282	71,413	69,383	61,720	74,603	66,544	66,127	70,635	91,830	93,743	105,213	117,507	128,642	125,694	128,682	136,438	131,111	151,958	150,558
Unclassified	259	289	282	99	80	75	66	39	38	29	20	29	36	46	56	54	212	280	187	388	522	1,296	1,535

USPTO = U.S. Patent and Trademark Office.

Note(s):
Patents are allocated according to patent ownership information. Patents are credited on a fractional-count basis (i.e., for patents with collaborating institutions, each institution receives fractional credit on the basis of the proportion of inventors from participating institutions). Business covers the for-profit business sector. Government includes federal, state, local, and municipal and federally funded research and development centers. Other includes private nonprofits, such as foundations, associations, nonacademic hospitals, and research-performing institutions.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-2

Regions, countries, or economies in patent and trademark data

(Regions, countries, or economies)

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia	Australia and Oceania
Canada	Antigua and Barbuda	Argentina	EU-27 + UK	Albania	Armenia	Algeria	Afghanistan	Australia
Greenland	Bahamas, The	Bolivia	United Kingdom[a]	Andorra	Azerbaijan	Angola	Bangladesh	Cook Islands
Mexico	Barbados	Brazil	EU-27[b]	Belarus	Bahrain	Benin	Brunei	Fiji
United States	Belize	Chile	Austria	Bosnia and Herzegovina	Georgia	Burkina Faso	Burma	Kiribati
	Costa Rica	Colombia	Belgium	Holy See (Vatican City)	Iran	Cameroon	Cambodia	Marshall Islands
	Cuba	Ecuador	Bulgaria	Iceland	Iraq	Chad	China	Nauru
	Dominica	Guyana	Croatia	Liechtenstein	Israel	Congo, Democratic Republic of the	India	New Zealand
	Dominican Republic	Paraguay	Cyprus	Moldova	Jordan	Congo, Republic of the	Indonesia	Palau
	El Salvador	Peru	Czechia	Monaco	Kuwait	Côte d'Ivoire	Japan	Samoa
	Grenada	Suriname	Denmark	Montenegro	Lebanon	Djibouti	Kazakhstan	Solomon Islands
	Guatemala	Uruguay	Estonia	North Macedonia	Oman	Egypt	Kyrgyzstan	Vanuatu
	Haiti	Venezuela	Finland	Norway	Qatar	Eritrea	Laos	
	Honduras		France	Russia	Saudi Arabia	Eswatini	Malaysia	
	Jamaica		Germany	San Marino	Syria	Ethiopia	Nepal	
	Nicaragua		Greece	Serbia	United Arab Emirates	Gabon	North Korea	
	Panama		Hungary	Serbia and Montenegro	Yemen	Gambia, The	Pakistan	
	Puerto Rico		Ireland	Switzerland		Ghana	Papua New Guinea	
	Saint Kitts and Nevis		Italy	Turkey		Guinea	Philippines	
	Saint Lucia		Latvia	Ukraine		Kenya	Singapore	
	Saint Vincent and the Grenadines		Lithuania			Liberia	South Korea	
	Trinidad and Tobago		Luxembourg			Libya	Sri Lanka	
			Malta			Madagascar	Taiwan	
			Netherlands			Mali	Tajikistan	
			Poland			Mauritius	Thailand	
			Portugal			Morocco	Uzbekistan	
			Romania			Namibia	Vietnam	
			Slovakia			Niger		
			Slovenia			Nigeria		
			Spain			Rwanda		
			Sweden			Senegal		
						Seychelles		
						Sierra Leone		
						South Africa		
						Tanzania		
						Togo		

Table SINV-2

Regions, countries, or economies in patent and trademark data

(Regions, countries, or economies)

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia	Australia and Oceania
						Tunisia		
						Uganda		
						Zambia		
						Zimbabwe		

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, U.S. Patent and Trademark Office, accessed June 2021.

Science and Engineering Indicators

Table SINV-3

World Bank income levels of regions, countries, or economies in patent and trademark data: 2020

(Regions, countries, or economies)

Low-income economies (GNI per capita of $1,035 or less per year)	Lower middle-income economies (GNI per capita of $1,036 to $4,045 per year)	Upper middle-income economies (GNI per capita of $4,046 to $12,535 per year)	High-income economies (GNI per capita of $12,536 or more per year)	Unclassified
Afghanistan	Algeria	Albania	Andorra	Cook Islands
Burkina Faso	Angola	Argentina	Antigua and Barbuda	Holy See (Vatican City)
Chad	Bangladesh	Armenia	Australia	
Congo, Democratic Republic of the	Benin	Azerbaijan	Austria	
Eritrea	Bolivia	Belarus	Bahamas, The	
Ethiopia	Burma	Belize	Bahrain	
Gambia, The	Cambodia	Bosnia and Herzegovina	Barbados	
Guinea	Cameroon	Brazil	Belgium	
Haiti	Congo, Republic of the	Bulgaria	Brunei	
Liberia	Côte d'Ivoire	China	Canada	
Madagascar	Djibouti	Colombia	Chile	
Mali	Egypt	Costa Rica	Croatia	
Niger	El Salvador	Cuba	Cyprus	
North Korea	Eswatini	Dominica	Czechia	
Rwanda	Ghana	Dominican Republic	Denmark	
Sierra Leone	Honduras	Ecuador	Estonia	
Syria	India	Fiji	Finland	
Tajikistan	Kenya	Gabon	France	
Togo	Kiribati	Georgia	Germany	
Uganda	Kyrgyzstan	Grenada	Greece	
Yemen	Laos	Guatemala	Greenland	
	Moldova	Guyana	Hungary	
	Morocco	Indonesia	Iceland	
	Nepal	Iran	Ireland	
	Nicaragua	Iraq	Israel	
	Nigeria	Jamaica	Italy	
	Pakistan	Jordan	Japan	
	Papua New Guinea	Kazakhstan	Kuwait	
	Philippines	Lebanon	Latvia	
	Senegal	Libya	Liechtenstein	
	Serbia and Montenegro	Malaysia	Lithuania	
	Solomon Islands	Marshall Islands	Luxembourg	
	Sri Lanka	Mexico	Malta	
	Tanzania	Montenegro	Mauritius	

Table SINV-3

World Bank income levels of regions, countries, or economies in patent and trademark data: 2020

(Regions, countries, or economies)

Low-income economies (GNI per capita of $1,035 or less per year)	Lower middle-income economies (GNI per capita of $1,036 to $4,045 per year)	Upper middle-income economies (GNI per capita of $4,046 to $12,535 per year)	High-income economies (GNI per capita of $12,536 or more per year)	Unclassified
	Tunisia	Namibia	Monaco	
	Ukraine	North Macedonia	Nauru	
	Uzbekistan	Paraguay	Netherlands	
	Vanuatu	Peru	New Zealand	
	Vietnam	Russia	Norway	
	Zambia	Saint Lucia	Oman	
	Zimbabwe	Saint Vincent and the Grenadines	Palau	
		Samoa	Panama	
		Serbia	Poland	
		South Africa	Portugal	
		Suriname	Puerto Rico	
		Thailand	Qatar	
		Turkey	Romania	
		Venezuela	Saint Kitts and Nevis	
			San Marino	
			Saudi Arabia	
			Seychelles	
			Singapore	
			Slovakia	
			Slovenia	
			South Korea	
			Spain	
			Sweden	
			Switzerland	
			Taiwan	
			Trinidad and Tobago	
			United Arab Emirates	
			United Kingdom	
			United States	
			Uruguay	

GNI = gross national income.

Source(s):
The World Bank, World Bank Country and Lending Groups, accessed May 2021.

Science and Engineering Indicators

Table SINV-4

Technical fields by fields of technology in patent data

(Category)

Technical field	Fields of technology
Basic materials chemistry	Chemistry
Biotechnology	Chemistry
Chemical engineering	Chemistry
Environmental technology	Chemistry
Food chemistry	Chemistry
Macromolecular chemistry, polymers	Chemistry
Materials, metallurgy	Chemistry
Microstructural technology, nanotechnology	Chemistry
Organic fine chemistry	Chemistry
Pharmaceuticals	Chemistry
Surface technology, coating	Chemistry
Audio-visual technology	Electrical engineering
Basic communication processes	Electrical engineering
Computer technology	Electrical engineering
Digital communication	Electrical engineering
Electrical machinery, apparatus, energy	Electrical engineering
IT methods for management	Electrical engineering
Semiconductors	Electrical engineering
Telecommunications	Electrical engineering
Analysis of biological materials	Instruments
Control	Instruments
Measurement	Instruments
Medical technology	Instruments
Optics	Instruments
Engines, pumps, turbines	Mechanical engineering
Handling	Mechanical engineering
Machine tools	Mechanical engineering
Mechanical elements	Mechanical engineering
Other special machines	Mechanical engineering
Textile and paper machines	Mechanical engineering
Thermal processes and apparatus	Mechanical engineering
Transport	Mechanical engineering
Civil engineering	Other fields
Furniture, games	Other fields
Other consumer goods	Other fields

IT = information technology.

Note(s):
U.S. Patent and Trademark Office patents and international patent families are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification codes under 35 technical fields and five fields of technology.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; International Patent Classification, WIPO, accessed June 2021.

Science and Engineering Indicators

Table SINV-5

International patent families granted, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	317,247	360,357	312,599	314,699	321,099	352,993	374,215	359,715	428,149	445,346	435,701	452,963	505,723	579,170	663,940	698,375	722,747	724,539	811,636	831,796	830,975	869,399	938,038
North America	na	65,118	67,277	66,399	66,600	65,473	70,187	68,340	55,272	65,500	59,449	58,982	62,869	77,905	76,062	85,681	90,987	98,078	96,366	96,409	96,329	91,195	104,239	100,615
Canada	High	2,770	3,005	3,013	3,192	3,053	3,289	3,362	2,792	3,266	3,151	3,398	3,559	4,189	4,197	4,709	5,188	5,684	5,347	5,276	5,135	4,803	5,361	4,962
Mexico	Upper middle	65	72	65	79	97	93	100	95	65	64	72	82	93	103	137	154	186	211	606	634	724	694	306
United States	High	62,283	64,199	63,321	63,329	62,323	66,806	64,878	52,386	62,169	56,234	55,513	59,228	73,622	71,762	80,835	85,645	92,206	90,807	90,527	90,560	85,666	98,184	95,347
Central America and Caribbean	na	48	49	35	39	26	45	41	39	48	37	55	63	42	38	58	62	58	53	56	45	49	60	72
Puerto Rico	High	15	4	0	0	0	0	0	0	1	0	1	1	1	0	1	0	2	1	2	1	2	7	2
South America	na	214	248	327	324	360	422	472	312	390	311	430	687	664	833	786	872	872	924	1,026	1,133	1,490	1,607	2,227
Argentina	Upper middle	59	53	57	48	61	70	61	33	49	60	58	65	71	70	64	79	75	78	88	82	77	111	84
Brazil	Upper middle	105	133	227	224	246	295	347	224	294	201	305	555	538	678	617	669	685	710	813	910	1,272	1,365	2,011
Europe	na	79,953	77,901	75,088	75,526	79,534	91,149	100,883	85,856	89,373	90,214	95,510	97,367	95,985	95,039	104,088	104,139	108,265	103,691	103,680	111,601	109,987	113,331	103,516
EU-27 + UK[a]	na	57,626	59,499	57,705	57,351	60,021	63,679	70,865	61,459	64,886	65,702	66,688	64,526	67,842	68,693	75,715	76,521	78,269	74,442	77,242	83,962	82,932	86,508	79,560
United Kingdom	High	5,704	5,363	5,147	5,376	6,115	7,073	7,144	6,405	5,967	4,877	5,216	5,113	5,814	6,313	7,070	6,779	7,216	7,271	7,478	7,341	7,163	7,888	8,224
EU-27[b]	na	51,922	54,136	52,558	51,975	53,906	56,605	63,721	55,054	58,919	60,826	61,471	59,413	62,028	62,380	68,645	69,742	71,053	67,171	69,764	76,621	75,769	78,620	71,336
Austria	High	1,217	1,243	1,211	1,326	1,414	1,599	1,277	1,297	2,013	1,553	1,682	1,560	1,722	1,869	2,088	1,959	1,922	2,274	2,311	2,439	2,467	2,454	2,413
Belgium	High	804	693	681	710	750	804	839	705	854	812	830	922	958	996	1,106	1,159	1,166	1,617	2,417	1,939	1,823	1,852	1,868
Denmark	High	449	474	442	548	548	644	620	561	593	585	702	707	809	820	946	1,081	1,095	1,163	1,184	1,154	1,086	1,235	1,148
Finland	High	1,185	1,134	1,198	1,254	1,349	1,666	1,677	1,527	1,345	1,339	1,455	1,467	1,558	1,353	1,475	1,546	1,703	1,933	1,870	1,822	1,564	1,661	1,654
France	High	10,226	10,106	9,536	9,809	9,163	10,773	10,621	9,185	11,943	10,919	10,718	11,080	11,056	11,166	13,858	12,825	13,302	13,528	13,580	13,298	13,471	14,725	14,445
Germany	High	19,599	19,392	18,821	20,460	22,778	24,407	24,299	23,756	25,978	23,731	23,414	21,532	23,192	22,512	25,193	26,504	27,303	27,265	29,523	28,883	29,050	31,713	29,942
Hungary	High	190	188	179	207	230	263	192	172	205	191	186	157	255	256	231	245	248	291	271	279	249	322	260
Ireland	High	379	246	178	154	208	278	241	217	235	207	220	241	293	326	425	542	523	545	547	512	597	707	770
Italy	High	6,774	9,660	10,195	7,211	7,318	5,826	13,059	6,984	5,738	10,568	10,833	9,920	9,887	10,313	9,728	9,717	9,104	5,191	2,118	10,538	10,387	8,827	4,932
Netherlands	High	3,162	2,997	2,928	2,962	2,936	2,978	3,043	2,766	2,909	2,952	3,112	2,999	3,056	3,315	3,243	3,536	3,282	2,974	3,612	3,875	3,522	3,694	3,460
Spain	High	1,636	1,786	1,679	1,734	1,197	1,796	1,893	2,422	2,109	2,484	2,261	2,537	2,784	2,953	3,001	3,196	3,449	2,820	2,841	2,613	2,533	2,123	1,539
Sweden	High	2,542	2,750	2,388	2,524	2,781	2,791	3,150	2,248	1,975	1,912	2,096	2,116	2,490	2,379	2,715	2,581	2,640	2,734	3,029	3,201	3,111	3,240	3,520
Other Europe	na	22,327	18,402	17,383	18,175	19,513	27,470	30,018	24,397	24,487	24,512	28,822	32,841	28,143	26,346	28,373	27,618	29,996	29,248	26,439	27,639	27,055	26,823	23,956
Other Europe-2020[b]	na	28,032	23,765	22,531	23,551	25,628	34,544	37,162	30,802	30,454	29,388	34,038	37,954	33,956	32,658	35,443	34,397	37,212	36,519	33,916	34,980	34,218	34,711	32,180

Table SINV-5

International patent families granted, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	111	73	55	62	65	109	155	136	193	172	186	205	208	165	183	151	118	113	171	259	182	193	157
Moldova	Lower middle	188	203	193	195	196	234	241	265	282	258	244	388	347	200	166	202	186	183	164	172	107	146	122
Norway	High	544	520	471	587	622	653	492	634	664	549	568	550	680	689	667	742	793	799	835	873	859	831	846
Russia	Upper middle	18,982	15,383	14,453	12,797	15,220	20,713	19,155	19,574	19,656	18,896	22,676	26,579	21,976	20,701	22,865	21,559	23,559	22,986	20,190	21,497	21,023	20,542	17,946
Switzerland	High	1,784	1,726	1,744	1,880	1,996	2,095	1,981	1,779	2,236	2,012	2,373	2,362	2,434	2,236	2,456	2,658	2,978	2,876	3,014	3,000	3,000	3,248	3,161
Ukraine	Lower middle	628	396	354	2,537	1,275	3,534	7,874	1,896	1,342	2,445	2,521	2,509	2,210	2,069	1,690	1,936	1,980	1,843	1,520	1,281	1,320	1,200	1,053
Asia	na	165,737	205,588	161,982	163,663	166,020	178,606	190,489	208,199	263,640	288,302	273,683	285,552	324,590	401,245	466,582	495,388	508,502	516,352	603,242	615,754	621,685	642,365	723,968
China	Upper middle	2,039	2,635	6,200	6,866	6,045	11,714	18,478	20,542	26,637	31,969	46,567	67,334	80,556	114,208	153,606	162,995	175,459	255,708	316,527	337,197	357,573	375,301	456,088
India	Lower middle	96	119	150	197	264	414	490	457	577	702	790	823	1,186	1,307	1,772	2,318	2,765	3,079	3,362	3,610	3,705	4,601	5,102
Japan	High	137,189	146,500	121,938	120,079	118,316	123,752	123,351	120,722	133,351	150,436	152,520	162,039	176,306	196,738	207,049	210,198	205,870	151,734	171,485	157,623	149,624	145,080	141,286
Malaysia	Upper middle	33	34	49	48	67	93	134	172	275	416	350	393	365	503	498	526	634	599	647	672	612	248	251
Singapore	High	186	201	281	417	435	508	478	365	413	401	420	471	563	582	703	666	786	804	804	838	811	863	804
South Korea	High	21,555	50,697	25,992	25,762	31,657	31,959	36,126	53,737	87,615	90,595	63,009	43,502	52,661	73,381	85,170	96,063	98,986	80,610	86,193	93,695	91,041	97,715	104,490
Taiwan	High	4,503	5,284	7,281	10,189	9,088	9,998	11,289	12,049	14,608	13,605	9,874	10,793	12,766	14,322	17,546	22,349	23,660	23,427	23,780	21,603	17,848	18,095	15,565
Middle East	na	734	798	1,020	1,100	1,165	1,467	1,299	1,087	1,237	1,131	1,281	1,312	1,573	1,716	2,330	2,623	2,867	3,107	3,189	3,419	3,339	3,896	3,917
Israel	High	659	707	704	857	935	1,260	1,144	822	949	869	1,011	1,183	1,363	1,416	1,906	2,125	2,349	2,483	2,510	2,664	2,566	2,926	2,906
Africa	na	1,293	1,371	1,085	1,165	1,131	1,290	1,215	1,104	1,077	1,041	1,460	1,318	1,146	815	953	793	814	591	659	687	508	975	558
South Africa	Upper middle	1,144	1,176	851	937	798	951	966	949	798	765	1,232	1,065	941	579	691	505	479	461	475	526	315	772	374
Australia and Oceania	na	3,373	3,870	4,261	5,904	7,125	9,693	10,587	5,887	5,574	4,692	4,094	3,656	3,685	3,289	3,231	3,206	3,139	3,304	3,066	2,751	2,636	2,849	3,070
Australia	High	3,117	3,597	4,024	5,645	6,785	9,328	10,189	5,499	5,140	4,266	3,585	3,123	3,100	2,698	2,614	2,550	2,485	2,687	2,492	2,266	2,263	2,472	2,776
New Zealand	High	254	264	236	259	340	363	397	388	434	425	507	534	582	589	616	652	651	615	571	480	366	371	289
Unclassified	na	776	3,254	2,402	377	265	134	889	1,959	1,311	169	206	139	132	133	231	306	153	150	308	77	86	77	95

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-6

International patent families granted in electrical machinery, apparatus, energy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	18,452	21,326	19,498	19,992	20,920	22,169	22,445	21,540	26,850	29,080	27,486	28,557	32,669	38,880	44,985	48,973	51,136	50,674	60,253	64,764	62,809	63,484	65,320
North America	na	3,330	3,527	3,606	3,676	3,515	3,580	3,723	2,850	3,427	3,146	3,040	3,258	3,717	3,563	3,707	4,027	4,260	4,551	4,957	5,176	4,751	5,214	4,634
Canada	High	131	131	144	142	137	163	178	145	165	177	149	180	197	177	189	215	223	220	216	259	220	244	205
Mexico	Upper middle	2	4	3	6	5	9	8	6	5	5	8	7	9	8	12	12	12	13	45	37	29	29	23
United States	High	3,197	3,393	3,460	3,528	3,374	3,408	3,538	2,699	3,257	2,964	2,883	3,071	3,512	3,378	3,506	3,800	4,025	4,319	4,696	4,879	4,501	4,941	4,407
Central America and Caribbean	na	0	2	3	2	1	0	0	0	0	0	1	1	5	1	2	1	2	3	3	2	2	2	2
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	7	9	17	14	20	10	18	9	17	11	18	17	22	36	24	28	26	43	38	58	53	53	69
Argentina	Upper middle	3	3	5	3	1	1	1	0	0	3	0	1	4	1	2	2	1	2	2	4	3	3	4
Brazil	Upper middle	3	5	11	11	17	9	16	9	17	7	16	13	17	35	22	23	21	34	31	47	45	44	61
Europe	na	4,028	4,046	4,120	3,859	4,015	4,400	4,677	4,020	4,197	3,961	4,289	4,291	4,529	4,368	4,948	4,995	5,618	5,756	6,374	6,918	6,850	7,092	6,596
EU-27 + UK[a]	na	3,215	3,386	3,433	3,310	3,367	3,495	3,581	3,070	3,293	3,020	3,118	3,184	3,408	3,523	3,957	4,018	4,546	4,617	5,373	5,922	5,710	6,017	5,612
United Kingdom	High	219	258	262	239	273	288	254	264	206	181	196	182	184	188	255	238	297	300	328	312	300	333	390
EU-27[b]	na	2,996	3,128	3,170	3,071	3,094	3,207	3,327	2,806	3,086	2,840	2,922	3,002	3,224	3,335	3,702	3,780	4,249	4,317	5,045	5,610	5,410	5,684	5,222
Austria	High	70	61	80	60	86	103	94	74	127	91	120	102	107	131	150	152	177	213	213	260	265	252	273
Belgium	High	41	35	35	39	39	33	32	25	29	25	22	34	28	22	28	25	33	43	81	76	69	89	109
Denmark	High	14	11	21	26	24	34	27	31	26	23	36	40	56	50	50	66	76	57	67	67	65	76	55
Finland	High	44	42	50	50	66	58	71	69	62	46	63	55	65	70	62	63	62	77	96	120	86	86	95
France	High	688	645	629	688	585	635	623	463	646	575	580	610	570	589	735	817	888	896	947	962	1,061	1,108	1,046
Germany	High	1,330	1,318	1,375	1,461	1,554	1,614	1,617	1,462	1,659	1,524	1,530	1,517	1,606	1,619	1,872	1,863	2,082	2,205	2,524	2,610	2,544	2,827	2,646
Hungary	High	9	9	11	7	11	20	10	5	9	7	14	10	9	15	22	19	21	16	17	13	25	29	17
Ireland	High	17	17	14	7	8	16	12	9	17	7	11	10	16	12	16	22	17	18	17	22	21	19	20
Italy	High	266	375	409	218	211	164	372	203	59	70	83	70	140	200	152	93	103	104	140	516	421	382	254
Netherlands	High	146	154	169	153	166	164	129	113	126	113	116	131	132	164	163	180	187	182	248	246	247	225	212
Spain	High	86	97	55	82	65	86	75	89	82	105	88	112	120	144	134	146	190	125	160	180	141	121	104
Sweden	High	89	173	128	133	134	119	101	76	78	70	81	86	109	96	121	122	154	129	151	138	139	127	138
Other Europe	na	813	660	688	549	649	906	1,097	951	904	941	1,171	1,107	1,121	845	991	977	1,072	1,139	1,001	995	1,140	1,075	985
Other Europe-2020[b]	na	1,032	918	950	789	921	1,193	1,350	1,215	1,111	1,122	1,367	1,288	1,305	1,033	1,246	1,215	1,369	1,439	1,328	1,307	1,440	1,408	1,375

Table SINV-6

International patent families granted in electrical machinery, apparatus, energy, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	2	3	2	2	3	3	3	4	5	7	8	6	1	7	3	7	6	4	4	2	7	2
Moldova	Lower middle	5	7	12	11	4	6	7	12	5	3	7	9	14	3	5	4	6	8	9	2	3	4	2
Norway	High	24	15	18	16	24	15	16	29	16	22	16	21	24	24	26	27	31	35	43	32	48	27	47
Russia	Upper middle	655	514	510	383	474	663	686	728	689	680	865	759	812	558	724	667	747	854	658	682	836	787	711
Switzerland	High	99	112	122	117	97	102	105	97	119	100	124	134	132	133	137	148	171	163	180	185	168	186	171
Ukraine	Lower middle	26	8	19	18	47	111	275	75	66	116	138	154	121	108	78	108	86	53	72	57	57	31	9
Asia	na	10,915	13,372	11,348	12,121	13,030	13,738	13,560	14,323	18,947	21,723	19,935	20,783	24,184	30,719	36,106	39,728	41,016	40,034	48,659	52,394	50,938	50,903	53,785
China	Upper middle	104	126	295	242	331	506	840	832	1,099	1,648	2,737	4,087	4,899	7,032	9,859	10,330	11,411	16,900	22,439	25,870	27,471	27,522	30,936
India	Lower middle	2	1	1	7	8	4	12	22	15	24	19	22	37	38	48	59	62	81	86	113	103	139	132
Japan	High	9,252	10,103	8,987	9,526	9,816	10,454	9,389	9,069	9,548	10,596	11,298	12,043	13,643	15,599	17,340	19,551	19,447	14,167	16,404	16,044	14,403	13,811	13,060
Malaysia	Upper middle	1	4	3	4	4	5	8	7	23	22	14	20	26	27	33	29	28	26	37	22	31	13	12
Singapore	High	5	9	16	17	22	21	17	20	19	24	26	23	30	26	31	28	42	49	54	67	62	46	43
South Korea	High	1,185	2,782	1,567	1,576	2,120	1,944	2,302	3,344	6,797	8,144	4,888	3,505	4,219	6,436	6,814	7,310	7,379	6,392	7,315	8,226	7,165	7,669	8,176
Taiwan	High	364	344	478	744	726	793	984	1,021	1,428	1,252	944	1,063	1,317	1,552	1,969	2,407	2,621	2,395	2,302	2,005	1,665	1,663	1,400
Middle East	na	10	19	33	39	33	49	30	33	33	32	33	33	36	31	48	50	54	74	83	101	97	86	109
Israel	High	9	16	21	28	29	37	29	26	28	26	28	30	32	29	36	39	41	53	60	72	66	59	70
Africa	na	56	64	49	54	56	51	48	38	30	28	43	49	63	29	34	32	37	15	15	17	14	22	15
South Africa	Upper middle	51	58	42	45	42	42	40	33	27	26	39	45	54	14	24	18	23	13	6	11	6	9	4
Australia and Oceania	na	77	120	117	204	226	337	357	199	172	161	125	118	103	129	102	107	121	192	107	98	102	112	108
Australia	High	69	113	110	197	216	327	348	189	166	155	111	105	93	113	90	92	102	173	80	75	86	91	88
New Zealand	High	7	7	7	7	10	11	9	10	6	6	14	13	10	16	12	15	19	19	26	22	16	21	19
Unclassified	na	30	167	204	22	24	4	32	68	26	19	2	6	10	4	14	5	2	6	19	1	1	1	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

^b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-7

International patent families granted in audio-visual technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	17,618	21,026	16,067	14,633	15,120	16,734	17,880	18,417	24,114	24,619	21,331	22,189	24,314	26,602	28,388	27,216	26,091	23,113	24,670	25,264	25,437	27,442	29,028
North America	na	2,727	2,704	2,827	2,783	2,772	3,198	3,224	2,579	3,058	2,581	2,370	2,521	2,893	2,917	3,729	3,781	4,434	4,207	3,973	3,696	3,288	3,420	3,248
Canada	High	94	85	88	74	82	93	107	75	117	114	120	115	141	137	168	196	220	214	223	168	144	140	116
Mexico	Upper middle	0	1	1	0	2	2	1	3	3	2	2	1	2	2	6	3	4	4	11	8	14	7	8
United States	High	2,633	2,619	2,738	2,708	2,688	3,103	3,116	2,500	2,938	2,466	2,248	2,405	2,750	2,777	3,556	3,581	4,211	3,989	3,738	3,521	3,130	3,273	3,123
Central America and Caribbean	na	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	1	1	2	0	0	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	2	5	6	9	8	4	9	6	7	10	5	5	4	8	7	9	12	10	12	9	15	13	16
Argentina	Upper middle	0	2	0	1	0	1	0	0	1	1	1	0	0	0	0	1	0	2	1	1	0	3	0
Brazil	Upper middle	1	2	5	6	7	3	7	4	5	9	3	4	4	7	6	6	10	7	10	9	13	8	15
Europe	na	1,390	1,437	1,372	1,343	1,518	1,832	1,810	1,704	1,672	1,511	1,570	1,534	1,550	1,573	1,740	1,595	1,621	1,663	1,754	1,838	1,815	1,801	1,657
EU-27 + UK[a]	na	1,195	1,272	1,210	1,218	1,363	1,596	1,578	1,482	1,438	1,290	1,305	1,275	1,328	1,326	1,522	1,393	1,387	1,408	1,519	1,603	1,572	1,554	1,440
United Kingdom	High	165	168	179	177	188	272	264	211	193	187	147	144	170	182	177	173	185	193	176	151	154	175	165
EU-27[b]	na	1,030	1,103	1,031	1,041	1,175	1,324	1,315	1,271	1,246	1,103	1,159	1,131	1,158	1,144	1,345	1,220	1,202	1,216	1,343	1,451	1,418	1,379	1,275
Austria	High	14	17	15	19	14	30	24	18	33	19	25	26	26	41	40	39	35	40	39	49	48	48	50
Belgium	High	15	16	13	15	20	18	14	19	17	16	20	19	15	21	22	22	33	40	45	45	42	34	36
Denmark	High	11	8	4	10	13	14	28	28	23	21	29	29	43	37	63	58	60	56	89	78	84	75	63
Finland	High	16	21	22	28	30	47	49	57	39	39	52	57	48	42	54	44	61	71	93	79	84	77	62
France	High	246	242	223	205	258	335	277	276	302	273	266	279	269	251	326	281	272	276	279	275	290	267	260
Germany	High	404	445	424	431	526	525	491	531	527	476	454	445	462	443	529	479	454	421	489	521	533	569	535
Hungary	High	7	10	6	7	6	4	2	2	6	1	2	3	5	4	4	3	4	5	1	3	3	2	2
Ireland	High	12	10	6	4	9	8	7	5	8	5	4	6	5	7	7	10	16	12	15	15	14	17	16
Italy	High	66	85	91	50	45	40	89	45	20	18	16	19	32	37	32	21	16	21	20	96	82	56	37
Netherlands	High	131	127	123	155	157	168	188	146	148	144	177	146	123	121	105	101	86	88	90	84	67	77	64
Spain	High	30	49	28	36	14	39	43	42	34	35	31	33	34	37	40	44	30	34	24	34	27	24	13
Sweden	High	46	50	47	45	55	57	68	49	46	28	38	34	57	62	83	79	85	104	103	111	92	82	85
Other Europe	na	195	165	162	125	155	236	231	222	234	221	264	258	222	247	218	202	234	255	235	236	243	246	218
Other Europe-2020[b]	na	361	334	341	302	343	509	495	433	426	408	411	402	392	429	395	375	418	448	411	387	397	422	383

Table SINV-7

International patent families granted in audio-visual technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	2	4	1	0	0	1	0	1	2	2	3	0	1	1	1	3	1	1	2	3	1	1	1
Moldova	Lower middle	1	1	3	3	1	1	3	2	5	2	1	2	5	0	1	1	2	1	1	1	1	0	0
Norway	High	16	17	14	17	10	17	7	22	18	10	14	12	11	14	20	11	18	27	22	15	20	14	13
Russia	Upper middle	143	112	107	65	89	143	126	139	126	153	165	166	120	119	105	110	116	123	117	112	140	131	98
Switzerland	High	25	27	32	35	46	55	49	45	52	45	60	59	67	84	69	60	75	75	68	77	66	80	77
Ukraine	Lower middle	9	3	4	5	7	17	45	14	29	8	16	14	7	14	10	5	12	10	10	10	8	4	6
Asia	na	13,381	16,734	11,703	10,305	10,553	11,290	12,397	13,838	19,124	20,280	17,187	17,965	19,717	21,967	22,755	21,655	19,865	17,066	18,767	19,555	20,155	22,056	23,955
China	Upper middle	33	43	99	96	84	229	443	565	763	978	1,860	2,845	3,274	3,805	4,422	4,036	3,743	4,897	5,847	7,486	9,312	11,141	12,985
India	Lower middle	0	1	2	2	2	4	9	6	14	12	17	16	31	37	53	73	98	96	96	98	103	127	121
Japan	High	10,172	9,786	8,192	7,906	8,006	8,460	8,858	8,350	9,494	10,558	10,387	11,836	12,281	12,763	12,647	11,250	9,761	6,709	7,177	6,664	6,171	6,045	5,724
Malaysia	Upper middle	4	4	5	3	3	5	4	12	19	23	20	18	16	12	18	21	26	19	24	17	19	20	14
Singapore	High	16	19	31	35	38	73	89	46	49	36	48	51	62	45	60	53	67	67	54	44	40	40	40
South Korea	High	2,974	6,681	3,099	1,867	1,891	1,830	2,179	3,811	7,413	7,427	3,919	2,241	2,686	3,730	3,662	3,904	4,141	3,552	3,815	3,870	3,478	3,641	3,918
Taiwan	High	180	200	274	394	520	688	814	1,044	1,369	1,241	932	952	1,362	1,563	1,881	2,307	2,014	1,703	1,731	1,361	1,017	1,026	1,141
Middle East	na	29	23	26	37	35	41	45	28	31	33	33	38	39	50	77	103	87	95	91	94	82	75	75
Israel	High	28	22	24	32	32	39	45	28	30	29	33	36	37	46	73	96	81	91	81	86	76	69	69
Africa	na	19	18	18	26	27	27	30	36	12	18	25	20	22	12	19	10	9	4	3	6	5	3	1
South Africa	Upper middle	15	11	9	18	11	17	23	32	10	18	23	20	19	7	10	6	3	2	1	3	3	2	0
Australia and Oceania	na	62	80	104	127	207	340	357	200	205	184	140	106	88	75	59	62	62	66	66	63	76	72	74
Australia	High	59	76	98	122	197	336	351	195	200	177	135	100	83	70	53	53	55	59	60	56	71	66	68
New Zealand	High	2	3	6	5	10	4	6	5	5	7	4	5	5	5	5	9	6	7	6	7	5	6	6
Unclassified	na	9	25	11	3	1	2	7	26	6	1	2	0	0	1	1	1	2	2	4	0	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

^b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-8

International patent families granted in telecommunications, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	10,230	13,081	11,960	11,508	11,599	12,521	13,799	13,594	20,247	19,229	16,181	15,774	18,306	20,649	22,326	21,312	20,923	18,331	18,234	17,823	18,190	20,545	20,850
North America	na	2,246	2,566	2,608	2,648	2,672	2,831	3,152	2,663	3,738	3,125	3,035	3,272	3,897	3,865	4,722	4,361	4,202	3,538	3,254	3,166	2,812	2,917	2,640
Canada	High	127	155	148	171	147	152	204	165	256	216	228	230	288	267	322	339	361	295	275	218	182	195	182
Mexico	Upper middle	0	1	1	1	1	2	5	3	1	1	0	0	1	0	2	1	4	1	16	9	7	9	3
United States	High	2,119	2,410	2,458	2,476	2,524	2,677	2,942	2,495	3,481	2,909	2,807	3,042	3,607	3,598	4,398	4,021	3,837	3,241	2,962	2,939	2,623	2,714	2,454
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	1	2	3	4	2	0	2
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	2	4	5	1	4	6	8	1	5	1	10	8	3	9	8	9	15	9	12	13	15	12	18
Argentina	Upper middle	0	0	0	0	0	1	0	0	1	1	0	2	0	3	1	1	1	3	2	0	2	1	0
Brazil	Upper middle	1	2	5	1	2	5	7	1	4	0	9	5	2	5	6	7	13	6	9	13	13	9	17
Europe	na	1,544	1,705	1,804	1,765	1,809	2,258	2,439	2,132	2,229	1,960	1,851	1,665	1,800	1,811	2,111	1,961	1,969	1,778	1,908	1,889	1,879	1,976	1,739
EU-27 + UK[a]	na	1,247	1,473	1,596	1,593	1,572	1,936	2,071	1,819	1,875	1,616	1,496	1,330	1,472	1,494	1,779	1,666	1,668	1,405	1,559	1,521	1,489	1,559	1,376
United Kingdom	High	157	210	202	205	222	302	352	298	276	225	172	161	176	160	210	187	197	194	165	143	144	149	154
EU-27[b]	na	1,091	1,263	1,394	1,388	1,350	1,634	1,718	1,521	1,599	1,391	1,325	1,170	1,296	1,335	1,569	1,479	1,471	1,211	1,393	1,378	1,345	1,410	1,221
Austria	High	12	11	20	27	22	29	27	30	43	24	23	27	24	33	42	29	34	26	32	41	39	42	44
Belgium	High	23	15	18	15	12	19	26	23	21	21	24	20	23	25	24	28	26	26	36	33	30	32	36
Denmark	High	7	12	14	17	19	26	19	24	26	25	28	21	22	19	27	34	34	26	30	37	17	16	16
Finland	High	115	128	174	162	149	206	203	163	161	175	168	147	138	113	115	142	116	108	84	75	71	59	53
France	High	212	245	292	299	285	399	352	308	408	287	296	245	276	314	368	297	305	228	324	312	295	266	226
Germany	High	375	373	388	473	460	565	643	652	643	556	497	404	422	379	472	468	457	398	463	446	472	531	456
Hungary	High	3	6	1	2	4	7	6	1	5	6	5	3	4	3	5	4	5	2	6	4	2	5	4
Ireland	High	5	11	4	4	9	7	14	9	12	14	12	9	17	14	22	26	23	27	24	24	26	27	32
Italy	High	85	143	162	66	62	53	123	76	34	43	30	37	60	73	79	70	49	48	48	101	82	71	56
Netherlands	High	61	73	77	68	63	71	69	63	68	59	68	60	63	77	77	61	75	51	64	57	59	55	51
Spain	High	39	57	27	29	13	39	43	54	43	54	39	31	48	47	62	63	64	37	47	35	40	40	27
Sweden	High	120	159	196	197	224	188	162	83	106	84	99	119	157	181	215	207	211	175	169	159	154	195	179
Other Europe	na	297	231	209	171	238	322	368	313	355	344	355	335	327	316	332	294	301	373	349	369	389	417	363
Other Europe-2020[b]	na	454	441	410	377	459	624	721	611	630	569	527	495	503	476	542	481	497	567	514	512	534	566	518

Table SINV-8

International patent families granted in telecommunications, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	1	0	0	0	0	0	2	4	0	1	1	0	2	1	3	1	1	3	4	5	1	2	1
Moldova	Lower middle	0	1	0	0	1	0	3	0	0	1	1	1	1	1	3	1	0	1	1	0	1	0	0
Norway	High	7	7	9	8	11	13	11	14	15	13	8	8	11	5	9	7	4	9	8	5	9	10	8
Russia	Upper middle	265	188	164	131	184	246	264	242	294	288	291	273	249	248	269	234	233	301	278	310	326	354	306
Switzerland	High	18	30	30	25	35	41	32	40	38	24	34	26	28	26	26	29	28	24	26	33	37	36	25
Ukraine	Lower middle	6	5	4	4	5	19	53	11	6	17	17	25	31	29	20	18	28	30	19	9	9	5	3
Asia	na	6,324	8,647	7,366	6,870	6,840	7,048	7,781	8,522	13,975	13,948	11,086	10,626	12,404	14,785	15,272	14,767	14,520	12,805	12,864	12,558	13,290	15,443	16,291
China	Upper middle	18	31	109	86	80	260	651	636	799	870	1,616	2,554	2,802	3,442	4,105	4,190	4,309	5,013	5,212	5,490	6,734	8,758	10,490
India	Lower middle	1	1	2	1	3	3	11	9	15	25	36	34	54	58	100	111	126	133	120	136	132	141	132
Japan	High	4,863	5,644	4,977	4,660	4,447	4,624	4,620	4,561	4,988	5,396	5,719	5,741	6,340	7,295	7,213	6,574	5,936	4,330	4,393	4,031	3,812	3,749	3,180
Malaysia	Upper middle	2	3	2	3	2	6	9	7	9	11	5	8	10	12	14	10	24	30	32	25	25	9	10
Singapore	High	9	4	5	12	14	13	16	12	18	16	19	20	18	17	32	20	19	15	17	15	17	18	19
South Korea	High	1,306	2,822	2,063	1,797	1,984	1,659	1,972	2,630	7,364	7,092	3,369	1,902	2,696	3,409	3,086	3,087	3,333	2,526	2,291	2,301	2,075	2,303	2,100
Taiwan	High	122	141	205	311	308	483	500	666	780	535	318	363	479	545	718	767	767	749	792	553	488	456	352
Middle East	na	34	40	38	40	58	74	88	69	87	74	82	96	115	102	146	147	142	145	131	140	139	141	114
Israel	High	32	39	34	40	53	74	88	66	85	72	78	92	110	95	140	136	131	131	120	121	123	114	92
Africa	na	15	25	16	25	20	26	17	12	21	18	22	29	21	11	11	10	16	8	7	7	9	7	6
South Africa	Upper middle	11	21	10	19	13	22	15	8	17	14	21	26	19	5	5	6	9	4	3	2	2	4	3
Australia and Oceania	na	59	70	100	155	194	278	306	183	188	101	93	78	65	66	53	56	57	44	46	44	43	48	39
Australia	High	50	66	98	151	192	269	300	178	181	98	86	73	57	60	45	48	50	37	41	39	38	45	36
New Zealand	High	8	4	3	5	2	9	6	6	8	4	7	5	7	6	8	7	7	7	4	5	5	3	4
Unclassified	na	6	24	23	3	2	1	8	11	4	1	2	1	1	0	1	1	1	3	10	2	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-9

International patent families granted in digital communication, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,779	6,275	6,629	6,437	6,670	8,573	10,652	10,062	13,952	14,399	14,332	16,406	18,854	22,928	26,507	27,322	31,409	32,313	35,346	37,806	42,528	52,023	54,137
North America	na	1,423	1,707	1,978	1,982	2,159	2,608	3,252	2,712	3,235	2,899	3,085	3,310	3,986	3,947	4,889	5,298	6,779	7,582	7,906	7,983	7,925	9,230	9,272
Canada	High	65	109	123	132	129	169	207	160	234	256	292	325	328	352	413	495	602	559	508	477	457	538	510
Mexico	Upper middle	0	1	1	2	2	2	2	3	0	0	1	0	2	0	1	1	2	4	5	8	9	7	7
United States	High	1,358	1,597	1,854	1,848	2,028	2,438	3,043	2,549	3,002	2,643	2,792	2,986	3,656	3,594	4,475	4,802	6,174	7,019	7,393	7,499	7,459	8,684	8,754
Central America and Caribbean	na	0	0	0	0	0	0	1	0	0	0	0	3	1	1	1	2	2	3	4	3	4	5	9
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	0	1	1	1	3	2	2	2	2	2	1	4	3	7	7	11	17	20	24	25	26	30	42
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	3	2	4	5	2	2	6	7
Brazil	Upper middle	0	0	1	1	2	2	2	2	1	0	0	2	1	5	5	8	13	16	17	22	22	22	30
Europe	na	708	823	1,001	1,089	1,233	1,728	1,919	1,998	2,115	1,968	1,937	1,887	2,053	2,164	2,753	2,697	3,180	3,118	3,454	3,568	3,745	4,103	3,900
EU-27 + UK[a]	na	659	755	953	1,034	1,161	1,604	1,800	1,867	1,986	1,830	1,812	1,744	1,931	2,030	2,585	2,561	2,998	2,900	3,212	3,293	3,470	3,745	3,596
United Kingdom	High	77	100	122	138	168	265	334	290	325	284	259	240	271	316	378	352	455	514	544	442	510	535	487
EU-27[b]	na	582	655	830	896	993	1,339	1,466	1,578	1,661	1,546	1,553	1,503	1,660	1,714	2,207	2,209	2,543	2,386	2,667	2,851	2,960	3,210	3,109
Austria	High	5	9	8	9	15	17	27	25	39	25	24	15	25	23	33	26	35	31	42	47	47	49	57
Belgium	High	11	6	9	11	14	14	34	35	34	35	35	30	41	39	46	53	52	47	72	72	64	56	76
Denmark	High	1	4	2	4	6	17	17	28	29	23	27	16	22	18	20	40	31	41	29	29	30	22	44
Finland	High	103	122	178	185	171	261	291	210	238	252	236	236	218	170	194	255	310	298	298	294	242	291	239
France	High	104	138	198	174	231	358	363	403	382	335	340	319	341	386	508	413	517	444	504	541	562	542	558
Germany	High	192	177	194	200	248	368	423	616	672	602	580	509	530	500	651	632	656	661	679	699	822	939	957
Hungary	High	1	2	0	1	3	5	5	6	6	12	11	11	16	21	24	33	44	41	38	39	28	38	20
Ireland	High	4	7	14	14	22	21	19	11	12	12	13	12	19	21	26	32	40	58	64	66	90	95	99
Italy	High	22	23	37	41	35	24	32	31	25	36	56	59	83	100	115	87	85	74	66	133	127	136	110
Netherlands	High	36	48	37	48	44	49	53	68	66	60	74	66	70	78	93	98	107	96	104	106	111	104	109
Spain	High	8	11	9	16	8	17	24	33	37	40	34	42	61	80	88	93	110	81	87	84	73	59	57
Sweden	High	93	101	137	186	189	179	161	97	101	96	100	152	190	242	356	393	486	450	578	624	629	735	637
Other Europe	na	49	68	49	55	72	124	119	131	129	138	125	143	122	134	168	136	182	219	242	275	275	358	304
Other Europe-2020[b]	na	126	168	171	192	241	389	453	421	454	422	384	384	393	451	546	488	637	733	786	717	786	894	791
Belarus	Upper middle	0	0	0	1	0	1	2	0	0	1	1	0	1	0	1	1	1	1	1	2	2	2	2
Moldova	Lower middle	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	1
Norway	High	6	4	8	9	16	16	11	20	15	18	14	15	10	9	10	9	13	17	18	13	14	20	21
Russia	Upper middle	31	44	25	24	31	70	64	78	74	75	60	80	66	79	101	76	98	113	114	145	152	197	167
Switzerland	High	11	18	12	19	20	31	34	30	37	37	44	40	34	40	39	40	47	62	81	92	76	101	75

Table SINV-9

International patent families granted in digital communication, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	2	4	5	2	2	6	5	5	7	3	13	5	11	11	10	6	11	12	11
Asia	na	2,586	3,655	3,539	3,210	3,061	3,882	5,058	5,048	8,258	9,267	9,078	10,972	12,570	16,622	18,615	19,054	21,064	21,202	23,485	25,717	30,312	38,061	40,351
China	Upper middle	4	11	18	43	32	222	553	535	781	1,389	3,568	5,485	6,521	8,589	10,450	10,001	11,505	13,154	14,697	17,287	22,036	28,767	32,046
India	Lower middle	1	1	1	4	4	11	22	19	24	41	51	48	82	101	143	218	308	460	549	612	711	904	951
Japan	High	1,817	2,187	2,068	1,950	1,861	2,276	2,484	2,442	2,867	3,173	2,789	3,310	3,781	4,686	4,785	4,849	4,565	3,199	3,459	3,288	3,274	3,339	2,714
Malaysia	Upper middle	0	0	0	1	0	1	3	4	3	4	0	6	7	13	19	25	28	41	51	33	37	13	20
Singapore	High	5	4	5	8	7	14	17	15	11	14	12	22	15	21	27	13	22	20	27	30	26	33	52
South Korea	High	713	1,400	1,402	1,095	1,048	1,156	1,693	1,696	4,179	4,355	2,492	1,889	1,882	2,897	2,710	3,315	3,868	3,545	3,912	3,785	3,629	4,347	4,083
Taiwan	High	44	52	44	108	109	199	284	336	390	290	160	205	276	308	469	619	753	769	775	663	586	639	471
Middle East	na	25	41	38	49	72	93	99	90	96	76	77	113	136	111	156	181	264	294	349	398	404	463	439
Israel	High	25	40	38	49	72	92	99	90	94	76	75	106	131	106	141	167	245	271	332	370	380	425	412
Africa	na	3	8	2	2	3	8	11	10	12	6	20	14	15	7	12	11	15	13	22	25	18	21	20
South Africa	Upper middle	3	6	2	1	1	8	9	9	10	4	18	14	12	4	7	5	8	8	15	15	7	13	8
Australia and Oceania	na	31	38	69	102	139	251	307	201	233	178	133	101	87	68	73	66	84	78	94	84	92	108	103
Australia	High	28	37	67	99	137	249	305	196	228	173	130	94	78	62	63	57	72	67	85	72	81	94	93
New Zealand	High	3	1	2	3	2	2	3	5	5	5	3	7	9	7	10	9	12	11	9	12	10	14	9
Unclassified	na	2	3	1	2	0	0	2	0	0	2	1	1	2	1	1	3	2	2	8	2	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Table SINV-10

International patent families granted in basic communication processes, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,716	5,389	4,810	5,138	5,102	5,306	5,151	4,734	5,541	5,547	5,027	5,390	6,179	6,243	6,374	6,661	6,448	5,952	6,498	6,503	5,898	5,986	5,995
North America	na	1,183	1,239	1,356	1,515	1,546	1,659	1,598	1,276	1,662	1,618	1,406	1,396	1,634	1,364	1,361	1,522	1,521	1,386	1,403	1,254	1,000	1,256	1,220
Canada	High	31	40	53	60	50	59	60	49	51	60	60	50	76	62	72	92	92	91	69	68	50	71	63
Mexico	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	0	2	4	6	4	1	2
United States	High	1,152	1,198	1,303	1,455	1,496	1,600	1,538	1,227	1,611	1,557	1,346	1,346	1,558	1,301	1,288	1,426	1,429	1,292	1,330	1,180	947	1,184	1,155
Central America and Caribbean	na	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	1	1	1	1	1	0	0	0	4	1	1	3	5	3	4	2	7	4	4	4	8	7	6
Argentina	Upper middle	0	0	0	0	0	0	0	0	3	1	0	2	0	1	1	1	1	1	0	0	2	1	0
Brazil	Upper middle	0	0	1	1	1	0	0	0	1	0	1	1	5	2	3	1	6	3	3	4	6	6	5
Europe	na	736	643	666	732	763	942	910	874	990	842	910	833	920	890	923	999	1,042	958	949	874	887	972	985
EU-27 + UK[a]	na	561	551	569	626	655	759	720	678	786	636	634	595	646	628	643	711	749	682	711	638	671	695	725
United Kingdom	High	69	65	74	86	97	120	99	110	108	75	64	62	73	75	65	99	109	94	106	75	83	77	89
EU-27[b]	na	492	486	496	539	558	639	621	568	678	561	570	533	572	553	578	612	641	588	605	563	588	619	636
Austria	High	5	10	4	11	28	26	32	41	50	33	36	33	52	40	32	25	47	42	41	51	37	47	48
Belgium	High	1	2	6	9	8	5	6	10	10	9	8	9	13	8	10	8	10	16	15	13	17	17	25
Denmark	High	2	4	4	4	10	7	9	8	17	10	9	14	5	10	13	10	11	4	8	8	15	13	13
Finland	High	26	17	25	41	32	33	35	30	29	26	15	17	23	14	13	21	22	17	26	13	17	11	14
France	High	94	89	96	104	86	117	115	105	116	96	99	93	101	111	129	151	100	111	92	86	118	106	110
Germany	High	183	184	193	215	235	277	270	262	312	257	262	227	230	204	219	221	249	256	237	199	236	258	263
Hungary	High	0	0	0	0	0	2	1	1	0	2	0	0	1	0	1	1	2	1	1	1	1	4	1
Ireland	High	10	5	3	5	5	16	11	11	12	12	14	7	11	14	11	11	25	17	20	17	16	24	28
Italy	High	72	83	75	40	40	33	40	24	30	27	32	29	32	30	23	22	30	23	36	67	39	33	24
Netherlands	High	30	30	36	41	51	46	45	31	43	38	36	35	37	45	38	58	42	38	48	33	28	37	51
Spain	High	10	5	3	5	3	7	7	6	8	11	10	12	17	10	14	13	13	8	8	10	10	11	8
Sweden	High	35	35	35	48	43	56	37	22	27	16	28	34	33	46	49	40	33	31	37	29	24	28	30
Other Europe	na	175	92	96	106	108	183	190	196	204	206	276	238	274	262	280	288	292	277	237	236	216	277	259
Other Europe-2020[b]	na	244	157	170	192	205	303	289	306	312	280	340	300	347	337	345	388	401	370	343	311	299	353	348
Belarus	Upper middle	0	0	0	0	0	2	0	0	5	1	0	0	0	3	1	0	7	1	4	5	2	2	3
Moldova	Lower middle	0	0	0	0	0	1	0	0	1	3	1	2	3	2	1	2	2	1	0	0	0	0	1
Norway	High	1	3	2	4	5	5	2	3	7	9	2	2	6	2	7	10	4	7	9	5	6	5	4
Russia	Upper middle	157	75	79	90	93	149	134	158	158	162	230	186	212	205	231	219	208	226	182	186	169	231	227
Switzerland	High	11	11	13	10	9	19	16	18	32	14	27	30	21	27	20	30	36	29	29	21	19	28	20

Table SINV-10

International patent families granted in basic communication processes, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	5	3	2	1	3	8	38	16	1	15	14	17	30	18	19	25	31	9	5	10	18	1	1
Asia	na	2,736	3,440	2,692	2,815	2,702	2,566	2,513	2,470	2,800	3,009	2,644	3,094	3,562	3,937	4,028	4,064	3,802	3,531	4,076	4,307	3,945	3,683	3,720
China	Upper middle	9	7	28	22	35	85	137	123	130	198	264	679	733	891	1,110	1,083	1,064	1,278	1,735	2,282	2,083	1,675	1,867
India	Lower middle	1	3	3	8	9	19	17	34	42	41	41	51	69	48	56	92	91	86	128	90	68	107	135
Japan	High	2,119	2,231	2,046	2,147	2,081	1,907	1,726	1,376	1,658	1,805	1,610	1,713	1,891	2,042	1,932	1,918	1,692	1,318	1,217	1,113	1,065	1,101	989
Malaysia	Upper middle	0	1	4	2	4	1	3	5	8	11	8	8	13	9	9	12	19	15	11	21	17	12	7
Singapore	High	13	6	19	10	11	8	16	9	15	27	17	26	27	16	18	13	22	23	16	24	15	21	20
South Korea	High	514	1,124	511	469	426	380	383	617	736	679	485	322	385	525	526	490	489	420	546	509	431	468	434
Taiwan	High	79	67	80	157	136	167	229	306	211	246	218	296	443	402	376	453	423	387	421	264	262	295	267
Middle East	na	25	23	25	23	22	37	30	34	29	33	32	42	42	39	47	63	59	56	55	54	44	53	52
Israel	High	25	23	24	23	21	36	29	33	29	33	32	40	42	34	41	53	52	49	46	47	41	47	43
Africa	na	4	2	3	2	4	2	4	4	2	3	4	1	3	2	2	3	6	5	1	4	5	3	4
South Africa	Upper middle	3	1	2	2	1	1	2	3	2	2	3	1	3	0	2	2	3	1	0	0	1	3	1
Australia and Oceania	na	14	15	19	32	59	98	93	55	45	42	30	20	12	8	7	6	10	11	8	6	8	12	8
Australia	High	11	15	18	31	57	96	89	52	44	38	29	18	8	5	5	5	8	9	8	5	8	11	8
New Zealand	High	2	1	1	1	2	1	3	2	1	4	0	2	4	3	2	1	1	2	0	1	1	1	1
Unclassified	na	14	26	49	19	4	1	2	21	9	0	0	1	0	1	1	1	1	1	2	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-11

International patent families granted in computer technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	17,156	19,424	16,781	17,273	17,697	20,349	22,649	22,037	29,143	29,282	30,644	33,494	38,290	43,158	51,153	53,712	56,891	56,450	64,552	70,481	70,439	82,149	95,834
North America	na	6,174	6,413	6,110	6,368	6,475	7,463	8,110	7,196	10,300	9,161	10,033	11,517	14,394	13,857	16,590	17,541	18,973	17,244	16,983	15,315	13,827	17,018	17,216
Canada	High	115	114	139	144	163	188	219	202	305	324	421	486	670	648	796	833	963	810	814	680	624	695	675
Mexico	Upper middle	0	1	1	2	0	4	5	6	2	2	2	2	6	6	8	3	7	9	23	22	25	21	19
United States	High	6,059	6,297	5,970	6,222	6,312	7,271	7,886	6,987	9,993	8,834	9,610	11,029	13,718	13,203	15,785	16,706	18,002	16,425	16,146	14,613	13,178	16,302	16,523
Central America and Caribbean	na	2	0	1	0	0	2	1	1	0	2	2	3	2	1	3	2	3	4	8	5	4	6	16
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	4	5	3	4	4	8	10	8	9	11	10	13	12	24	24	31	32	47	46	49	61	77	124
Argentina	Upper middle	1	0	0	1	1	1	1	0	2	2	1	1	2	5	5	7	5	11	11	3	6	10	12
Brazil	Upper middle	3	5	3	2	2	5	6	5	4	6	7	10	9	16	14	22	23	30	33	42	48	61	107
Europe	na	1,320	1,449	1,452	1,743	1,874	2,510	2,618	2,474	2,634	2,520	2,703	2,895	3,392	3,455	3,957	4,192	4,628	4,690	4,924	5,114	5,108	5,584	5,505
EU-27 + UK[a]	na	1,098	1,252	1,285	1,556	1,659	2,212	2,281	2,165	2,336	2,161	2,350	2,514	2,975	2,928	3,345	3,642	3,954	3,937	4,155	4,165	4,191	4,596	4,582
United Kingdom	High	203	210	207	228	312	445	443	497	413	337	386	447	513	544	638	714	815	852	916	821	815	958	981
EU-27[b]	na	895	1,043	1,078	1,327	1,347	1,767	1,838	1,668	1,923	1,824	1,964	2,068	2,462	2,384	2,707	2,928	3,139	3,085	3,239	3,345	3,375	3,638	3,601
Austria	High	11	14	17	18	20	25	22	27	49	38	54	42	49	53	45	45	53	65	63	77	71	74	80
Belgium	High	18	12	14	15	14	18	24	18	28	26	35	42	45	45	61	69	57	58	72	74	95	96	75
Denmark	High	3	7	9	11	13	17	16	14	22	18	19	26	30	35	37	37	37	35	39	43	40	45	31
Finland	High	18	30	32	30	33	66	92	88	102	99	125	123	148	111	132	151	186	176	196	178	141	156	152
France	High	221	270	262	418	322	525	451	439	502	437	450	489	522	569	699	779	756	754	840	842	898	846	822
Germany	High	352	363	373	448	583	689	750	718	865	839	880	869	1,088	975	1,060	1,110	1,188	1,128	1,126	1,091	1,132	1,355	1,331
Hungary	High	0	3	5	3	4	4	3	3	4	4	3	7	8	14	9	10	13	14	10	13	15	17	20
Ireland	High	16	24	20	18	19	26	14	20	22	20	18	31	33	42	60	73	76	91	77	78	102	153	178
Italy	High	125	152	162	114	118	105	181	104	76	75	89	85	115	109	132	149	144	109	109	239	207	197	202
Netherlands	High	61	76	80	97	93	127	126	102	115	118	115	123	131	132	130	142	161	155	150	166	167	176	178
Spain	High	22	24	26	25	10	29	26	34	42	36	48	59	69	73	92	106	116	117	117	93	101	92	75
Sweden	High	36	53	58	99	98	103	98	77	67	79	77	89	119	125	142	137	176	203	209	215	165	174	204
Other Europe	na	222	197	168	187	215	298	338	309	298	358	353	380	417	527	612	550	675	753	769	949	918	988	923
Other Europe-2020[b]	na	425	407	374	416	527	743	780	806	711	695	739	827	930	1,071	1,250	1,265	1,490	1,605	1,685	1,770	1,733	1,946	1,904

Table SINV-11

International patent families granted in computer technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	1	0	1	2	0	3	0	0	1	3	2	1	1	2	1	2	2	2	6	6	6	10	5
Moldova	Lower middle	1	1	0	2	1	2	2	3	1	1	2	3	8	4	4	4	2	2	1	4	0	0	0
Norway	High	10	11	10	14	17	19	14	17	14	22	32	34	37	44	39	34	41	46	52	57	56	47	60
Russia	Upper middle	182	159	138	121	151	190	164	218	214	247	227	217	257	347	386	298	384	453	459	633	606	659	601
Switzerland	High	23	21	16	43	42	48	55	45	56	52	62	82	71	84	123	156	182	175	180	179	181	213	197
Ukraine	Lower middle	5	2	2	3	2	34	100	23	9	27	23	38	36	34	37	37	49	51	44	41	35	28	19
Asia	na	9,470	11,314	8,955	8,815	8,872	9,657	11,072	11,792	15,633	17,100	17,394	18,575	19,901	25,201	29,720	30,960	32,172	33,307	41,427	48,875	50,368	58,191	71,654
China	Upper middle	35	75	156	221	290	664	1,061	1,135	1,526	2,236	3,434	4,502	4,616	6,133	8,936	8,742	8,429	12,473	19,842	28,599	31,939	38,542	51,306
India	Lower middle	4	7	10	17	16	44	48	62	109	147	190	223	395	491	641	908	1,095	1,161	1,157	1,188	1,214	1,573	1,797
Japan	High	7,887	8,037	6,657	6,329	6,035	6,137	6,579	6,304	7,430	8,350	8,797	9,610	10,358	12,650	13,371	13,289	12,932	9,865	10,796	9,955	8,955	8,901	8,689
Malaysia	Upper middle	2	1	1	1	1	6	15	25	23	27	22	30	33	31	53	69	80	65	90	80	69	53	42
Singapore	High	15	21	20	22	33	41	43	30	44	35	50	48	37	51	73	67	84	80	95	91	93	121	126
South Korea	High	1,198	2,809	1,669	1,521	1,702	1,806	2,125	3,030	4,896	4,822	3,796	2,933	3,060	4,312	4,560	5,185	6,231	6,022	6,222	6,291	5,971	6,761	7,647
Taiwan	High	329	362	441	704	792	958	1,200	1,206	1,604	1,479	1,103	1,224	1,393	1,519	2,064	2,676	3,300	3,616	3,186	2,630	2,089	2,204	2,020
Middle East	na	93	88	103	98	120	185	180	137	184	169	202	247	310	380	590	695	783	873	869	889	831	1,002	1,023
Israel	High	92	85	102	97	115	182	178	136	179	168	196	240	297	367	560	650	743	830	813	834	784	944	952
Africa	na	15	23	22	19	40	36	39	45	37	27	48	31	30	21	43	42	46	30	37	33	27	49	32
South Africa	Upper middle	15	21	20	16	33	31	32	43	34	22	45	28	27	10	27	23	19	17	22	21	10	30	19
Australia and Oceania	na	69	105	113	224	311	488	607	352	337	288	249	213	249	215	223	245	251	251	251	199	210	221	262
Australia	High	64	99	106	219	303	475	597	345	320	270	232	197	229	195	196	219	223	223	224	184	194	204	242
New Zealand	High	5	6	7	5	8	13	9	7	17	17	17	16	19	20	26	26	27	28	26	15	15	17	19
Unclassified	na	8	26	22	2	0	0	11	32	10	4	4	2	1	4	3	3	3	4	6	2	4	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-12

International patent families granted in IT methods for management, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	757	894	935	907	1,222	1,736	1,926	1,995	2,516	3,584	3,882	3,761	5,018	5,851	7,092	8,019	8,399	7,127	9,398	10,661	11,360	13,528	18,236
North America	na	319	397	455	393	474	641	665	640	676	713	924	1,009	1,793	1,756	2,113	2,646	2,531	1,752	1,731	2,225	2,331	3,504	3,255
Canada	High	6	8	10	8	12	16	19	19	18	24	39	44	56	59	66	97	98	88	91	107	93	131	117
Mexico	Upper middle	0	0	1	0	0	1	1	1	0	1	1	0	1	3	3	1	1	1	2	3	3	11	2
United States	High	314	389	444	386	461	624	644	619	657	689	884	965	1,737	1,694	2,044	2,549	2,432	1,662	1,638	2,115	2,235	3,362	3,135
Central America and Caribbean	na	1	0	0	0	0	0	1	1	0	0	0	0	1	2	1	1	1	0	1	1	2	2	2
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	0	0	1	0	1	1	2	2	0	1	1	6	2	6	3	6	8	6	8	7	9	13	26
Argentina	Upper middle	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	1	2	3	1	2	2
Brazil	Upper middle	0	0	1	0	0	1	2	2	0	0	1	5	2	5	2	4	6	5	6	5	8	9	20
Europe	na	60	71	106	125	164	232	232	236	232	236	288	300	352	341	409	463	486	441	501	683	705	788	711
EU-27 + UK[a]	na	47	61	93	109	143	203	206	198	188	207	247	251	316	293	362	413	422	392	439	587	598	636	580
United Kingdom	High	10	12	15	12	21	45	56	41	36	39	39	46	62	61	73	98	90	89	73	81	89	116	110
EU-27[b]	na	36	49	78	96	123	157	150	157	152	168	208	205	254	232	289	315	332	304	365	506	509	520	470
Austria	High	1	1	1	0	2	1	2	1	2	4	1	3	4	4	4	3	5	2	6	10	6	12	8
Belgium	High	0	1	0	2	2	0	0	2	2	3	5	2	4	3	6	6	9	18	37	37	40	36	27
Denmark	High	0	1	0	0	2	1	2	2	1	2	2	2	2	1	4	5	4	3	2	5	4	6	2
Finland	High	0	1	4	4	7	9	24	12	12	8	12	13	11	18	14	15	19	25	17	17	10	18	15
France	High	11	12	16	26	27	48	36	42	27	37	41	40	49	44	57	46	58	66	70	79	108	92	102
Germany	High	9	11	17	18	25	39	35	49	46	40	57	59	87	73	109	129	102	79	98	85	96	121	128
Hungary	High	0	0	0	0	1	0	0	2	0	0	3	1	0	2	2	0	2	1	0	1	1	3	2
Ireland	High	3	1	1	3	0	1	2	3	1	3	4	4	9	7	13	14	22	18	21	24	19	32	39
Italy	High	2	3	15	7	8	4	10	4	14	21	23	17	20	18	11	16	10	12	14	134	116	88	54
Netherlands	High	2	11	14	22	36	36	24	23	27	27	30	20	20	22	22	25	30	30	35	46	42	31	23
Spain	High	1	2	1	3	2	2	1	4	6	6	9	10	14	14	13	16	29	21	25	22	21	17	7
Sweden	High	5	4	8	7	9	13	10	8	8	5	11	13	20	10	13	20	22	12	16	18	18	19	29
Other Europe	na	13	10	14	16	21	29	26	38	43	29	41	48	36	48	46	50	65	49	62	97	107	152	131
Other Europe-2020[b]	na	23	22	28	29	42	75	81	79	79	68	80	95	98	109	119	148	155	137	135	177	196	268	240
Belarus	Upper middle	0	0	0	1	0	0	0	0	0	0	1	1	0	1	2	1	0	0	1	0	0	1	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	1
Norway	High	1	1	0	1	3	4	1	3	3	1	2	2	3	5	4	4	3	3	3	1	6	6	7
Russia	Upper middle	9	8	11	12	13	14	15	25	29	16	25	22	14	18	24	23	28	25	37	69	78	106	81
Switzerland	High	2	2	2	2	4	10	6	8	12	9	11	14	15	22	12	17	28	18	16	21	18	31	34

Table SINV-12

International patent families granted in IT methods for management, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	0	0	1	0	4	2	0	2	1	8	1	1	2	3	2	1	2	2	2	5	2
Asia	na	361	407	339	347	502	663	791	998	1,435	2,454	2,457	2,254	2,650	3,545	4,365	4,711	5,166	4,715	6,938	7,502	8,096	8,955	14,010
China	Upper middle	0	1	1	2	3	11	6	8	19	39	49	93	115	148	230	249	344	598	1,474	1,985	2,462	2,723	6,764
India	Lower middle	0	0	0	0	1	2	4	8	5	4	7	13	19	23	47	71	73	79	94	119	136	201	244
Japan	High	319	339	287	280	344	435	513	647	752	1,098	1,110	1,396	1,489	1,836	2,167	2,443	2,445	1,711	2,179	2,289	2,452	2,552	2,934
Malaysia	Upper middle	0	0	0	0	0	0	0	0	2	0	0	1	4	3	2	3	8	4	3	10	5	4	1
Singapore	High	0	1	0	1	5	6	7	3	4	4	5	2	4	6	5	8	9	12	10	11	11	14	15
South Korea	High	39	62	50	57	129	180	229	300	622	1,262	1,239	692	959	1,454	1,798	1,803	2,059	1,967	2,746	2,739	2,604	2,952	3,730
Taiwan	High	3	4	1	6	21	27	32	30	30	46	48	56	55	71	107	131	224	341	428	343	419	501	309
Middle East	na	1	2	4	3	5	9	15	9	8	9	10	17	19	26	32	36	37	44	36	47	48	85	64
Israel	High	1	2	4	2	4	9	14	8	7	8	8	14	17	23	29	33	32	39	33	42	43	76	57
Africa	na	2	2	0	2	2	3	4	6	7	4	15	25	39	19	19	26	20	12	11	13	5	16	11
South Africa	Upper middle	2	2	0	1	2	3	3	6	7	4	13	24	34	18	17	22	13	11	7	10	2	10	6
Australia and Oceania	na	14	15	29	37	74	186	216	102	158	168	187	146	162	156	151	128	148	153	170	181	163	164	158
Australia	High	13	13	27	36	72	181	214	98	155	162	183	138	155	147	144	123	141	147	165	176	159	156	154
New Zealand	High	1	1	2	2	2	4	2	4	3	6	4	8	7	8	6	5	7	7	4	5	4	8	4
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	4	1	1	1	3	2	3	2	1	0	2	1

na = not applicable, metric not calculated at this level.

EU = European Union; IT = information technology; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-13

International patent families granted in semiconductors, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	13,703	17,916	16,599	18,048	17,136	16,931	15,617	16,929	21,968	22,137	19,175	19,039	21,797	25,146	26,766	27,377	28,903	26,507	29,760	29,138	26,092	27,428	28,211
North America	na	1,904	2,394	2,822	3,255	3,243	3,293	2,916	2,338	2,484	2,327	2,091	2,297	2,900	2,644	2,514	2,899	3,278	3,408	3,690	3,386	2,745	2,871	2,866
Canada	High	19	18	19	24	22	30	37	29	29	39	31	43	41	51	53	44	55	40	50	36	33	39	41
Mexico	Upper middle	0	0	0	1	1	0	0	2	0	2	0	0	0	0	2	1	2	1	7	3	2	9	2
United States	High	1,885	2,376	2,803	3,229	3,219	3,263	2,879	2,308	2,455	2,287	2,059	2,255	2,859	2,593	2,459	2,854	3,221	3,367	3,633	3,347	2,710	2,822	2,822
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	0	1	1	2	1	1	1	2	1	1	0	1	1	2	1	3	2	4	2	4	9	6	11
Argentina	Upper middle	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	3
Brazil	Upper middle	0	1	0	0	0	0	1	1	0	0	0	1	1	1	1	2	2	3	2	2	7	5	7
Europe	na	719	734	746	940	1,160	1,290	1,203	1,190	1,323	1,282	1,251	1,346	1,499	1,529	1,627	1,700	1,821	1,831	1,916	1,900	1,900	1,713	1,484
EU-27 + UK[a]	na	588	623	655	845	1,047	1,141	1,053	1,050	1,150	1,090	1,071	1,065	1,278	1,339	1,403	1,464	1,536	1,576	1,693	1,640	1,613	1,470	1,302
United Kingdom	High	41	28	30	55	68	90	93	60	57	54	65	82	83	91	79	87	91	95	83	76	73	83	93
EU-27[b]	na	548	595	625	790	979	1,052	960	989	1,093	1,036	1,006	984	1,194	1,248	1,324	1,377	1,445	1,481	1,610	1,564	1,540	1,387	1,209
Austria	High	9	14	10	19	19	25	32	29	31	45	50	44	52	69	65	68	94	112	143	160	125	115	96
Belgium	High	4	3	13	12	15	28	24	14	20	13	25	36	46	45	49	51	60	67	94	70	72	81	79
Denmark	High	1	1	1	1	2	3	3	3	5	2	3	3	6	4	4	3	7	6	4	4	3	5	4
Finland	High	7	4	4	3	8	7	6	13	12	13	8	13	14	15	12	11	17	19	17	8	14	18	19
France	High	88	95	83	147	146	209	143	178	168	180	174	179	203	271	271	305	293	272	318	302	367	294	250
Germany	High	279	302	337	406	590	579	577	618	698	665	605	540	679	643	679	701	752	784	775	774	723	645	559
Hungary	High	0	0	0	1	0	1	0	2	0	0	1	0	2	0	1	0	1	1	2	0	1	3	1
Ireland	High	7	3	2	6	3	2	5	4	6	4	6	3	3	10	10	9	11	7	17	11	13	17	23
Italy	High	62	89	85	70	76	64	66	32	27	22	21	31	37	44	43	38	40	46	37	81	83	66	49
Netherlands	High	37	33	42	62	81	96	66	62	88	55	54	73	85	89	105	110	85	83	112	78	66	75	59
Spain	High	6	5	5	6	3	3	5	9	10	10	13	13	14	14	19	22	19	16	17	14	14	11	11
Sweden	High	28	35	30	43	28	24	21	12	14	11	15	11	22	21	17	12	19	20	25	14	16	20	18
Other Europe	na	130	112	90	95	113	148	150	140	173	192	181	281	221	190	224	236	286	255	223	260	287	242	182
Other Europe-2020[b]	na	171	140	120	150	181	238	243	200	230	247	246	362	304	281	303	323	376	350	306	336	360	325	276

Table SINV-13

International patent families granted in semiconductors, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	1	2	0	0	0	3	1	0	3	2	1	4	3	0	1	1	2	0	2	8	3	2	1
Moldova	Lower middle	3	2	1	4	5	2	4	6	5	5	3	4	6	5	3	3	2	3	0	2	2	2	1
Norway	High	0	0	2	3	2	2	2	2	2	2	3	4	3	5	4	9	4	3	3	2	3	2	2
Russia	Upper middle	105	92	62	67	80	104	88	96	129	140	137	207	157	129	176	171	223	198	161	190	228	190	126
Switzerland	High	17	15	23	20	23	26	18	22	27	26	21	37	29	29	28	40	37	36	44	44	40	41	45
Ukraine	Lower middle	5	1	1	1	4	11	37	14	6	16	16	23	22	21	11	9	14	10	9	11	8	2	1
Asia	na	11,056	14,639	12,840	13,744	12,585	12,156	11,294	13,260	18,049	18,438	15,742	15,332	17,346	20,925	22,513	22,719	23,736	21,200	24,083	23,787	21,389	22,783	23,799
China	Upper middle	15	35	58	50	49	155	417	579	716	960	1,558	2,347	2,258	2,668	3,717	3,584	3,355	5,337	7,177	8,133	7,697	9,225	10,462
India	Lower middle	2	2	1	4	2	8	2	2	6	5	8	4	8	10	16	26	24	24	42	44	36	41	44
Japan	High	7,880	7,953	6,779	7,510	6,994	7,139	6,060	5,814	6,164	7,515	7,129	8,216	9,430	10,282	10,995	11,516	11,377	7,964	8,445	7,636	6,511	6,004	5,512
Malaysia	Upper middle	2	3	6	14	18	10	20	34	38	45	37	32	44	50	50	39	63	81	57	65	53	38	47
Singapore	High	28	37	77	164	151	131	102	80	87	77	66	74	145	171	162	164	176	175	157	162	129	122	96
South Korea	High	2,163	5,207	3,293	2,293	2,944	2,517	2,670	4,647	9,058	8,363	5,798	3,461	4,183	6,187	5,739	4,956	5,565	4,504	4,809	4,653	4,625	5,040	5,425
Taiwan	High	966	1,399	2,622	3,703	2,415	2,179	2,011	2,095	1,972	1,460	1,140	1,191	1,264	1,541	1,824	2,420	3,163	3,094	3,371	3,062	2,315	2,291	2,189
Middle East	na	7	13	12	29	24	23	23	20	16	15	17	21	24	22	24	23	39	38	48	49	34	35	40
Israel	High	6	13	12	24	22	23	20	20	13	15	16	20	23	19	20	20	34	29	35	37	23	23	25
Africa	na	2	2	2	2	1	2	1	1	2	1	1	2	2	3	4	8	7	3	2	1	4	3	3
South Africa	Upper middle	2	1	1	1	1	1	0	0	1	0	1	1	1	1	2	3	2	1	0	0	0	1	0
Australia and Oceania	na	9	21	37	60	111	166	168	103	83	66	42	37	23	21	17	25	16	22	15	10	10	16	8
Australia	High	9	21	37	60	110	166	168	102	83	64	41	36	22	20	15	24	12	18	15	9	9	14	8
New Zealand	High	1	0	1	0	1	0	0	1	0	2	1	1	1	1	2	1	3	2	1	1	2	2	0
Unclassified	na	5	110	140	17	12	2	11	16	9	7	29	3	2	0	66	1	2	1	3	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-14

International patent families granted in optics, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	14,583	15,397	13,264	13,067	13,853	15,237	15,833	14,889	17,643	19,545	19,483	19,378	21,770	23,772	25,339	25,689	24,944	21,686	22,818	22,432	21,441	23,429	22,387
North America	na	2,344	2,301	2,195	2,333	2,372	2,783	2,706	2,102	2,190	1,991	1,876	1,737	1,969	1,696	1,688	1,707	1,868	1,865	1,874	1,789	1,628	1,928	1,902
Canada	High	93	79	78	77	91	128	112	95	89	86	107	105	111	103	106	105	128	107	116	116	85	106	98
Mexico	Upper middle	1	2	0	1	3	3	2	2	2	3	0	2	0	1	2	4	4	3	9	9	5	10	4
United States	High	2,250	2,220	2,117	2,255	2,278	2,652	2,592	2,006	2,099	1,902	1,768	1,630	1,858	1,592	1,580	1,598	1,736	1,755	1,749	1,665	1,539	1,812	1,800
Central America and Caribbean	na	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	1	1	3	2	4	2	3	0	3	2	1	5	1	1	3	6	3	5	8	9	15	16	14
Argentina	Upper middle	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0
Brazil	Upper middle	1	1	2	2	3	1	3	0	3	2	1	4	1	1	3	5	3	3	6	7	15	15	14
Europe	na	1,389	1,237	1,178	1,171	1,261	1,584	1,620	1,363	1,431	1,315	1,385	1,296	1,284	1,223	1,316	1,361	1,340	1,410	1,392	1,647	1,569	1,648	1,412
EU-27 + UK[a]	na	1,112	1,073	1,011	995	1,081	1,361	1,337	1,137	1,199	1,091	1,127	1,004	1,046	1,008	1,116	1,130	1,118	1,130	1,167	1,373	1,307	1,358	1,189
United Kingdom	High	189	151	152	141	169	214	170	162	123	101	108	93	99	84	76	71	70	89	97	95	81	91	95
EU-27[b]	na	922	921	859	854	912	1,147	1,167	975	1,076	990	1,019	911	947	923	1,040	1,060	1,047	1,040	1,070	1,278	1,225	1,267	1,094
Austria	High	10	11	24	16	12	18	16	15	22	20	17	14	26	19	25	14	21	24	21	28	33	22	23
Belgium	High	94	84	74	48	43	46	35	12	20	21	16	23	26	14	18	22	21	33	38	56	35	46	45
Denmark	High	4	4	5	7	4	16	12	8	5	11	9	13	7	7	4	9	11	11	11	12	8	6	10
Finland	High	8	6	11	7	6	12	15	20	16	13	18	16	28	15	14	7	14	19	19	24	25	34	42
France	High	210	203	135	155	181	276	227	162	204	166	218	171	181	204	202	201	185	191	225	214	239	253	173
Germany	High	365	357	360	408	460	531	557	541	549	475	454	390	436	412	460	495	511	521	516	594	548	568	514
Hungary	High	2	0	0	2	2	1	3	7	10	4	4	4	2	1	3	4	3	3	5	5	3	4	6
Ireland	High	2	1	0	0	3	5	4	3	6	3	1	3	3	6	3	5	5	3	3	5	5	7	6
Italy	High	98	117	118	75	57	61	118	54	32	21	23	32	21	29	35	24	13	23	19	99	89	76	51
Netherlands	High	56	47	37	45	72	83	96	71	138	174	184	150	135	134	175	183	146	100	114	127	135	156	129
Spain	High	17	19	7	18	14	14	10	20	15	20	23	25	26	29	27	32	31	25	22	27	28	23	17
Sweden	High	32	35	60	54	43	61	52	26	21	20	27	32	31	23	23	18	21	29	24	26	21	18	26
Other Europe	na	277	165	167	176	180	223	283	226	232	224	258	291	238	215	200	230	222	280	225	274	262	291	223
Other Europe-2020[b]	na	467	316	319	317	349	437	452	388	354	325	366	385	337	300	276	301	292	369	322	369	343	382	318

Table SINV-14

International patent families granted in optics, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	14	2	1	1	3	3	6	7	7	8	8	16	13	9	6	4	4	7	5	7	3	4	2
Moldova	Lower middle	1	0	4	7	1	3	7	2	1	4	0	5	3	1	2	1	1	0	0	0	1	1	0
Norway	High	3	5	2	2	6	7	4	8	8	4	6	6	0	3	4	2	5	6	5	3	1	4	4
Russia	Upper middle	225	119	125	117	127	141	162	153	170	137	178	212	169	153	138	158	163	203	148	200	193	207	150
Switzerland	High	27	37	33	48	37	47	57	39	38	42	41	30	36	36	39	52	33	40	44	50	53	62	56
Ukraine	Lower middle	6	2	2	2	6	20	48	16	4	26	20	20	14	10	10	12	15	21	19	9	9	6	0
Asia	na	10,769	11,616	9,736	9,380	9,990	10,542	11,173	11,228	13,853	16,091	16,118	16,265	18,424	20,777	22,258	22,525	21,651	18,323	19,427	18,887	18,117	19,690	18,922
China	Upper middle	20	26	52	78	89	183	388	493	586	860	1,852	2,150	2,317	2,804	3,205	2,814	3,290	4,687	5,209	5,987	6,142	7,789	8,018
India	Lower middle	2	0	1	0	2	2	2	7	3	7	5	2	4	8	7	8	8	8	11	14	14	26	20
Japan	High	9,931	9,923	8,293	8,039	8,413	8,665	8,519	7,673	8,579	10,097	10,450	10,923	12,301	13,764	14,166	14,170	13,397	9,661	10,378	8,764	8,031	7,859	7,063
Malaysia	Upper middle	2	1	3	2	2	2	2	5	6	6	7	6	2	2	6	9	15	11	4	9	7	4	0
Singapore	High	4	5	6	11	9	16	19	23	16	12	16	12	13	9	13	8	12	21	15	16	15	19	21
South Korea	High	675	1,501	1,179	937	1,132	1,209	1,544	2,309	3,687	4,031	3,167	2,298	2,757	2,987	3,299	3,729	3,103	2,232	2,490	2,866	2,915	2,919	2,788
Taiwan	High	133	159	201	313	343	462	696	718	973	1,079	620	870	1,027	1,198	1,558	1,785	1,824	1,698	1,312	1,222	982	1,065	1,004
Middle East	na	25	21	22	40	32	55	48	27	39	30	33	37	49	37	48	42	54	59	69	66	83	121	106
Israel	High	24	21	20	37	29	53	48	26	36	29	32	36	46	35	43	41	49	54	62	59	77	112	97
Africa	na	7	2	2	5	7	5	5	5	3	6	8	2	2	2	3	4	4	2	3	2	3	2	2
South Africa	Upper middle	7	2	2	3	5	3	4	2	2	4	7	1	2	0	3	2	3	0	1	1	2	1	0
Australia and Oceania	na	40	59	77	127	179	261	271	148	123	93	58	37	39	27	22	31	23	22	25	32	24	24	28
Australia	High	37	58	76	124	175	256	268	146	122	90	56	33	36	25	19	24	21	18	21	28	21	21	24
New Zealand	High	3	1	1	3	3	5	3	2	1	3	2	4	3	2	3	6	2	4	4	4	3	2	4
Unclassified	na	8	158	51	9	8	5	8	14	1	17	3	0	2	11	0	14	0	0	19	0	1	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-15

International patent families granted in measurement, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	14,482	16,461	14,444	14,303	15,269	16,790	17,589	16,957	18,174	18,956	20,040	21,712	24,534	29,767	33,932	36,569	38,498	41,111	45,352	51,342	52,534	58,300	62,444
North America	na	3,171	3,089	3,096	3,173	3,342	3,802	3,685	3,002	3,573	3,441	3,472	3,449	3,735	3,565	3,698	3,794	4,010	4,147	4,295	4,525	4,335	4,993	4,548
Canada	High	116	118	106	116	129	161	164	121	138	132	157	168	171	158	177	218	234	209	257	241	249	281	250
Mexico	Upper middle	1	3	0	2	2	8	8	8	7	4	4	2	3	3	3	4	7	8	40	30	30	37	8
United States	High	3,055	2,968	2,990	3,055	3,211	3,633	3,513	2,873	3,428	3,305	3,311	3,279	3,560	3,405	3,519	3,572	3,769	3,930	3,998	4,254	4,056	4,675	4,290
Central America and Caribbean	na	2	0	1	0	1	2	2	1	1	1	0	1	1	0	1	1	2	2	1	2	1	3	1
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
South America	na	6	3	9	11	6	12	13	7	11	10	18	19	19	22	23	22	31	27	42	89	94	90	146
Argentina	Upper middle	1	0	2	2	1	3	2	0	2	3	2	5	3	4	0	2	4	1	5	10	4	7	10
Brazil	Upper middle	5	2	6	7	4	9	7	4	7	5	15	12	14	15	21	14	23	23	33	73	81	76	132
Europe	na	4,208	3,665	3,671	3,603	4,119	4,451	4,986	4,675	4,967	4,974	5,195	5,447	5,458	5,287	5,693	6,039	6,510	6,686	6,468	7,115	7,076	7,431	6,843
EU-27 + UK[a]	na	2,696	2,585	2,544	2,607	2,765	2,826	2,990	2,844	3,087	3,062	3,005	2,998	3,310	3,310	3,609	3,829	3,957	3,967	4,364	4,584	4,458	4,821	4,638
United Kingdom	High	273	246	247	267	305	324	345	319	308	243	270	284	286	247	253	245	284	255	325	327	278	318	347
EU-27[b]	na	2,423	2,339	2,296	2,339	2,460	2,502	2,645	2,525	2,779	2,820	2,735	2,715	3,024	3,063	3,356	3,584	3,673	3,712	4,039	4,257	4,180	4,502	4,291
Austria	High	46	36	39	44	54	65	53	54	76	74	107	73	81	125	125	108	104	144	152	156	159	185	182
Belgium	High	21	20	17	15	23	21	24	20	26	24	22	11	22	23	33	26	38	43	70	75	58	74	76
Denmark	High	11	27	14	20	16	18	17	18	21	26	18	28	29	29	31	37	39	43	37	46	45	50	71
Finland	High	59	50	51	46	71	78	91	70	49	64	76	61	70	60	55	52	77	76	74	94	76	84	79
France	High	454	430	414	404	333	369	461	438	495	512	520	580	576	555	675	642	713	706	741	805	762	885	907
Germany	High	1,189	1,131	1,121	1,240	1,425	1,427	1,425	1,418	1,627	1,579	1,436	1,330	1,554	1,491	1,639	1,892	1,901	1,857	1,945	1,820	2,041	2,199	2,138
Hungary	High	11	4	6	9	4	7	16	5	9	1	4	5	8	10	5	7	7	10	7	15	10	15	10
Ireland	High	16	14	6	2	6	17	8	5	13	7	8	10	14	9	14	19	15	17	21	16	22	25	31
Italy	High	140	165	198	118	121	66	157	99	34	38	54	49	89	143	94	63	48	63	68	324	298	250	135
Netherlands	High	109	92	107	96	93	100	94	83	89	115	132	112	113	160	131	153	180	156	180	192	158	212	182
Spain	High	67	72	51	70	25	80	54	68	79	71	73	90	117	140	115	149	138	144	117	107	101	90	61
Sweden	High	88	109	99	118	111	102	130	95	97	86	82	80	95	91	102	120	115	124	129	112	111	124	142
Other Europe	na	1,511	1,081	1,127	996	1,354	1,625	1,995	1,831	1,879	1,912	2,190	2,448	2,148	1,977	2,084	2,210	2,553	2,719	2,103	2,532	2,619	2,610	2,205
Other Europe-2020[b]	na	1,785	1,326	1,375	1,263	1,659	1,949	2,341	2,151	2,187	2,154	2,460	2,732	2,434	2,224	2,337	2,454	2,837	2,974	2,429	2,859	2,896	2,929	2,552

Table SINV-15

International patent families granted in measurement, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	7	3	4	6	3	4	13	6	7	14	9	15	11	13	13	11	9	10	5	23	10	11	13
Moldova	Lower middle	12	4	8	5	6	8	11	11	12	15	14	8	14	16	11	16	10	9	4	8	8	4	2
Norway	High	32	19	26	25	34	46	46	45	60	41	56	59	63	65	57	55	60	80	73	71	61	59	68
Russia	Upper middle	1,293	933	929	796	1,088	1,218	1,235	1,475	1,534	1,429	1,624	1,842	1,575	1,477	1,591	1,646	1,844	2,088	1,493	1,906	2,025	2,014	1,604
Switzerland	High	130	104	136	136	173	175	170	147	164	185	246	287	274	216	252	299	391	343	406	425	406	456	493
Ukraine	Lower middle	34	15	20	23	46	171	517	144	96	222	232	230	200	181	149	171	225	176	116	82	94	37	5
Asia	na	6,864	9,289	7,194	7,196	7,447	8,062	8,267	8,523	9,197	10,284	11,110	12,597	15,092	20,703	24,283	26,465	27,687	29,978	34,268	39,311	40,703	45,420	50,533
China	Upper middle	86	67	139	168	182	470	785	875	1,017	1,338	2,186	3,938	5,299	8,383	10,189	10,829	12,682	18,827	22,370	26,926	28,306	32,664	37,789
India	Lower middle	1	3	2	2	10	12	16	15	16	31	32	25	30	30	47	71	86	95	87	109	113	132	153
Japan	High	6,142	7,214	6,284	6,168	6,020	6,309	5,962	5,800	5,903	6,409	6,804	6,769	7,409	9,021	9,760	10,055	9,424	6,504	7,470	6,990	7,323	7,230	7,182
Malaysia	Upper middle	0	1	5	4	2	7	6	9	15	23	22	17	18	23	32	25	34	29	35	36	29	13	9
Singapore	High	8	11	16	24	26	27	18	22	14	16	23	19	17	21	25	17	27	27	37	53	50	61	63
South Korea	High	507	1,829	560	552	968	874	1,015	1,341	1,658	1,842	1,687	1,447	1,905	2,722	3,563	4,336	4,153	3,305	3,392	4,230	4,013	4,519	4,661
Taiwan	High	114	158	187	273	231	356	459	456	569	614	351	380	405	497	659	1,122	1,265	1,171	864	944	849	781	658
Middle East	na	40	41	69	66	85	73	78	62	72	60	76	75	89	79	104	115	120	154	148	198	205	236	238
Israel	High	37	39	54	55	64	64	69	44	55	48	68	68	76	61	78	90	85	108	105	147	139	140	157
Africa	na	25	38	25	21	15	20	25	26	15	20	23	28	21	16	26	22	36	13	13	12	23	21	16
South Africa	Upper middle	20	32	18	13	11	12	14	19	12	14	20	26	15	9	12	9	12	5	5	7	9	9	4
Australia and Oceania	na	82	97	131	193	239	366	434	212	201	157	115	98	110	89	99	101	99	100	89	86	88	102	118
Australia	High	73	87	124	186	233	354	417	203	189	146	101	88	96	73	77	65	73	81	70	69	75	85	110
New Zealand	High	8	9	7	8	6	11	17	8	12	11	14	10	15	16	22	35	26	19	19	17	11	17	8
Unclassified	na	84	239	247	40	15	3	99	451	137	10	31	0	10	6	5	10	2	4	28	3	9	3	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-16

International patent families granted in analysis of biological materials, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	1,525	1,527	1,390	1,362	1,586	2,063	2,336	1,744	1,938	2,102	2,125	2,208	2,550	2,785	3,188	3,533	3,894	4,585	4,531	4,602	4,615	4,761	4,865
North America	na	488	460	389	433	395	548	510	302	363	361	385	397	515	468	466	477	526	617	571	679	669	693	664
Canada	High	29	21	20	22	25	38	34	16	24	22	27	20	28	25	30	27	29	37	27	34	40	36	36
Mexico	Upper middle	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	6	7	9	7	0
United States	High	459	439	369	411	370	510	475	285	338	339	357	377	487	442	436	449	495	578	538	638	620	650	628
Central America and Caribbean	na	1	1	1	1	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	4	1	1	2	2	3	4	3	4	1	3	1	1	3	4	6	3	7	9	11	15	14	21
Argentina	Upper middle	1	1	1	0	1	1	2	1	1	0	0	0	1	1	0	0	1	0	1	0	0	0	0
Brazil	Upper middle	2	0	0	2	0	2	2	2	1	0	1	1	1	2	3	5	1	2	7	8	12	12	19
Europe	na	643	627	608	496	647	811	991	712	749	748	811	797	771	883	926	990	961	1,066	930	1,094	1,022	1,041	853
EU-27 + UK[a]	na	297	294	302	293	315	393	451	302	367	330	324	366	374	396	418	435	418	427	432	456	435	425	402
United Kingdom	High	45	40	39	36	42	54	67	47	48	45	43	41	37	41	35	28	33	26	35	31	28	30	29
EU-27[b]	na	252	254	263	258	272	339	383	255	320	285	281	325	337	355	382	407	385	401	397	425	407	395	372
Austria	High	6	8	4	9	10	11	9	5	10	6	14	8	9	9	11	9	10	12	12	17	10	8	12
Belgium	High	4	6	2	7	9	10	13	7	6	8	12	9	9	6	7	10	9	10	13	15	9	19	15
Denmark	High	5	7	4	8	4	5	7	4	6	6	6	5	9	8	8	7	9	3	7	4	5	11	9
Finland	High	5	13	10	12	9	10	10	9	8	3	6	10	6	3	3	4	7	9	9	8	10	13	5
France	High	41	54	43	43	52	73	77	46	66	74	57	66	61	60	91	84	88	89	84	90	81	92	86
Germany	High	117	98	118	115	124	142	163	115	145	119	113	110	121	138	128	141	123	122	113	113	138	108	126
Hungary	High	1	0	2	1	0	1	1	2	1	0	1	1	2	2	2	3	2	1	2	2	1	4	0
Ireland	High	2	1	2	2	1	3	3	0	4	1	0	0	2	2	3	3	1	3	1	2	4	3	3
Italy	High	5	17	15	11	12	9	25	10	5	4	3	7	15	13	14	11	9	10	9	49	45	34	15
Netherlands	High	18	13	17	14	11	13	15	8	14	11	15	15	17	18	16	23	25	27	28	26	19	23	24
Spain	High	7	12	15	10	3	15	22	23	20	14	17	30	34	32	32	37	39	40	41	30	21	24	19
Sweden	High	13	9	20	15	20	24	19	9	12	15	19	21	18	14	18	19	21	19	17	17	20	17	13
Other Europe	na	346	333	306	202	332	418	541	410	382	418	487	431	397	487	508	555	543	640	499	638	587	617	451
Other Europe-2020[b]	na	392	373	344	238	374	471	608	457	429	463	530	472	434	528	544	583	576	666	533	669	615	646	481
Belarus	Upper middle	1	1	2	0	0	0	1	0	2	2	2	2	3	4	3	2	5	2	2	3	3	0	2
Moldova	Lower middle	3	6	3	3	1	4	0	1	0	1	2	2	3	2	2	1	1	3	2	1	3	3	6
Norway	High	3	3	1	4	3	4	7	2	4	9	2	4	5	2	3	4	3	4	8	6	5	5	3
Russia	Upper middle	315	314	291	181	310	360	388	381	350	365	447	392	352	435	461	504	476	576	419	573	522	568	414
Switzerland	High	11	7	6	8	9	9	12	7	17	15	10	16	17	13	16	17	22	23	32	25	22	24	22

Table SINV-16

International patent families granted in analysis of biological materials, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	12	3	2	6	9	40	132	17	8	23	22	15	16	31	21	26	34	30	34	28	31	15	0
Asia	na	327	359	316	346	425	463	597	621	728	905	855	951	1,199	1,385	1,746	2,011	2,354	2,849	2,980	2,763	2,849	2,950	3,252
China	Upper middle	4	5	13	24	15	63	105	116	152	154	142	263	315	432	681	871	1,213	1,827	2,049	1,671	1,751	1,836	2,017
India	Lower middle	1	2	1	1	1	4	3	3	3	5	5	4	9	5	7	7	7	10	9	14	12	18	13
Japan	High	298	307	268	274	363	323	411	364	389	498	503	508	640	618	596	581	577	510	463	462	444	474	527
Malaysia	Upper middle	0	0	0	0	0	1	0	0	0	1	0	0	2	4	0	5	2	6	4	5	3	0	1
Singapore	High	1	1	1	2	1	2	1	2	1	2	3	3	1	2	4	5	7	4	7	8	11	10	6
South Korea	High	15	37	24	34	30	54	54	111	150	216	169	145	200	284	396	454	438	383	364	518	551	538	628
Taiwan	High	5	6	8	10	12	16	21	26	31	26	33	26	31	41	58	82	107	108	79	76	72	67	56
Middle East	na	14	10	11	7	8	11	13	9	8	14	10	11	13	17	12	18	13	19	20	27	29	32	42
Israel	High	13	10	8	6	8	9	12	8	6	13	8	10	11	10	10	13	11	14	12	13	16	17	19
Africa	na	2	1	1	1	3	1	2	1	1	2	2	1	1	0	4	2	3	2	1	5	3	5	3
South Africa	Upper middle	2	0	0	0	0	0	0	0	0	1	2	0	1	0	0	1	0	1	0	2	2	3	2
Australia and Oceania	na	38	51	50	74	107	225	218	93	85	71	57	49	48	28	30	29	31	23	19	22	25	25	28
Australia	High	35	48	47	71	100	218	208	87	79	64	47	43	38	21	22	19	22	13	12	17	20	21	26
New Zealand	High	2	3	3	3	6	7	10	6	6	7	10	6	10	7	8	9	9	10	7	5	6	4	2
Unclassified	na	8	18	12	3	0	1	1	1	1	1	2	0	1	0	1	2	3	2	1	1	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-17

International patent families granted in control, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,171	6,604	5,690	5,592	5,666	6,563	6,975	6,217	7,268	7,256	7,257	8,041	9,073	10,417	12,474	12,785	13,489	13,451	16,542	19,208	20,039	20,673	23,584
North America	na	1,249	1,266	1,305	1,234	1,176	1,364	1,451	1,128	1,506	1,272	1,422	1,382	1,690	1,650	1,897	1,977	2,131	2,051	2,087	2,507	2,556	2,892	2,821
Canada	High	51	57	50	53	58	51	63	51	60	52	61	56	82	69	85	110	109	94	97	122	129	138	132
Mexico	Upper middle	1	0	1	0	2	1	2	2	1	0	1	3	1	2	4	2	2	3	15	10	18	18	11
United States	High	1,197	1,208	1,253	1,181	1,116	1,311	1,386	1,075	1,444	1,220	1,361	1,323	1,607	1,580	1,809	1,865	2,019	1,953	1,976	2,375	2,409	2,737	2,678
Central America and Caribbean	na	1	1	0	1	0	1	0	1	1	3	1	2	1	1	1	0	1	0	2	2	2	2	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
South America	na	4	3	8	8	9	7	5	6	8	4	7	12	8	15	9	10	10	18	23	22	28	29	42
Argentina	Upper middle	1	1	2	2	1	2	1	1	2	0	0	1	0	0	0	0	2	2	3	1	3	2	1
Brazil	Upper middle	3	1	5	5	7	4	4	5	6	3	6	10	8	14	9	7	8	14	15	19	23	26	38
Europe	na	1,459	1,384	1,345	1,284	1,308	1,667	1,874	1,498	1,592	1,414	1,505	1,465	1,439	1,430	1,646	1,557	1,593	1,696	1,729	2,063	2,030	2,047	1,986
EU-27 + UK[a]	na	1,160	1,161	1,122	1,094	1,083	1,326	1,453	1,162	1,224	1,043	1,120	1,046	1,033	1,069	1,213	1,207	1,198	1,227	1,369	1,593	1,541	1,602	1,535
United Kingdom	High	140	125	140	117	126	178	194	138	140	121	117	106	99	92	93	85	97	111	119	129	126	119	158
EU-27[b]	na	1,020	1,036	983	978	958	1,148	1,259	1,024	1,084	922	1,003	940	934	977	1,120	1,122	1,101	1,116	1,249	1,465	1,415	1,483	1,377
Austria	High	15	23	17	21	28	28	29	28	43	31	44	30	39	51	61	45	52	56	55	57	51	72	50
Belgium	High	12	8	8	11	4	6	8	8	6	8	8	9	6	5	6	3	7	18	26	18	20	21	20
Denmark	High	6	6	4	13	10	11	8	10	7	3	9	9	13	10	11	19	13	13	17	12	24	22	20
Finland	High	12	6	7	16	19	26	33	22	20	13	20	25	20	16	26	33	28	30	27	24	25	22	30
France	High	200	190	189	197	202	257	237	231	258	172	181	209	186	155	200	211	192	201	249	226	227	229	214
Germany	High	394	393	349	405	422	507	547	436	507	440	496	409	397	402	486	507	498	478	544	568	605	698	658
Hungary	High	4	3	1	3	5	3	1	2	7	3	2	2	2	2	5	2	7	2	3	4	1	4	6
Ireland	High	10	9	4	4	4	5	5	8	10	8	7	9	6	12	10	11	11	10	13	9	16	15	24
Italy	High	121	168	188	82	62	74	168	70	23	17	26	23	49	66	59	30	21	32	35	210	162	109	77
Netherlands	High	67	62	61	57	70	48	59	50	57	51	55	57	47	58	55	58	45	37	39	56	54	58	52
Spain	High	82	67	58	62	27	80	43	69	67	73	54	59	67	81	76	87	107	88	66	69	58	48	34
Sweden	High	36	42	43	34	46	55	68	44	36	34	41	39	46	42	47	59	49	68	67	81	69	84	103
Other Europe	na	299	223	222	189	225	341	421	335	368	371	385	419	406	361	433	349	395	469	360	470	489	445	451
Other Europe-2020[b]	na	439	348	362	306	350	519	614	474	508	492	502	525	505	453	525	435	492	580	480	599	615	564	608
Belarus	Upper middle	0	1	3	1	0	2	2	4	4	1	2	2	5	1	5	1	1	2	0	1	1	1	1
Moldova	Lower middle	0	0	1	1	1	2	2	4	4	4	2	1	4	5	3	2	2	0	1	2	1	3	0
Norway	High	7	7	6	8	11	10	9	18	17	18	12	15	15	15	13	13	12	15	14	6	15	10	21
Russia	Upper middle	241	178	179	125	166	233	260	246	274	277	274	314	306	280	343	251	289	372	262	378	392	358	372
Switzerland	High	36	30	27	42	30	49	40	36	52	31	45	39	40	33	40	46	51	44	41	59	52	50	48

Table SINV-17

International patent families granted in control, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	13	4	4	12	15	44	106	27	17	40	46	43	29	21	27	30	33	28	35	18	24	12	2
Asia	na	3,336	3,802	2,859	2,914	3,011	3,269	3,378	3,410	3,982	4,433	4,192	5,051	5,810	7,200	8,775	9,098	9,603	9,534	12,559	14,453	15,238	15,518	18,561
China	Upper middle	17	17	37	43	56	113	170	134	194	229	581	1,341	1,474	1,971	2,578	2,699	3,306	5,064	7,206	9,100	9,331	9,405	11,859
India	Lower middle	0	0	1	2	5	2	7	4	11	7	11	13	19	29	25	52	58	56	75	103	118	144	163
Japan	High	3,056	3,058	2,465	2,486	2,460	2,523	2,504	2,493	2,721	2,863	2,686	2,937	3,221	3,676	4,457	4,290	4,119	2,742	3,410	3,173	3,650	3,610	3,864
Malaysia	Upper middle	1	1	1	1	0	1	1	1	3	7	3	1	3	3	4	6	12	10	10	17	14	4	4
Singapore	High	3	3	5	4	3	6	7	7	9	5	9	13	18	11	12	12	7	11	16	25	26	21	14
South Korea	High	204	672	277	289	369	458	501	630	825	1,060	703	564	819	1,254	1,328	1,540	1,559	1,196	1,420	1,596	1,748	1,964	2,407
Taiwan	High	54	52	73	89	117	165	185	139	214	260	198	179	254	253	368	491	533	449	408	433	345	360	246
Middle East	na	14	21	21	20	17	28	25	11	25	20	20	25	25	28	40	38	52	57	49	71	81	90	72
Israel	High	12	18	17	18	15	25	23	10	22	16	17	23	20	24	31	26	38	41	39	55	58	60	52
Africa	na	45	37	23	34	29	32	34	33	14	29	32	25	26	13	18	24	25	9	14	10	20	17	14
South Africa	Upper middle	38	24	18	28	23	28	27	32	12	27	32	24	25	7	14	16	13	6	5	5	7	6	6
Australia and Oceania	na	45	58	63	97	113	193	195	106	100	78	76	78	73	78	83	78	73	85	77	81	84	77	84
Australia	High	43	55	62	94	107	189	191	102	96	74	71	74	69	70	74	69	62	75	68	75	79	74	80
New Zealand	High	2	3	1	3	6	3	4	3	3	5	6	4	4	8	9	9	11	10	9	5	5	3	4
Unclassified	na	17	33	67	1	3	1	12	25	43	2	1	2	1	1	3	3	0	1	3	0	1	0	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-18

International patent families granted in medical technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	11,510	11,275	11,026	10,022	10,872	13,433	13,777	11,501	12,456	12,663	13,443	15,021	17,717	19,131	22,209	23,908	24,927	24,970	27,453	29,868	29,530	31,207	34,851
North America	na	4,247	3,973	3,904	3,634	3,459	4,197	3,384	2,528	2,811	2,671	2,624	3,038	4,399	4,626	5,414	5,902	5,944	5,739	5,630	5,869	5,524	6,647	6,669
Canada	High	114	96	101	133	129	153	101	79	90	86	89	83	127	120	139	174	169	187	172	215	212	258	239
Mexico	Upper middle	6	2	4	2	3	6	7	19	2	7	5	4	3	6	6	9	11	6	36	35	35	29	9
United States	High	4,128	3,876	3,798	3,500	3,327	4,039	3,277	2,430	2,719	2,578	2,530	2,951	4,268	4,499	5,269	5,719	5,764	5,546	5,422	5,619	5,278	6,360	6,421
Central America and Caribbean	na	6	8	5	1	3	3	3	2	2	3	5	5	3	6	3	9	7	4	1	1	4	3	8
Puerto Rico	High	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
South America	na	24	25	25	25	38	33	30	28	23	15	22	35	31	33	36	36	41	43	38	54	68	72	145
Argentina	Upper middle	14	13	11	9	11	10	7	5	4	3	6	7	4	3	5	5	7	5	4	7	7	8	8
Brazil	Upper middle	7	9	10	13	20	18	18	19	18	9	12	23	21	23	18	21	26	28	27	30	52	57	122
Europe	na	4,183	4,225	4,132	3,361	4,027	5,146	5,919	4,489	4,448	4,274	4,566	5,016	4,706	4,424	5,213	5,013	4,851	5,275	4,965	5,921	5,654	6,060	5,713
EU-27 + UK[a]	na	2,386	2,455	2,343	2,142	2,168	2,342	2,674	2,430	2,180	2,131	2,240	2,330	2,604	2,648	3,091	3,189	3,132	3,132	3,366	3,721	3,499	3,689	3,369
United Kingdom	High	238	196	202	200	217	284	310	273	247	186	223	209	206	231	233	261	256	281	287	264	238	320	312
EU-27[b]	na	2,148	2,258	2,142	1,942	1,951	2,058	2,364	2,157	1,932	1,945	2,017	2,122	2,398	2,416	2,858	2,928	2,877	2,851	3,079	3,457	3,261	3,369	3,057
Austria	High	32	50	48	48	40	59	40	48	68	30	69	69	70	67	79	88	78	70	80	85	82	74	65
Belgium	High	26	16	23	19	18	25	27	22	27	23	32	32	30	28	29	48	43	69	95	77	73	69	73
Denmark	High	21	32	28	23	36	41	40	29	29	36	41	45	57	73	80	76	80	93	89	86	84	112	81
Finland	High	37	35	39	40	43	45	44	41	34	28	48	44	48	50	44	53	61	58	50	50	64	82	71
France	High	526	502	429	402	354	349	467	420	462	393	441	403	417	422	609	512	484	458	425	397	380	438	534
Germany	High	675	717	675	708	766	836	822	856	832	871	850	863	992	933	1,141	1,253	1,272	1,246	1,349	1,266	1,247	1,375	1,137
Hungary	High	8	4	13	20	9	14	13	14	8	12	7	6	15	11	12	13	11	18	11	13	11	25	14
Ireland	High	19	8	13	11	6	18	13	18	16	16	22	18	29	32	37	48	57	54	71	60	66	85	88
Italy	High	258	371	401	187	198	180	364	194	36	46	48	67	136	188	156	72	70	78	98	547	439	336	209
Netherlands	High	175	144	125	118	124	127	108	108	111	124	126	139	153	151	162	200	210	191	266	302	269	291	341
Spain	High	69	74	88	76	54	65	79	100	80	105	73	113	117	121	119	179	149	153	138	162	142	116	62
Sweden	High	193	181	165	191	215	184	231	185	132	122	140	174	189	182	203	195	182	150	146	178	152	139	173
Other Europe	na	1,798	1,771	1,789	1,220	1,859	2,804	3,246	2,059	2,269	2,143	2,326	2,686	2,102	1,777	2,123	1,824	1,719	2,143	1,599	2,200	2,155	2,370	2,344
Other Europe-2020[b]	na	2,036	1,967	1,991	1,420	2,076	3,088	3,555	2,332	2,516	2,329	2,550	2,895	2,307	2,008	2,355	2,085	1,975	2,425	1,886	2,464	2,393	2,690	2,656

Table SINV-18

International patent families granted in medical technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	4	7	3	5	5	4	7	7	9	4	7	6	5	6	8	7	10	11	7	15	13	10	12
Moldova	Lower middle	28	47	36	27	39	30	28	41	55	41	40	95	36	15	17	23	30	29	27	19	12	26	17
Norway	High	16	17	20	22	35	20	31	25	27	14	11	19	29	17	15	21	19	23	17	20	14	23	19
Russia	Upper middle	1,591	1,574	1,580	1,024	1,593	2,272	1,846	1,709	1,950	1,799	1,964	2,263	1,698	1,435	1,748	1,406	1,320	1,583	1,152	1,782	1,761	1,965	2,003
Switzerland	High	99	90	109	99	106	130	139	129	152	156	178	185	199	177	209	228	213	283	225	224	216	259	227
Ukraine	Lower middle	52	30	34	36	71	342	1,187	145	67	114	104	108	116	115	114	117	117	184	134	99	105	41	14
Asia	na	2,683	2,686	2,558	2,487	2,737	3,243	3,614	4,003	4,743	5,311	5,830	6,561	8,204	9,682	11,133	12,476	13,607	13,477	16,386	17,540	17,811	17,783	21,656
China	Upper middle	99	78	192	198	153	313	460	413	537	607	929	1,425	1,645	2,119	3,030	3,445	3,989	5,696	6,696	7,628	8,349	8,127	11,212
India	Lower middle	3	3	4	5	1	5	12	6	10	9	12	13	16	17	29	33	42	40	47	66	64	81	154
Japan	High	2,377	2,275	2,128	1,973	1,996	2,282	2,452	2,586	2,660	3,059	3,533	3,930	5,020	5,310	5,352	5,990	6,246	4,580	5,674	5,640	5,378	5,237	5,285
Malaysia	Upper middle	0	0	2	1	5	7	7	2	2	5	3	5	7	19	26	20	28	30	17	17	29	6	7
Singapore	High	3	2	1	3	5	11	6	3	5	4	8	11	12	12	21	19	23	28	20	28	24	32	28
South Korea	High	113	221	127	197	419	463	489	758	1,240	1,336	1,189	999	1,302	1,983	2,344	2,520	2,800	2,609	3,201	3,301	3,341	3,651	4,368
Taiwan	High	80	102	99	100	145	149	181	226	281	275	148	166	195	214	317	438	459	477	710	834	603	621	585
Middle East	na	88	71	104	117	119	165	123	86	94	80	91	118	140	153	198	241	246	228	275	299	284	380	383
Israel	High	82	64	72	99	105	145	113	69	78	74	75	112	132	138	181	208	214	198	237	254	234	301	318
Africa	na	47	57	41	47	58	80	71	40	41	77	88	61	41	24	49	29	30	18	16	17	15	33	21
South Africa	Upper middle	39	49	21	30	36	53	51	34	35	58	73	53	34	13	38	11	18	12	9	12	8	18	7
Australia and Oceania	na	160	196	237	347	421	563	630	301	282	226	214	178	194	179	159	200	198	182	138	165	167	226	254
Australia	High	149	181	224	336	405	545	612	283	262	205	187	154	166	154	128	172	166	149	111	122	121	175	208
New Zealand	High	12	11	13	11	16	18	19	18	20	20	26	24	28	25	31	28	32	33	27	43	46	51	46
Unclassified	na	70	34	20	2	10	2	4	25	11	6	2	8	1	3	2	2	3	4	4	2	2	4	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

ª The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

ᵇ Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-19

International patent families granted in organic fine chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,629	6,948	5,807	5,544	6,006	6,447	7,360	6,243	7,924	8,193	8,600	8,305	8,948	10,596	13,205	13,863	14,678	16,028	16,183	14,888	14,846	14,961	16,406
North America	na	1,487	1,537	1,251	1,242	1,362	1,304	1,171	878	1,169	1,155	1,289	1,318	1,388	1,345	1,497	1,645	1,778	1,679	1,509	1,426	1,314	1,288	1,207
Canada	High	45	48	45	35	54	49	44	28	44	54	64	72	71	69	68	71	70	69	72	52	48	55	51
Mexico	Upper middle	4	2	0	0	3	3	1	1	0	3	2	3	1	2	3	5	3	6	15	19	26	19	1
United States	High	1,438	1,487	1,206	1,206	1,305	1,252	1,126	849	1,124	1,098	1,223	1,243	1,316	1,274	1,427	1,569	1,705	1,604	1,422	1,355	1,240	1,213	1,155
Central America and Caribbean	na	1	2	1	1	0	1	1	1	1	1	4	1	0	1	2	3	3	2	1	2	1	0	1
Puerto Rico	High	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	8	8	8	10	16	13	16	9	12	11	14	17	18	21	25	23	25	26	39	33	54	54	102
Argentina	Upper middle	2	0	1	1	2	1	3	1	1	2	2	1	1	1	2	2	1	2	2	0	1	1	2
Brazil	Upper middle	4	5	7	8	12	11	12	7	10	6	11	14	16	19	20	19	22	22	35	29	51	50	96
Europe	na	2,298	2,144	1,862	1,776	1,997	2,172	2,288	1,941	2,185	2,212	2,365	2,102	2,131	2,113	2,575	2,378	2,289	2,173	1,976	1,969	2,006	1,960	1,793
EU-27 + UK[a]	na	1,833	1,698	1,478	1,479	1,602	1,701	1,779	1,531	1,750	1,754	1,809	1,580	1,630	1,606	1,981	1,898	1,783	1,611	1,569	1,422	1,482	1,506	1,454
United Kingdom	High	234	187	169	149	185	204	199	180	191	175	211	152	126	104	105	92	95	76	68	77	73	72	61
EU-27[b]	na	1,599	1,511	1,309	1,330	1,417	1,497	1,580	1,351	1,559	1,579	1,598	1,428	1,505	1,503	1,875	1,806	1,688	1,536	1,501	1,345	1,409	1,434	1,393
Austria	High	17	9	11	17	14	21	16	12	14	13	16	10	17	11	15	19	22	16	15	8	13	15	12
Belgium	High	26	25	25	20	29	25	24	24	31	34	39	38	39	39	42	49	47	54	39	32	31	24	26
Denmark	High	27	16	11	27	16	22	21	17	17	16	31	28	32	28	23	23	18	14	20	15	10	13	17
Finland	High	11	20	11	13	13	20	7	12	12	14	8	15	15	6	10	12	11	13	11	10	10	7	10
France	High	382	344	327	383	375	400	401	372	520	443	441	421	456	508	702	585	486	510	454	328	355	446	548
Germany	High	692	606	522	548	642	625	658	548	627	578	572	495	500	442	509	553	571	517	493	470	489	471	401
Hungary	High	14	16	16	10	13	29	20	13	15	25	19	17	34	18	12	15	11	16	19	14	9	15	12
Ireland	High	5	3	2	3	4	8	5	2	2	2	3	7	4	5	7	6	6	5	6	5	3	6	4
Italy	High	125	187	175	75	112	85	144	73	28	32	33	40	60	60	52	52	46	44	44	137	114	79	35
Netherlands	High	60	52	39	58	44	51	48	38	41	54	58	49	49	56	49	56	63	57	46	41	56	62	44
Spain	High	48	43	36	29	34	50	60	59	57	76	66	69	103	92	91	89	75	66	66	70	48	52	41
Sweden	High	26	27	13	22	31	38	35	34	38	37	51	34	26	25	27	20	20	20	14	12	18	14	16
Other Europe	na	465	445	384	297	394	470	509	409	435	458	556	521	501	507	595	480	506	562	408	547	524	455	339
Other Europe-2020[b]	na	699	632	552	447	579	675	708	589	626	633	767	673	626	610	700	571	601	638	475	624	597	526	400
Belarus	Upper middle	0	0	0	0	0	4	2	1	3	1	0	1	3	3	2	1	0	1	1	1	0	1	0
Moldova	Lower middle	5	8	3	4	3	10	9	8	9	7	8	16	17	8	9	12	10	9	3	7	3	13	11
Norway	High	6	6	4	8	6	9	4	7	4	4	7	4	10	10	9	7	6	8	4	7	5	4	2
Russia	Upper middle	357	350	303	210	298	342	343	305	304	306	369	344	327	367	448	339	353	418	264	420	409	339	261
Switzerland	High	80	70	62	55	69	69	75	58	82	91	110	98	101	79	86	77	70	75	89	77	71	68	58

Table SINV-19

International patent families granted in organic fine chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	10	8	9	10	12	31	67	23	27	43	46	52	34	34	34	36	59	45	39	29	27	20	0
Asia	na	2,547	2,728	2,210	2,126	2,109	2,341	3,298	3,105	4,178	4,549	4,708	4,667	5,230	6,989	8,965	9,670	10,457	12,023	12,531	11,369	11,383	11,570	13,192
China	Upper middle	119	168	321	271	245	477	914	847	1,312	1,347	1,549	1,891	2,330	3,453	4,906	5,679	6,374	8,432	8,942	7,769	8,043	8,159	9,660
India	Lower middle	19	29	37	48	69	92	94	78	82	89	101	112	105	97	119	136	124	163	170	168	122	128	112
Japan	High	1,994	1,984	1,597	1,522	1,335	1,324	1,745	1,378	1,705	2,058	2,147	2,025	2,171	2,463	2,756	2,636	2,638	2,175	2,065	1,715	1,546	1,441	1,444
Malaysia	Upper middle	1	0	0	0	1	1	0	1	3	4	1	5	6	12	7	9	12	11	7	11	2	2	4
Singapore	High	5	7	4	5	3	2	5	2	8	6	4	5	2	11	14	13	18	11	19	12	9	9	10
South Korea	High	376	505	218	223	409	410	487	754	1,024	992	853	515	557	865	1,059	1,032	1,135	1,074	1,167	1,556	1,537	1,726	1,868
Taiwan	High	32	32	31	56	45	30	51	41	43	50	47	112	57	80	99	161	150	148	151	126	110	98	87
Middle East	na	19	25	28	37	46	59	45	27	38	29	40	35	31	26	39	42	38	39	47	44	51	49	58
Israel	High	18	22	21	35	42	57	41	26	28	24	34	28	25	23	28	28	25	24	20	21	13	17	20
Africa	na	31	46	26	18	20	23	25	14	19	21	17	17	19	9	14	16	8	12	7	4	5	3	8
South Africa	Upper middle	28	45	23	13	14	14	20	10	19	16	12	16	15	4	9	8	2	6	2	2	2	1	1
Australia and Oceania	na	220	278	271	324	445	530	509	249	249	204	154	136	123	85	81	75	71	66	47	36	26	30	37
Australia	High	195	247	251	298	411	492	467	211	194	156	99	85	72	39	34	32	25	25	23	18	15	22	33
New Zealand	High	24	31	20	26	34	39	42	39	55	48	54	51	51	47	47	43	46	41	24	18	11	8	4
Unclassified	na	19	180	150	10	11	3	6	19	73	10	9	14	7	7	8	11	10	7	26	5	7	6	9

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-20

International patent families granted in biotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,758	3,922	3,623	3,443	3,467	5,240	5,825	4,867	5,575	5,322	5,447	5,343	6,706	8,151	10,608	12,189	12,225	11,726	11,525	10,938	12,104	14,767	16,643
North America	na	1,420	1,411	1,144	1,178	1,125	1,301	1,128	772	965	984	1,072	1,181	1,326	1,359	1,593	1,674	1,835	1,865	1,840	1,938	1,834	1,771	1,585
Canada	High	67	79	61	74	63	69	68	39	58	57	66	63	77	84	97	104	96	110	85	97	102	79	59
Mexico	Upper middle	2	1	1	2	1	3	2	2	0	1	2	1	2	1	3	3	4	8	25	27	28	31	4
United States	High	1,351	1,331	1,081	1,103	1,060	1,229	1,058	731	907	926	1,005	1,117	1,247	1,274	1,494	1,567	1,736	1,746	1,729	1,814	1,705	1,661	1,522
Central America and Caribbean	na	4	3	2	2	4	3	4	3	7	3	4	3	3	2	2	5	4	5	4	2	1	2	3
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	5	6	3	4	6	7	14	5	9	11	7	19	14	14	13	23	35	24	31	32	47	39	52
Argentina	Upper middle	1	1	0	1	0	1	2	0	3	4	3	5	2	2	1	3	2	4	4	5	6	5	3
Brazil	Upper middle	1	4	3	3	4	6	10	4	4	4	2	10	9	9	8	18	27	14	24	23	35	26	43
Europe	na	942	890	834	813	943	1,794	1,792	1,678	1,572	1,080	1,131	1,130	1,292	1,382	1,352	1,367	1,427	1,551	1,415	1,454	1,465	1,504	1,453
EU-27 + UK[a]	na	665	694	625	642	733	890	1,016	721	751	801	717	773	857	956	958	985	995	1,061	1,060	1,032	1,012	1,017	923
United Kingdom	High	114	105	90	100	103	130	153	88	93	88	83	75	80	81	62	56	52	43	47	50	48	50	56
EU-27[b]	na	551	589	534	543	631	760	863	633	658	713	633	698	777	875	896	929	943	1,018	1,014	982	964	967	868
Austria	High	13	16	13	18	20	29	19	13	17	28	21	24	21	22	21	28	28	22	25	31	20	25	30
Belgium	High	21	19	14	13	23	28	35	17	23	27	29	29	18	30	25	39	28	35	39	48	33	32	39
Denmark	High	27	34	29	35	24	28	25	18	19	18	27	29	39	42	41	41	57	41	49	38	47	43	44
Finland	High	10	17	12	13	11	15	15	12	9	14	15	12	19	14	11	13	20	17	26	21	20	13	19
France	High	101	99	85	120	143	184	219	103	107	129	89	97	112	149	160	168	154	169	202	150	164	151	178
Germany	High	181	187	160	181	217	272	293	259	306	289	257	257	263	273	302	298	311	354	301	281	290	293	241
Hungary	High	6	3	2	4	7	6	3	2	3	3	3	4	5	8	4	3	3	8	12	7	4	4	2
Ireland	High	3	3	1	3	4	6	5	4	2	4	3	4	4	5	5	5	5	7	7	9	8	12	4
Italy	High	55	71	72	27	46	33	77	34	18	23	21	29	36	47	27	29	20	20	25	87	81	72	42
Netherlands	High	38	49	40	27	27	39	41	33	36	35	43	42	62	50	60	75	87	86	78	86	77	100	67
Spain	High	31	32	37	38	28	46	52	75	51	50	43	76	115	125	104	96	98	111	84	67	66	53	40
Sweden	High	20	24	23	29	36	42	31	23	20	33	29	22	21	23	28	29	28	27	24	29	29	28	28
Other Europe	na	277	196	209	170	210	904	776	957	821	279	414	357	435	426	395	381	432	490	355	422	453	487	530
Other Europe-2020[b]	na	391	301	299	270	312	1,034	929	1,045	914	367	497	432	515	507	457	437	484	533	402	473	501	537	585
Belarus	Upper middle	3	2	0	1	1	1	1	0	1	1	0	2	3	2	3	2	0	1	0	3	2	1	4
Moldova	Lower middle	12	4	7	2	6	7	18	9	7	12	6	9	14	7	3	14	5	16	12	15	13	10	8
Norway	High	3	7	3	7	7	9	10	4	9	5	9	4	4	10	7	6	4	7	8	11	7	8	6
Russia	Upper middle	232	164	177	115	159	827	628	898	754	216	326	281	349	338	320	287	340	383	252	334	361	411	453
Switzerland	High	21	17	21	34	29	33	38	23	34	26	41	34	38	35	40	46	53	53	50	45	48	45	53

Table SINV-20

International patent families granted in biotechnology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	4	2	1	9	6	26	77	20	13	13	28	25	23	32	19	23	24	27	29	13	17	10	2
Asia	na	1,205	1,322	1,330	1,070	944	1,273	2,015	2,043	2,666	2,948	2,967	2,772	3,876	5,251	7,498	8,968	8,760	8,134	8,097	7,390	8,634	11,346	13,428
China	Upper middle	35	32	123	157	86	289	570	629	921	1,000	1,069	1,207	1,924	2,928	4,811	5,990	5,641	5,292	5,272	4,503	5,843	8,593	10,606
India	Lower middle	4	6	8	9	20	31	26	21	25	29	32	27	34	23	34	35	34	34	49	47	44	41	35
Japan	High	891	840	918	659	470	567	706	631	822	867	970	1,023	1,165	1,319	1,291	1,326	1,258	1,254	1,244	1,015	1,072	1,047	1,007
Malaysia	Upper middle	0	0	0	1	0	1	0	1	3	11	2	4	17	13	14	10	25	20	22	22	12	0	3
Singapore	High	4	3	2	3	2	3	7	4	8	6	7	8	8	9	10	16	18	16	16	16	29	23	13
South Korea	High	255	418	256	207	335	351	658	708	818	949	824	430	626	864	1,192	1,383	1,596	1,343	1,296	1,600	1,474	1,470	1,658
Taiwan	High	16	21	21	33	30	29	45	48	66	82	59	71	96	92	138	201	177	161	188	170	144	163	100
Middle East	na	18	27	24	28	31	47	39	22	26	26	26	30	30	39	42	45	48	47	49	52	50	46	45
Israel	High	15	27	22	26	30	45	38	20	25	25	24	28	29	33	38	40	41	43	44	45	38	34	32
Africa	na	11	13	6	9	8	16	10	14	10	7	32	37	25	10	14	12	10	12	13	8	14	7	9
South Africa	Upper middle	10	10	6	8	5	12	7	10	9	5	24	25	20	6	10	6	2	6	5	3	4	4	5
Australia and Oceania	na	146	212	241	339	405	797	819	328	318	262	204	168	137	90	87	91	97	81	72	56	53	46	62
Australia	High	136	201	225	321	380	777	791	305	293	231	166	134	102	60	52	49	54	46	40	32	36	35	57
New Zealand	High	10	11	16	18	25	20	28	23	26	30	38	35	35	29	36	43	44	35	32	24	18	11	5
Unclassified	na	7	40	39	1	1	2	4	3	1	1	5	3	2	3	6	3	7	7	5	5	6	6	5

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-21

International patent families granted in pharmaceuticals, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,800	5,182	5,614	5,740	6,053	7,357	8,523	7,314	9,071	9,033	9,448	9,826	11,132	15,095	16,136	16,615	18,088	16,732	15,474	14,078	14,690	14,591	15,647
North America	na	1,496	1,575	1,322	1,463	1,506	1,645	1,410	1,074	1,256	1,246	1,429	1,480	1,629	1,657	1,877	2,010	2,179	2,025	2,043	2,111	1,964	2,167	2,063
Canada	High	74	70	68	81	85	96	97	64	73	70	96	85	97	92	94	93	102	100	89	91	90	97	85
Mexico	Upper middle	1	2	3	1	0	1	2	2	0	4	6	7	8	8	11	13	16	7	41	59	53	52	7
United States	High	1,422	1,504	1,251	1,381	1,420	1,548	1,311	1,008	1,183	1,171	1,328	1,387	1,525	1,557	1,773	1,905	2,061	1,918	1,913	1,961	1,821	2,018	1,971
Central America and Caribbean	na	4	3	2	3	3	6	7	5	10	7	10	20	7	4	7	13	6	10	7	3	1	5	6
Puerto Rico	High	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	13	12	10	11	15	19	23	14	17	13	17	23	22	26	32	37	35	41	38	42	64	85	126
Argentina	Upper middle	8	5	3	3	7	7	9	4	4	3	2	5	6	5	4	5	5	5	7	7	6	11	2
Brazil	Upper middle	2	5	7	8	6	12	11	8	12	7	10	16	12	15	19	23	19	22	23	24	49	63	115
Europe	na	1,878	1,872	1,751	1,538	2,176	2,544	3,070	2,170	2,288	2,222	2,558	2,551	2,382	2,570	2,582	2,366	2,450	2,428	2,130	2,407	2,381	2,434	1,918
EU-27 + UK[a]	na	1,059	1,052	964	958	1,184	1,382	1,507	1,259	1,271	1,269	1,402	1,351	1,390	1,457	1,472	1,376	1,367	1,222	1,195	1,331	1,330	1,302	1,105
United Kingdom	High	163	149	160	150	187	227	206	188	187	158	164	132	139	114	119	105	99	75	75	69	72	76	75
EU-27[b]	na	896	902	805	808	997	1,155	1,301	1,071	1,084	1,110	1,238	1,219	1,251	1,342	1,353	1,272	1,268	1,147	1,120	1,263	1,258	1,226	1,030
Austria	High	16	21	17	21	26	29	23	21	23	22	25	26	27	26	26	36	28	21	26	29	33	29	24
Belgium	High	24	20	20	21	30	29	37	32	34	40	49	34	34	41	40	36	44	52	55	48	37	40	55
Denmark	High	37	25	14	27	17	27	30	22	24	31	35	43	39	51	47	45	47	35	34	27	31	31	41
Finland	High	12	16	14	15	14	21	17	14	10	15	15	11	10	12	9	8	9	12	14	13	12	12	9
France	High	227	179	168	225	231	285	335	210	280	293	291	266	275	286	358	300	257	249	226	196	210	242	248
Germany	High	270	270	223	219	324	359	391	354	362	326	387	376	342	348	345	332	347	306	300	277	248	262	210
Hungary	High	10	8	12	9	12	17	14	13	15	19	15	18	22	21	21	17	10	15	13	21	11	16	13
Ireland	High	7	3	6	8	7	5	6	7	7	10	11	11	9	11	12	13	10	16	10	7	10	10	9
Italy	High	94	144	146	91	120	103	179	96	49	60	48	56	100	130	100	84	70	59	63	258	243	155	64
Netherlands	High	37	37	19	25	42	56	38	43	37	45	51	49	53	64	55	58	63	49	54	65	64	72	63
Spain	High	38	36	45	38	32	58	54	80	80	82	91	97	152	152	132	140	130	134	102	83	107	97	66
Sweden	High	48	57	36	39	59	68	68	64	54	47	69	50	50	45	42	36	45	33	40	31	32	35	33
Other Europe	na	819	820	787	580	992	1,162	1,563	911	1,017	953	1,156	1,200	992	1,113	1,110	989	1,084	1,206	936	1,076	1,050	1,132	814
Other Europe-2020[b]	na	982	969	947	730	1,179	1,389	1,769	1,099	1,204	1,111	1,320	1,332	1,131	1,227	1,229	1,094	1,182	1,281	1,011	1,144	1,122	1,208	889
Belarus	Upper middle	3	1	2	1	5	2	5	2	10	1	4	1	8	10	9	5	2	6	5	3	5	10	5
Moldova	Lower middle	19	19	11	16	14	21	18	15	28	22	24	35	20	10	13	14	13	9	14	18	4	21	12
Norway	High	10	8	12	14	11	10	11	11	11	11	9	7	8	11	8	12	9	8	15	13	11	12	9
Russia	Upper middle	714	703	704	473	837	901	862	702	813	739	909	958	762	840	867	756	832	975	676	854	827	930	676
Switzerland	High	45	40	27	43	61	66	70	64	79	79	105	100	104	102	118	103	106	84	99	84	97	88	86

Table SINV-21

International patent families granted in pharmaceuticals, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	21	43	26	29	58	155	589	108	69	90	92	85	83	124	78	72	103	103	101	75	81	52	3
Asia	na	1,077	1,276	2,119	2,175	1,614	2,172	3,028	3,530	4,943	5,152	5,007	5,435	6,793	10,566	11,360	11,903	13,129	11,980	10,998	9,290	10,050	9,669	11,273
China	Upper middle	83	170	1,207	1,206	722	1,071	1,865	2,137	3,297	3,405	3,292	3,890	5,005	8,099	8,386	8,682	9,546	9,032	7,646	5,821	7,027	6,800	8,287
India	Lower middle	13	13	22	28	34	68	66	53	65	71	80	70	73	72	104	111	116	108	150	130	103	131	109
Japan	High	809	819	733	758	589	670	752	708	765	841	874	1,010	1,164	1,402	1,534	1,482	1,493	1,229	1,387	1,224	1,169	1,074	1,093
Malaysia	Upper middle	1	0	0	0	2	4	0	1	1	4	2	1	4	10	16	22	23	10	17	19	14	3	4
Singapore	High	3	2	2	2	0	2	3	3	3	6	4	4	6	6	7	14	15	12	15	12	19	17	8
South Korea	High	151	244	121	140	227	314	299	570	745	750	676	384	454	846	1,128	1,322	1,661	1,309	1,500	1,812	1,446	1,390	1,581
Taiwan	High	10	15	26	36	25	36	32	48	65	65	70	66	80	121	170	258	259	257	260	253	250	240	178
Middle East	na	36	48	52	62	91	95	79	62	70	50	87	56	54	67	74	90	86	71	87	87	113	106	114
Israel	High	31	45	36	41	65	82	64	47	46	37	57	54	42	52	61	67	67	51	60	58	66	60	69
Africa	na	16	10	10	15	21	17	30	25	30	25	37	31	18	18	16	24	26	14	19	18	11	15	11
South Africa	Upper middle	8	4	2	4	7	6	15	10	19	12	23	23	11	7	8	8	6	9	4	4	4	8	3
Australia and Oceania	na	264	339	317	466	622	852	871	427	399	305	291	215	215	178	176	164	162	152	134	109	93	97	120
Australia	High	234	297	286	422	557	786	802	350	308	228	192	139	136	100	92	81	76	72	77	61	62	76	109
New Zealand	High	30	40	31	44	65	66	68	77	91	77	99	76	79	78	84	82	86	79	57	49	31	20	11
Unclassified	na	17	47	31	8	6	7	5	8	58	13	12	14	12	10	11	8	15	11	16	10	12	13	14

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-22

International patent families granted in macromolecular chemistry, polymers, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,307	5,970	5,259	5,312	5,662	6,472	6,388	5,642	6,294	6,501	6,098	6,019	7,120	8,993	10,801	11,519	11,581	11,308	13,735	12,661	12,586	11,798	13,797
North America	na	920	912	870	877	894	848	760	560	574	570	542	566	738	682	708	738	806	741	737	689	624	618	637
Canada	High	25	26	27	36	41	33	38	26	28	21	26	30	37	35	40	35	49	54	45	50	38	30	32
Mexico	Upper middle	1	1	1	0	1	2	1	1	0	1	2	3	1	2	2	3	4	3	9	13	16	11	2
United States	High	894	885	843	841	852	813	720	533	546	548	514	533	701	645	666	700	753	684	684	626	571	576	604
Central America and Caribbean	na	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	3	3	3	6	6	10	10	7	12	5	8	8	5	19	12	13	10	9	12	9	14	14	48
Argentina	Upper middle	0	1	1	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0
Brazil	Upper middle	1	1	2	6	6	10	9	6	11	3	7	7	5	17	11	12	9	6	8	9	13	13	47
Europe	na	1,191	1,168	993	975	1,038	1,153	1,203	973	1,066	921	930	871	923	1,009	1,137	1,088	1,116	1,125	1,109	1,184	1,078	1,049	1,009
EU-27 + UK[a]	na	935	918	814	804	833	899	944	691	839	703	712	640	686	760	854	808	864	832	904	896	796	785	822
United Kingdom	High	64	54	46	43	48	49	54	30	34	39	36	25	39	26	30	28	26	19	28	25	21	25	25
EU-27[b]	na	871	864	767	761	785	851	890	661	805	663	676	615	647	734	824	780	838	813	876	871	775	760	797
Austria	High	12	13	17	14	17	17	12	18	17	10	15	14	19	29	30	25	33	42	39	43	29	45	29
Belgium	High	40	40	36	44	32	39	37	24	41	34	46	33	46	39	55	42	42	44	48	37	34	27	27
Denmark	High	2	2	4	3	4	1	3	3	2	2	5	3	1	4	4	2	3	5	4	3	3	6	6
Finland	High	14	13	10	14	11	15	20	11	11	11	15	13	15	24	12	23	22	23	36	31	20	20	19
France	High	119	122	107	120	125	151	123	110	151	114	80	64	87	116	169	120	115	128	134	142	116	113	201
Germany	High	443	416	340	371	400	453	499	329	424	332	335	292	301	302	306	341	388	344	323	307	279	276	255
Hungary	High	1	1	4	5	2	5	0	3	1	1	2	2	2	6	2	2	1	1	2	3	3	1	3
Ireland	High	1	0	1	2	1	2	1	1	0	1	2	1	4	2	3	4	3	2	2	4	3	2	4
Italy	High	60	91	94	48	50	35	81	36	28	23	35	35	35	47	43	24	31	35	49	80	83	59	48
Netherlands	High	76	70	55	54	53	51	49	32	35	40	34	43	45	41	38	48	55	45	48	58	56	63	61
Spain	High	8	10	19	13	8	14	14	15	12	13	15	16	19	24	27	22	26	26	31	16	22	24	18
Sweden	High	11	14	10	7	9	12	13	12	12	9	14	17	15	16	11	15	19	16	16	17	15	18	25
Other Europe	na	256	250	179	171	204	254	259	282	227	218	218	232	237	249	283	280	253	292	206	288	282	264	188
Other Europe-2020[b]	na	320	304	225	214	252	302	313	312	261	257	254	257	276	275	313	308	279	312	233	313	303	289	212
Belarus	Upper middle	1	2	2	0	0	3	3	4	7	5	3	2	3	3	2	4	0	2	1	2	1	2	4
Moldova	Lower middle	1	2	3	1	2	0	1	1	1	5	2	2	2	1	1	1	1	0	0	1	0	1	2
Norway	High	2	6	2	8	3	5	6	7	8	5	5	7	7	7	6	5	3	1	3	3	4	2	2
Russia	Upper middle	210	199	140	128	163	191	158	232	167	151	151	167	174	182	226	219	191	236	145	231	223	216	134
Switzerland	High	32	39	24	23	28	27	24	18	23	23	20	28	33	36	37	40	40	37	40	36	39	30	42

Table SINV-22

International patent families granted in macromolecular chemistry, polymers, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	8	2	5	9	8	27	66	20	20	27	36	25	16	20	10	10	15	14	11	9	12	4	0
Asia	na	3,107	3,755	3,243	3,319	3,558	4,261	4,221	4,008	4,548	4,916	4,561	4,525	5,411	7,248	8,907	9,646	9,602	9,391	11,817	10,730	10,833	10,084	12,058
China	Upper middle	48	60	143	175	155	421	696	629	893	782	862	1,251	1,705	3,031	3,967	4,126	4,266	5,696	7,844	6,614	7,157	6,536	8,091
India	Lower middle	6	6	6	9	9	12	16	9	17	18	14	16	27	13	16	17	25	21	25	35	28	29	22
Japan	High	2,746	2,854	2,783	2,832	2,923	3,242	2,897	2,473	2,288	3,040	2,874	2,753	3,140	3,612	3,984	4,425	4,184	2,707	2,881	2,750	2,511	2,312	2,432
Malaysia	Upper middle	3	1	1	0	1	2	2	0	2	2	3	3	6	11	7	8	11	4	13	12	6	3	2
Singapore	High	4	5	7	7	7	12	9	5	5	6	4	3	3	4	5	5	7	11	6	7	6	7	8
South Korea	High	263	788	254	230	401	512	511	844	1,260	1,005	742	391	461	484	821	892	918	742	881	1,167	1,000	1,071	1,402
Taiwan	High	36	39	48	66	61	58	89	46	81	62	60	104	65	90	101	169	187	201	158	134	117	115	95
Middle East	na	4	8	7	8	6	14	12	8	6	7	4	5	7	14	14	14	25	26	33	29	20	18	26
Israel	High	3	6	4	6	3	10	4	4	6	3	3	4	5	8	7	6	8	7	6	4	3	5	7
Africa	na	14	9	12	7	7	9	8	6	2	6	10	11	11	2	2	5	4	2	5	5	5	3	3
South Africa	Upper middle	14	9	10	3	5	5	7	2	1	4	9	11	9	1	1	2	0	1	1	1	1	1	2
Australia and Oceania	na	57	73	83	115	151	176	173	79	84	75	40	32	24	16	18	14	15	12	14	14	10	10	13
Australia	High	53	69	80	111	147	173	170	75	80	71	36	28	19	12	12	9	10	8	8	12	8	9	12
New Zealand	High	4	4	3	4	5	3	3	4	3	4	4	3	5	4	6	5	5	4	6	2	2	1	1
Unclassified	na	11	41	48	3	2	0	1	2	2	2	3	0	0	1	1	1	1	1	8	1	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-23

International patent families granted in food chemistry, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,766	4,532	4,306	4,175	3,996	5,597	5,804	6,633	6,606	6,877	7,401	9,732	9,288	11,260	14,701	16,758	16,395	14,244	16,112	10,163	10,703	10,251	10,739
North America	na	549	668	659	592	487	474	522	409	420	459	430	452	544	656	742	778	798	833	788	795	831	1,116	1,112
Canada	High	20	26	21	21	26	30	24	24	18	17	30	32	33	41	47	55	60	67	58	56	65	74	72
Mexico	Upper middle	2	4	1	4	1	2	1	3	3	1	2	3	4	4	6	6	5	10	22	13	26	36	5
United States	High	527	638	637	567	460	442	497	382	399	440	398	416	506	611	688	717	733	755	708	725	740	1,006	1,034
Central America and Caribbean	na	1	0	1	1	0	2	0	1	2	1	1	1	1	0	3	2	1	1	0	2	0	0	1
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	4	4	11	9	11	10	9	11	8	7	12	14	16	10	7	23	33	24	26	26	34	39	45
Argentina	Upper middle	2	2	4	1	3	1	2	2	2	3	4	5	2	1	1	1	0	1	2	5	1	3	3
Brazil	Upper middle	0	1	6	5	7	5	6	9	4	3	5	8	11	7	4	12	27	17	17	19	26	33	35
Europe	na	1,506	1,703	1,542	1,549	1,445	2,326	2,208	2,471	2,267	2,473	3,220	5,610	4,608	4,677	3,470	4,011	5,652	3,100	5,582	2,043	1,736	1,572	1,420
EU-27 + UK[a]	na	711	694	662	542	569	648	681	675	574	551	569	643	624	646	703	714	694	673	716	771	761	822	667
United Kingdom	High	46	42	35	39	48	49	42	47	44	41	42	39	38	40	40	43	42	40	45	41	31	41	32
EU-27[b]	na	665	652	627	503	521	599	639	628	530	509	526	604	586	606	663	671	652	633	670	730	730	781	635
Austria	High	7	12	8	10	7	11	13	14	8	8	8	9	7	13	11	10	14	17	9	8	8	9	5
Belgium	High	11	7	12	15	9	22	11	16	13	14	16	22	16	20	25	24	16	37	39	29	61	63	53
Denmark	High	12	20	23	12	19	21	18	16	17	20	30	21	26	25	22	24	18	25	26	24	22	25	22
Finland	High	11	12	10	10	10	10	10	18	8	8	5	9	15	14	15	8	9	8	10	9	8	13	12
France	High	108	111	107	119	95	115	111	133	132	100	89	105	86	101	126	92	121	114	108	98	82	122	92
Germany	High	102	97	84	90	109	116	104	81	108	106	93	104	107	134	101	116	107	107	113	86	115	108	103
Hungary	High	13	17	22	22	29	38	12	7	17	22	16	6	5	9	6	6	2	5	7	9	4	6	5
Ireland	High	31	13	3	5	6	9	7	7	9	6	3	3	5	3	10	5	3	2	4	2	1	5	5
Italy	High	84	123	122	45	59	48	128	64	28	31	34	35	47	35	53	41	30	16	19	124	143	102	60
Netherlands	High	75	52	49	59	54	57	60	73	52	63	68	73	69	82	77	89	92	89	99	119	98	143	116
Spain	High	47	49	77	30	41	69	72	109	67	62	53	108	104	78	103	85	92	70	89	68	73	55	34
Sweden	High	12	14	12	13	10	11	17	12	11	8	10	13	7	10	9	9	7	6	7	12	7	7	10
Other Europe	na	795	1,009	880	1,007	876	1,678	1,528	1,796	1,693	1,923	2,651	4,967	3,984	4,031	2,767	3,296	4,958	2,427	4,866	1,272	975	750	753
Other Europe-2020[b]	na	841	1,051	915	1,046	924	1,727	1,569	1,843	1,737	1,964	2,693	5,006	4,022	4,072	2,807	3,339	5,000	2,467	4,912	1,313	1,007	791	785
Belarus	Upper middle	4	1	2	4	3	2	1	2	5	4	3	7	7	3	1	0	3	2	4	9	5	3	7
Moldova	Lower middle	9	14	28	30	35	21	31	40	29	29	18	28	22	8	11	25	22	15	13	13	11	21	9
Norway	High	8	11	10	15	12	10	12	11	11	12	4	4	2	5	7	5	10	6	7	7	9	5	6
Russia	Upper middle	722	932	793	882	748	1,475	995	1,629	1,582	1,778	2,514	4,830	3,878	3,895	2,641	3,149	4,758	2,221	4,707	1,116	818	627	677
Switzerland	High	32	36	32	30	36	29	35	33	29	33	28	37	24	34	45	40	53	48	44	40	39	55	41

Table SINV-23

International patent families granted in food chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	19	14	13	45	38	138	454	79	33	62	81	54	48	83	56	71	107	128	86	79	85	29	2
Asia	na	1,616	2,042	1,978	1,903	1,883	2,610	2,877	3,608	3,771	3,821	3,623	3,567	4,039	5,815	10,395	11,858	9,836	10,205	9,642	7,233	8,030	7,453	8,097
China	Upper middle	166	203	467	637	479	642	797	1,019	1,202	1,155	1,078	1,198	1,728	2,706	6,910	8,232	6,356	7,539	6,610	3,655	4,238	3,714	4,296
India	Lower middle	2	2	2	4	8	11	17	14	13	23	20	11	18	9	10	10	15	11	7	10	10	11	13
Japan	High	1,179	1,368	1,264	945	827	1,201	1,192	1,151	1,073	1,013	1,229	1,367	1,455	1,729	1,451	1,342	1,188	1,177	1,470	1,264	1,269	1,406	1,507
Malaysia	Upper middle	0	1	0	1	0	1	1	1	2	6	0	9	5	5	5	13	5	13	7	11	10	3	1
Singapore	High	2	4	1	1	5	3	3	2	1	2	2	1	3	1	2	6	4	6	2	3	3	2	1
South Korea	High	256	456	222	297	551	730	843	1,391	1,443	1,582	1,251	952	797	1,322	1,969	2,200	2,207	1,390	1,479	2,210	2,425	2,216	2,177
Taiwan	High	9	5	16	17	9	19	19	29	35	31	39	26	27	41	44	52	52	60	60	74	69	92	84
Middle East	na	8	11	33	25	18	25	25	33	19	22	35	10	13	28	20	20	10	14	21	20	19	16	16
Israel	High	6	5	8	5	8	12	11	6	5	6	11	9	8	8	11	8	9	6	12	14	12	12	14
Africa	na	19	29	20	20	38	34	30	25	30	18	22	20	12	16	17	14	16	8	7	8	5	4	4
South Africa	Upper middle	14	17	11	16	18	19	21	20	14	12	17	14	9	5	10	6	3	4	4	4	2	2	2
Australia and Oceania	na	58	65	61	76	103	110	133	73	85	74	56	57	52	56	45	51	47	53	42	34	46	47	44
Australia	High	50	57	51	69	94	102	119	60	71	58	39	36	38	34	26	29	24	36	27	19	38	35	37
New Zealand	High	8	8	10	7	9	9	13	13	13	16	17	22	14	22	18	22	22	17	15	16	8	13	7
Unclassified	na	5	11	1	1	10	7	1	2	4	1	4	1	4	1	1	3	3	6	5	2	2	2	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

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International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-24

International patent families granted in basic materials chemistry, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,859	7,672	6,104	6,087	6,340	7,592	8,062	7,295	8,404	8,780	8,376	8,801	9,885	11,571	15,066	19,905	20,086	19,098	20,535	18,143	18,538	16,945	19,622
North America	na	1,417	1,452	1,287	1,185	1,149	1,205	1,066	731	861	767	746	836	1,058	1,117	1,299	1,425	1,662	1,514	1,416	1,365	1,324	1,277	1,222
Canada	High	62	78	67	59	58	66	56	48	41	48	37	64	61	84	86	91	128	100	116	94	70	72	58
Mexico	Upper middle	2	6	3	1	3	4	3	2	1	5	2	4	2	5	6	7	13	14	25	35	42	25	12
United States	High	1,353	1,368	1,217	1,125	1,088	1,134	1,007	681	819	715	707	768	996	1,029	1,208	1,326	1,521	1,400	1,274	1,236	1,212	1,180	1,152
Central America and Caribbean	na	1	1	1	2	1	4	2	2	3	2	0	0	2	0	1	1	2	4	0	1	5	3	2
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
South America	na	9	20	17	13	19	24	27	21	20	14	17	34	25	39	35	38	42	48	69	50	80	80	80
Argentina	Upper middle	0	0	0	1	1	1	2	2	1	2	1	1	2	1	1	1	2	2	2	5	3	1	1
Brazil	Upper middle	4	11	13	9	14	19	20	16	16	10	14	28	19	32	24	29	34	36	59	38	65	71	72
Europe	na	2,359	2,252	1,786	1,771	2,018	2,381	2,335	1,941	1,972	1,836	1,943	1,899	1,903	1,933	2,138	2,507	2,233	1,993	1,963	2,161	2,212	2,082	1,960
EU-27 + UK[a]	na	1,481	1,546	1,181	1,219	1,309	1,386	1,316	1,114	1,235	1,159	1,198	1,117	1,183	1,229	1,378	1,321	1,271	1,178	1,335	1,298	1,462	1,446	1,316
United Kingdom	High	205	168	137	146	164	213	165	130	138	116	131	121	116	103	115	103	116	104	108	91	114	130	104
EU-27[b]	na	1,276	1,378	1,044	1,073	1,145	1,173	1,151	984	1,097	1,043	1,067	997	1,067	1,126	1,263	1,217	1,155	1,074	1,227	1,207	1,348	1,316	1,212
Austria	High	16	18	13	15	19	18	14	17	14	12	17	19	22	22	28	18	20	23	29	21	25	19	22
Belgium	High	59	60	38	37	55	47	43	28	42	32	23	43	37	40	40	57	52	47	56	58	62	57	63
Denmark	High	14	17	11	9	10	14	11	6	8	8	10	12	13	9	13	13	19	13	22	19	18	23	21
Finland	High	18	22	19	25	13	16	24	15	17	14	18	17	16	14	18	26	22	22	27	29	21	32	44
France	High	192	191	135	150	166	168	166	144	190	162	129	126	155	172	232	203	175	213	201	188	167	197	273
Germany	High	516	540	428	479	518	566	538	425	510	510	491	463	462	476	513	535	512	443	481	456	517	470	406
Hungary	High	14	6	8	10	5	7	4	4	5	7	3	4	7	3	6	5	5	6	8	5	8	5	7
Ireland	High	6	5	4	2	4	4	3	2	1	3	3	4	3	3	8	7	5	6	5	5	6	4	8
Italy	High	64	125	100	60	65	63	85	46	18	18	29	19	32	48	34	22	18	15	26	109	120	90	42
Netherlands	High	73	73	63	63	61	73	64	51	63	69	74	56	58	62	54	64	62	57	69	74	72	72	64
Spain	High	36	64	53	40	34	37	45	66	39	48	47	51	63	71	64	70	67	73	62	49	51	57	45
Sweden	High	26	34	21	27	15	23	28	20	18	18	14	16	17	20	25	13	16	17	20	14	16	23	17
Other Europe	na	878	706	604	552	709	995	1,019	827	737	677	746	782	720	704	760	1,186	963	815	628	862	750	636	644
Other Europe-2020[b]	na	1,084	874	741	698	873	1,208	1,184	957	875	793	876	902	836	807	875	1,289	1,078	919	736	953	864	766	747
Belarus	Upper middle	5	4	2	3	5	2	2	6	10	7	5	5	12	10	3	6	3	5	9	4	7	1	2
Moldova	Lower middle	14	10	4	6	8	6	8	6	13	11	8	13	10	7	6	7	7	5	5	4	3	5	5
Norway	High	9	11	9	12	10	10	11	7	8	10	8	4	7	13	14	8	13	10	11	16	10	13	11
Russia	Upper middle	767	608	541	454	580	838	712	688	602	510	594	625	568	555	636	1,040	820	704	498	732	608	547	561
Switzerland	High	58	59	34	42	55	44	52	39	40	44	47	52	49	50	48	57	54	43	54	58	62	45	55

Table SINV-24

International patent families granted in basic materials chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	25	13	12	34	48	94	230	80	64	94	76	79	68	65	48	62	59	42	45	38	48	15	2
Asia	na	2,858	3,660	2,768	2,898	2,892	3,670	4,340	4,404	5,386	6,000	5,508	5,878	6,767	8,358	11,461	15,794	16,003	15,392	16,955	14,459	14,789	13,367	16,199
China	Upper middle	204	241	464	620	447	953	1,273	1,483	1,738	1,680	1,754	2,364	2,513	3,549	6,011	9,818	9,579	10,784	12,223	9,656	10,230	8,899	11,364
India	Lower middle	9	8	10	10	19	23	27	21	20	17	19	19	31	21	31	33	49	56	69	65	84	86	76
Japan	High	2,395	2,936	2,025	1,892	1,900	2,054	2,327	1,792	2,150	2,768	2,683	2,699	3,133	3,547	3,794	4,038	4,522	2,960	3,099	2,723	2,456	2,295	2,498
Malaysia	Upper middle	0	1	1	1	0	1	6	4	6	8	6	10	14	23	17	19	20	12	32	42	22	6	6
Singapore	High	10	8	2	2	3	5	3	1	5	3	2	4	3	5	7	6	8	13	12	12	11	11	8
South Korea	High	213	437	229	313	468	569	610	1,028	1,370	1,435	962	707	961	1,127	1,465	1,682	1,605	1,357	1,317	1,783	1,831	1,914	2,114
Taiwan	High	23	27	34	57	51	60	92	73	94	87	79	70	110	83	127	189	213	198	188	165	147	144	126
Middle East	na	16	12	16	13	12	18	18	21	16	22	16	18	19	29	31	39	39	57	54	58	70	75	91
Israel	High	11	10	11	12	8	14	15	13	9	10	7	12	13	17	18	22	22	24	20	19	20	19	19
Africa	na	37	31	33	30	32	47	30	26	17	25	55	33	38	24	32	25	20	14	9	9	10	15	9
South Africa	Upper middle	33	23	24	13	14	27	20	19	13	21	47	26	31	15	17	15	10	9	4	4	6	4	2
Australia and Oceania	na	136	157	149	167	214	243	243	137	122	112	83	85	71	64	64	71	76	74	60	38	44	42	56
Australia	High	123	143	138	159	202	231	230	127	108	96	64	63	50	39	43	39	44	50	33	23	34	32	45
New Zealand	High	13	13	11	8	12	11	13	10	15	16	19	22	21	26	21	32	32	24	27	15	10	10	10
Unclassified	na	27	88	48	7	3	1	2	13	8	3	6	19	2	5	6	6	8	3	9	3	4	5	4

na = not applicable, metric not calculated at this level.

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[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-25

International patent families granted in materials, metallurgy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	8,116	8,549	7,519	7,294	7,679	8,366	9,119	8,288	9,505	10,468	11,805	12,390	13,043	15,828	18,946	20,557	21,221	23,095	26,244	24,732	23,453	22,380	24,619
North America	na	759	774	678	713	702	694	656	463	502	451	436	519	615	582	632	620	662	657	683	693	733	795	748
Canada	High	46	71	46	46	60	48	48	35	41	36	39	40	34	45	52	40	44	43	40	42	50	44	38
Mexico	Upper middle	6	6	7	2	7	5	3	1	4	3	3	6	6	8	7	8	7	5	16	21	20	23	7
United States	High	708	697	626	666	635	641	605	427	457	412	394	473	576	529	574	572	611	609	628	630	663	728	704
Central America and Caribbean	na	1	0	0	1	2	0	0	0	0	1	0	0	1	1	2	1	1	2	2	2	2	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	8	15	7	6	11	16	19	7	10	7	12	41	24	41	30	32	36	35	52	32	40	56	50
Argentina	Upper middle	0	1	0	1	0	1	2	1	0	0	2	1	1	1	1	0	2	3	0	1	0	2	0
Brazil	Upper middle	5	7	2	4	6	13	12	4	7	6	6	36	20	35	24	28	28	28	43	23	33	46	46
Europe	na	2,523	2,069	2,109	1,934	2,021	2,415	2,787	2,118	1,984	2,450	3,354	3,057	2,544	2,725	2,647	2,776	2,503	2,556	2,174	2,679	2,374	2,402	2,001
EU-27 + UK[a]	na	1,156	1,186	1,111	1,094	1,040	1,087	1,120	1,003	951	905	934	875	928	1,133	1,041	1,083	1,080	1,058	1,178	1,191	1,250	1,352	1,211
United Kingdom	High	73	69	47	56	54	53	71	43	35	38	42	27	39	32	35	36	29	37	38	34	40	44	40
EU-27[b]	na	1,083	1,117	1,064	1,038	986	1,034	1,049	959	916	867	892	848	889	1,101	1,006	1,047	1,051	1,021	1,140	1,157	1,210	1,308	1,170
Austria	High	61	69	39	84	61	59	52	47	33	30	43	26	49	54	43	52	40	48	48	68	50	54	59
Belgium	High	15	10	10	17	25	29	20	19	21	14	19	17	19	23	18	24	25	29	40	37	38	46	32
Denmark	High	7	11	17	13	14	14	12	8	7	5	10	7	10	11	7	9	9	8	5	12	11	9	7
Finland	High	14	14	18	16	21	19	19	26	24	18	16	26	18	22	31	18	25	35	25	27	18	21	19
France	High	192	183	169	167	144	156	158	123	174	159	155	127	152	232	186	179	219	198	193	165	172	242	212
Germany	High	411	411	387	436	406	474	452	420	408	404	395	377	370	417	384	471	429	390	461	456	496	554	467
Hungary	High	6	8	3	3	12	3	6	1	4	4	2	3	6	3	8	4	3	2	3	4	2	5	3
Ireland	High	5	1	2	0	3	1	0	0	1	3	2	1	4	2	1	2	2	2	1	3	3	0	0
Italy	High	79	113	116	60	67	49	109	55	12	12	13	14	26	44	40	13	17	17	22	116	89	68	53
Netherlands	High	39	36	35	24	22	28	28	24	23	18	22	25	29	28	29	38	26	22	28	22	28	24	27
Spain	High	18	39	50	34	23	48	58	61	46	40	41	51	56	67	68	58	71	64	54	51	47	49	33
Sweden	High	37	44	43	49	49	52	40	38	42	37	27	26	22	41	24	21	24	42	31	24	29	30	40
Other Europe	na	1,367	884	998	839	980	1,327	1,668	1,115	1,033	1,545	2,420	2,182	1,616	1,592	1,606	1,693	1,422	1,498	996	1,488	1,124	1,050	790
Other Europe-2020[b]	na	1,440	952	1,045	895	1,035	1,381	1,739	1,159	1,068	1,583	2,462	2,209	1,656	1,624	1,641	1,728	1,452	1,535	1,034	1,522	1,164	1,093	831
Belarus	Upper middle	2	1	4	2	2	5	5	10	13	10	7	9	7	6	11	10	8	8	11	21	11	11	8
Moldova	Lower middle	11	6	6	8	5	4	8	12	6	10	11	16	16	7	3	4	4	4	2	5	1	4	4
Norway	High	15	12	4	15	13	13	10	14	7	12	8	9	21	14	8	12	12	5	10	10	9	12	16
Russia	Upper middle	1,244	806	924	747	845	1,117	1,133	913	845	1,238	2,115	1,894	1,323	1,369	1,434	1,505	1,244	1,320	850	1,327	992	952	704
Switzerland	High	45	38	36	43	48	33	28	21	25	34	33	27	31	28	31	29	42	39	35	36	49	38	48

Table SINV-25

International patent families granted in materials, metallurgy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	46	17	22	24	68	152	484	141	134	236	239	220	212	163	117	128	109	115	80	81	55	26	3
Asia	na	4,686	5,179	4,374	4,460	4,763	5,051	5,427	5,487	6,862	7,454	7,872	8,674	9,766	12,398	15,501	16,985	17,941	19,747	23,240	21,247	20,241	19,041	21,724
China	Upper middle	252	280	515	499	417	675	1,180	1,433	1,774	2,169	2,674	3,528	4,429	6,273	8,362	9,228	9,645	13,680	16,749	15,705	14,914	13,930	16,499
India	Lower middle	4	8	6	6	8	10	21	14	19	15	19	7	16	18	17	22	18	24	28	24	22	25	28
Japan	High	3,979	4,103	3,190	3,361	3,341	3,274	3,095	2,607	3,239	3,514	3,463	4,013	3,975	4,449	4,701	4,706	5,235	3,747	3,951	3,260	3,283	2,936	2,936
Malaysia	Upper middle	0	0	0	0	0	1	3	1	2	8	2	5	6	5	6	7	10	8	9	10	10	1	2
Singapore	High	4	1	3	3	4	7	6	2	3	3	1	2	2	2	3	3	3	5	6	8	9	7	6
South Korea	High	392	750	611	490	911	984	1,009	1,329	1,709	1,645	1,631	1,022	1,244	1,552	2,255	2,748	2,763	2,031	2,221	2,023	1,807	1,946	2,113
Taiwan	High	43	33	45	93	76	92	101	91	115	89	71	76	86	96	148	256	257	234	262	204	179	179	128
Middle East	na	6	9	30	18	15	16	25	15	21	10	15	13	8	16	22	24	19	26	38	35	29	40	41
Israel	High	4	7	10	8	7	9	12	5	9	6	6	10	3	5	10	7	7	7	9	6	5	8	5
Africa	na	38	29	30	36	33	34	40	23	22	17	43	26	21	12	23	16	17	8	9	10	8	10	12
South Africa	Upper middle	37	26	25	27	21	25	31	17	19	16	40	24	18	7	13	11	8	4	2	4	5	7	2
Australia and Oceania	na	71	65	82	102	122	140	141	76	72	73	56	52	46	35	40	41	35	37	27	32	25	32	39
Australia	High	67	63	80	100	118	137	138	73	69	69	52	49	42	30	35	38	31	32	23	25	21	29	38
New Zealand	High	4	2	2	2	4	3	3	2	3	3	4	3	4	5	5	3	4	5	5	7	3	3	1
Unclassified	na	24	409	209	24	12	1	23	100	31	5	17	7	16	18	48	63	8	27	17	2	1	3	3

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-26

International patent families granted in surface technology, coating, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,638	6,197	5,743	5,740	5,661	6,110	6,003	5,490	6,365	7,257	7,061	7,555	9,275	10,863	12,146	12,106	12,834	12,867	14,516	13,653	13,856	14,283	14,146
North America	na	897	947	967	1,027	991	1,080	1,023	767	844	916	892	967	1,286	1,313	1,414	1,429	1,325	1,187	1,134	1,072	1,006	1,031	952
Canada	High	31	27	34	42	34	42	34	34	35	37	36	27	40	54	78	65	60	46	56	47	40	40	39
Mexico	Upper middle	2	1	1	0	0	0	2	1	1	1	1	2	1	2	2	4	3	4	9	11	12	6	2
United States	High	864	918	933	985	957	1,038	987	733	808	879	856	939	1,245	1,256	1,333	1,361	1,263	1,137	1,070	1,015	954	984	911
Central America and Caribbean	na	1	1	0	1	1	2	3	2	1	2	1	0	0	0	1	1	0	0	0	0	0	1	0
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	3	2	1	5	4	7	8	5	4	5	7	8	13	15	14	14	22	20	14	9	20	23	28
Argentina	Upper middle	1	1	0	0	0	0	2	1	0	0	0	0	0	1	3	1	1	0	0	0	1	2	1
Brazil	Upper middle	1	1	1	5	4	5	5	2	3	4	4	5	11	12	10	9	17	15	10	7	15	19	25
Europe	na	1,163	1,027	937	986	1,104	1,296	1,360	1,091	1,143	1,156	1,097	1,235	1,233	1,336	1,362	1,322	1,633	1,438	1,390	1,492	1,415	1,542	1,295
EU-27 + UK[a]	na	722	743	672	721	779	842	886	748	762	775	698	735	812	876	920	892	906	920	997	1,043	1,048	1,085	971
United Kingdom	High	61	49	32	50	65	68	72	56	47	46	37	44	51	59	49	47	46	39	47	46	46	54	47
EU-27[b]	na	661	694	640	672	714	774	815	692	715	729	661	692	762	817	871	844	860	882	950	997	1,002	1,031	924
Austria	High	19	21	15	25	23	20	16	24	23	18	25	23	16	23	29	28	26	34	40	40	38	37	26
Belgium	High	18	10	16	15	17	18	18	13	19	24	16	20	20	28	34	24	20	25	31	39	35	36	37
Denmark	High	4	3	5	7	6	5	5	4	8	4	6	4	8	9	8	11	11	9	11	9	7	6	15
Finland	High	10	8	13	17	16	23	21	24	11	12	18	19	25	18	22	27	25	37	36	27	28	29	29
France	High	106	112	94	83	96	132	120	82	140	132	108	94	114	155	152	131	167	160	155	162	137	183	183
Germany	High	288	311	269	348	369	406	389	357	373	361	338	371	392	375	423	440	416	427	443	417	466	480	375
Hungary	High	1	2	1	2	2	2	1	1	2	1	1	2	2	4	0	0	2	2	3	0	3	0	3
Ireland	High	9	3	2	1	4	4	4	5	2	2	6	3	8	5	8	4	4	4	4	3	3	4	2
Italy	High	63	78	89	54	61	50	103	38	9	18	15	13	28	38	32	15	13	15	23	107	103	74	53
Netherlands	High	36	25	34	34	27	31	33	28	25	42	30	29	35	40	39	43	40	38	45	56	36	38	45
Spain	High	15	17	25	21	16	18	25	36	22	34	23	27	30	36	32	34	26	27	27	26	22	24	24
Sweden	High	29	38	30	25	22	27	35	39	34	41	24	22	20	25	22	25	19	17	21	19	24	22	28
Other Europe	na	441	284	264	264	326	454	473	343	381	381	399	499	420	460	442	430	727	518	393	449	367	457	324
Other Europe-2020[b]	na	502	333	297	314	390	522	545	399	429	427	436	543	471	518	491	478	773	556	440	495	413	511	371
Belarus	Upper middle	4	1	1	2	0	1	3	2	5	3	4	2	5	0	7	4	4	2	7	7	8	10	7
Moldova	Lower middle	4	0	3	2	4	2	4	7	8	9	13	11	13	10	5	6	5	4	3	4	3	4	6
Norway	High	8	1	2	3	7	10	13	9	7	3	4	10	10	8	6	6	8	10	6	6	2	5	9
Russia	Upper middle	391	245	229	217	262	365	319	268	302	282	306	388	320	354	350	333	618	399	291	363	286	380	253
Switzerland	High	24	32	25	28	33	33	34	28	30	31	34	32	35	41	39	40	42	42	42	36	45	40	43

Table SINV-26

International patent families granted in surface technology, coating, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	7	5	5	12	18	40	98	27	29	51	37	55	36	42	32	39	43	56	40	28	21	12	1
Asia	na	3,495	3,994	3,671	3,610	3,433	3,561	3,436	3,507	4,296	5,096	4,995	5,275	6,646	8,136	9,278	9,233	9,800	10,166	11,906	11,036	11,370	11,620	11,816
China	Upper middle	57	58	99	92	97	189	347	414	557	645	871	1,361	1,874	2,362	2,951	2,631	3,167	5,204	6,553	6,152	6,624	6,899	6,987
India	Lower middle	2	2	1	1	1	3	2	4	6	3	7	6	12	10	19	16	12	9	18	14	10	21	19
Japan	High	3,162	3,410	3,165	2,996	2,707	2,760	2,385	2,233	2,603	3,238	3,194	3,281	3,844	4,621	4,708	4,455	4,531	3,231	3,572	3,161	3,120	3,011	3,001
Malaysia	Upper middle	0	0	0	0	1	1	2	1	2	2	1	3	2	5	10	9	12	11	9	7	4	2	2
Singapore	High	1	2	5	7	8	12	9	6	7	5	3	4	4	8	6	7	9	12	9	10	8	6	4
South Korea	High	213	448	292	353	496	420	496	688	931	1,024	794	510	712	922	1,345	1,611	1,601	1,263	1,322	1,357	1,343	1,415	1,598
Taiwan	High	57	72	108	157	122	166	192	159	187	178	123	109	197	205	235	499	462	429	411	330	254	262	201
Middle East	na	5	9	15	10	12	10	11	9	5	9	14	9	9	14	20	20	16	21	23	16	19	38	29
Israel	High	4	9	7	5	9	9	10	3	4	5	11	8	7	11	17	11	12	16	13	7	7	17	14
Africa	na	19	18	11	11	11	18	7	10	10	7	13	20	15	4	13	9	8	6	6	3	4	4	1
South Africa	Upper middle	16	17	9	8	4	11	6	8	9	6	13	19	10	2	7	5	2	2	1	1	1	2	0
Australia and Oceania	na	48	41	59	77	97	136	149	69	53	58	40	37	46	37	31	33	28	27	21	24	19	25	24
Australia	High	44	39	57	73	93	131	142	65	51	53	37	33	39	33	23	27	22	19	17	19	16	22	22
New Zealand	High	4	2	2	3	4	5	6	4	2	5	3	5	8	4	8	6	6	8	5	5	3	2	2
Unclassified	na	7	159	83	14	7	0	6	31	9	7	3	4	26	9	14	46	3	2	20	1	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-27

International patent families granted in microstructural technology and nanotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	78	103	123	165	231	349	424	416	552	657	693	752	1,065	1,514	1,714	1,951	2,248	2,384	2,463	2,340	2,002	2,198	2,383
North America	na	20	26	43	60	83	145	140	97	62	40	41	46	60	86	116	177	296	341	298	249	181	195	194
Canada	High	1	1	1	1	0	4	3	3	3	1	3	2	4	4	7	6	14	14	14	10	9	10	14
Mexico	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	6	8	1
United States	High	19	25	42	59	83	141	137	95	59	38	37	44	56	81	109	171	282	327	283	237	166	177	179
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	4	3	6	6	7
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Brazil	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	3	2	5	6	7
Europe	na	11	15	15	28	32	47	64	77	93	125	141	212	270	320	350	404	422	475	417	454	420	422	386
EU-27 + UK[a]	na	11	14	13	25	31	39	51	69	79	103	87	95	111	126	178	198	211	224	235	213	211	210	222
United Kingdom	High	1	1	1	1	1	2	4	4	2	2	3	3	3	4	8	6	12	10	10	9	10	7	10
EU-27[b]	na	9	13	13	24	30	36	48	65	76	101	84	92	108	121	170	192	199	215	225	204	201	203	212
Austria	High	0	0	0	0	0	0	1	0	2	1	2	1	2	3	4	1	4	3	2	5	6	6	7
Belgium	High	0	0	0	0	0	1	0	0	1	0	0	1	1	2	4	4	4	4	5	4	6	5	3
Denmark	High	0	0	0	0	1	0	0	1	1	1	0	1	1	0	0	2	3	3	4	2	1	2	1
Finland	High	0	0	0	0	1	1	1	1	1	2	2	3	3	3	1	2	6	4	6	8	4	6	7
France	High	2	2	2	1	5	8	8	17	24	32	26	27	29	28	37	33	38	49	36	39	33	31	41
Germany	High	7	8	8	17	18	21	21	36	43	51	39	35	51	56	75	90	86	93	98	86	90	86	98
Hungary	High	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1	2	0	0	0
Ireland	High	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1	1	2
Italy	High	0	1	2	3	3	0	4	3	1	5	3	2	3	3	2	3	3	5	4	8	5	6	6
Netherlands	High	0	0	0	1	0	1	3	3	1	2	2	5	3	3	6	8	8	7	10	7	8	8	3
Spain	High	0	0	0	0	0	0	1	1	0	2	2	3	3	5	15	13	14	13	13	10	9	9	6
Sweden	High	0	1	1	2	1	1	6	5	1	4	2	2	4	4	5	5	4	7	4	2	4	4	3
Other Europe	na	1	1	1	3	2	8	13	7	15	22	54	116	159	195	172	206	211	250	182	241	209	211	164
Other Europe-2020[b]	na	2	1	2	4	3	10	17	11	17	23	57	120	162	199	180	212	223	260	192	250	219	219	174
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	1	2	1	3	3	2	1	0
Moldova	Lower middle	0	1	0	0	0	0	0	3	3	2	1	3	5	1	1	1	2	3	2	1	1	1	2
Norway	High	0	0	0	1	0	0	1	0	2	0	1	0	1	0	1	3	2	1	0	0	0	0	0
Russia	Upper middle	0	0	1	1	1	6	6	3	8	16	46	108	147	183	159	184	191	226	159	218	186	194	150
Switzerland	High	0	0	0	1	1	1	4	2	2	2	2	3	2	4	6	10	10	11	11	13	11	12	9
Ukraine	Lower middle	0	0	0	0	0	0	1	0	1	1	3	2	2	3	4	7	3	8	6	4	8	2	1
Asia	na	46	62	62	74	106	140	202	233	388	487	500	488	731	1,101	1,239	1,354	1,510	1,551	1,729	1,619	1,379	1,560	1,774

Table SINV-27

International patent families granted in microstructural technology and nanotechnology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	0	0	1	0	0	1	13	21	54	57	101	174	197	303	466	576	770	993	1,245	1,222	1,044	1,259	1,488
India	Lower middle	0	0	0	0	0	0	0	0	0	1	2	0	1	4	4	4	8	8	8	7	6	6	4
Japan	High	46	58	55	66	78	85	95	95	127	135	146	182	256	265	313	305	259	205	210	171	145	134	136
Malaysia	Upper middle	0	0	0	0	0	0	0	1	0	0	0	0	1	2	3	1	2	5	2	3	4	1	2
Singapore	High	0	1	0	1	2	3	0	2	1	1	1	1	1	1	5	4	7	10	8	10	7	7	6
South Korea	High	0	3	2	5	10	29	66	90	181	251	226	113	250	494	403	397	381	217	160	127	100	91	87
Taiwan	High	0	1	5	3	17	23	28	23	25	38	23	16	25	30	43	67	80	111	93	77	71	60	50
Middle East	na	0	0	1	1	0	1	0	1	2	2	3	0	1	2	5	8	13	10	10	9	9	12	17
Israel	High	0	0	1	1	0	1	0	1	1	1	2	0	1	1	3	3	8	6	7	5	4	4	5
Africa	na	0	0	0	0	0	0	0	1	0	0	1	2	0	1	1	3	1	1	1	1	1	0	1
South Africa	Upper middle	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0
Australia and Oceania	na	1	0	3	2	9	16	17	8	6	4	7	4	2	3	3	5	4	5	5	4	6	4	4
Australia	High	0	0	3	2	9	16	17	8	6	4	6	3	2	3	2	5	3	4	4	3	6	3	4
New Zealand	High	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-28

International patent families granted in chemical engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,637	8,496	7,073	7,245	7,665	8,146	8,640	8,091	8,767	9,310	9,433	9,719	10,755	12,565	15,036	15,147	15,950	18,480	20,282	21,055	21,616	21,991	26,042
North America	na	1,596	1,693	1,493	1,420	1,318	1,409	1,327	1,018	1,203	1,088	1,089	1,124	1,432	1,499	1,517	1,536	1,587	1,625	1,613	1,617	1,488	1,654	1,679
Canada	High	93	94	83	91	81	80	85	56	84	55	56	77	71	93	96	97	98	117	103	108	91	112	121
Mexico	Upper middle	0	2	1	2	5	1	2	1	1	1	1	2	3	3	2	3	4	7	16	15	21	26	5
United States	High	1,502	1,597	1,410	1,327	1,233	1,328	1,240	961	1,118	1,032	1,032	1,046	1,358	1,402	1,419	1,436	1,485	1,501	1,493	1,494	1,377	1,517	1,553
Central America and Caribbean	na	1	1	0	0	0	1	2	0	2	1	0	0	0	2	1	2	2	0	0	0	2	1	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	9	15	17	17	13	18	22	17	15	9	19	28	37	42	34	55	46	51	38	56	73	60	92
Argentina	Upper middle	0	2	3	1	1	3	2	0	2	0	1	1	0	1	0	1	1	1	1	4	2	3	2
Brazil	Upper middle	4	7	9	10	8	13	18	10	9	7	11	23	34	39	28	45	36	43	33	44	66	55	84
Europe	na	2,984	2,807	2,486	2,419	2,654	2,818	3,076	2,461	2,364	2,380	2,562	2,540	2,377	2,443	2,584	2,542	2,567	2,759	2,617	2,975	2,947	2,805	2,555
EU-27 + UK[a]	na	1,901	1,920	1,686	1,623	1,775	1,733	1,871	1,540	1,504	1,440	1,411	1,355	1,418	1,554	1,596	1,644	1,620	1,675	1,802	1,872	1,835	1,930	1,775
United Kingdom	High	147	140	117	126	133	172	144	120	113	114	100	94	82	109	104	89	108	87	106	108	103	95	123
EU-27[b]	na	1,754	1,780	1,569	1,497	1,642	1,561	1,727	1,420	1,391	1,327	1,311	1,261	1,336	1,445	1,492	1,556	1,512	1,588	1,695	1,765	1,733	1,835	1,651
Austria	High	35	49	33	35	44	42	38	41	37	28	41	32	41	46	36	38	45	52	46	46	44	44	39
Belgium	High	21	24	15	18	23	20	23	19	25	22	21	25	23	29	33	29	25	38	47	42	36	47	50
Denmark	High	17	26	22	21	12	18	22	18	14	18	23	24	25	25	26	23	31	27	26	31	36	34	42
Finland	High	51	43	46	49	53	54	45	36	43	30	40	39	36	37	37	43	44	62	58	49	53	51	43
France	High	290	280	293	287	294	274	284	201	268	277	213	204	223	270	298	261	270	294	277	256	243	351	321
Germany	High	780	732	614	683	806	759	713	663	704	621	605	569	577	580	612	664	661	679	752	663	657	697	622
Hungary	High	5	5	4	8	4	5	5	1	4	4	4	3	4	8	5	3	4	9	6	6	3	4	4
Ireland	High	11	4	5	2	5	9	4	3	3	4	4	6	8	5	5	10	4	8	8	5	7	9	3
Italy	High	139	200	206	110	115	104	233	111	27	23	32	35	57	97	71	49	36	30	48	246	234	152	98
Netherlands	High	124	104	90	73	87	74	102	75	67	67	70	84	95	93	90	106	96	85	90	107	93	92	81
Spain	High	51	60	53	46	36	52	64	75	62	60	57	58	66	80	71	86	88	70	67	66	56	49	39
Sweden	High	82	95	79	66	68	67	87	58	62	55	56	58	73	52	62	61	46	76	83	66	66	63	81
Other Europe	na	1,083	887	800	796	879	1,085	1,205	921	860	940	1,151	1,185	959	889	988	898	947	1,084	816	1,102	1,112	875	780
Other Europe-2020[b]	na	1,230	1,027	916	922	1,012	1,257	1,349	1,041	973	1,053	1,251	1,279	1,041	998	1,092	987	1,056	1,171	922	1,210	1,214	969	903
Belarus	Upper middle	5	4	4	3	8	7	8	7	10	11	12	10	4	6	7	6	5	6	3	8	6	2	4
Moldova	Lower middle	6	4	2	5	7	5	15	11	6	7	14	24	14	7	5	5	7	9	7	5	6	1	2
Norway	High	25	20	22	25	27	30	21	24	21	20	16	20	32	30	27	16	32	21	24	20	25	25	20
Russia	Upper middle	930	754	684	670	713	842	767	739	709	709	926	951	719	663	796	692	725	879	622	943	929	718	657
Switzerland	High	79	74	63	56	57	70	54	42	60	60	54	58	74	68	53	65	79	68	71	57	64	79	79

Table SINV-28

International patent families granted in chemical engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	35	27	22	34	63	128	338	97	52	125	123	121	110	110	87	108	93	93	82	60	69	36	8
Asia	na	2,864	3,503	2,776	3,157	3,437	3,621	3,904	4,380	5,001	5,689	5,599	5,883	6,747	8,455	10,750	10,885	11,608	13,905	15,860	16,267	16,964	17,325	21,546
China	Upper middle	88	119	209	208	271	594	682	671	758	960	1,403	1,922	2,231	3,212	4,727	4,987	5,720	9,193	10,773	10,943	11,811	12,128	16,109
India	Lower middle	5	7	10	9	9	12	16	12	16	18	10	15	15	15	21	23	41	39	45	47	63	55	49
Japan	High	2,437	2,787	2,223	2,546	2,560	2,417	2,497	2,529	2,716	2,884	2,740	2,815	3,108	3,371	3,586	3,046	3,017	2,299	2,493	2,307	2,111	2,040	2,129
Malaysia	Upper middle	1	0	2	1	0	4	1	5	6	18	2	3	12	12	25	12	14	19	12	23	18	2	3
Singapore	High	5	2	5	6	6	3	5	5	3	3	5	3	3	9	8	8	6	9	18	16	16	13	16
South Korea	High	242	500	226	231	464	443	579	1,014	1,321	1,625	1,276	979	1,204	1,624	2,184	2,520	2,523	2,058	2,185	2,607	2,664	2,815	3,040
Taiwan	High	77	81	98	153	121	140	120	140	178	178	157	140	170	208	196	281	275	274	315	308	258	255	186
Middle East	na	18	27	24	25	26	22	17	19	17	19	18	19	29	20	39	37	47	57	59	67	70	77	83
Israel	High	16	25	15	14	16	18	9	12	9	11	10	11	17	12	17	16	19	25	22	21	22	24	22
Africa	na	40	48	42	40	33	35	38	41	26	27	45	41	34	21	29	19	20	9	15	12	10	8	11
South Africa	Upper middle	36	40	31	34	24	24	33	37	25	24	44	34	30	10	19	16	13	6	10	6	5	3	5
Australia and Oceania	na	95	117	120	135	177	221	242	133	122	88	94	80	95	80	76	66	69	69	70	58	59	59	74
Australia	High	88	107	117	129	171	214	233	121	112	77	85	70	82	67	64	52	55	51	53	50	50	52	69
New Zealand	High	7	10	3	6	6	7	9	12	11	11	10	10	12	13	12	15	14	19	17	9	8	7	6
Unclassified	na	31	284	116	32	6	1	12	21	17	9	7	3	4	4	6	4	4	4	9	4	3	3	3

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-29

International patent families granted in environmental technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,696	5,357	4,768	4,760	5,440	5,735	6,332	6,713	7,456	7,904	7,440	7,664	8,484	10,231	11,656	12,385	12,148	13,249	15,008	14,502	14,477	14,678	16,648
North America	na	878	842	791	771	746	718	697	560	632	602	669	728	841	786	858	934	969	970	968	928	851	1,011	933
Canada	High	43	60	61	67	50	54	59	45	49	37	53	54	49	53	64	69	52	64	68	64	59	59	63
Mexico	Upper middle	0	0	0	2	2	1	1	1	2	0	3	1	0	1	3	3	5	6	20	16	11	14	3
United States	High	835	783	730	703	694	663	637	515	581	564	613	673	791	731	791	863	911	900	881	849	782	939	867
Central America and Caribbean	na	1	1	0	1	1	0	0	1	0	1	0	2	0	0	2	2	0	0	2	0	1	1	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	4	1	2	3	6	6	11	5	6	6	3	18	10	21	23	26	21	22	28	18	26	32	33
Argentina	Upper middle	1	0	0	0	1	1	1	0	1	0	0	0	0	1	1	0	0	1	0	0	1	2	1
Brazil	Upper middle	2	1	2	2	4	5	9	4	4	4	2	16	9	16	19	20	17	17	26	12	19	29	32
Europe	na	1,706	1,544	1,389	1,277	1,458	1,518	1,720	1,412	1,489	1,498	1,617	1,492	1,605	1,650	1,712	1,745	1,747	1,826	1,769	1,982	1,975	1,832	1,653
EU-27 + UK[a]	na	1,134	1,093	969	923	984	944	1,115	969	998	985	1,054	934	1,061	1,100	1,153	1,184	1,196	1,249	1,309	1,348	1,245	1,342	1,249
United Kingdom	High	80	63	53	56	79	74	85	76	76	59	64	55	59	73	58	54	59	67	59	79	66	97	85
EU-27[b]	na	1,054	1,029	916	867	905	869	1,030	893	922	927	991	879	1,002	1,027	1,095	1,130	1,137	1,183	1,250	1,269	1,179	1,245	1,164
Austria	High	38	26	29	28	39	33	29	25	37	26	39	31	39	26	33	31	23	31	35	34	36	27	40
Belgium	High	11	11	8	13	10	11	13	9	16	10	15	19	11	12	12	17	14	24	33	37	28	36	28
Denmark	High	13	11	10	12	8	9	8	12	8	11	12	11	13	11	14	15	13	13	16	18	13	17	16
Finland	High	25	21	14	19	18	23	30	19	29	17	18	15	22	19	27	28	39	36	37	39	24	36	27
France	High	185	184	168	174	170	167	163	133	226	221	213	181	189	253	240	233	252	298	214	220	200	233	253
Germany	High	405	373	328	321	355	345	387	356	373	401	388	344	372	355	425	446	448	476	470	438	380	428	404
Hungary	High	7	11	1	7	11	7	4	8	1	4	8	4	7	8	9	7	4	11	10	7	6	9	4
Ireland	High	8	3	3	0	0	1	2	1	4	2	3	2	2	3	2	8	7	3	7	6	5	3	6
Italy	High	93	117	120	68	67	48	159	94	8	8	11	15	45	47	32	11	11	15	25	134	143	106	71
Netherlands	High	85	67	58	49	54	53	45	35	56	49	59	54	61	66	74	89	55	48	62	70	63	64	72
Spain	High	34	42	36	40	27	37	48	52	46	54	58	65	77	74	57	69	76	51	79	57	48	45	33
Sweden	High	52	50	46	43	52	48	63	44	37	27	35	24	50	43	64	50	44	51	72	63	76	67	67
Other Europe	na	572	451	420	354	474	575	605	443	492	513	562	558	543	549	558	561	551	577	461	634	730	490	404
Other Europe-2020[b]	na	651	515	474	410	553	649	690	519	567	572	626	613	603	623	617	615	610	643	519	713	796	587	489
Belarus	Upper middle	3	0	0	2	1	0	5	2	6	4	2	2	2	0	2	2	1	0	4	4	3	2	6
Moldova	Lower middle	7	4	6	8	4	6	11	9	11	15	12	13	18	6	4	2	5	4	2	3	2	1	2
Norway	High	15	15	13	8	14	19	11	13	12	7	4	6	12	16	15	21	19	20	12	14	13	11	18
Russia	Upper middle	500	396	377	297	408	451	407	359	389	400	448	438	424	409	459	434	455	487	373	552	654	434	353
Switzerland	High	24	26	17	21	15	20	21	16	20	17	19	19	31	21	26	26	32	28	29	29	23	29	19

Table SINV-29

International patent families granted in environmental technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	21	10	6	17	30	78	151	43	52	68	76	79	54	93	48	72	37	34	34	28	31	7	4
Asia	na	2,041	2,816	2,457	2,590	3,099	3,355	3,758	4,619	5,242	5,702	5,058	5,340	5,928	7,692	8,972	9,566	9,322	10,349	12,154	11,494	11,537	11,710	13,931
China	Upper middle	27	34	109	114	153	308	499	565	715	794	962	1,492	1,590	2,908	3,897	4,350	4,535	6,489	7,929	7,181	7,553	7,554	9,894
India	Lower middle	0	0	2	1	2	7	3	7	6	5	6	8	7	10	14	14	20	18	19	23	24	25	22
Japan	High	1,689	1,981	1,880	1,875	2,050	2,172	2,183	2,336	2,713	2,862	2,554	2,619	2,870	3,094	3,026	2,799	2,564	2,124	2,302	2,126	1,863	1,836	1,693
Malaysia	Upper middle	1	0	0	1	0	2	0	2	5	3	1	4	3	7	9	7	6	7	11	14	5	0	1
Singapore	High	2	1	2	2	0	3	2	3	2	1	2	3	3	2	1	5	3	5	5	5	5	6	6
South Korea	High	281	755	409	534	801	780	997	1,591	1,689	1,939	1,450	1,141	1,378	1,585	1,911	2,246	2,043	1,554	1,682	1,942	1,940	2,123	2,189
Taiwan	High	37	46	51	60	89	79	71	110	109	96	80	65	75	85	112	143	148	149	193	190	138	160	121
Middle East	na	6	10	11	19	15	16	10	11	9	19	11	19	18	21	22	34	28	37	38	34	41	43	43
Israel	High	5	10	8	15	10	12	6	7	5	9	8	16	12	14	11	14	18	20	17	15	17	14	18
Africa	na	15	22	23	23	21	22	20	15	11	16	29	19	34	14	20	28	15	4	9	8	11	8	7
South Africa	Upper middle	13	16	18	18	10	11	16	12	10	12	25	18	26	7	8	15	5	2	3	2	5	3	3
Australia and Oceania	na	39	48	52	64	86	97	112	74	55	56	52	44	49	44	47	43	45	39	37	36	35	40	47
Australia	High	37	45	48	61	85	94	109	72	52	53	46	40	43	37	40	35	38	31	32	32	31	37	43
New Zealand	High	2	3	4	3	2	2	3	3	3	2	6	4	5	6	7	7	7	8	6	4	3	3	4
Unclassified	na	8	73	43	13	7	2	4	17	12	4	2	3	1	5	2	7	2	3	3	1	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-30

International patent families granted in handling, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	11,098	11,681	9,407	9,341	9,843	10,271	10,458	10,085	11,313	12,255	12,324	12,964	13,993	15,496	17,316	17,692	18,833	19,703	24,097	25,895	25,872	25,479	27,273
North America	na	2,120	2,257	2,103	1,977	1,814	1,761	1,519	1,374	1,557	1,406	1,383	1,456	1,729	1,787	1,772	2,068	2,035	1,911	1,904	1,865	1,925	2,173	2,053
Canada	High	120	107	136	142	104	110	99	86	89	84	92	73	100	106	113	139	149	123	131	124	123	151	109
Mexico	Upper middle	3	5	8	10	12	8	7	5	3	1	4	6	3	4	3	4	7	7	24	16	19	13	11
United States	High	1,997	2,146	1,959	1,825	1,698	1,643	1,412	1,283	1,465	1,322	1,287	1,378	1,626	1,678	1,656	1,925	1,879	1,781	1,749	1,725	1,783	2,009	1,933
Central America and Caribbean	na	3	1	1	0	0	3	2	0	2	1	3	1	0	1	1	2	0	0	2	0	4	4	3
Puerto Rico	High	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	13	14	16	10	15	18	24	16	13	20	21	46	33	41	50	43	32	27	34	40	79	84	65
Argentina	Upper middle	2	3	5	3	3	4	4	0	1	4	2	3	0	0	2	2	0	1	3	2	4	5	5
Brazil	Upper middle	9	9	10	5	10	13	20	13	12	13	17	37	30	36	42	37	30	25	30	33	71	74	55
Europe	na	3,418	3,431	3,072	2,914	2,964	3,227	3,604	3,060	3,054	2,866	2,961	2,702	2,940	2,799	2,973	2,844	2,885	2,806	3,098	3,761	3,432	3,524	3,173
EU-27 + UK[a]	na	2,962	3,044	2,728	2,588	2,555	2,711	3,048	2,558	2,475	2,382	2,413	2,158	2,468	2,413	2,566	2,389	2,432	2,387	2,743	3,330	3,027	3,049	2,785
United Kingdom	High	241	208	194	182	225	217	227	196	195	172	185	148	142	151	165	138	133	129	142	144	134	132	150
EU-27[b]	na	2,722	2,836	2,534	2,406	2,330	2,494	2,821	2,362	2,280	2,210	2,228	2,011	2,326	2,262	2,401	2,250	2,299	2,259	2,602	3,186	2,893	2,917	2,635
Austria	High	57	62	56	41	47	83	45	55	67	56	83	67	81	82	70	97	66	99	89	81	92	112	108
Belgium	High	41	26	27	25	28	20	36	21	29	23	24	32	26	21	25	25	21	49	87	54	63	66	61
Denmark	High	16	20	17	27	29	27	25	21	22	24	31	27	31	30	39	45	40	43	56	48	38	38	31
Finland	High	78	54	79	69	62	95	67	78	67	87	83	82	103	71	91	73	100	114	108	123	88	85	96
France	High	533	533	497	497	461	497	469	359	479	446	407	418	485	413	477	426	465	457	423	364	305	432	480
Germany	High	854	794	722	797	855	1,009	892	900	1,013	896	975	769	898	871	968	1,004	947	969	1,112	1,135	1,056	1,144	1,133
Hungary	High	6	3	5	2	4	10	11	6	3	5	6	2	8	6	4	7	5	4	3	5	3	5	3
Ireland	High	25	16	7	6	6	11	11	9	12	9	4	8	4	9	8	11	12	14	11	7	13	9	7
Italy	High	453	724	631	395	343	252	701	367	70	71	96	78	176	263	202	69	78	48	115	743	643	423	223
Netherlands	High	238	217	177	208	177	191	187	196	217	186	196	180	182	159	176	168	173	131	184	206	188	196	166
Spain	High	109	105	105	110	81	102	124	152	139	182	126	131	135	135	129	107	161	134	137	131	143	104	71
Sweden	High	182	161	121	111	134	122	163	99	85	88	92	66	84	92	90	74	69	62	73	82	78	101	99
Other Europe	na	456	387	345	326	409	516	556	502	579	484	548	544	471	386	408	456	453	419	354	431	405	474	388
Other Europe-2020[b]	na	697	595	538	508	634	733	783	698	774	656	733	691	614	537	572	594	586	548	496	575	539	607	538

Table SINV-30

International patent families granted in handling, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	2	0	0	1	1	2	1	2	5	9	7	16	10	5	9	2	3	2	4	5	6	7	5
Moldova	Lower middle	3	5	4	1	2	7	2	1	2	3	2	2	2	2	5	2	2	1	1	3	2	3	1
Norway	High	32	26	33	18	23	26	23	22	33	21	18	30	25	25	18	21	23	20	30	41	24	39	34
Russia	Upper middle	280	236	179	183	227	271	271	322	296	275	333	317	260	182	188	232	206	203	139	194	188	238	214
Switzerland	High	117	107	114	105	128	132	130	111	150	115	143	124	127	127	140	140	173	146	144	144	136	157	115
Ukraine	Lower middle	16	6	8	14	23	69	126	41	89	56	39	51	40	33	35	48	35	29	27	29	32	16	4
Asia	na	5,281	5,732	3,957	4,136	4,767	4,951	4,941	5,362	6,482	7,766	7,736	8,544	9,074	10,686	12,323	12,552	13,696	14,775	18,870	20,085	20,293	19,528	21,831
China	Upper middle	21	33	60	69	86	148	190	222	295	395	540	929	1,220	1,905	2,763	2,806	3,489	7,322	9,948	11,581	11,923	10,723	13,076
India	Lower middle	0	1	3	0	1	0	3	3	1	5	2	3	4	7	14	5	11	15	11	16	17	22	37
Japan	High	4,841	4,993	3,452	3,584	3,949	4,169	4,045	4,197	4,615	5,670	5,777	6,498	6,540	6,936	7,261	6,888	7,378	5,189	6,236	5,639	5,445	5,531	5,487
Malaysia	Upper middle	4	2	3	0	1	2	5	3	6	20	3	4	12	9	9	11	10	11	9	10	17	3	4
Singapore	High	6	4	12	12	11	15	7	13	16	16	8	10	6	4	5	9	6	8	8	10	11	6	11
South Korea	High	305	583	312	342	566	467	540	769	1,316	1,323	1,213	860	1,022	1,502	1,959	2,492	2,467	1,958	2,199	2,416	2,536	2,886	2,893
Taiwan	High	101	116	115	124	149	148	148	150	231	336	191	237	263	315	304	336	319	264	448	404	338	352	315
Middle East	na	10	9	12	12	14	22	17	9	12	10	12	13	14	14	33	22	27	34	27	33	33	38	39
Israel	High	8	8	10	11	9	18	15	7	8	8	11	11	12	7	23	15	23	26	20	24	25	27	29
Africa	na	113	102	77	93	70	69	88	72	47	53	94	77	62	28	45	37	28	16	12	6	10	13	4
South Africa	Upper middle	109	94	65	83	65	58	83	62	45	50	91	73	61	20	38	33	26	12	7	5	7	9	1
Australia and Oceania	na	129	118	139	196	198	220	254	170	140	132	113	124	141	136	117	121	128	131	148	103	93	114	102
Australia	High	118	103	127	183	184	202	241	157	125	117	97	112	120	117	100	97	108	107	121	86	85	101	92
New Zealand	High	11	15	12	13	14	17	13	13	15	15	16	13	21	19	17	23	20	24	27	17	8	13	10
Unclassified	na	10	17	28	3	2	0	10	22	6	0	1	1	0	2	1	1	2	2	2	2	1	1	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-31

International patent families granted in machine tools, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	11,094	11,731	10,037	9,739	9,972	10,584	10,988	10,906	12,511	11,867	11,804	12,879	13,730	16,173	19,005	19,630	21,251	26,028	30,440	31,580	29,922	28,224	30,826
North America	na	1,763	1,959	1,901	1,844	1,573	1,748	1,625	1,330	1,644	1,420	1,083	1,105	1,429	1,612	1,793	1,972	2,090	1,863	1,611	1,553	1,362	1,445	1,392
Canada	High	90	110	114	100	94	115	99	79	94	82	80	72	81	102	101	110	110	103	89	90	69	83	69
Mexico	Upper middle	2	5	1	5	0	0	1	1	2	2	2	1	3	3	5	3	6	6	9	8	13	5	2
United States	High	1,671	1,844	1,787	1,739	1,478	1,632	1,526	1,251	1,548	1,336	1,002	1,032	1,346	1,508	1,688	1,860	1,974	1,755	1,513	1,456	1,279	1,357	1,321
Central America and Caribbean	na	1	1	1	1	0	1	0	0	0	0	3	2	1	1	0	0	2	0	1	1	0	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	4	6	9	6	6	9	10	6	8	12	9	21	18	22	21	24	18	20	12	25	28	46	54
Argentina	Upper middle	1	1	1	0	0	0	2	2	1	0	0	1	0	2	1	1	1	2	0	1	2	1	0
Brazil	Upper middle	2	5	6	5	6	7	8	3	7	10	7	18	17	18	18	21	17	15	11	23	25	44	52
Europe	na	3,397	3,135	3,052	2,841	2,985	3,467	3,743	3,300	3,249	2,931	3,083	3,290	2,920	2,793	3,096	2,913	3,099	3,201	3,061	3,417	2,870	3,165	2,671
EU-27 + UK[a]	na	2,212	2,408	2,235	2,132	2,147	2,209	2,386	2,266	2,163	1,947	2,027	1,935	1,936	1,932	2,091	2,017	2,219	2,265	2,423	2,554	2,189	2,309	2,098
United Kingdom	High	128	105	87	109	124	143	137	120	104	73	95	84	73	86	95	81	77	88	68	71	61	72	78
EU-27[b]	na	2,085	2,303	2,148	2,023	2,023	2,066	2,250	2,146	2,059	1,874	1,932	1,851	1,863	1,846	1,996	1,936	2,142	2,177	2,355	2,483	2,129	2,237	2,020
Austria	High	65	47	88	81	68	85	61	58	113	73	79	92	78	96	109	95	94	112	114	92	95	89	78
Belgium	High	10	11	11	11	18	14	11	16	8	10	7	11	9	11	12	8	17	24	39	27	27	33	32
Denmark	High	11	6	8	16	13	10	15	9	15	12	9	15	12	8	18	17	9	20	22	15	10	15	14
Finland	High	77	44	37	34	46	51	40	44	33	29	33	29	28	30	27	29	20	55	26	34	24	24	31
France	High	266	286	233	262	236	258	226	193	272	236	266	312	243	194	314	255	375	328	284	308	208	274	206
Germany	High	914	956	915	945	1,032	1,134	1,091	1,256	1,235	1,110	1,144	994	1,029	1,011	1,065	1,114	1,184	1,178	1,262	1,200	1,112	1,173	1,107
Hungary	High	2	1	4	2	5	3	2	5	4	6	2	5	5	8	6	3	3	11	11	7	4	4	5
Ireland	High	12	8	2	3	4	12	6	6	3	5	4	5	3	4	7	7	3	6	5	4	3	5	3
Italy	High	280	473	433	243	229	163	428	173	24	34	47	38	106	136	102	23	31	37	44	376	313	233	161
Netherlands	High	72	84	67	77	54	60	62	52	62	49	62	53	51	61	59	58	46	46	57	61	43	56	60
Spain	High	52	51	52	56	47	34	58	77	62	71	57	68	56	66	62	62	79	54	62	44	50	40	30
Sweden	High	145	196	128	117	140	128	131	138	108	122	114	94	93	81	72	67	67	66	82	83	78	62	107
Other Europe	na	1,185	727	816	709	838	1,258	1,356	1,034	1,086	984	1,056	1,355	985	861	1,005	895	880	936	638	863	681	856	573
Other Europe-2020[b]	na	1,313	832	904	818	961	1,401	1,493	1,154	1,189	1,057	1,151	1,439	1,058	947	1,100	977	957	1,024	706	934	741	928	651

Table SINV-31

International patent families granted in machine tools, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	13	2	0	3	1	9	7	4	6	10	3	10	3	2	6	5	4	4	7	9	8	9	6
Moldova	Lower middle	0	6	5	6	3	11	5	10	10	5	9	8	14	13	10	7	5	3	3	8	4	1	5
Norway	High	14	9	7	10	6	7	8	11	8	13	8	10	10	10	12	7	11	12	10	9	10	10	10
Russia	Upper middle	1,030	607	674	588	675	987	856	814	878	737	799	1,090	736	650	808	693	678	776	463	681	471	694	432
Switzerland	High	88	83	103	72	109	126	97	83	119	100	120	99	106	86	97	80	101	82	106	101	104	103	107
Ukraine	Lower middle	35	18	21	25	33	115	375	105	59	111	113	133	109	91	66	95	72	55	42	45	70	26	5
Asia	na	5,781	6,294	4,798	4,846	5,224	5,178	5,357	5,879	7,380	7,390	7,491	8,356	9,248	11,643	13,966	14,531	15,872	20,818	25,629	26,494	25,572	23,477	26,619
China	Upper middle	48	92	154	214	170	264	364	446	576	785	1,527	2,175	2,741	4,048	5,508	5,450	6,528	13,692	17,857	19,629	18,806	16,902	20,199
India	Lower middle	2	3	0	2	4	0	1	1	3	3	2	1	5	11	15	16	13	19	16	17	16	13	16
Japan	High	5,115	4,784	3,745	3,665	3,824	3,691	3,476	3,548	4,004	3,861	3,777	4,388	4,518	4,992	5,219	5,309	5,438	3,562	4,725	3,693	3,636	3,401	3,329
Malaysia	Upper middle	0	1	1	0	2	3	3	5	9	14	3	5	3	13	10	10	15	8	17	11	15	5	2
Singapore	High	3	6	6	19	12	9	10	6	14	14	7	13	6	6	7	8	9	8	8	3	4	5	3
South Korea	High	397	1,126	512	460	827	804	1,047	1,315	2,133	1,987	1,678	1,270	1,427	1,961	2,511	3,011	3,154	2,737	2,206	2,225	2,374	2,510	2,605
Taiwan	High	212	275	376	481	380	403	451	556	638	719	492	502	544	608	693	721	709	785	789	905	717	635	461
Middle East	na	20	17	19	31	28	21	27	23	23	22	22	14	14	12	30	42	54	49	36	35	46	42	33
Israel	High	18	17	13	28	20	21	22	17	19	17	17	12	9	10	18	34	50	45	33	27	37	31	25
Africa	na	29	34	26	29	22	17	25	30	22	17	32	32	22	11	22	13	8	5	2	3	3	5	3
South Africa	Upper middle	26	31	23	21	12	10	19	27	18	13	32	25	19	6	18	8	7	4	2	2	2	3	1
Australia and Oceania	na	73	84	77	122	122	141	166	97	106	69	68	55	64	78	72	52	62	71	51	51	40	44	53
Australia	High	66	80	75	118	117	134	158	89	101	61	62	45	56	64	61	40	53	61	35	41	34	36	47
New Zealand	High	7	4	2	4	5	7	8	8	6	8	6	10	7	14	11	13	9	10	16	10	6	6	5
Unclassified	na	28	201	154	21	13	1	35	240	78	6	13	3	14	1	5	82	45	1	35	0	0	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-32

International patent families granted in engines, pumps, turbines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	9,413	10,961	9,187	9,685	9,722	10,411	10,784	10,490	12,084	11,949	12,011	12,059	13,175	14,440	16,628	17,167	17,061	18,280	20,995	21,296	20,849	21,146	20,472
North America	na	1,345	1,279	1,548	1,816	1,963	1,824	1,712	1,505	1,574	1,325	1,235	1,341	1,589	1,742	2,095	2,064	2,102	2,407	2,513	2,800	2,992	3,339	2,954
Canada	High	54	68	77	94	94	101	87	103	90	95	78	102	88	104	126	114	114	132	122	142	142	150	167
Mexico	Upper middle	3	2	1	0	1	2	2	0	1	1	0	1	5	2	3	2	2	2	12	12	13	11	19
United States	High	1,289	1,209	1,471	1,722	1,868	1,722	1,622	1,402	1,483	1,229	1,157	1,238	1,496	1,637	1,967	1,947	1,986	2,272	2,378	2,646	2,837	3,178	2,768
Central America and Caribbean	na	1	2	0	1	1	0	1	1	2	0	3	0	1	1	4	1	3	1	0	0	2	2	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	14	11	12	15	14	23	16	13	28	13	17	25	22	31	37	32	27	34	42	35	28	43	43
Argentina	Upper middle	5	2	2	2	5	5	2	2	2	1	0	1	2	0	0	0	1	2	2	0	1	3	1
Brazil	Upper middle	7	8	10	11	7	15	12	10	23	12	16	21	20	30	34	26	25	24	33	31	24	35	40
Europe	na	3,106	2,958	2,697	2,860	3,138	3,581	3,682	3,423	3,651	3,373	3,528	3,574	3,728	3,667	4,075	4,138	4,526	4,760	4,725	5,018	4,866	5,019	4,717
EU-27 + UK[a]	na	1,940	1,970	1,870	1,975	2,145	2,308	2,441	2,307	2,621	2,310	2,288	2,244	2,550	2,679	3,008	3,000	3,327	3,487	3,739	3,873	3,834	4,011	3,878
United Kingdom	High	146	152	132	166	167	159	171	173	182	174	158	159	209	191	162	156	191	200	208	194	183	246	296
EU-27[b]	na	1,794	1,818	1,738	1,809	1,977	2,150	2,271	2,134	2,439	2,137	2,130	2,085	2,341	2,489	2,846	2,845	3,136	3,287	3,531	3,679	3,651	3,764	3,582
Austria	High	41	37	32	64	37	56	43	54	99	38	66	74	59	65	103	99	86	84	90	78	108	93	90
Belgium	High	6	7	14	14	19	20	18	13	20	18	13	13	12	15	20	20	22	35	74	58	62	61	60
Denmark	High	32	26	20	30	37	29	33	33	36	37	36	37	65	82	115	100	124	146	134	139	108	131	126
Finland	High	26	13	6	22	11	21	18	15	16	16	23	11	26	20	30	31	30	42	32	40	29	37	26
France	High	252	285	270	265	293	325	305	296	505	442	443	489	506	579	661	589	681	793	681	670	813	988	976
Germany	High	949	939	975	1,014	1,161	1,288	1,359	1,331	1,454	1,230	1,157	1,036	1,172	1,137	1,386	1,529	1,649	1,692	1,960	1,840	1,702	1,713	1,695
Hungary	High	9	8	2	2	5	7	2	2	2	5	4	2	3	2	4	6	7	8	4	5	5	6	5
Ireland	High	1	3	3	1	1	2	2	0	2	2	2	1	7	5	4	11	12	11	3	4	9	9	7
Italy	High	135	191	181	131	120	84	201	130	51	50	58	58	108	178	129	72	76	64	90	378	355	266	168
Netherlands	High	45	37	34	47	48	39	34	41	35	44	52	58	54	79	60	54	46	48	55	69	50	70	60
Spain	High	54	41	35	41	51	43	41	48	41	53	70	79	79	92	99	113	157	114	113	99	109	72	48
Sweden	High	88	116	49	76	84	122	121	74	75	72	77	83	82	71	87	70	67	81	102	122	128	136	125
Other Europe	na	1,166	988	828	885	994	1,273	1,241	1,116	1,031	1,063	1,239	1,331	1,179	988	1,067	1,138	1,199	1,274	986	1,146	1,031	1,008	839
Other Europe-2020[b]	na	1,312	1,140	960	1,051	1,161	1,432	1,411	1,289	1,212	1,237	1,397	1,489	1,388	1,179	1,229	1,293	1,390	1,474	1,194	1,339	1,215	1,254	1,136

Table SINV-32

International patent families granted in engines, pumps, turbines, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	5	5	0	2	4	5	6	5	7	3	8	3	6	9	5	7	2	2	3	5	4	6	4
Moldova	Lower middle	5	8	8	9	9	14	9	16	13	7	6	21	9	7	2	15	5	8	9	9	3	1	2
Norway	High	8	12	8	9	11	11	9	20	25	23	34	37	41	48	27	40	38	20	28	33	19	25	33
Russia	Upper middle	1,064	897	755	767	854	1,043	853	895	865	840	948	1,016	918	753	871	907	979	1,050	758	934	844	856	678
Switzerland	High	55	44	43	68	65	70	57	52	57	52	66	69	45	63	76	76	85	129	110	80	105	85	96
Ukraine	Lower middle	28	18	10	29	45	125	303	127	60	135	165	173	148	96	78	77	76	50	60	64	41	20	6
Asia	na	4,852	6,438	4,763	4,785	4,451	4,818	5,088	5,251	6,618	7,126	7,139	7,030	7,746	8,908	10,310	10,823	10,317	10,992	13,613	13,362	12,890	12,667	12,680
China	Upper middle	24	33	75	95	99	165	211	234	245	427	785	958	1,132	1,724	2,348	2,251	2,117	4,470	6,094	6,306	6,132	6,275	6,642
India	Lower middle	1	1	1	3	1	4	4	2	4	8	3	9	10	26	35	43	70	73	61	65	78	81	112
Japan	High	4,323	4,534	3,776	3,646	3,339	3,363	3,762	3,639	4,500	5,024	5,208	5,155	5,395	5,443	5,802	5,916	5,574	4,369	5,487	5,013	4,720	4,163	3,791
Malaysia	Upper middle	0	0	0	0	1	0	0	0	4	4	1	1	1	10	3	3	3	4	3	4	3	2	1
Singapore	High	1	4	0	2	2	3	2	3	2	3	4	1	3	4	10	10	7	11	11	7	8	4	3
South Korea	High	449	1,799	818	935	894	1,152	987	1,251	1,704	1,483	1,012	753	1,005	1,489	1,864	2,306	2,289	1,758	1,641	1,674	1,698	1,870	1,916
Taiwan	High	46	62	90	101	112	121	116	117	152	169	121	148	194	209	241	286	250	300	308	277	240	258	205
Middle East	na	14	10	34	39	22	25	15	29	17	31	25	14	20	24	36	29	31	42	39	31	29	32	38
Israel	High	12	8	6	14	9	14	10	5	4	8	12	12	14	11	12	14	16	11	18	11	12	8	12
Africa	na	20	21	17	19	23	27	20	17	11	15	17	26	29	19	15	20	19	6	10	7	9	10	6
South Africa	Upper middle	17	16	11	11	10	19	12	15	7	12	15	26	23	9	11	8	6	4	2	5	5	2	1
Australia and Oceania	na	41	61	58	85	96	108	136	73	81	58	43	46	38	46	54	60	35	36	46	41	23	33	32
Australia	High	38	57	56	84	93	103	132	70	77	53	36	39	33	40	47	50	29	28	37	36	18	32	31
New Zealand	High	3	4	3	1	3	4	4	3	4	5	7	7	6	5	7	10	6	8	9	5	4	1	1
Unclassified	na	21	181	56	66	12	3	115	178	101	7	5	3	2	1	2	1	1	2	6	1	10	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-33

International patent families granted in textile and paper machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	8,735	10,178	8,174	7,980	8,106	8,151	8,594	8,071	8,760	8,712	8,560	8,983	10,686	12,097	12,455	12,208	12,958	13,188	14,308	13,451	13,273	12,409	12,984
North America	na	1,270	1,202	1,227	1,236	1,169	1,192	1,138	832	816	700	705	596	819	732	866	814	954	791	698	602	550	599	582
Canada	High	50	45	44	57	40	37	32	38	34	27	36	24	41	31	44	33	39	43	40	33	19	25	24
Mexico	Upper middle	3	1	2	2	2	3	3	3	1	1	2	0	1	1	4	3	1	2	3	4	5	9	2
United States	High	1,217	1,156	1,181	1,178	1,126	1,152	1,103	792	782	672	667	571	777	700	818	778	913	746	655	565	526	565	556
Central America and Caribbean	na	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1
South America	na	4	3	4	11	10	8	15	8	8	7	11	12	19	19	13	17	12	11	13	16	12	12	23
Argentina	Upper middle	2	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Brazil	Upper middle	3	3	3	8	10	8	12	8	8	5	11	12	17	18	12	15	11	10	12	14	10	10	22
Europe	na	1,844	2,062	1,928	1,748	1,759	1,878	2,047	1,647	1,529	1,404	1,460	1,376	1,414	1,451	1,343	1,295	1,216	1,107	1,204	1,352	1,365	1,373	1,161
EU-27 + UK[a]	na	1,555	1,804	1,697	1,523	1,523	1,577	1,744	1,411	1,310	1,167	1,226	1,129	1,209	1,286	1,168	1,086	1,042	969	1,072	1,194	1,193	1,197	1,023
United Kingdom	High	109	103	80	106	99	113	99	72	68	60	63	48	48	49	60	35	40	37	37	51	30	47	47
EU-27[b]	na	1,446	1,701	1,617	1,417	1,423	1,465	1,645	1,339	1,242	1,107	1,163	1,081	1,161	1,237	1,108	1,052	1,002	932	1,035	1,143	1,163	1,149	975
Austria	High	35	43	42	32	48	44	40	28	48	26	38	38	33	32	40	38	32	43	33	31	34	35	27
Belgium	High	45	49	63	53	48	40	48	36	56	46	38	35	36	38	28	36	16	32	56	45	51	39	50
Denmark	High	7	11	6	8	9	12	11	10	7	12	16	8	6	6	11	20	14	16	14	12	7	8	7
Finland	High	97	134	111	106	107	148	142	137	92	83	100	98	85	100	99	67	53	63	82	57	56	38	47
France	High	143	154	163	152	136	156	160	127	159	115	103	111	123	106	91	88	103	101	84	84	77	87	96
Germany	High	626	654	600	669	666	702	650	606	658	596	604	544	625	709	585	540	537	454	498	450	476	539	447
Hungary	High	1	1	1	3	1	0	1	0	1	0	2	1	1	1	0	1	1	3	1	0	2	1	1
Ireland	High	17	4	2	2	7	5	3	3	2	4	3	3	4	6	2	23	5	11	4	13	3	6	7
Italy	High	220	395	401	153	179	147	366	181	35	30	54	41	73	89	72	34	27	19	33	201	185	132	83
Netherlands	High	56	50	53	42	35	30	47	40	46	36	35	44	50	32	32	40	30	37	49	53	56	71	54
Spain	High	37	47	43	66	47	75	62	63	48	54	51	44	37	42	54	57	62	64	66	61	78	70	59
Sweden	High	78	97	85	87	92	60	72	61	51	48	46	48	45	42	36	29	35	38	37	36	45	40	53
Other Europe	na	289	258	231	226	236	301	303	236	220	237	235	247	205	165	175	209	175	137	132	158	172	176	138
Other Europe-2020[b]	na	398	361	311	331	336	413	402	308	287	297	297	295	253	214	235	244	215	175	169	209	202	224	186
Belarus	Upper middle	0	2	1	3	1	3	1	4	2	1	3	1	1	2	1	0	0	0	5	1	1	2	0
Moldova	Lower middle	0	1	0	0	0	2	0	1	0	0	0	1	3	2	2	1	0	0	0	1	0	0	0
Norway	High	5	1	2	3	2	2	1	1	3	4	4	2	2	1	0	1	1	2	0	2	2	2
Russia	Upper middle	174	148	138	122	125	169	151	133	109	129	118	145	116	99	86	123	86	65	63	88	104	101	77
Switzerland	High	100	99	87	92	97	101	78	78	92	81	88	75	69	52	73	66	66	56	45	52	51	49	43

Table SINV-33

International patent families granted in textile and paper machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	8	5	0	4	9	23	70	16	12	22	15	19	12	9	9	13	13	9	9	8	6	5	0
Asia	na	5,533	6,815	4,928	4,866	4,994	4,885	5,229	5,467	6,292	6,471	6,214	6,901	8,291	9,810	10,157	10,016	10,697	11,207	12,338	11,429	11,300	10,365	11,167
China	Upper middle	52	52	105	123	155	215	349	415	529	650	799	1,098	1,604	2,503	2,814	2,627	3,292	5,156	6,299	6,052	5,979	5,279	6,299
India	Lower middle	1	1	3	3	0	3	2	1	2	3	1	3	5	4	5	4	7	8	6	12	13	12	9
Japan	High	5,041	5,686	4,300	4,122	4,007	3,911	3,950	3,686	4,162	4,475	4,625	5,178	5,854	6,105	5,994	5,849	5,827	4,851	4,938	4,141	3,982	3,708	3,557
Malaysia	Upper middle	1	0	0	0	1	0	2	2	2	3	2	1	2	6	2	3	3	2	6	6	3	2	1
Singapore	High	7	4	4	8	12	15	11	8	7	12	6	3	4	3	8	11	13	6	13	16	17	20	19
South Korea	High	361	988	421	479	661	600	730	1,201	1,377	1,094	671	501	646	966	1,169	1,303	1,319	976	861	969	1,106	1,161	1,106
Taiwan	High	67	81	92	129	155	139	182	153	210	230	109	113	172	214	162	217	229	202	208	229	193	177	169
Middle East	na	11	13	14	18	22	19	15	9	15	10	14	10	15	15	22	29	42	40	34	29	27	32	24
Israel	High	11	12	9	14	19	16	14	8	14	8	12	10	14	14	21	26	40	36	32	28	22	31	22
Africa	na	17	15	9	10	16	17	12	29	13	10	13	11	13	3	8	8	7	2	3	3	4	3	3
South Africa	Upper middle	13	12	8	8	6	11	8	25	13	8	8	7	7	2	4	4	4	1	2	1	0	1	1
Australia and Oceania	na	50	61	56	89	136	151	138	76	83	108	141	77	115	51	45	28	29	26	18	19	14	21	24
Australia	High	46	57	52	87	129	145	133	73	78	105	138	72	110	47	40	25	22	20	13	15	12	20	20
New Zealand	High	4	4	5	1	7	6	4	3	5	3	3	5	5	4	5	3	6	6	4	3	2	1	2
Unclassified	na	4	6	9	2	1	1	0	2	4	2	1	0	0	15	1	1	1	2	1	1	1	0	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-34

International patent families granted in other special machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	12,938	14,056	12,286	12,077	12,507	13,601	14,815	13,505	14,563	14,681	14,442	14,322	16,106	18,507	21,437	23,118	23,953	25,958	28,968	30,152	29,453	29,051	33,709
North America	na	2,647	2,704	2,503	2,458	2,354	2,510	2,269	1,747	1,821	1,620	1,521	1,568	2,187	2,135	2,170	2,326	2,562	2,686	2,825	2,908	2,847	3,213	3,233
Canada	High	154	190	181	191	186	149	169	146	166	156	157	128	170	149	139	154	193	182	171	202	188	202	192
Mexico	Upper middle	5	5	0	0	6	4	4	2	4	0	1	2	2	6	4	7	5	6	21	30	29	26	9
United States	High	2,489	2,510	2,321	2,267	2,162	2,357	2,097	1,600	1,651	1,464	1,363	1,438	2,015	1,979	2,027	2,165	2,365	2,497	2,633	2,676	2,630	2,984	3,033
Central America and Caribbean	na	1	3	2	3	1	0	2	2	0	1	0	2	0	2	2	1	4	1	0	2	1	3	3
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	9	15	25	16	18	25	23	18	19	17	33	59	64	80	75	66	64	73	73	116	166	122	170
Argentina	Upper middle	3	3	7	3	5	5	1	3	0	2	3	2	2	1	5	4	1	3	9	9	6	4	3
Brazil	Upper middle	1	9	17	12	13	17	18	12	17	12	28	55	61	76	65	57	57	65	57	102	151	111	157
Europe	na	4,637	4,369	4,139	3,687	3,937	4,675	5,394	4,283	4,073	3,992	4,461	4,182	4,047	3,818	4,254	4,402	4,347	4,592	4,614	5,345	5,137	4,964	4,666
EU-27 + UK[a]	na	3,051	3,185	3,015	2,725	2,790	2,938	3,159	2,678	2,566	2,428	2,447	2,327	2,515	2,510	2,780	2,776	2,849	2,824	3,307	3,681	3,527	3,343	3,226
United Kingdom	High	224	212	158	170	187	269	239	201	180	133	139	109	141	114	139	133	124	145	163	141	142	139	146
EU-27[b]	na	2,827	2,973	2,857	2,556	2,602	2,669	2,920	2,477	2,386	2,294	2,308	2,217	2,374	2,396	2,641	2,643	2,725	2,679	3,144	3,540	3,385	3,204	3,080
Austria	High	75	64	75	88	81	100	78	66	87	50	90	83	96	106	116	87	98	160	123	146	148	131	146
Belgium	High	52	37	36	46	36	55	44	43	47	55	39	54	50	51	42	34	43	88	226	106	134	93	95
Denmark	High	25	38	29	33	39	44	45	30	33	40	39	29	39	33	46	51	56	63	55	56	63	72	50
Finland	High	59	42	42	41	61	52	47	58	29	43	30	40	59	51	49	35	42	40	55	53	43	54	51
France	High	501	603	469	452	395	457	450	404	568	491	402	425	407	424	563	549	559	524	580	611	510	504	488
Germany	High	895	859	838	885	1,001	997	996	885	940	892	936	831	844	818	947	1,004	1,084	1,050	1,164	1,104	1,125	1,168	1,209
Hungary	High	4	12	5	15	16	13	8	8	11	3	2	5	9	9	6	8	8	7	10	15	10	11	12
Ireland	High	31	21	13	4	12	15	21	15	6	10	10	12	12	9	21	34	24	20	12	14	13	15	13
Italy	High	388	614	624	305	276	244	530	289	67	71	82	69	131	198	164	78	46	53	82	519	496	375	257
Netherlands	High	303	244	290	263	258	263	231	239	212	243	238	217	244	250	215	250	229	199	270	323	274	250	252
Spain	High	119	126	140	139	98	131	142	167	158	179	161	143	162	150	163	182	168	139	167	149	148	117	123
Sweden	High	150	132	121	105	127	126	151	85	65	66	65	81	96	72	80	64	76	67	79	90	85	96	119
Other Europe	na	1,586	1,184	1,124	962	1,147	1,737	2,235	1,605	1,507	1,564	2,013	1,855	1,532	1,308	1,474	1,626	1,499	1,768	1,306	1,663	1,610	1,620	1,439
Other Europe-2020[b]	na	1,810	1,396	1,282	1,132	1,335	2,007	2,474	1,806	1,688	1,698	2,152	1,965	1,673	1,422	1,613	1,759	1,622	1,913	1,470	1,805	1,752	1,760	1,586

Table SINV-34

International patent families granted in other special machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	12	6	6	4	6	10	17	7	17	10	15	11	16	12	15	9	5	6	15	18	15	15	14
Moldova	Lower middle	27	19	19	12	12	25	19	19	19	18	21	24	32	26	20	19	18	18	22	17	14	5	9
Norway	High	39	35	42	44	40	33	25	37	30	21	33	20	34	36	33	23	31	32	36	38	68	73	58
Russia	Upper middle	1,366	1,016	956	782	933	1,427	1,557	1,358	1,269	1,181	1,624	1,565	1,198	1,029	1,198	1,332	1,182	1,490	1,052	1,404	1,288	1,376	1,224
Switzerland	High	92	85	74	84	89	67	64	60	79	71	68	62	73	67	66	62	70	67	69	86	100	88	99
Ukraine	Lower middle	47	16	20	30	64	172	546	119	91	256	243	168	165	129	127	162	180	140	88	76	104	41	7
Asia	na	5,337	6,606	5,244	5,573	5,874	5,946	6,735	7,108	8,369	8,803	8,159	8,302	9,578	12,258	14,706	16,092	16,756	18,402	21,201	21,553	21,090	20,528	25,383
China	Upper middle	76	95	205	228	221	350	560	592	762	965	1,264	1,796	2,484	3,940	4,937	6,038	6,839	10,835	13,217	13,301	12,724	12,028	16,679
India	Lower middle	2	1	2	4	2	3	8	6	6	7	6	4	5	8	12	14	16	16	19	24	26	26	37
Japan	High	4,655	5,418	4,305	4,508	4,469	4,532	4,807	4,615	4,881	5,143	4,768	4,689	5,048	5,702	6,245	5,925	5,678	4,526	4,623	4,129	3,994	4,112	4,278
Malaysia	Upper middle	3	1	1	1	1	2	3	4	11	15	5	5	8	25	19	20	23	16	12	22	24	9	14
Singapore	High	3	3	4	5	9	11	12	6	4	4	5	6	8	4	8	8	13	8	9	8	9	11	9
South Korea	High	443	942	552	596	977	815	1,088	1,632	2,362	2,325	1,902	1,521	1,752	2,265	3,143	3,672	3,811	2,582	2,899	3,499	3,811	3,789	3,943
Taiwan	High	148	139	170	224	188	228	250	245	338	336	206	272	271	309	336	408	365	406	409	558	482	534	406
Middle East	na	28	26	41	47	44	58	34	35	44	36	52	25	26	41	58	50	51	65	64	74	66	73	92
Israel	High	26	21	22	28	34	37	27	22	28	18	33	18	19	22	34	33	36	45	35	49	50	54	73
Africa	na	62	82	46	52	46	65	51	50	39	45	73	41	55	25	43	29	39	8	22	19	11	18	11
South Africa	Upper middle	56	67	36	41	35	48	38	46	30	38	64	40	47	14	29	21	29	6	11	10	9	11	9
Australia and Oceania	na	158	164	195	235	227	318	301	210	183	166	136	141	145	145	124	147	127	126	161	131	133	127	144
Australia	High	145	147	178	218	214	298	286	189	168	148	119	127	120	119	92	112	97	95	116	96	113	98	126
New Zealand	High	13	17	17	16	14	20	15	21	15	17	17	15	25	26	32	34	30	31	45	35	20	29	18
Unclassified	na	58	88	92	4	6	4	6	50	14	1	6	2	2	2	4	6	2	4	8	4	2	4	7

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-35

International patent families granted in thermal processes and apparatus, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,654	8,376	6,644	6,403	6,340	6,428	7,027	7,424	9,652	9,271	8,099	8,401	8,425	9,495	11,699	12,171	12,967	12,649	15,100	16,595	15,920	17,032	16,953
North America	na	798	807	749	806	727	750	718	616	618	495	414	438	575	589	632	673	741	855	874	973	921	1,133	1,108
Canada	High	71	58	54	60	51	48	60	46	48	53	51	43	45	44	57	52	47	68	63	69	67	66	68
Mexico	Upper middle	2	3	6	5	5	2	2	1	3	2	1	1	1	4	1	1	5	6	13	17	16	13	7
United States	High	725	745	689	741	671	700	657	570	567	441	362	395	529	541	573	620	690	781	798	887	839	1,054	1,034
Central America and Caribbean	na	0	0	1	1	1	0	0	0	1	0	0	1	0	1	2	2	3	0	1	1	1	2	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
South America	na	1	3	19	17	10	12	9	6	11	11	8	19	29	24	21	15	15	16	12	22	18	19	42
Argentina	Upper middle	0	0	1	0	1	2	0	1	0	1	0	1	2	0	0	0	0	1	0	0	0	1	1
Brazil	Upper middle	0	2	17	16	9	7	7	4	10	9	8	19	27	23	21	14	14	14	10	20	16	16	39
Europe	na	1,844	1,821	1,779	1,645	1,715	1,792	1,953	1,703	1,616	1,599	1,573	1,750	1,709	1,638	1,913	1,887	1,785	1,923	1,896	2,257	2,194	2,370	2,060
EU-27 + UK[a]	na	1,326	1,369	1,353	1,259	1,256	1,194	1,295	1,197	1,144	1,050	995	1,069	1,183	1,201	1,472	1,366	1,337	1,387	1,524	1,752	1,719	1,926	1,652
United Kingdom	High	95	88	90	64	78	73	68	110	62	40	42	53	63	53	72	65	48	69	89	70	77	77	103
EU-27[b]	na	1,231	1,281	1,263	1,195	1,179	1,121	1,227	1,087	1,081	1,009	954	1,016	1,119	1,148	1,400	1,300	1,289	1,317	1,435	1,682	1,642	1,849	1,550
Austria	High	58	62	55	56	82	67	37	41	42	27	46	52	73	40	78	62	49	49	59	61	42	47	43
Belgium	High	7	8	12	7	10	10	12	13	8	9	9	6	14	13	12	23	19	23	47	42	44	39	37
Denmark	High	16	11	12	13	18	16	20	13	24	15	23	30	20	24	17	31	26	30	42	28	36	42	45
Finland	High	41	31	27	26	38	35	28	27	14	31	20	34	26	28	38	40	28	49	38	29	41	26	40
France	High	236	215	214	223	157	135	162	140	184	174	139	128	154	119	312	243	263	230	232	298	321	510	352
Germany	High	458	471	449	494	517	547	498	465	512	427	381	392	397	380	444	458	436	511	534	569	542	600	563
Hungary	High	6	6	4	5	4	1	1	2	2	1	2	3	2	2	2	8	7	7	7	2	3	5	2
Ireland	High	6	9	3	0	0	3	5	3	4	2	8	14	10	11	10	11	11	10	9	6	8	2	11
Italy	High	141	205	228	106	102	71	219	123	26	33	43	44	74	117	100	39	31	40	44	273	216	183	104
Netherlands	High	79	80	89	79	59	62	75	60	70	58	54	57	70	71	83	72	53	66	67	64	55	86	66
Spain	High	29	32	33	32	31	35	33	59	59	68	71	69	107	122	107	108	152	105	105	100	71	63	30
Sweden	High	51	54	49	57	70	72	69	39	55	45	38	55	56	52	40	34	27	45	35	42	61	59	86
Other Europe	na	518	452	426	386	459	598	657	506	472	549	577	681	527	438	442	521	448	537	372	504	475	444	408
Other Europe-2020[b]	na	613	540	517	450	537	671	726	616	534	589	619	734	590	491	514	587	496	606	461	575	552	521	510
Belarus	Upper middle	1	1	3	2	1	0	4	4	4	4	1	7	4	1	5	2	1	0	1	6	7	0	2
Moldova	Lower middle	2	3	0	5	7	8	3	9	5	2	3	10	8	3	2	4	3	5	3	2	1	3	4
Norway	High	16	11	13	9	13	18	8	8	10	9	10	6	12	11	9	14	10	11	10	14	5	9	6
Russia	Upper middle	435	372	353	306	373	465	404	402	386	421	445	521	375	319	329	393	329	397	230	365	354	350	317
Switzerland	High	46	44	46	47	42	39	35	21	41	38	34	30	32	26	32	36	45	56	51	45	56	37	46

Table SINV-35

International patent families granted in thermal processes and apparatus, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	16	19	10	13	22	61	201	60	24	70	77	97	85	62	50	62	46	49	40	38	30	13	3
Asia	na	3,941	5,620	3,973	3,831	3,778	3,772	4,235	4,975	6,993	7,081	6,029	6,115	6,014	7,160	9,038	9,489	10,336	9,772	12,238	13,266	12,737	13,437	13,670
China	Upper middle	27	29	113	92	89	312	403	429	500	580	998	1,821	1,681	1,987	2,821	2,595	2,865	4,733	6,332	7,534	7,410	7,942	8,436
India	Lower middle	2	1	4	1	1	3	2	2	3	4	3	3	3	6	9	6	10	8	14	12	20	20	29
Japan	High	3,202	3,687	3,096	2,928	2,719	2,421	2,652	2,990	3,802	3,573	3,165	3,102	2,953	3,388	3,803	4,123	4,692	2,966	3,728	3,517	3,298	3,182	2,743
Malaysia	Upper middle	0	0	0	1	1	2	2	1	8	5	0	3	3	3	0	7	6	6	1	4	8	1	3
Singapore	High	1	2	2	2	4	3	3	3	2	1	1	3	2	1	4	3	2	2	3	3	3	4	1
South Korea	High	660	1,843	713	700	878	946	1,065	1,442	2,488	2,726	1,716	1,017	1,215	1,641	2,231	2,524	2,525	1,836	1,867	1,886	1,718	2,068	2,246
Taiwan	High	45	56	42	105	84	80	104	107	188	192	143	160	153	129	169	225	232	215	286	302	274	214	204
Middle East	na	4	8	11	15	13	12	7	14	6	12	8	7	9	10	11	20	24	24	26	33	20	27	25
Israel	High	3	7	7	9	7	11	5	9	4	6	4	3	5	7	4	8	14	13	12	13	8	9	11
Africa	na	26	29	33	26	22	20	13	23	17	24	20	26	37	18	26	25	23	7	5	12	5	5	5
South Africa	Upper middle	23	25	29	22	16	11	10	20	15	22	19	26	36	12	21	18	11	5	4	8	1	2	3
Australia and Oceania	na	31	50	57	56	67	72	80	61	49	41	42	38	51	51	52	58	39	39	46	29	24	38	40
Australia	High	30	45	53	54	63	70	76	56	45	39	39	32	43	44	45	51	29	32	38	23	20	33	38
New Zealand	High	1	5	3	2	4	2	4	5	4	2	2	6	8	7	7	7	9	8	8	7	4	5	2
Unclassified	na	9	38	21	7	7	0	11	25	341	9	6	5	1	4	2	1	1	12	2	2	1	2	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-36

International patent families granted in mechanical elements, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	10,146	11,891	10,340	9,801	10,126	11,169	11,399	11,258	12,221	11,880	12,712	12,912	13,862	15,442	18,086	18,228	17,812	19,734	23,081	24,519	24,140	23,402	22,960
North America	na	1,834	1,958	1,970	1,897	1,867	1,827	1,751	1,371	1,574	1,270	1,197	1,263	1,644	1,658	1,796	2,058	2,202	2,382	2,325	2,497	2,410	2,670	2,385
Canada	High	77	106	87	86	104	98	107	87	94	80	73	87	106	95	99	125	141	143	141	143	140	152	147
Mexico	Upper middle	4	3	2	4	5	3	5	6	2	3	4	3	2	2	3	4	10	8	11	13	23	25	18
United States	High	1,752	1,850	1,880	1,806	1,758	1,726	1,639	1,279	1,478	1,186	1,120	1,173	1,536	1,561	1,694	1,929	2,052	2,231	2,173	2,341	2,247	2,492	2,221
Central America and Caribbean	na	0	2	3	1	3	1	2	0	1	0	1	2	1	1	2	2	1	1	1	0	0	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	16	10	19	19	13	28	21	14	19	11	15	34	46	44	37	43	29	44	47	43	52	65	112
Argentina	Upper middle	1	4	4	2	2	5	2	1	1	3	3	2	2	5	3	5	2	2	4	2	1	1	0
Brazil	Upper middle	12	5	14	15	10	22	18	11	15	7	12	30	42	38	33	34	27	39	40	37	48	62	111
Europe	na	3,647	3,665	3,587	3,479	3,605	3,929	4,423	3,935	4,129	3,603	3,778	3,666	3,697	3,589	4,199	4,030	4,138	4,432	4,700	5,279	5,264	5,211	4,722
EU-27 + UK[a]	na	2,899	3,002	2,983	2,884	2,909	3,034	3,367	3,147	3,215	2,786	2,958	2,798	2,885	2,932	3,356	3,236	3,287	3,545	3,799	4,286	4,159	4,423	4,058
United Kingdom	High	235	220	210	192	245	218	278	249	234	163	193	124	165	174	179	175	145	192	206	200	187	225	264
EU-27[b]	na	2,664	2,782	2,773	2,692	2,664	2,816	3,089	2,898	2,981	2,623	2,765	2,673	2,721	2,758	3,177	3,062	3,142	3,354	3,593	4,086	3,972	4,198	3,794
Austria	High	56	57	63	63	58	63	51	54	96	50	77	76	89	107	107	127	99	117	106	120	132	128	115
Belgium	High	20	12	13	19	18	20	26	26	28	21	18	23	17	20	22	18	19	27	50	49	39	51	46
Denmark	High	23	18	28	27	31	36	25	38	44	29	32	27	31	29	25	40	37	50	42	48	42	46	41
Finland	High	29	29	29	25	22	36	29	39	26	22	33	27	33	22	34	28	34	47	40	35	34	38	39
France	High	560	507	532	563	492	480	515	400	555	550	579	594	503	435	586	524	597	694	716	738	759	798	717
Germany	High	1,273	1,293	1,293	1,399	1,463	1,638	1,573	1,711	1,831	1,516	1,586	1,471	1,519	1,571	1,858	1,809	1,818	1,919	2,005	2,043	2,076	2,324	2,133
Hungary	High	7	5	9	9	11	6	4	10	5	8	4	4	7	5	9	7	11	6	7	13	12	18	18
Ireland	High	6	5	2	3	2	2	5	4	1	3	1	2	2	6	5	7	8	13	7	5	7	6	11
Italy	High	232	409	391	206	195	154	422	217	52	55	64	69	128	147	123	58	47	44	77	454	367	292	191
Netherlands	High	107	106	105	106	82	85	106	86	77	78	73	83	92	99	85	113	103	84	125	118	101	95	76
Spain	High	50	63	56	44	35	55	59	69	61	85	62	70	60	72	92	85	114	83	72	74	61	56	40
Sweden	High	123	148	107	102	118	137	166	119	100	86	105	98	97	100	98	86	67	102	114	143	130	123	147
Other Europe	na	748	663	604	596	697	895	1,056	788	914	817	820	868	811	657	844	794	850	887	901	993	1,106	788	664
Other Europe-2020[b]	na	983	882	814	787	941	1,113	1,334	1,037	1,148	980	1,013	993	976	831	1,022	968	995	1,079	1,106	1,193	1,293	1,013	928

Table SINV-36

International patent families granted in mechanical elements, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	3	3	4	1	0	7	17	9	13	12	7	7	13	8	7	9	5	6	6	18	7	15	9
Moldova	Lower middle	0	1	1	3	2	3	3	2	9	4	5	8	10	4	1	2	2	3	2	4	1	0	1
Norway	High	30	43	28	38	37	35	22	37	58	38	37	34	49	35	39	33	45	39	51	50	53	49	41
Russia	Upper middle	625	537	481	468	552	689	701	606	704	606	610	676	589	466	640	592	655	703	693	781	894	586	480
Switzerland	High	65	62	74	59	62	67	60	71	83	62	66	59	64	74	73	82	80	79	86	81	91	88	102
Ukraine	Lower middle	21	13	13	21	40	85	249	59	44	92	89	75	80	57	67	64	48	43	43	39	37	20	9
Asia	na	4,456	6,027	4,557	4,202	4,436	5,145	4,925	5,646	6,219	6,844	7,572	7,814	8,332	10,013	11,897	11,957	11,287	12,739	15,867	16,569	16,305	15,332	15,594
China	Upper middle	28	46	56	112	103	183	167	265	324	547	885	1,265	1,477	2,047	3,087	3,059	3,043	6,130	8,078	8,509	8,605	7,316	7,850
India	Lower middle	0	3	0	0	2	4	2	1	4	2	4	4	7	9	14	20	21	27	23	36	35	36	57
Japan	High	3,877	4,476	3,667	3,359	3,315	3,942	3,769	4,004	4,052	4,578	5,141	5,228	5,422	6,212	6,571	6,036	5,380	4,329	5,089	4,926	4,529	4,696	4,388
Malaysia	Upper middle	0	1	0	1	2	1	3	4	5	12	2	4	13	4	8	5	5	3	2	10	12	2	2
Singapore	High	3	2	2	3	3	4	3	2	2	1	1	3	3	2	5	4	5	7	5	7	3	7	8
South Korea	High	444	1,383	707	558	843	828	799	1,130	1,460	1,423	1,284	969	1,051	1,401	1,840	2,290	2,378	1,792	2,091	2,600	2,726	2,854	2,964
Taiwan	High	101	114	121	163	166	181	176	238	367	274	246	334	355	336	367	536	450	446	571	478	391	419	321
Middle East	na	12	18	14	15	14	13	14	7	23	17	19	11	15	24	31	20	28	26	28	41	30	29	33
Israel	High	11	15	10	11	10	7	9	3	11	6	7	8	10	14	11	12	17	16	20	27	19	16	18
Africa	na	74	64	57	56	59	62	46	48	45	35	54	38	37	23	47	26	32	6	6	7	5	12	9
South Africa	Upper middle	64	57	48	54	49	49	44	45	43	32	52	38	31	15	33	17	29	6	3	5	5	10	5
Australia and Oceania	na	80	92	93	127	126	162	193	134	101	91	72	85	89	89	76	92	95	100	102	81	70	81	104
Australia	High	70	87	90	121	115	154	182	125	90	84	65	74	77	80	64	78	78	84	81	67	55	67	92
New Zealand	High	10	5	3	5	11	8	11	9	11	7	7	11	12	9	12	14	17	16	22	14	15	14	12
Unclassified	na	27	56	41	6	4	2	23	104	109	9	3	0	2	0	1	1	1	3	4	2	3	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-37

International patent families granted in transport, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	16,017	19,051	15,971	15,511	16,595	18,168	18,857	20,162	20,590	20,868	22,085	21,108	22,525	23,003	26,573	30,405	30,564	31,145	37,323	39,214	39,052	40,879	43,383
North America	na	3,250	3,048	3,430	3,422	3,246	3,159	3,029	2,704	2,681	2,477	2,293	2,207	2,710	2,517	2,685	2,935	3,264	3,804	4,032	4,458	4,660	5,301	5,147
Canada	High	160	160	186	194	178	198	197	181	172	169	165	161	160	176	180	191	201	219	219	231	242	274	252
Mexico	Upper middle	4	1	3	10	5	3	3	3	4	2	5	2	4	3	2	9	10	18	26	57	87	85	64
United States	High	3,086	2,885	3,241	3,216	3,063	2,958	2,828	2,520	2,504	2,305	2,122	2,044	2,546	2,338	2,502	2,735	3,052	3,567	3,787	4,170	4,331	4,943	4,831
Central America and Caribbean	na	1	2	0	2	0	3	2	1	3	1	2	2	2	0	2	3	0	0	2	0	1	4	1
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	15	10	18	23	16	27	24	11	17	14	18	27	30	48	48	43	43	42	53	43	78	90	102
Argentina	Upper middle	3	1	2	5	2	6	0	1	2	3	2	0	2	3	1	4	2	1	5	2	4	7	1
Brazil	Upper middle	10	5	14	14	13	18	20	8	14	10	15	26	28	44	44	36	34	40	47	39	70	82	99
Europe	na	5,218	5,011	5,332	5,013	5,352	5,677	6,322	6,030	6,565	6,168	6,460	6,657	6,699	5,937	6,690	6,967	7,103	7,325	7,765	8,726	9,094	9,867	9,616
EU-27 + UK[a]	na	4,324	4,225	4,655	4,379	4,620	4,727	5,198	5,012	5,486	5,212	5,380	5,461	5,566	5,084	5,668	5,856	5,921	5,996	6,754	7,556	7,634	8,497	8,219
United Kingdom	High	279	268	291	341	387	330	374	300	296	186	206	186	178	218	208	243	223	281	274	318	382	448	474
EU-27[b]	na	4,044	3,957	4,364	4,038	4,233	4,398	4,824	4,712	5,190	5,026	5,173	5,276	5,387	4,865	5,461	5,613	5,698	5,716	6,480	7,238	7,252	8,049	7,744
Austria	High	91	88	83	70	94	102	70	88	96	64	79	91	96	85	107	123	120	138	143	141	200	187	201
Belgium	High	33	31	26	32	35	40	26	47	54	48	40	43	46	53	46	55	43	79	136	100	81	77	93
Denmark	High	19	8	16	17	25	20	15	16	11	19	18	21	16	21	18	31	24	34	32	34	26	40	35
Finland	High	40	29	25	29	55	50	49	47	23	22	31	24	33	32	34	49	45	70	49	59	45	45	73
France	High	1,034	998	1,030	964	928	1,073	963	864	1,435	1,408	1,516	2,000	1,769	1,435	1,735	1,628	1,667	1,644	1,794	1,889	1,921	2,027	1,958
Germany	High	1,777	1,641	1,930	2,057	2,204	2,309	2,381	2,602	2,853	2,682	2,630	2,295	2,475	2,217	2,492	2,776	2,857	2,887	3,279	3,369	3,377	4,189	4,078
Hungary	High	6	2	6	9	8	8	9	11	14	9	14	8	13	14	9	15	19	17	14	26	40	35	29
Ireland	High	7	3	6	7	4	8	5	5	2	1	5	6	3	6	9	9	10	7	16	8	9	14	19
Italy	High	406	544	617	260	256	181	565	307	79	94	112	131	192	247	179	112	90	74	109	634	555	459	339
Netherlands	High	170	172	206	182	179	152	193	184	160	160	171	158	178	186	177	185	161	143	164	187	187	162	158
Spain	High	108	105	94	112	68	108	122	153	138	194	162	131	154	181	188	219	260	187	214	184	200	174	111
Sweden	High	186	184	166	137	195	190	273	206	162	138	191	157	217	181	229	209	184	224	234	309	299	306	335
Other Europe	na	894	786	677	634	732	950	1,124	1,017	1,079	956	1,081	1,195	1,134	854	1,021	1,111	1,182	1,329	1,011	1,171	1,461	1,370	1,397
Other Europe-2020[b]	na	1,174	1,054	968	976	1,119	1,280	1,497	1,318	1,375	1,142	1,287	1,381	1,312	1,072	1,229	1,354	1,405	1,609	1,285	1,489	1,842	1,818	1,871

Table SINV-37

International patent families granted in transport, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	3	6	3	2	5	4	11	7	6	12	13	9	12	10	11	13	7	5	10	11	13	14	7
Moldova	Lower middle	1	1	7	8	0	7	2	3	3	2	3	0	5	0	3	0	4	5	3	1	0	1	2
Norway	High	61	47	40	58	54	51	34	45	42	32	32	38	32	44	58	42	50	72	53	49	53	65	59
Russia	Upper middle	763	665	556	492	570	743	786	808	917	762	847	969	905	636	818	886	948	1,085	774	967	1,211	1,098	1,176
Switzerland	High	42	47	52	52	60	55	51	57	64	54	66	65	73	67	63	71	77	57	69	75	80	98	93
Ukraine	Lower middle	22	13	17	15	35	80	237	89	40	87	108	93	90	80	54	77	78	80	74	50	54	38	18
Asia	na	7,266	10,651	6,853	6,758	7,681	8,939	8,748	10,777	10,936	11,970	13,091	11,997	12,866	14,307	16,925	20,219	19,901	19,720	25,226	25,748	24,998	25,346	28,296
China	Upper middle	19	38	66	72	100	152	178	196	279	494	830	1,055	1,398	1,906	2,753	3,183	2,933	6,416	9,684	10,640	10,899	11,241	14,658
India	Lower middle	0	1	0	1	2	0	2	6	3	9	6	8	13	10	17	18	25	30	44	61	73	88	110
Japan	High	4,740	5,799	4,979	5,272	5,298	5,588	5,854	6,098	6,186	7,464	8,301	8,451	8,542	9,037	9,855	10,861	10,522	7,932	9,639	9,245	8,746	8,678	8,216
Malaysia	Upper middle	0	2	2	1	2	0	5	3	5	12	1	8	8	10	4	12	9	10	7	12	12	3	6
Singapore	High	1	2	3	3	3	2	2	2	3	4	4	4	3	5	5	3	7	8	8	14	12	16	10
South Korea	High	2,306	4,606	1,561	1,129	2,005	2,903	2,410	4,110	3,981	3,524	3,510	2,086	2,469	2,936	3,787	5,594	5,977	4,831	5,176	5,086	4,663	4,836	4,893
Taiwan	High	197	202	240	279	267	290	294	354	477	456	427	372	423	395	498	540	414	482	653	668	572	462	388
Middle East	na	18	22	37	21	17	29	17	26	20	25	19	17	24	21	32	35	38	49	50	54	48	69	53
Israel	High	12	17	14	11	8	19	13	9	4	10	7	16	17	12	21	18	22	28	36	35	35	47	36
Africa	na	85	77	72	73	63	71	61	64	52	47	70	46	51	31	49	44	36	16	19	12	23	13	12
South Africa	Upper middle	74	71	61	65	53	56	48	59	49	40	67	46	42	23	34	33	28	13	14	10	14	6	5
Australia and Oceania	na	119	112	129	193	209	263	309	211	199	163	127	153	143	141	144	158	175	184	172	169	149	188	145
Australia	High	109	102	121	189	200	252	293	198	187	152	117	139	129	125	127	136	149	163	150	147	131	166	129
New Zealand	High	9	9	8	4	9	11	15	13	12	11	11	14	14	15	17	22	27	20	22	21	19	22	16
Unclassified	na	45	120	100	6	12	1	347	339	117	3	6	2	0	1	1	1	3	5	4	3	1	1	10

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

^b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-38

International patent families granted in furniture, games, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	10,137	10,445	9,292	8,407	8,351	9,165	10,124	9,991	11,251	12,106	12,164	13,255	15,095	16,860	19,022	20,840	22,411	20,856	24,466	24,426	24,498	23,428	25,794
North America	na	3,165	3,110	3,015	2,635	2,567	2,603	2,433	1,973	2,193	2,026	1,787	1,856	2,598	2,442	2,568	2,619	2,915	2,837	2,750	2,723	2,551	2,786	2,759
Canada	High	178	182	172	168	152	145	131	131	127	123	111	114	146	133	122	165	177	155	151	149	144	151	144
Mexico	Upper middle	5	2	6	3	5	3	7	4	1	1	4	6	4	3	7	9	6	7	13	12	11	10	7
United States	High	2,981	2,926	2,837	2,464	2,410	2,455	2,295	1,838	2,065	1,903	1,672	1,737	2,448	2,306	2,439	2,445	2,732	2,675	2,586	2,562	2,397	2,625	2,608
Central America and Caribbean	na	7	6	0	3	2	4	0	1	2	2	1	2	3	2	2	0	3	0	2	2	1	2	3
Puerto Rico	High	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
South America	na	9	9	10	5	13	11	18	18	12	9	19	18	12	14	12	17	20	23	21	24	24	25	45
Argentina	Upper middle	1	3	1	0	5	1	3	3	3	3	4	0	2	1	1	0	3	3	1	0	2	1	2
Brazil	Upper middle	4	4	8	4	8	7	13	11	8	4	10	15	9	9	10	16	13	16	17	19	18	22	39
Europe	na	2,420	2,436	2,352	2,081	2,086	2,235	2,584	2,186	1,948	1,794	1,832	1,913	2,005	1,898	2,162	2,140	2,045	1,943	2,206	2,654	2,520	2,393	2,188
EU-27 + UK[a]	na	2,108	2,198	2,108	1,854	1,836	1,899	2,250	1,866	1,700	1,532	1,522	1,587	1,671	1,652	1,893	1,871	1,726	1,639	1,904	2,265	2,117	1,998	1,860
United Kingdom	High	203	236	238	231	239	239	280	286	220	180	191	180	173	226	218	221	185	164	192	193	171	141	201
EU-27[b]	na	1,905	1,962	1,870	1,623	1,598	1,660	1,970	1,581	1,479	1,352	1,332	1,407	1,498	1,426	1,675	1,650	1,541	1,475	1,711	2,072	1,946	1,857	1,659
Austria	High	72	66	62	70	71	79	63	63	77	59	84	80	77	98	115	85	75	95	108	84	77	86	81
Belgium	High	15	14	9	19	18	13	17	10	16	16	19	12	13	16	11	15	14	31	64	51	41	55	37
Denmark	High	27	25	18	21	12	26	29	16	15	11	15	16	15	21	22	26	28	32	27	34	21	31	27
Finland	High	25	26	9	24	29	25	19	12	9	16	11	18	16	10	19	16	17	29	29	23	20	23	25
France	High	514	488	465	391	373	409	357	305	430	310	290	285	308	261	433	377	346	317	341	319	288	282	247
Germany	High	469	458	427	452	501	513	484	436	487	452	457	436	453	406	500	609	575	549	608	554	543	625	650
Hungary	High	6	4	4	8	9	6	7	3	6	2	6	5	8	7	6	5	5	11	2	4	5	5	5
Ireland	High	18	8	8	6	4	1	9	8	6	4	5	5	10	7	12	18	13	10	15	9	10	8	8
Italy	High	353	429	479	228	205	171	490	273	34	58	39	58	150	189	123	54	38	41	72	522	463	341	199
Netherlands	High	130	148	146	151	130	132	140	129	142	136	123	156	131	135	131	124	100	83	129	144	115	102	116
Spain	High	85	97	84	92	61	78	86	125	111	131	101	117	93	84	120	126	112	86	94	84	86	76	35
Sweden	High	87	92	66	66	73	88	139	80	50	64	61	76	101	56	75	73	62	71	71	79	107	59	86
Other Europe	na	312	238	244	227	250	335	334	320	248	262	309	326	334	246	268	269	319	304	302	389	403	395	328
Other Europe-2020[b]	na	514	474	482	458	489	574	614	606	469	442	500	506	507	472	486	490	504	468	494	581	574	536	529
Belarus	Upper middle	3	0	0	0	1	0	4	1	2	3	9	2	4	2	2	1	0	3	4	4	2	1	3

Table SINV-38

International patent families granted in furniture, games, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Moldova	Lower middle	5	1	2	4	10	1	1	1	2	4	1	1	2	3	2	2	1	2	1	2	2	2	0
Norway	High	21	29	32	38	38	31	16	23	26	30	24	20	31	20	11	19	28	25	32	27	25	13	11
Russia	Upper middle	208	132	133	101	114	202	182	198	124	144	150	182	150	120	134	123	140	157	118	211	221	215	182
Switzerland	High	68	68	71	76	83	74	57	80	82	57	89	77	111	67	72	88	110	86	114	104	110	118	103
Ukraine	Lower middle	6	4	1	3	4	21	65	12	9	15	22	26	13	17	18	9	11	8	5	15	8	6	1
Asia	na	4,274	4,624	3,669	3,361	3,398	3,965	4,660	5,513	6,860	8,012	8,248	9,204	10,171	12,233	13,964	15,801	17,179	15,798	19,276	18,827	19,202	18,026	20,588
China	Upper middle	42	58	86	117	120	252	220	254	296	325	535	909	909	1,228	1,574	1,359	1,748	2,909	4,017	4,731	5,641	4,801	6,579
India	Lower middle	1	1	1	0	0	1	3	0	1	1	1	1	3	5	8	4	7	11	15	15	16	19	28
Japan	High	3,531	3,529	2,842	2,590	2,333	2,674	3,186	3,511	4,005	4,926	5,732	6,780	7,481	8,478	9,462	10,887	11,891	10,004	12,193	11,062	10,592	9,989	10,706
Malaysia	Upper middle	2	2	2	2	2	3	6	4	16	19	8	11	15	15	12	10	13	11	8	8	9	2	1
Singapore	High	3	5	2	1	0	6	4	2	2	4	6	5	6	3	4	5	4	5	4	7	4	4	8
South Korea	High	335	693	332	281	509	589	720	1,226	2,054	2,252	1,589	1,140	1,340	2,034	2,395	2,996	3,057	2,330	2,345	2,387	2,435	2,630	2,713
Taiwan	High	358	330	401	366	428	434	515	510	481	484	372	357	413	465	505	534	456	523	687	605	498	567	548
Middle East	na	22	20	17	19	17	22	15	15	18	20	14	12	16	26	27	28	38	40	30	24	30	31	28
Israel	High	21	16	13	15	14	17	14	10	11	14	10	10	13	22	17	20	22	22	22	19	22	23	20
Africa	na	93	103	82	82	68	94	94	89	47	63	91	59	70	25	56	31	37	17	6	8	7	12	7
South Africa	Upper middle	81	96	71	78	59	75	82	83	40	53	89	57	63	18	48	22	26	13	6	5	4	9	7
Australia and Oceania	na	139	135	144	218	198	232	318	192	171	178	171	189	217	219	231	202	173	197	175	165	162	151	170
Australia	High	126	128	137	205	188	222	306	180	156	173	158	178	194	201	220	186	156	181	157	152	147	142	157
New Zealand	High	13	7	7	12	10	9	12	11	14	6	12	11	22	18	11	14	17	16	17	13	14	9	14
Unclassified	na	7	3	4	2	1	0	2	5	2	0	2	2	1	2	1	1	1	2	1	1	2	2	5

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-39

International patent families granted in other consumer goods, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,415	9,009	7,442	7,005	6,908	7,551	7,896	8,138	9,020	9,511	8,333	8,840	9,140	10,908	13,292	11,699	11,708	11,909	14,098	14,175	14,780	14,347	14,921
North America	na	2,012	2,260	2,029	1,852	1,662	1,565	1,519	1,148	1,304	1,249	1,162	1,164	1,460	1,437	1,600	1,584	1,663	1,893	1,957	1,902	1,896	2,102	2,043
Canada	High	76	101	100	89	76	81	87	59	56	67	67	70	73	73	84	106	95	93	95	103	89	111	89
Mexico	Upper middle	3	2	2	4	7	4	3	1	3	2	1	1	4	4	5	8	4	7	23	12	17	10	4
United States	High	1,933	2,156	1,927	1,759	1,578	1,480	1,429	1,087	1,245	1,180	1,094	1,094	1,384	1,360	1,511	1,470	1,564	1,793	1,839	1,788	1,790	1,982	1,951
Central America and Caribbean	na	2	4	3	2	2	2	1	0	1	0	4	5	1	3	1	1	0	2	0	2	1	1	1
Puerto Rico	High	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
South America	na	4	8	11	9	12	16	16	7	16	10	11	25	29	23	21	18	16	17	14	20	30	28	70
Argentina	Upper middle	2	2	2	1	1	1	3	1	3	3	1	5	5	4	0	1	0	1	0	1	0	4	2
Brazil	Upper middle	2	4	8	5	11	12	10	5	13	6	10	19	24	18	19	16	15	15	11	16	26	24	65
Europe	na	1,901	1,819	1,849	1,761	1,720	1,868	2,207	1,905	1,792	1,761	1,607	1,835	1,666	2,179	3,399	1,651	1,802	1,899	2,304	2,410	2,423	2,360	2,107
EU-27 + UK[a]	na	1,544	1,545	1,605	1,495	1,491	1,591	1,855	1,590	1,479	1,325	1,276	1,198	1,361	1,456	1,565	1,389	1,484	1,573	1,768	2,037	2,024	1,963	1,746
United Kingdom	High	150	135	168	185	183	211	196	186	164	113	124	120	128	122	128	127	98	121	138	183	161	150	177
EU-27[b]	na	1,394	1,410	1,437	1,309	1,308	1,380	1,659	1,403	1,315	1,212	1,152	1,078	1,233	1,335	1,437	1,262	1,386	1,452	1,630	1,855	1,863	1,812	1,569
Austria	High	30	37	29	48	50	33	32	28	53	28	50	33	36	51	50	51	42	54	56	51	50	49	51
Belgium	High	12	14	9	14	13	13	15	16	12	11	8	15	10	21	18	14	19	25	53	42	42	54	35
Denmark	High	4	6	7	2	5	16	7	10	8	9	7	9	10	8	13	16	12	13	10	11	9	16	10
Finland	High	15	14	9	14	20	17	11	15	16	13	14	11	8	10	13	15	11	16	17	16	16	14	17
France	High	386	368	348	328	297	342	372	338	398	408	320	254	300	334	370	295	373	400	375	327	383	370	342
Germany	High	379	345	359	384	480	483	445	413	486	406	399	398	459	460	528	494	560	574	695	603	585	665	638
Hungary	High	3	2	4	2	3	6	4	3	2	0	1	2	4	0	2	4	1	2	4	1	2	3	5
Ireland	High	11	6	1	3	5	2	1	5	3	6	3	5	2	1	5	9	6	8	5	5	9	8	6
Italy	High	292	390	416	238	207	212	479	256	45	44	59	55	123	176	135	81	94	90	125	524	449	356	225
Netherlands	High	91	67	67	75	71	82	94	90	91	81	89	92	67	79	95	83	59	63	72	87	96	79	71
Spain	High	52	62	88	86	44	63	64	96	80	87	90	83	82	101	105	93	91	82	80	56	69	46	28
Sweden	High	43	36	28	49	35	45	59	45	37	34	38	40	42	26	29	31	22	25	32	34	32	36	45
Other Europe	na	357	274	244	267	229	277	352	316	313	436	331	636	305	723	1,834	262	318	325	536	373	399	397	361
Other Europe-2020[b]	na	507	409	411	452	412	488	548	502	477	549	455	756	433	844	1,961	389	416	447	673	555	560	548	538
Belarus	Upper middle	1	3	1	3	0	2	4	4	5	3	2	1	1	1	1	0	2	0	3	3	1	4	1
Moldova	Lower middle	3	11	5	3	6	6	6	2	3	1	1	4	1	3	2	1	2	1	2	2	0	1	1
Norway	High	9	11	6	16	14	14	7	9	11	8	9	7	6	13	8	8	13	9	9	8	7	8	6
Russia	Upper middle	277	186	169	168	127	172	203	221	185	340	202	508	184	595	1,696	127	164	163	351	171	208	173	159
Switzerland	High	53	53	58	60	64	52	56	54	89	59	84	73	69	59	74	82	95	88	99	107	105	141	130

Table SINV-39

International patent families granted in other consumer goods, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	11	5	0	10	14	20	71	21	14	19	14	20	25	30	11	12	10	13	7	13	7	10	3
Asia	na	3,342	4,771	3,408	3,184	3,317	3,866	3,875	4,860	5,709	6,326	5,352	5,642	5,784	7,124	8,100	8,284	8,062	7,943	9,663	9,705	10,295	9,722	10,570
China	Upper middle	78	84	123	149	146	244	346	442	338	356	650	1,065	1,072	1,396	1,834	1,638	1,752	3,310	4,489	4,456	5,106	4,459	5,304
India	Lower middle	0	2	1	0	1	1	2	2	4	3	3	2	6	4	11	11	9	15	16	15	18	22	31
Japan	High	2,446	2,683	2,410	2,138	2,071	2,390	2,251	2,576	2,762	3,027	2,845	3,237	3,195	3,296	3,254	3,443	3,241	2,268	2,676	2,592	2,606	2,467	2,463
Malaysia	Upper middle	0	0	1	0	2	1	5	1	4	16	4	9	10	7	4	9	12	6	5	9	10	1	3
Singapore	High	3	5	3	2	3	6	4	3	6	3	2	5	6	4	6	7	4	9	4	4	2	5	6
South Korea	High	601	1,727	644	633	829	977	1,006	1,592	2,309	2,642	1,643	1,142	1,301	2,213	2,777	2,907	2,822	2,078	2,159	2,302	2,238	2,438	2,537
Taiwan	High	209	266	222	258	260	243	258	226	280	275	205	181	190	197	210	262	216	249	306	319	307	323	214
Middle East	na	20	16	14	19	17	26	21	11	9	9	20	10	10	21	14	29	36	30	34	31	34	30	24
Israel	High	18	15	10	14	13	24	20	8	7	5	14	10	8	11	11	16	25	17	21	23	22	22	16
Africa	na	55	50	38	48	43	52	39	34	31	34	48	42	52	17	34	18	22	6	7	7	7	7	6
South Africa	Upper middle	49	42	27	46	32	40	34	32	25	33	44	40	48	10	31	13	16	4	4	2	2	3	2
Australia and Oceania	na	70	71	86	126	136	155	217	160	141	121	129	116	137	103	122	113	106	119	117	97	95	96	98
Australia	High	64	65	82	119	128	150	211	152	133	116	123	108	128	90	111	102	88	103	104	85	85	84	91
New Zealand	High	6	6	4	7	7	5	6	8	8	5	6	9	10	13	11	10	18	16	13	12	9	10	7
Unclassified	na	9	11	4	4	1	1	3	13	18	1	1	1	0	1	1	1	1	1	2	1	0	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-40

International patent families granted in civil engineering, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	17,034	18,560	14,975	14,572	14,701	16,222	17,032	17,558	20,653	21,873	19,194	19,200	22,311	24,919	27,401	27,742	28,875	32,518	37,747	38,898	38,150	37,461	41,322
North America	na	2,507	2,568	2,591	2,590	2,467	2,379	2,263	1,935	2,019	1,699	1,653	1,860	2,529	2,254	2,493	2,816	3,062	3,277	3,428	3,482	3,424	3,793	3,539
Canada	High	231	250	256	296	238	228	227	224	223	185	196	213	267	279	279	292	334	316	369	377	370	427	384
Mexico	Upper middle	4	3	1	2	4	2	2	1	3	2	2	4	5	5	5	8	8	13	33	35	37	41	16
United States	High	2,273	2,314	2,334	2,292	2,225	2,149	2,034	1,711	1,793	1,512	1,455	1,644	2,257	1,969	2,209	2,517	2,719	2,948	3,026	3,070	3,016	3,326	3,139
Central America and Caribbean	na	1	3	2	7	1	2	3	5	1	1	3	0	1	1	3	2	3	2	3	0	1	0	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
South America	na	5	17	24	23	21	21	25	19	20	15	25	47	32	39	42	55	54	57	73	71	93	135	149
Argentina	Upper middle	2	4	2	3	4	1	1	1	1	1	2	0	5	2	3	1	3	4	5	3	2	3	5
Brazil	Upper middle	3	8	18	14	13	11	19	11	16	10	13	42	23	29	31	46	43	43	60	58	83	115	138
Europe	na	5,605	5,251	4,785	4,921	5,141	5,496	6,194	5,410	5,236	4,945	5,152	5,353	5,254	5,011	5,419	5,258	5,413	5,647	5,649	6,331	5,979	5,645	5,393
EU-27 + UK[a]	na	3,896	3,906	3,601	3,562	3,610	3,691	4,087	3,678	3,450	3,261	3,364	3,299	3,294	3,484	3,585	3,350	3,471	3,723	3,994	4,412	4,039	3,937	3,757
United Kingdom	High	409	365	366	410	490	528	484	511	459	280	284	323	314	324	360	248	292	318	314	398	301	312	372
EU-27[b]	na	3,487	3,541	3,235	3,152	3,120	3,163	3,603	3,167	2,991	2,981	3,080	2,975	2,980	3,160	3,224	3,102	3,179	3,405	3,680	4,015	3,738	3,625	3,385
Austria	High	160	156	140	135	149	167	112	131	197	110	138	153	166	162	194	151	126	169	167	172	184	183	183
Belgium	High	39	29	27	37	29	34	43	42	44	44	31	44	36	31	29	23	36	110	216	163	123	129	150
Denmark	High	20	15	21	37	36	37	30	34	36	29	41	40	47	38	50	75	69	117	86	77	81	102	94
Finland	High	69	53	48	49	61	54	50	59	56	39	50	80	75	71	78	69	76	103	80	89	76	79	86
France	High	792	738	643	606	474	615	694	590	655	649	689	587	548	589	717	752	712	919	731	583	576	676	666
Germany	High	1,014	1,145	1,012	1,130	1,280	1,270	1,149	1,032	1,141	1,056	980	952	914	885	908	895	1,048	1,098	1,227	1,203	1,186	1,137	1,185
Hungary	High	16	20	15	12	8	12	14	16	19	9	10	6	24	21	11	11	11	17	13	10	7	7	17
Ireland	High	32	12	8	7	23	21	19	16	20	10	9	9	13	16	26	31	28	26	23	19	14	17	9
Italy	High	378	487	530	265	274	215	612	310	34	38	44	47	165	298	200	55	50	46	92	662	585	466	229
Netherlands	High	294	307	277	277	299	219	278	276	255	293	307	237	229	306	259	292	224	219	278	291	236	215	222
Spain	High	158	144	129	173	100	151	162	217	195	257	282	333	271	261	271	275	281	169	181	188	176	107	81
Sweden	High	227	129	123	114	137	130	215	159	99	145	140	104	147	130	133	92	82	97	128	133	100	104	140
Other Europe	na	1,708	1,345	1,184	1,359	1,531	1,806	2,107	1,731	1,786	1,684	1,788	2,055	1,960	1,527	1,834	1,908	1,942	1,924	1,656	1,919	1,940	1,708	1,636
Other Europe-2020[b]	na	2,118	1,710	1,550	1,769	2,021	2,334	2,592	2,243	2,246	1,964	2,072	2,378	2,274	1,851	2,195	2,156	2,234	2,242	1,969	2,317	2,241	2,020	2,008

Table SINV-40

International patent families granted in civil engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	5	10	4	3	4	8	8	12	13	18	30	33	23	22	18	19	10	7	21	33	23	22	17
Moldova	Lower middle	1	6	3	4	1	10	4	1	7	3	3	6	12	12	7	4	6	4	10	8	2	6	6
Norway	High	74	84	59	90	94	112	63	103	105	74	98	59	90	82	108	194	152	136	167	210	190	153	157
Russia	Upper middle	1,472	1,117	986	1,050	1,253	1,385	1,422	1,431	1,449	1,333	1,397	1,667	1,561	1,205	1,457	1,442	1,530	1,530	1,219	1,432	1,512	1,336	1,256
Switzerland	High	101	89	113	169	113	121	109	93	127	106	104	120	127	85	98	112	115	139	155	152	115	132	158
Ukraine	Lower middle	46	35	15	40	59	167	500	87	79	139	143	153	123	108	123	122	102	87	62	60	67	31	8
Asia	na	8,464	10,017	6,886	6,462	6,580	7,772	7,908	9,672	12,898	14,799	11,876	11,447	14,004	17,202	18,893	19,122	19,858	23,014	28,101	28,557	28,247	27,416	31,698
China	Upper middle	61	102	188	233	232	452	527	626	766	911	1,288	2,209	3,001	4,214	5,179	4,737	6,592	12,595	16,717	16,739	16,210	15,587	19,235
India	Lower middle	1	0	0	2	0	0	2	2	1	3	1	3	2	10	10	11	21	18	28	44	29	36	36
Japan	High	7,849	8,564	5,983	5,450	5,223	5,670	5,571	6,346	6,904	7,872	7,250	6,319	6,993	7,577	7,496	7,764	7,280	5,250	5,959	5,870	6,029	5,653	5,652
Malaysia	Upper middle	4	2	5	3	5	4	5	6	15	30	9	14	26	30	13	34	20	24	25	26	31	5	6
Singapore	High	6	6	6	6	7	7	8	9	7	7	8	9	5	10	9	8	13	17	22	25	31	34	24
South Korea	High	339	1,143	520	523	858	1,408	1,540	2,442	4,915	5,678	3,091	2,653	3,701	5,092	5,912	6,256	5,627	4,726	4,897	5,406	5,520	5,683	6,461
Taiwan	High	187	188	178	241	244	221	250	237	278	291	220	232	265	263	268	299	300	369	434	421	380	401	263
Middle East	na	30	25	38	45	30	36	28	30	30	25	37	26	34	31	58	59	60	70	86	101	81	133	167
Israel	High	17	14	14	22	17	18	14	11	16	9	10	16	13	12	17	13	18	21	20	17	22	27	25
Africa	na	193	210	163	186	151	189	175	142	119	102	153	142	128	72	138	94	99	34	17	17	21	28	19
South Africa	Upper middle	186	194	147	170	132	164	152	134	112	94	149	136	116	50	124	73	78	26	10	10	12	16	12
Australia and Oceania	na	213	223	240	329	307	322	421	333	318	287	294	301	326	305	351	332	318	408	378	335	302	306	349
Australia	High	201	210	227	315	292	306	398	304	296	267	269	271	292	276	314	289	270	352	332	288	266	272	325
New Zealand	High	12	12	13	13	16	16	22	29	22	20	25	29	34	29	37	43	48	56	46	47	36	35	24
Unclassified	na	15	248	246	9	3	5	14	13	12	1	2	24	4	3	5	4	7	10	12	4	3	4	7

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-41

International patent families unassigned under the WIPO classification, by region, country, or economy: 1998-2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,601	4,893	3,809	10,393	7,017	5,455	7,134	4,518	7,199	11,669	11,765	10,966	9,903	9,836	10,277	11,404	10,949	7,090	3,529	4,552	5,281	6,739	5,007
North America	na	161	251	177	111	103	82	87	93	186	177	151	211	195	160	171	161	134	139	108	113	113	179	134
Canada	High	10	17	13	10	7	7	7	6	18	9	5	22	24	22	21	33	29	34	24	24	33	25	23
Mexico	Upper middle	0	0	2	1	1	0	0	0	1	2	0	1	2	0	1	0	0	1	0	1	1	1	1
United States	High	151	234	163	101	95	74	81	87	166	165	145	188	170	138	149	127	105	104	84	88	79	152	110
Central America and Caribbean	na	0	1	2	1	0	0	0	4	6	0	3	4	1	3	3	3	0	0	0	0	0	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	1	1	1	7	4	4	6	3	15	18	30	18	31	29	28	37	29	15	16	14	10	18	9
Argentina	Upper middle	0	0	0	2	3	4	3	1	6	8	15	13	20	19	16	25	22	7	6	3	3	5	1
Brazil	Upper middle	1	0	1	4	0	0	4	2	5	8	14	5	9	6	6	10	5	6	5	7	5	11	6
Europe	na	1,967	2,406	2,614	5,999	4,343	4,006	5,629	3,276	5,529	10,419	10,437	9,601	8,886	8,724	9,394	10,548	10,244	6,262	2,651	3,625	4,592	5,580	4,214
EU-27 + UK[a]	na	1,938	2,347	2,567	3,522	3,919	3,053	5,556	3,224	5,456	10,350	10,352	9,519	8,784	8,629	9,286	10,420	10,105	6,143	2,557	3,506	4,483	4,890	3,198
United Kingdom	High	469	435	377	401	416	452	417	328	363	350	536	717	1,151	1,546	1,994	1,859	1,999	1,839	1,762	1,803	1,791	1,902	1,847
EU-27[b]	na	1,469	1,912	2,190	3,120	3,504	2,602	5,138	2,896	5,093	9,999	9,816	8,802	7,633	7,083	7,292	8,561	8,106	4,304	796	1,703	2,692	2,988	1,350
Austria	High	6	9	3	10	8	3	6	2	224	335	15	22	15	6	11	6	7	8	12	10	30	3	8
Belgium	High	7	3	5	3	5	10	12	7	20	28	48	76	118	116	174	173	185	216	243	130	92	74	67
Denmark	High	3	3	4	5	3	4	4	2	0	8	9	13	11	7	15	19	20	15	16	23	23	26	19
Finland	High	1	2	2	4	11	7	4	3	9	6	10	16	36	29	32	33	36	53	22	15	10	9	10
France	High	11	11	11	18	16	34	30	29	53	91	66	81	82	78	70	58	56	49	40	33	42	46	78
Germany	High	32	20	17	13	37	23	17	18	47	51	51	61	67	79	73	95	88	93	87	91	106	120	70
Hungary	High	3	5	3	5	8	5	1	2	2	1	1	2	3	6	6	9	3	7	8	2	2	3	1
Ireland	High	6	4	3	2	6	5	1	2	3	3	6	8	6	14	23	21	21	18	20	19	33	34	35
Italy	High	1,317	1,760	2,067	2,962	3,124	2,438	4,996	2,760	4,579	9,299	9,358	8,413	7,165	6,631	6,767	8,003	7,566	3,719	189	1,251	2,214	2,507	907
Netherlands	High	4	8	11	11	11	18	13	10	17	17	18	28	20	26	26	32	33	40	57	48	50	57	41
Spain	High	16	27	15	17	15	15	13	18	14	23	21	18	19	21	15	19	14	12	8	12	16	6	8
Sweden	High	28	22	6	10	10	19	10	10	15	22	41	46	42	37	38	44	34	29	42	39	42	46	54
Other Europe	na	30	59	48	2,477	424	953	74	52	73	70	85	82	101	95	108	128	139	118	94	119	109	690	1,016
Other Europe-2020[b]	na	499	494	424	2,879	840	1,405	491	380	436	420	621	799	1,252	1,641	2,102	1,987	2,138	1,958	1,855	1,922	1,900	2,592	2,864
Belarus	Upper middle	0	0	1	2	5	6	4	10	1	0	5	6	9	7	5	7	1	0	0	1	0	0	0
Moldova	Lower middle	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Norway	High	7	5	2	5	5	10	5	5	8	5	7	11	21	28	26	33	55	50	35	50	45	54	52
Russia	Upper middle	6	3	1	440	7	1	5	3	6	12	12	7	8	6	4	8	4	5	15	14	7	4	12
Switzerland	High	7	14	8	16	21	20	19	12	34	40	51	44	53	43	52	70	66	52	31	28	45	56	46

Table SINV-41

International patent families unassigned under the WIPO classification, by region, country, or economy: 1998-2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	4	30	22	2,001	362	906	30	14	16	3	2	6	2	4	10	1	1	1	1	17	1	563	891
Asia	na	860	1,696	513	3,726	1,926	734	788	729	879	656	751	669	485	443	409	408	326	308	370	378	336	336	344
China	Upper middle	43	85	115	107	51	84	110	129	186	35	73	67	43	66	82	78	25	55	54	55	41	103	97
India	Lower middle	1	2	2	6	4	4	4	1	4	7	15	20	13	18	15	14	14	16	16	21	24	34	49
Japan	High	131	150	117	117	155	100	77	101	129	186	244	293	278	161	163	159	163	118	51	31	36	55	77
Malaysia	Upper middle	0	0	0	0	1	6	2	10	7	16	150	129	5	55	29	13	10	11	35	19	26	1	3
Singapore	High	1	1	1	1	4	1	2	0	11	16	31	49	75	72	81	74	88	74	69	49	68	78	73
South Korea	High	665	1,415	237	3,417	1,576	398	483	394	401	310	114	50	37	18	24	51	10	16	117	175	104	40	21
Taiwan	High	19	41	38	77	133	137	109	78	118	83	122	59	33	48	13	11	9	8	22	14	27	15	17
Middle East	na	3	16	22	7	29	15	10	37	68	51	56	65	121	124	128	137	120	97	53	52	43	42	40
Israel	High	1	2	1	1	9	2	3	5	11	18	33	52	95	106	113	124	76	66	35	36	25	32	31
Africa	na	44	51	45	46	58	60	63	51	260	188	160	236	79	251	44	54	64	242	307	350	165	569	248
South Africa	Upper middle	31	38	20	18	29	35	39	32	93	48	51	76	24	248	38	38	42	234	300	344	158	555	241
Australia and Oceania	na	437	379	400	483	491	482	488	262	223	156	163	162	105	97	96	56	30	23	17	16	21	13	16
Australia	High	435	377	399	482	489	476	485	261	215	140	129	94	46	26	37	17	15	17	13	11	19	12	14
New Zealand	High	2	2	2	0	3	5	3	1	8	16	34	68	59	71	59	38	15	6	4	5	2	1	2
Unclassified	na	127	93	34	12	62	72	62	63	35	3	14	0	1	4	4	2	2	4	7	6	3	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; WIPO = World Intellectual Property Organization.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the WIPO classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-42

U.S. granted international patent families, by WIPO technical field: 1998−2020

(Number)

WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All technical fields	62,283	64,199	63,321	63,329	62,323	66,806	64,878	52,386	62,169	56,234	55,513	59,228	73,622	71,762	80,835	85,645	92,206	90,807	90,527	90,560	85,666	98,184	95,347
Analysis of biological materials	459	439	369	411	370	510	475	285	338	339	357	377	487	442	436	449	495	578	538	638	620	650	628
Audio-visual technology	2,633	2,619	2,738	2,708	2,688	3,103	3,116	2,500	2,938	2,466	2,248	2,405	2,750	2,777	3,556	3,581	4,211	3,989	3,738	3,521	3,130	3,273	3,123
Basic communication processes	1,152	1,198	1,303	1,455	1,496	1,600	1,538	1,227	1,611	1,557	1,346	1,346	1,558	1,301	1,288	1,426	1,429	1,292	1,330	1,180	947	1,184	1,155
Basic materials chemistry	1,353	1,368	1,217	1,125	1,088	1,134	1,007	681	819	715	707	768	996	1,029	1,208	1,326	1,521	1,400	1,274	1,236	1,212	1,180	1,152
Biotechnology	1,351	1,331	1,081	1,103	1,060	1,229	1,058	731	907	926	1,005	1,117	1,247	1,274	1,494	1,567	1,736	1,746	1,729	1,814	1,705	1,661	1,522
Chemical engineering	1,502	1,597	1,410	1,327	1,233	1,328	1,240	961	1,118	1,032	1,032	1,046	1,358	1,402	1,419	1,436	1,485	1,501	1,493	1,494	1,377	1,517	1,553
Civil engineering	2,273	2,314	2,334	2,292	2,225	2,149	2,034	1,711	1,793	1,512	1,455	1,644	2,257	1,969	2,209	2,517	2,719	2,948	3,026	3,070	3,016	3,326	3,139
Computer technology	6,059	6,297	5,970	6,222	6,312	7,271	7,886	6,987	9,993	8,834	9,610	11,029	13,718	13,203	15,785	16,706	18,002	16,425	16,146	14,613	13,178	16,302	16,523
Control	1,197	1,208	1,253	1,181	1,116	1,311	1,386	1,075	1,444	1,220	1,361	1,323	1,607	1,580	1,809	1,865	2,019	1,953	1,976	2,375	2,409	2,737	2,678
Digital communication	1,358	1,597	1,854	1,848	2,028	2,438	3,043	2,549	3,002	2,643	2,792	2,986	3,656	3,594	4,475	4,802	6,174	7,019	7,393	7,499	7,459	8,684	8,754
Electrical machinery, apparatus, energy	3,197	3,393	3,460	3,528	3,374	3,408	3,538	2,699	3,257	2,964	2,883	3,071	3,512	3,378	3,506	3,800	4,025	4,319	4,696	4,879	4,501	4,941	4,407
Engines, pumps, turbines	1,289	1,209	1,471	1,722	1,868	1,722	1,622	1,402	1,483	1,229	1,157	1,238	1,496	1,637	1,967	1,947	1,986	2,272	2,378	2,646	2,837	3,178	2,768
Environmental technology	835	783	730	703	694	663	637	515	581	564	613	673	791	731	791	863	911	900	881	849	782	939	867
Food chemistry	527	638	637	567	460	442	497	382	399	440	398	416	506	611	688	717	733	755	708	725	740	1,006	1,034
Furniture, games	2,981	2,926	2,837	2,464	2,410	2,455	2,295	1,838	2,065	1,903	1,672	1,737	2,448	2,306	2,439	2,445	2,732	2,675	2,586	2,562	2,397	2,625	2,608
Handling	1,997	2,146	1,959	1,825	1,698	1,643	1,412	1,283	1,465	1,322	1,287	1,378	1,626	1,678	1,656	1,925	1,879	1,781	1,749	1,725	1,783	2,009	1,933
IT methods for management	314	389	444	386	461	624	644	619	657	689	884	965	1,737	1,694	2,044	2,549	2,432	1,662	1,638	2,115	2,235	3,362	3,135
Machine tools	1,671	1,844	1,787	1,739	1,478	1,632	1,526	1,251	1,548	1,336	1,002	1,032	1,346	1,508	1,688	1,860	1,974	1,755	1,513	1,456	1,279	1,357	1,321
Macromolecular chemistry, polymers	894	885	843	841	852	813	720	533	546	548	514	533	701	645	666	700	753	684	684	626	571	576	604
Materials, metallurgy	708	697	626	666	635	641	605	427	457	412	394	473	576	529	574	572	611	609	628	630	663	728	704
Measurement	3,055	2,968	2,990	3,055	3,211	3,633	3,513	2,873	3,428	3,305	3,311	3,279	3,560	3,405	3,519	3,572	3,769	3,930	3,998	4,254	4,056	4,675	4,290
Mechanical elements	1,752	1,850	1,880	1,806	1,758	1,726	1,639	1,279	1,478	1,186	1,120	1,173	1,536	1,561	1,694	1,929	2,052	2,231	2,173	2,341	2,247	2,492	2,221
Medical technology	4,128	3,876	3,798	3,500	3,327	4,039	3,277	2,430	2,719	2,578	2,530	2,951	4,268	4,499	5,269	5,719	5,764	5,546	5,422	5,619	5,278	6,360	6,421
Microstructural technology and nanotechnology	19	25	42	59	83	141	137	95	59	38	37	44	56	81	109	171	282	327	283	237	166	177	179
Optics	2,250	2,220	2,117	2,255	2,278	2,652	2,592	2,006	2,099	1,902	1,768	1,630	1,858	1,592	1,580	1,598	1,736	1,755	1,749	1,665	1,539	1,812	1,800
Organic fine chemistry	1,438	1,487	1,206	1,206	1,305	1,252	1,126	849	1,124	1,098	1,223	1,243	1,316	1,274	1,427	1,569	1,705	1,604	1,422	1,355	1,240	1,213	1,155
Other consumer goods	1,933	2,156	1,927	1,759	1,578	1,480	1,429	1,087	1,245	1,180	1,094	1,094	1,384	1,360	1,511	1,470	1,564	1,793	1,839	1,788	1,790	1,982	1,951
Other special machines	2,489	2,510	2,321	2,267	2,162	2,357	2,097	1,600	1,651	1,464	1,363	1,438	2,015	1,979	2,027	2,165	2,365	2,497	2,633	2,676	2,630	2,984	3,033
Pharmaceuticals	1,422	1,504	1,251	1,381	1,420	1,548	1,311	1,008	1,183	1,171	1,328	1,387	1,525	1,557	1,773	1,905	2,061	1,918	1,913	1,961	1,821	2,018	1,971
Semiconductors	1,885	2,376	2,803	3,229	3,219	3,263	2,879	2,308	2,455	2,287	2,059	2,255	2,859	2,593	2,459	2,854	3,221	3,367	3,633	3,347	2,710	2,822	2,822

Table SINV-42

U.S. granted international patent families, by WIPO technical field: 1998−2020

(Number)

WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Surface technology, coating	864	918	933	985	957	1,038	987	733	808	879	856	939	1,245	1,256	1,333	1,361	1,263	1,137	1,070	1,015	954	984	911
Telecommunications	2,119	2,410	2,458	2,476	2,524	2,677	2,942	2,495	3,481	2,909	2,807	3,042	3,607	3,598	4,398	4,021	3,837	3,241	2,962	2,939	2,623	2,714	2,454
Textile and paper machines	1,217	1,156	1,181	1,178	1,126	1,152	1,103	792	782	672	667	571	777	700	818	778	913	746	655	565	526	565	556
Thermal processes and apparatus	725	745	689	741	671	700	657	570	567	441	362	395	529	541	573	620	690	781	798	887	839	1,054	1,034
Transport	3,086	2,885	3,241	3,216	3,063	2,958	2,828	2,520	2,504	2,305	2,122	2,044	2,546	2,338	2,502	2,735	3,052	3,567	3,787	4,170	4,331	4,943	4,831
Unclassified	151	234	163	101	95	74	81	87	166	165	145	188	170	138	149	127	105	104	84	88	79	152	110

IT = information technology; WIPO = World Intellectual Property Organization.

Note(s):
International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the WIPO classification of patents, which classifies International Patent Classification codes under 35 technical fields.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-43

U.S. specialization index of international patent families, by WIPO technical field: 1998−2020

(Index)

WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All technical fields	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Analysis of biological materials	1.52	1.6	1.3	1.45	1.18	1.29	1.15	1.11	1.19	1.25	1.29	1.28	1.29	1.26	1.11	1.02	0.98	1.0	1.06	1.27	1.3	1.2	1.27
Audio-visual technology	0.75	0.69	0.83	0.89	0.9	0.97	0.99	0.92	0.83	0.77	0.81	0.81	0.76	0.83	1.01	1.06	1.25	1.37	1.35	1.27	1.19	1.05	1.05
Basic communication processes	1.23	1.24	1.32	1.36	1.48	1.57	1.69	1.76	1.97	2.17	2.05	1.87	1.7	1.66	1.64	1.72	1.71	1.72	1.83	1.66	1.55	1.74	1.89
Basic materials chemistry	1.0	0.99	0.97	0.89	0.87	0.78	0.71	0.63	0.66	0.63	0.65	0.65	0.68	0.71	0.65	0.54	0.59	0.58	0.55	0.62	0.63	0.61	0.58
Biotechnology	1.81	1.89	1.46	1.54	1.54	1.22	1.03	1.02	1.1	1.35	1.41	1.57	1.26	1.24	1.14	1.03	1.1	1.18	1.34	1.52	1.36	0.99	0.9
Chemical engineering	0.99	1.04	0.97	0.88	0.81	0.85	0.81	0.81	0.87	0.86	0.84	0.81	0.85	0.89	0.76	0.76	0.72	0.64	0.66	0.65	0.61	0.61	0.58
Civil engineering	0.67	0.69	0.76	0.76	0.76	0.69	0.68	0.66	0.59	0.53	0.58	0.64	0.68	0.63	0.65	0.73	0.73	0.72	0.72	0.72	0.76	0.78	0.74
Computer technology	1.78	1.8	1.74	1.73	1.8	1.86	1.97	2.15	2.33	2.33	2.4	2.47	2.42	2.43	2.5	2.5	2.45	2.3	2.23	1.9	1.8	1.75	1.69
Control	0.98	1.02	1.08	1.02	0.99	1.04	1.13	1.17	1.35	1.3	1.44	1.23	1.2	1.21	1.17	1.17	1.16	1.15	1.07	1.13	1.16	1.17	1.11
Digital communication	1.43	1.41	1.37	1.38	1.53	1.48	1.62	1.72	1.46	1.42	1.49	1.36	1.31	1.25	1.37	1.41	1.52	1.72	1.87	1.81	1.69	1.47	1.58
Electrical machinery, apparatus, energy	0.87	0.88	0.87	0.85	0.81	0.8	0.89	0.85	0.82	0.79	0.8	0.81	0.73	0.69	0.63	0.62	0.61	0.67	0.7	0.69	0.69	0.68	0.66
Engines, pumps, turbines	0.69	0.61	0.78	0.86	0.97	0.86	0.85	0.91	0.83	0.8	0.74	0.77	0.77	0.9	0.96	0.91	0.9	0.98	1.01	1.14	1.31	1.32	1.32
Environmental technology	0.9	0.81	0.75	0.71	0.64	0.6	0.57	0.52	0.53	0.55	0.63	0.66	0.63	0.57	0.55	0.56	0.58	0.54	0.52	0.54	0.52	0.56	0.51
Food chemistry	0.71	0.78	0.72	0.65	0.58	0.41	0.49	0.39	0.41	0.5	0.41	0.32	0.37	0.43	0.38	0.34	0.35	0.42	0.39	0.65	0.67	0.86	0.94
Furniture, games	1.48	1.56	1.49	1.41	1.46	1.4	1.28	1.25	1.25	1.22	1.05	0.98	1.09	1.09	1.04	0.94	0.94	1.01	0.94	0.96	0.94	0.99	0.99
Handling	0.91	1.02	1.02	0.94	0.87	0.83	0.77	0.86	0.88	0.83	0.8	0.8	0.78	0.86	0.77	0.87	0.77	0.72	0.65	0.61	0.66	0.69	0.69
IT methods for management	2.09	2.42	2.32	2.05	1.91	1.87	1.9	2.11	1.77	1.49	1.74	1.92	2.34	2.3	2.33	2.55	2.24	1.84	1.56	1.81	1.9	2.19	1.68
Machine tools	0.76	0.87	0.87	0.86	0.75	0.8	0.79	0.78	0.84	0.87	0.65	0.6	0.66	0.74	0.72	0.76	0.72	0.53	0.44	0.42	0.41	0.42	0.42
Macromolecular chemistry, polymers	0.85	0.82	0.78	0.76	0.76	0.65	0.64	0.64	0.59	0.65	0.65	0.66	0.66	0.57	0.5	0.49	0.5	0.48	0.44	0.45	0.44	0.43	0.43
Materials, metallurgy	0.44	0.45	0.41	0.44	0.42	0.4	0.38	0.35	0.33	0.3	0.26	0.29	0.3	0.27	0.25	0.22	0.22	0.21	0.21	0.23	0.27	0.29	0.28
Measurement	1.06	1.0	1.01	1.03	1.06	1.13	1.13	1.15	1.28	1.35	1.27	1.13	0.98	0.91	0.84	0.78	0.76	0.76	0.79	0.76	0.74	0.71	0.67
Mechanical elements	0.87	0.86	0.89	0.89	0.88	0.8	0.81	0.77	0.82	0.77	0.67	0.68	0.75	0.8	0.76	0.85	0.89	0.89	0.84	0.87	0.9	0.94	0.95
Medical technology	1.81	1.91	1.68	1.68	1.54	1.57	1.35	1.44	1.48	1.57	1.44	1.47	1.63	1.87	1.92	1.92	1.79	1.76	1.76	1.72	1.72	1.79	1.81
Microstructural technology and nanotechnology	1.22	1.37	1.67	1.72	1.81	2.11	1.82	1.55	0.72	0.45	0.41	0.44	0.35	0.43	0.51	0.7	0.97	1.08	1.03	0.93	0.8	0.71	0.73
Optics	0.78	0.8	0.78	0.83	0.83	0.91	0.93	0.92	0.81	0.75	0.69	0.63	0.58	0.53	0.51	0.5	0.54	0.64	0.68	0.68	0.69	0.68	0.79
Organic fine chemistry	1.1	1.19	1.02	1.05	1.1	1.01	0.87	0.92	0.96	1.04	1.09	1.12	0.99	0.96	0.88	0.91	0.9	0.79	0.79	0.83	0.81	0.71	0.69
Other consumer goods	1.32	1.33	1.27	1.21	1.15	1.02	1.03	0.91	0.94	0.96	1.01	0.93	1.02	0.99	0.92	1.01	1.03	1.19	1.17	1.15	1.17	1.22	1.28
Other special machines	0.97	0.99	0.92	0.9	0.87	0.9	0.8	0.8	0.77	0.77	0.72	0.75	0.84	0.85	0.77	0.75	0.76	0.76	0.81	0.81	0.86	0.9	0.88
Pharmaceuticals	1.5	1.61	1.09	1.16	1.18	1.1	0.87	0.94	0.89	1.0	1.08	1.06	0.92	0.82	0.89	0.92	0.88	0.91	1.1	1.27	1.2	1.22	1.23
Semiconductors	0.69	0.74	0.83	0.86	0.95	1.0	1.04	0.93	0.76	0.8	0.82	0.89	0.89	0.82	0.74	0.84	0.86	1.0	1.09	1.05	1.0	0.91	0.98
Surface technology, coating	0.77	0.82	0.79	0.83	0.85	0.88	0.93	0.91	0.86	0.94	0.93	0.93	0.91	0.92	0.89	0.9	0.76	0.7	0.66	0.68	0.66	0.61	0.63
Telecommunications	1.05	1.02	1.0	1.04	1.1	1.11	1.21	1.25	1.17	1.17	1.33	1.44	1.33	1.39	1.6	1.52	1.42	1.4	1.45	1.51	1.39	1.16	1.15
Textile and paper machines	0.7	0.63	0.71	0.71	0.7	0.74	0.73	0.67	0.61	0.6	0.6	0.48	0.49	0.46	0.53	0.51	0.54	0.45	0.41	0.38	0.38	0.4	0.42
Thermal processes and apparatus	0.55	0.49	0.51	0.56	0.53	0.57	0.53	0.52	0.4	0.37	0.34	0.35	0.42	0.45	0.4	0.41	0.41	0.49	0.47	0.49	0.51	0.54	0.6

Table SINV-43

U.S. specialization index of international patent families, by WIPO technical field: 1998–2020

(Index)

WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Transport	0.97	0.84	0.99	1.0	0.93	0.85	0.85	0.85	0.83	0.85	0.74	0.72	0.76	0.81	0.76	0.72	0.77	0.91	0.91	0.97	1.07	1.06	1.09

IT = information technology; WIPO = World Intellectual Property Organization.

Note(s):

International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the WIPO classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. Patent families unclassified under the WIPO classification are not accounted for in the total when normalization is performed in the computation of the specialization index to avoid underestimating specialization for countries where these unclassified families are more prominent because of data gaps in International Patent Classification codes availability in PATSTAT.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators

Table SINV-44

USPTO utility patents granted, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	147,576	153,592	157,595	166,158	167,400	169,077	164,384	143,891	173,822	157,331	157,788	167,463	219,848	224,871	253,633	278,518	301,643	299,382	304,126	320,003	308,852	355,923	353,701
North America	na	83,045	86,917	88,231	91,051	90,201	91,117	87,438	77,291	93,023	82,539	80,583	85,680	112,163	113,244	126,345	139,833	151,225	147,400	149,897	157,623	150,707	174,479	171,797
Canada	High	2,976	3,218	3,401	3,594	3,448	3,448	3,395	2,921	3,603	3,341	3,375	3,670	4,856	5,051	5,758	6,533	7,032	6,735	6,503	6,937	6,603	7,709	7,375
Mexico	Upper middle	65	80	79	90	108	91	91	82	72	59	64	64	101	103	135	164	185	182	238	295	341	384	348
United States	High	80,004	83,619	84,751	87,367	86,645	87,578	83,953	74,288	89,348	79,138	77,144	81,946	107,205	108,090	120,452	133,135	144,007	140,483	143,156	150,390	143,763	166,386	164,074
Central America and Caribbean	na	44	57	54	43	46	60	33	44	48	46	44	47	60	61	77	74	102	85	103	85	91	103	136
Puerto Rico	High	20	24	26	12	13	27	18	25	27	30	17	15	26	26	37	22	41	33	46	33	42	47	52
South America	na	173	220	209	224	206	244	208	138	216	185	180	208	285	355	366	446	552	550	513	605	590	724	769
Argentina	Upper middle	42	48	55	50	54	61	47	27	42	41	35	47	47	60	68	83	77	75	90	91	88	135	108
Brazil	Upper middle	73	98	102	116	99	132	106	75	130	92	101	111	181	223	201	261	352	337	318	398	389	452	510
Europe	na	24,747	25,570	27,102	29,385	29,174	28,887	26,859	22,765	26,346	23,726	23,722	24,146	33,134	33,473	39,097	44,407	48,747	48,585	49,114	51,855	50,145	57,096	55,801
EU-27 + UK[a]	na	22,997	23,781	25,229	27,338	27,243	26,972	25,068	21,315	24,595	22,161	22,031	22,384	30,741	30,926	36,239	40,985	44,997	44,589	44,992	47,517	45,934	52,360	51,061
United Kingdom	High	3,507	3,606	3,696	3,989	3,859	3,661	3,478	3,169	3,629	3,311	3,120	3,237	4,394	4,375	5,343	5,926	6,604	6,506	6,603	6,804	6,737	7,961	7,564
EU-27[b]	na	19,491	20,175	21,533	23,349	23,383	23,311	21,591	18,146	20,966	18,850	18,911	19,148	26,348	26,551	30,895	35,059	38,393	38,083	38,389	40,713	39,197	44,399	43,496
Austria	High	398	488	520	584	532	595	546	452	560	454	456	509	740	763	871	1,014	1,213	1,180	1,367	1,543	1,419	1,613	1,532
Belgium	High	699	655	707	738	725	636	630	530	621	532	517	601	831	810	882	1,064	1,205	1,155	1,238	1,304	1,298	1,447	1,375
Denmark	High	397	487	436	489	450	537	426	373	443	396	397	393	612	737	857	923	1,065	1,012	1,084	1,121	1,122	1,223	1,199
Finland	High	599	653	618	743	824	868	924	726	955	858	824	866	1,143	960	1,060	1,227	1,363	1,386	1,513	1,616	1,453	1,529	1,476
France	High	3,691	3,827	3,839	4,067	4,039	3,879	3,406	2,903	3,463	3,152	3,185	3,167	4,478	4,558	5,394	6,148	6,723	6,597	6,465	6,836	6,519	7,285	7,124
Germany	High	9,109	9,363	10,255	11,276	11,309	11,462	10,784	9,040	10,052	9,080	8,952	9,017	12,387	11,930	13,889	15,572	16,589	16,588	15,975	16,924	16,072	18,403	17,887
Hungary	High	51	42	39	59	49	74	51	48	54	49	66	50	93	104	110	137	159	159	178	180	137	177	172
Ireland	High	75	96	129	142	126	163	185	158	186	151	174	193	278	328	356	432	506	508	590	612	690	833	969
Italy	High	1,601	1,505	1,703	1,728	1,760	1,723	1,605	1,316	1,496	1,318	1,369	1,377	1,842	1,922	2,167	2,531	2,653	2,686	2,712	2,751	2,862	3,249	3,243
Netherlands	High	1,251	1,265	1,269	1,329	1,392	1,330	1,286	1,005	1,339	1,273	1,324	1,318	1,660	1,766	1,954	2,277	2,530	2,424	2,600	2,752	2,738	3,066	2,891
Spain	High	257	239	275	276	323	325	273	274	313	282	317	339	436	492	673	738	805	850	795	891	898	974	1,057
Sweden	High	1,232	1,405	1,584	1,746	1,668	1,511	1,286	1,132	1,251	1,068	1,065	1,010	1,436	1,715	2,090	2,301	2,775	2,664	2,863	3,049	2,835	3,149	3,054
Other Europe	na	1,750	1,789	1,873	2,047	1,932	1,915	1,791	1,450	1,751	1,565	1,691	1,762	2,393	2,548	2,859	3,422	3,749	3,997	4,122	4,338	4,211	4,736	4,740
Other Europe-2020[b]	na	5,256	5,396	5,569	6,036	5,791	5,576	5,269	4,619	5,381	4,877	4,811	4,998	6,787	6,922	8,202	9,348	10,354	10,502	10,725	11,141	10,948	12,697	12,304

Table SINV-44

USPTO utility patents granted, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	9	5	3	9	3	6	3	2	6	9	8	7	10	7	8	9	12	12	15	14	11	16	20
Moldova	Lower middle	1	0	0	0	0	1	1	1	0	0	0	0	0	1	1	0	1	1	1	2	2	2	2
Norway	High	194	227	247	266	249	258	247	223	239	243	263	267	391	369	445	479	549	616	609	605	600	662	710
Russia	Upper middle	212	204	201	255	220	223	188	167	199	201	200	216	307	331	365	439	474	498	557	569	565	626	686
Switzerland	High	1,278	1,286	1,343	1,428	1,366	1,335	1,267	991	1,212	1,033	1,126	1,193	1,584	1,713	1,882	2,303	2,464	2,577	2,631	2,768	2,692	2,997	2,897
Ukraine	Lower middle	20	20	19	24	30	23	21	20	27	20	25	20	20	28	48	44	52	66	76	79	62	95	93
Asia	na	37,798	39,063	40,182	43,271	45,529	46,342	47,538	41,503	51,307	48,182	50,497	54,412	70,164	73,319	83,041	88,215	94,762	96,382	98,010	102,596	100,058	115,039	116,600
China	Upper middle	254	266	326	461	561	614	740	744	1,057	1,193	1,606	2,042	3,215	3,720	5,359	6,680	8,122	9,021	11,439	14,286	15,477	20,376	22,500
India	Lower middle	90	118	141	187	265	354	369	401	511	566	651	709	1,144	1,277	1,756	2,456	3,073	3,457	3,767	4,271	4,315	5,478	5,917
Japan	High	30,887	31,161	31,362	33,278	34,913	35,567	35,441	30,381	36,870	33,409	33,725	35,557	44,977	46,337	50,899	52,270	54,317	52,809	50,168	50,073	47,904	54,033	52,116
Malaysia	Upper middle	24	31	44	34	58	48	85	94	123	171	159	156	200	177	213	222	268	267	275	270	252	290	270
Singapore	High	123	149	226	307	420	438	457	345	412	391	406	436	616	650	805	793	933	961	989	1,023	974	1,115	1,039
South Korea	High	3,269	3,567	3,332	3,548	3,792	3,952	4,429	4,365	5,901	6,299	7,544	8,775	11,669	12,254	13,236	14,556	16,529	17,963	19,576	20,815	19,901	21,870	22,204
Taiwan	High	3,110	3,718	4,705	5,397	5,444	5,299	5,951	5,115	6,350	6,104	6,345	6,666	8,235	8,794	10,638	11,077	11,342	11,688	11,576	11,605	10,994	11,568	12,234
Middle East	na	781	792	841	1,022	1,094	1,236	1,089	980	1,274	1,163	1,250	1,478	1,937	2,123	2,752	3,406	3,988	4,182	4,357	4,898	4,956	5,934	6,039
Israel	High	755	757	789	983	1,046	1,189	1,053	936	1,217	1,111	1,183	1,413	1,839	1,976	2,482	3,008	3,486	3,631	3,713	4,100	4,038	4,668	4,721
Africa	na	119	125	130	137	129	136	124	114	129	99	108	112	151	155	188	223	234	228	251	264	246	271	251
South Africa	Upper middle	115	110	112	119	112	111	102	90	109	78	90	90	121	120	140	163	154	161	181	187	152	192	160
Australia and Oceania	na	842	827	819	1,012	1,009	1,048	1,094	1,052	1,472	1,382	1,400	1,374	1,944	2,129	1,754	1,893	2,014	1,935	1,832	2,028	2,010	2,221	2,274
Australia	High	722	709	710	882	861	909	957	929	1,334	1,271	1,295	1,242	1,770	1,943	1,530	1,643	1,753	1,667	1,561	1,709	1,680	1,839	1,898
New Zealand	High	118	117	109	129	147	137	135	122	137	111	104	132	171	185	223	250	260	267	270	314	328	377	370
Unclassified	na	28	22	25	13	11	8	2	4	6	7	4	6	9	12	13	21	19	34	49	48	49	56	35

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-45

USPTO utility patents granted in electrical machinery, apparatus, energy, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	8,361	9,029	9,756	10,283	10,547	10,566	10,983	9,326	10,702	9,591	9,731	10,557	13,395	13,553	14,888	16,029	17,544	18,817	20,124	21,595	20,958	23,407	21,858
North America	na	4,050	4,352	4,562	4,733	4,587	4,514	4,744	4,033	4,571	4,053	4,008	4,279	5,148	5,172	5,414	6,045	6,424	6,630	7,222	7,715	7,467	8,360	7,641
Canada	High	133	138	145	159	143	169	188	182	189	201	174	209	237	238	249	276	280	264	270	351	316	370	319
Mexico	Upper middle	4	4	4	6	5	9	7	8	7	5	8	6	13	7	11	13	16	12	22	26	20	21	25
United States	High	3,913	4,211	4,413	4,568	4,439	4,336	4,550	3,843	4,375	3,847	3,827	4,064	4,898	4,927	5,154	5,756	6,129	6,353	6,930	7,338	7,131	7,969	7,297
Central America and Caribbean	na	0	2	1	5	3	2	2	5	2	2	3	1	3	4	4	3	7	4	5	4	4	4	4
Puerto Rico	High	0	2	0	2	2	2	2	5	2	2	2	0	1	4	1	2	5	2	2	2	3	2	2
South America	na	2	4	7	12	10	8	6	8	4	9	9	13	11	17	14	25	17	21	20	22	22	25	28
Argentina	Upper middle	1	0	4	3	1	1	0	0	0	2	0	1	3	1	3	2	0	2	1	4	4	2	4
Brazil	Upper middle	0	3	0	8	8	7	6	8	4	5	9	9	6	15	10	20	13	16	14	13	14	17	19
Europe	na	1,392	1,543	1,677	1,613	1,652	1,606	1,613	1,360	1,455	1,212	1,292	1,356	1,864	1,899	2,155	2,438	2,688	2,874	3,151	3,518	3,378	3,741	3,400
EU-27 + UK[a]	na	1,300	1,438	1,566	1,514	1,561	1,510	1,506	1,274	1,373	1,127	1,201	1,271	1,774	1,788	2,040	2,269	2,533	2,711	2,967	3,312	3,164	3,536	3,189
United Kingdom	High	152	178	153	166	153	143	135	150	137	127	125	133	184	171	204	266	320	314	348	359	359	396	350
EU-27[b]	na	1,149	1,260	1,413	1,348	1,408	1,367	1,371	1,125	1,236	1,000	1,077	1,137	1,590	1,616	1,836	2,003	2,213	2,397	2,619	2,953	2,804	3,140	2,839
Austria	High	17	20	28	20	25	28	32	27	37	21	38	32	43	57	77	59	80	90	128	152	142	171	150
Belgium	High	28	30	41	26	20	27	20	23	12	20	19	20	29	23	28	24	44	35	48	40	52	64	54
Denmark	High	10	7	20	21	18	20	17	18	15	12	22	23	42	41	48	51	69	59	70	59	58	74	50
Finland	High	15	26	26	22	35	28	31	28	41	31	24	26	48	38	37	46	58	45	73	82	68	62	59
France	High	230	281	279	245	284	204	188	150	181	150	143	175	259	227	236	283	318	346	380	403	434	474	394
Germany	High	575	623	711	708	682	705	780	635	688	545	593	622	876	861	925	1,020	1,051	1,221	1,279	1,483	1,312	1,499	1,418
Hungary	High	9	6	6	5	6	11	6	4	2	4	7	6	6	11	18	17	19	17	8	9	8	18	10
Ireland	High	8	6	12	13	13	11	11	9	15	5	8	6	6	11	16	15	20	16	19	20	20	21	19
Italy	High	78	62	102	85	105	103	106	95	90	73	81	78	106	110	125	153	166	165	164	210	196	232	219
Netherlands	High	124	127	111	108	118	142	92	59	68	74	78	60	75	110	157	166	187	207	242	266	295	255	236
Spain	High	4	8	14	14	17	17	21	16	20	12	12	23	24	20	21	33	33	30	36	40	52	60	46
Sweden	High	44	58	58	71	76	57	59	51	53	38	32	48	49	80	110	96	126	107	111	111	95	98	86
Other Europe	na	91	106	111	99	91	96	107	85	82	85	90	85	89	111	115	169	155	163	184	206	214	205	212
Other Europe-2020[b]	na	243	283	264	265	244	239	241	235	219	212	215	219	274	283	319	435	475	477	532	565	573	601	561
Belarus	Upper middle	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	7	9	8	7	3	6	8	10	6	9	12	9	11	11	19	16	15	21	29	28	28	21	23
Russia	Upper middle	9	14	18	16	13	15	12	18	9	11	13	8	14	13	11	18	11	16	23	26	26	22	15
Switzerland	High	72	81	82	73	70	73	80	52	64	61	61	63	60	83	77	127	122	115	121	137	148	146	159

Table SINV-45

USPTO utility patents granted in electrical machinery, apparatus, energy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	1	0	4	2	3	3	2	1	3	2	2	1	6	2	1	2	1	2	3	0	2
Asia	na	2,859	3,079	3,453	3,847	4,218	4,355	4,547	3,853	4,581	4,244	4,335	4,836	6,273	6,364	7,191	7,374	8,279	9,109	9,530	10,104	9,843	11,021	10,512
China	Upper middle	33	30	50	89	110	105	134	126	172	170	269	327	553	610	724	774	819	930	1,137	1,346	1,558	1,858	1,818
India	Lower middle	2	1	1	7	9	3	14	21	10	13	14	14	34	37	51	53	71	80	79	110	94	144	138
Japan	High	2,225	2,376	2,532	2,823	3,134	3,273	3,158	2,676	3,053	2,699	2,625	2,832	3,576	3,499	4,005	3,941	4,442	4,782	5,031	5,364	5,129	5,755	5,373
Malaysia	Upper middle	0	4	4	3	5	4	4	7	10	14	10	10	10	9	10	8	10	13	18	14	14	13	11
Singapore	High	7	11	11	14	19	16	19	16	16	19	25	28	38	35	45	41	49	56	60	78	62	48	53
South Korea	High	275	294	222	233	305	357	456	363	457	478	553	699	908	897	930	1,187	1,555	1,833	1,903	1,939	1,863	2,076	1,993
Taiwan	High	315	363	633	676	631	591	757	640	853	847	833	917	1,147	1,272	1,419	1,362	1,321	1,404	1,289	1,234	1,104	1,099	1,109
Middle East	na	17	23	31	30	41	42	28	35	39	41	43	37	46	47	68	81	75	105	126	143	146	154	180
Israel	High	16	21	28	28	38	38	27	31	36	40	40	35	41	45	60	72	62	90	105	118	116	118	131
Africa	na	7	7	4	7	8	6	6	8	9	3	6	6	12	7	5	7	3	5	12	10	9	11	5
South Africa	Upper middle	7	6	4	6	7	5	6	8	9	3	7	5	11	7	5	5	2	4	8	9	4	8	3
Australia and Oceania	na	32	18	18	35	28	32	38	25	39	26	36	30	36	42	36	54	50	67	56	73	87	89	86
Australia	High	22	13	12	26	21	28	31	20	35	23	32	25	29	35	29	40	39	52	38	46	61	55	58
New Zealand	High	10	5	6	9	6	4	7	5	4	3	4	5	7	7	7	14	11	15	18	26	26	34	28
Unclassified	na	2	0	3	1	0	1	0	1	0	0	0	0	1	0	2	2	1	3	3	6	1	3	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-46

USPTO utility patents granted in audio-visual technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	8,048	7,780	7,941	8,335	8,517	9,080	9,533	8,137	10,790	9,676	9,896	10,520	12,647	13,179	15,816	14,754	15,304	15,029	15,203	15,642	14,896	16,493	16,282
North America	na	3,385	3,327	3,542	3,620	3,542	3,777	3,779	3,244	4,049	3,468	3,291	3,460	4,018	4,095	4,898	4,848	5,773	5,843	5,876	5,923	5,457	5,931	5,683
Canada	High	82	82	93	83	89	96	96	84	121	100	122	108	138	158	193	211	254	286	267	234	218	259	210
Mexico	Upper middle	0	1	1	1	1	0	1	4	4	2	2	2	2	2	6	3	3	3	10	7	11	6	5
United States	High	3,304	3,243	3,448	3,536	3,452	3,680	3,682	3,157	3,924	3,366	3,167	3,350	3,878	3,934	4,699	4,635	5,516	5,553	5,599	5,682	5,228	5,666	5,468
Central America and Caribbean	na	0	0	0	1	1	0	0	1	0	2	0	1	1	1	1	1	1	0	1	1	2	1	1	2
Puerto Rico	High	0	0	0	0	1	0	0	1	0	2	0	0	1	0	0	0	0	0	0	1	1	0	0	2
South America	na	1	3	2	6	2	2	3	3	4	2	2	3	0	3	4	4	5	4	6	7	7	13	9
Argentina	Upper middle	0	2	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3	1
Brazil	Upper middle	1	0	0	2	2	1	2	2	3	2	1	2	0	3	4	3	3	3	4	6	6	6	7
Europe	na	642	638	686	750	726	744	756	653	818	724	684	704	913	975	1,300	1,264	1,257	1,305	1,509	1,614	1,646	1,800	1,769
EU-27 + UK[a]	na	615	605	638	714	693	690	701	610	764	664	623	634	826	878	1,193	1,162	1,151	1,165	1,346	1,470	1,515	1,632	1,609
United Kingdom	High	131	125	125	138	128	120	141	123	128	119	112	118	133	138	189	191	196	194	195	192	196	234	236
EU-27[b]	na	484	480	513	576	565	569	560	487	636	545	510	516	693	740	1,004	971	954	971	1,151	1,278	1,319	1,398	1,373
Austria	High	11	9	17	15	24	29	12	9	15	14	8	9	17	21	26	30	24	35	40	53	58	54	49
Belgium	High	16	15	12	16	20	14	25	14	23	17	14	13	17	20	27	29	34	40	45	40	44	47	41
Denmark	High	6	11	4	6	7	12	24	13	26	19	25	20	26	37	72	59	73	66	95	87	101	115	97
Finland	High	11	10	8	20	13	20	27	23	25	30	27	30	46	34	51	57	57	77	88	97	104	119	101
France	High	86	94	80	91	99	85	92	92	91	88	82	85	115	118	161	178	170	152	180	215	196	208	219
Germany	High	189	187	227	234	219	216	196	183	230	200	194	188	253	266	404	342	315	311	377	410	454	491	512
Hungary	High	0	0	0	0	1	1	1	0	0	0	2	2	2	4	1	2	1	3	3	4	4	3	4
Ireland	High	5	3	6	7	7	7	5	5	8	8	8	7	9	10	14	21	18	17	21	23	24	23	29
Italy	High	21	17	27	28	29	31	19	25	31	21	19	15	21	26	27	26	35	41	43	49	45	49	48
Netherlands	High	121	106	100	107	107	124	129	85	147	120	103	107	132	139	127	139	114	84	111	117	96	98	90
Spain	High	1	2	8	8	3	5	4	6	4	2	1	4	6	7	6	9	7	11	15	11	16	18	21
Sweden	High	15	22	21	35	32	25	25	27	29	21	21	30	43	50	73	65	84	110	107	142	148	134	127
Other Europe	na	28	33	48	37	32	54	54	42	54	60	61	70	87	96	106	102	106	140	163	144	131	168	160
Other Europe-2020[b]	na	159	158	173	175	160	174	196	165	182	179	174	188	220	235	296	293	303	334	358	336	327	402	396
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	7	13	14	8	3	6	9	9	9	13	9	12	23	7	29	20	25	30	31	21	23	24	21
Russia	Upper middle	3	4	4	4	5	9	4	4	5	5	6	4	5	10	9	13	11	10	21	19	19	22	27
Switzerland	High	16	16	28	23	24	36	40	29	38	39	45	51	57	75	63	66	64	91	97	91	76	102	95

Table SINV-46

USPTO utility patents granted in audio-visual technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	2	0	0	0	0	2	0	0	1	0	1	3	0	1	0	0	0	2	3	3	3	7	5
Asia	na	3,979	3,773	3,675	3,878	4,174	4,495	4,910	4,176	5,817	5,386	5,823	6,247	7,583	7,957	9,461	8,465	8,103	7,704	7,635	7,885	7,579	8,506	8,589
China	Upper middle	13	10	22	20	31	41	48	54	79	86	126	167	199	235	404	487	498	572	845	1,139	1,309	1,762	1,854
India	Lower middle	0	0	1	0	3	4	7	6	11	9	14	19	28	34	67	68	96	88	101	111	120	149	157
Japan	High	3,280	3,124	3,047	3,188	3,394	3,680	3,933	3,283	4,401	3,876	3,957	4,221	4,981	5,215	5,847	5,108	4,794	4,211	3,775	3,667	3,417	3,680	3,576
Malaysia	Upper middle	4	4	4	4	2	3	2	3	9	8	14	8	15	8	7	21	22	16	17	12	18	21	18
Singapore	High	10	14	20	26	41	65	92	47	61	38	57	47	75	56	103	76	87	104	98	86	84	73	62
South Korea	High	524	484	401	400	401	382	436	415	711	781	1,033	1,124	1,370	1,388	1,671	1,578	1,651	1,753	1,862	2,043	1,806	1,940	1,934
Taiwan	High	145	138	179	237	297	318	390	367	540	585	618	655	909	1,005	1,348	1,110	939	933	914	814	817	854	964
Middle East	na	27	24	25	45	38	30	42	25	44	34	41	44	72	82	109	115	112	121	123	148	131	147	156
Israel	High	26	23	24	45	37	30	42	25	44	34	41	43	72	78	106	110	107	117	118	141	125	138	149
Africa	na	2	2	1	1	1	2	3	2	2	1	4	3	2	1	5	4	3	4	3	4	5	3	2
South Africa	Upper middle	2	1	1	1	1	2	3	1	2	1	4	3	1	1	0	3	0	2	2	3	3	3	1
Australia and Oceania	na	12	13	10	34	33	31	39	32	57	58	51	59	58	64	40	52	50	46	47	59	69	79	70
Australia	High	10	11	9	34	27	29	37	30	54	57	48	54	56	63	35	44	48	37	40	51	62	70	60
New Zealand	High	2	2	2	0	6	2	2	2	3	1	2	5	2	1	5	8	2	9	7	7	6	9	10
Unclassified	na	1	0	0	0	1	0	0	0	0	1	0	1	0	1	1	1	1	1	2	1	1	13	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-47

USPTO utility patents granted in telecommunications, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,030	5,457	5,497	5,737	5,877	6,037	6,514	5,992	8,311	6,920	7,067	7,220	8,570	9,195	11,362	12,134	12,528	11,759	11,183	11,690	11,079	12,124	11,334
North America	na	2,600	2,949	3,003	3,159	3,190	3,180	3,536	3,197	4,400	3,587	3,458	3,561	4,142	4,500	5,299	5,796	6,007	5,550	5,220	5,409	5,073	5,535	5,174
Canada	High	114	155	161	169	147	158	183	175	246	206	195	225	252	306	395	440	457	395	349	325	269	314	286
Mexico	Upper middle	0	1	2	1	1	3	5	3	2	1	0	0	1	0	1	2	3	2	10	5	7	11	6
United States	High	2,487	2,792	2,841	2,989	3,042	3,019	3,348	3,018	4,152	3,380	3,263	3,336	3,889	4,194	4,902	5,353	5,547	5,153	4,861	5,079	4,797	5,211	4,883
Central America and Caribbean	na	0	1	1	0	0	0	1	0	1	0	0	2	3	1	3	2	3	4	3	4	4	1	3
Puerto Rico	High	0	1	1	0	0	0	1	0	1	0	0	1	0	0	2	1	1	1	1	1	0	0	1
South America	na	1	3	2	0	2	0	1	0	1	1	4	5	3	6	6	4	16	11	8	11	12	11	10
Argentina	Upper middle	0	0	1	0	0	0	0	0	0	0	0	3	0	2	2	2	3	2	3	3	4	4	3
Brazil	Upper middle	1	2	1	0	1	0	0	0	1	1	3	2	2	4	4	2	13	8	6	7	7	6	6
Europe	na	621	727	766	856	892	926	929	820	1,087	878	875	828	1,025	989	1,243	1,368	1,503	1,474	1,490	1,501	1,384	1,516	1,383
EU-27 + UK[a]	na	608	702	743	829	862	897	886	783	1,041	848	842	797	978	945	1,192	1,317	1,447	1,404	1,403	1,407	1,298	1,418	1,305
United Kingdom	High	120	159	162	174	179	156	173	144	197	167	152	147	150	169	211	231	243	240	217	221	197	220	188
EU-27[b]	na	488	542	581	655	683	741	713	639	844	682	690	650	828	776	981	1,086	1,203	1,164	1,186	1,187	1,101	1,198	1,117
Austria	High	10	8	8	3	7	13	10	17	13	7	16	12	18	20	29	19	34	26	27	37	30	34	37
Belgium	High	32	17	12	14	8	15	19	19	24	18	21	17	17	14	13	24	27	31	32	31	28	33	36
Denmark	High	2	13	12	13	16	17	12	14	19	15	15	11	13	12	26	34	44	27	37	44	24	34	35
Finland	High	70	82	95	97	108	131	119	101	138	131	111	116	124	112	98	122	110	105	113	93	92	78	65
France	High	91	114	117	139	136	130	134	108	163	110	113	111	142	132	181	196	184	216	204	217	179	186	168
Germany	High	131	138	149	198	206	242	263	233	296	256	217	218	256	210	274	283	360	304	305	314	317	361	341
Hungary	High	1	1	1	1	0	6	1	1	2	2	1	2	3	0	4	2	6	2	6	5	3	7	2
Ireland	High	3	2	3	4	4	5	11	6	9	5	9	10	17	14	22	20	23	37	30	34	34	32	32
Italy	High	24	16	16	20	19	25	29	28	37	30	44	30	49	47	55	75	79	65	66	72	59	67	57
Netherlands	High	52	48	33	27	27	21	34	19	29	27	46	26	33	41	59	68	62	66	66	59	73	61	51
Spain	High	7	3	5	6	3	10	7	9	23	18	26	18	15	27	45	41	39	47	35	36	38	41	43
Sweden	High	63	99	130	131	146	125	70	78	84	56	65	68	127	127	152	176	216	212	232	211	188	215	208
Other Europe	na	13	25	23	28	30	29	43	36	46	30	33	31	47	44	52	51	57	70	87	93	86	98	78
Other Europe-2020[b]	na	133	184	185	202	208	184	216	180	243	196	185	178	197	213	263	283	300	310	304	314	283	318	266
Belarus	Upper middle	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	1	2	3	6	7	6	5	8	7	6	3	7	7	5	5	7	8	9	7	6	13	7
Russia	Upper middle	2	5	3	7	4	2	8	6	7	8	6	10	10	11	12	13	18	28	33	40	29	33	27
Switzerland	High	10	18	16	15	17	18	22	23	27	13	20	17	27	20	29	32	29	27	37	40	41	42	33

Table SINV-47

USPTO utility patents granted in telecommunications, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	2	2	3	2	1	1
Asia	na	1,748	1,728	1,666	1,656	1,713	1,835	1,930	1,873	2,639	2,319	2,590	2,679	3,216	3,489	4,599	4,743	4,735	4,475	4,228	4,514	4,334	4,766	4,515
China	Upper middle	7	7	8	7	3	12	20	23	41	40	59	94	165	242	388	394	538	506	535	714	724	933	980
India	Lower middle	1	1	1	2	3	2	6	7	10	18	21	16	24	34	61	84	101	123	123	152	149	178	170
Japan	High	1,521	1,452	1,399	1,367	1,412	1,451	1,543	1,472	2,005	1,614	1,753	1,785	2,098	2,158	2,802	2,779	2,697	2,453	2,107	2,139	2,064	2,190	1,975
Malaysia	Upper middle	0	3	1	3	1	0	3	2	1	4	4	6	3	5	6	5	5	11	13	10	8	14	10
Singapore	High	4	3	5	10	13	10	12	10	15	12	10	13	12	15	32	24	23	20	23	21	21	22	22
South Korea	High	139	174	158	155	157	200	179	211	317	342	412	441	567	625	825	978	916	929	987	1,060	1,018	1,060	983
Taiwan	High	76	87	91	112	124	160	168	148	249	290	331	324	345	409	479	475	451	429	437	413	346	361	363
Middle East	na	34	34	38	43	43	66	77	58	95	77	78	82	102	109	158	182	212	198	180	195	212	233	195
Israel	High	33	34	38	42	43	65	77	58	94	76	78	82	99	107	152	177	197	183	169	175	196	203	168
Africa	na	2	0	2	2	4	1	3	3	3	3	2	2	3	3	5	3	6	8	5	9	6	7	5
South Africa	Upper middle	2	0	1	2	4	1	3	2	2	2	2	2	3	2	1	1	3	5	3	4	2	5	4
Australia and Oceania	na	24	15	19	19	33	30	38	41	84	56	60	61	77	96	48	36	45	39	46	47	50	54	47
Australia	High	17	14	15	14	29	21	36	38	80	55	57	59	75	90	42	32	39	36	45	44	44	48	41
New Zealand	High	7	1	3	5	4	9	1	3	5	1	3	2	3	6	6	4	7	3	2	4	6	5	6
Unclassified	na	0	0	2	2	0	0	0	0	0	0	0	0	0	2	1	0	0	2	2	1	4	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-48

USPTO utility patents granted in digital communication, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,120	3,651	4,262	4,461	4,856	5,322	6,464	6,343	9,855	9,039	10,386	12,047	16,262	17,726	21,158	23,989	28,424	27,985	28,906	30,258	29,218	33,085	33,500
North America	na	1,939	2,274	2,757	2,841	3,019	3,315	4,155	4,068	6,323	5,678	6,401	7,506	9,901	10,414	12,043	13,418	16,069	16,101	15,861	16,456	15,842	17,679	17,836
Canada	High	78	127	147	149	146	169	213	193	303	290	379	424	584	655	828	982	1,134	1,019	874	901	836	957	946
Mexico	Upper middle	0	1	1	2	3	3	2	3	2	0	1	0	1	1	2	1	1	1	5	7	8	11	9
United States	High	1,860	2,147	2,609	2,690	2,870	3,143	3,940	3,872	6,018	5,387	6,021	7,082	9,316	9,759	11,213	12,435	14,933	15,080	14,983	15,548	14,997	16,711	16,880
Central America and Caribbean	na	0	1	0	0	0	0	1	0	0	1	1	4	3	1	4	4	4	4	5	5	6	5	13
Puerto Rico	High	0	1	0	0	0	0	1	0	0	1	0	1	0	0	1	0	1	1	1	1	2	2	1
South America	na	0	0	1	0	2	0	2	2	4	4	4	4	6	7	13	22	27	27	28	36	40	39	48
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	3	0	1	3	1	4	8	6	6	8	5	7	13	10
Brazil	Upper middle	0	0	0	0	2	0	1	1	1	1	3	3	2	6	7	12	17	21	18	28	31	22	33
Europe	na	441	528	594	634	744	853	971	938	1,362	1,223	1,406	1,478	2,040	2,294	2,777	3,257	4,000	3,760	4,040	4,118	3,823	4,408	4,379
EU-27 + UK[a]	na	426	506	579	612	720	822	937	901	1,311	1,172	1,340	1,406	1,940	2,183	2,649	3,127	3,821	3,558	3,804	3,853	3,577	4,099	4,085
United Kingdom	High	88	97	107	117	120	134	162	173	236	230	256	248	350	384	478	585	727	706	735	729	715	801	805
EU-27[b]	na	338	409	471	494	600	689	774	727	1,075	943	1,084	1,158	1,590	1,800	2,172	2,542	3,093	2,852	3,070	3,124	2,862	3,298	3,280
Austria	High	0	2	3	3	7	7	7	6	13	6	10	18	23	23	29	32	38	35	41	43	44	60	61
Belgium	High	12	8	7	9	11	13	23	27	29	19	29	40	44	51	54	55	69	65	79	63	60	74	68
Denmark	High	1	3	2	2	5	12	8	15	26	21	16	22	26	33	37	44	37	57	37	41	36	35	53
Finland	High	65	97	86	98	133	159	220	152	258	255	270	261	334	286	326	372	431	387	411	384	299	327	304
France	High	77	83	95	99	109	121	135	129	195	186	237	194	303	341	384	441	504	435	437	464	401	458	452
Germany	High	72	78	107	114	132	178	170	195	313	260	293	351	463	503	523	615	750	692	691	677	660	813	852
Hungary	High	0	0	1	0	0	6	3	5	5	9	7	11	14	23	26	39	55	45	52	49	28	37	29
Ireland	High	1	1	4	11	11	12	24	11	15	12	18	14	33	40	40	45	67	72	101	106	130	125	149
Italy	High	4	6	8	5	11	14	15	11	32	27	39	49	63	103	120	136	121	110	105	117	99	129	128
Netherlands	High	23	29	29	25	29	27	35	46	59	38	54	63	79	98	107	131	160	137	159	155	155	149	143
Spain	High	5	2	2	4	5	3	8	6	9	18	17	18	22	27	60	82	82	76	69	76	64	56	59
Sweden	High	78	99	126	123	145	133	124	120	116	81	86	98	157	241	402	482	689	657	770	799	719	861	786
Other Europe	na	15	23	15	22	24	30	35	38	51	50	66	72	101	111	128	130	179	202	235	264	246	309	293
Other Europe-2020[b]	na	103	120	123	139	144	164	197	211	287	280	322	320	450	494	606	715	906	908	970	994	961	1,110	1,099
Belarus	Upper middle	0	0	0	1	0	0	0	0	0	1	1	0	1	1	2	0	0	0	1	1	2	1	2
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
Norway	High	3	1	1	5	6	7	6	7	5	9	10	13	15	9	13	9	23	27	36	22	36	41	45
Russia	Upper middle	1	2	2	2	2	1	4	2	6	7	16	14	22	31	41	35	45	56	58	70	58	85	89
Switzerland	High	10	16	9	8	12	20	21	23	38	30	37	44	59	66	67	75	96	99	121	142	128	140	119

Table SINV-48

USPTO utility patents granted in digital communication, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3	4	6	5	10	10	15	14
Asia	na	700	797	860	914	1,004	1,045	1,212	1,186	1,970	1,956	2,363	2,774	3,922	4,613	5,849	6,738	7,649	7,411	8,220	8,803	8,658	10,042	10,356
China	Upper middle	2	4	5	3	3	6	10	18	58	48	84	149	332	481	750	1,109	1,560	1,525	2,036	2,388	2,492	3,090	3,485
India	Lower middle	0	0	1	4	6	12	18	22	38	55	83	83	174	185	273	372	551	657	794	886	964	1,198	1,258
Japan	High	600	666	698	725	783	829	891	872	1,384	1,255	1,372	1,561	2,005	2,219	2,607	2,759	2,764	2,426	2,263	2,286	2,054	2,345	2,213
Malaysia	Upper middle	0	0	0	0	1	1	2	2	2	3	4	5	7	7	7	9	15	9	28	11	15	14	19
Singapore	High	2	3	5	3	15	10	10	6	15	19	13	35	35	37	41	31	42	41	46	49	44	57	85
South Korea	High	82	103	122	155	162	157	218	207	356	421	627	753	1,103	1,365	1,695	1,959	2,173	2,231	2,539	2,595	2,552	2,833	2,758
Taiwan	High	13	19	26	22	35	30	61	57	113	153	178	184	262	316	469	488	529	515	506	577	529	491	526
Middle East	na	32	44	38	59	76	95	103	117	147	126	142	215	305	296	362	430	532	558	596	675	698	761	713
Israel	High	32	43	38	59	75	93	102	116	146	125	141	212	299	287	345	406	508	529	566	639	663	705	671
Africa	na	2	1	2	1	1	1	3	3	2	2	3	1	6	4	7	9	11	12	31	33	25	31	25
South Africa	Upper middle	2	1	2	0	1	0	2	2	1	1	2	0	3	2	3	4	6	9	20	18	11	18	12
Australia and Oceania	na	7	6	9	12	9	15	17	29	47	50	66	63	79	96	104	112	131	108	123	127	123	121	129
Australia	High	5	6	9	11	8	13	17	26	44	48	64	59	72	88	95	105	122	98	116	116	112	112	119
New Zealand	High	2	0	0	1	1	2	1	3	3	1	2	4	6	8	9	7	9	10	6	11	10	9	9
Unclassified	na	0	0	1	0	0	0	0	0	0	0	1	1	1	0	1	1	1	4	2	6	3	1	3

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-49

USPTO utility patents granted in basic communication processes, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,672	2,788	3,064	3,337	3,488	3,585	3,669	3,308	4,327	4,145	4,031	4,255	4,899	4,632	4,581	5,064	5,119	4,694	4,722	4,400	3,773	4,842	4,854
North America	na	1,374	1,449	1,628	1,813	1,889	1,969	1,920	1,722	2,142	2,076	1,865	1,931	2,183	1,996	1,971	2,222	2,210	2,072	2,017	1,948	1,617	1,989	1,980
Canada	High	38	42	61	63	60	62	74	67	62	77	67	58	88	84	96	132	130	121	100	105	73	112	105
Mexico	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	2	2	3	0	2	3
United States	High	1,336	1,408	1,567	1,750	1,828	1,907	1,845	1,656	2,081	1,999	1,798	1,873	2,094	1,911	1,875	2,088	2,079	1,949	1,915	1,840	1,544	1,876	1,872
Central America and Caribbean	na	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0
Puerto Rico	High	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
South America	na	1	0	0	0	0	1	0	0	2	0	1	1	4	3	4	2	7	5	5	4	8	8	6
Argentina	Upper middle	0	0	0	0	0	0	0	0	2	0	0	1	1	1	1	1	1	1	0	1	4	1	1
Brazil	Upper middle	0	0	0	0	0	0	0	0	0	0	1	1	3	2	3	0	6	4	4	3	4	6	5
Europe	na	379	388	426	461	489	577	527	493	704	592	580	606	694	654	679	747	811	739	782	677	630	773	779
EU-27 + UK[a]	na	362	371	410	440	476	560	508	470	665	568	552	579	655	597	627	688	753	673	713	619	586	712	718
United Kingdom	High	62	65	62	72	82	90	76	79	99	81	62	78	84	83	90	89	108	90	108	84	83	99	110
EU-27[b]	na	300	305	348	368	394	470	432	391	566	486	490	501	571	514	537	599	645	583	605	534	503	613	607
Austria	High	4	6	7	7	6	16	26	24	42	26	41	42	57	43	32	32	48	43	48	51	44	47	56
Belgium	High	2	3	6	7	7	6	8	10	9	6	8	9	15	10	17	11	10	13	13	10	16	21	16
Denmark	High	1	5	3	4	8	8	11	5	15	8	16	10	10	12	13	8	13	11	7	14	18	15	16
Finland	High	24	21	12	27	35	41	25	28	29	26	13	12	30	20	13	21	21	18	21	13	20	17	17
France	High	68	82	81	65	72	74	86	68	89	87	84	91	96	92	135	150	120	126	115	94	87	105	116
Germany	High	91	93	115	108	119	177	147	150	217	187	199	196	213	164	158	178	194	198	210	179	167	225	191
Hungary	High	1	0	0	0	0	1	1	1	0	1	0	1	2	0	0	1	2	1	0	1	2	2	0
Ireland	High	7	3	5	6	5	14	12	14	18	21	18	8	13	18	16	19	29	26	21	18	22	30	36
Italy	High	45	31	48	57	50	39	33	25	42	33	34	41	43	30	33	38	59	46	53	48	45	49	46
Netherlands	High	38	30	34	38	49	54	45	29	59	58	45	42	48	61	58	76	71	54	57	40	41	43	49
Spain	High	1	1	2	3	0	1	1	1	1	2	3	7	5	2	4	8	6	5	5	7	7	7	6
Sweden	High	21	28	35	47	41	36	35	32	37	24	24	30	29	46	41	42	46	28	42	40	26	35	39
Other Europe	na	17	17	17	20	14	17	18	23	39	24	28	27	40	57	52	60	59	67	69	58	44	61	61
Other Europe-2020[b]	na	79	83	79	92	96	107	95	103	138	106	90	105	124	140	142	148	166	157	177	142	127	160	172
Belarus	Upper middle	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	2	1	1	4	3	2	1	1	6	6	1	1	8	5	7	10	8	12	12	5	6	10	9
Russia	Upper middle	5	4	4	6	2	3	2	4	3	3	6	4	6	7	16	7	6	10	9	10	6	10	15
Switzerland	High	9	13	12	10	9	12	15	18	28	15	21	22	26	40	21	35	42	40	40	31	30	35	33

Table SINV-49

USPTO utility patents granted in basic communication processes, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	0	0	0	0	0	0	1	0	0	0	0	1	5	5	2	2	4	4	1	1	1
Asia	na	883	928	981	1,036	1,079	991	1,185	1,043	1,426	1,423	1,531	1,669	1,957	1,915	1,868	1,997	1,988	1,786	1,833	1,689	1,442	1,982	1,994
China	Upper middle	2	5	4	5	7	9	8	10	20	20	42	43	70	75	112	123	156	157	199	191	188	269	312
India	Lower middle	2	3	3	6	9	19	18	36	41	40	40	48	81	55	66	100	101	99	138	105	86	142	162
Japan	High	704	740	756	820	871	762	892	721	915	861	907	926	984	1,036	1,000	1,042	965	892	826	732	631	864	800
Malaysia	Upper middle	0	1	4	1	3	1	2	5	6	12	8	7	13	11	11	10	17	12	11	20	13	19	8
Singapore	High	10	6	16	10	10	12	17	11	19	28	23	34	38	27	22	21	32	29	23	28	18	24	19
South Korea	High	111	122	135	132	116	116	137	150	229	241	289	325	400	396	338	357	359	308	328	356	268	384	355
Taiwan	High	54	51	61	59	63	72	111	109	195	220	220	284	372	315	318	343	356	286	307	252	233	276	337
Middle East	na	26	18	23	24	23	32	27	35	39	36	32	38	51	48	52	82	87	75	72	70	59	73	79
Israel	High	26	18	23	24	22	31	26	33	38	36	31	36	50	46	49	74	75	68	64	61	56	66	68
Africa	na	0	1	3	1	0	1	1	1	0	1	2	0	1	4	2	2	5	6	3	4	5	2	5
South Africa	Upper middle	0	0	2	0	0	1	1	1	0	0	2	0	0	2	1	2	1	2	1	1	1	1	2
Australia and Oceania	na	8	4	3	2	7	14	9	12	14	16	19	11	9	11	6	12	10	10	9	8	12	15	11
Australia	High	5	4	3	2	5	12	8	10	13	14	17	9	6	8	5	10	10	8	9	7	11	14	10
New Zealand	High	3	1	0	0	2	3	1	2	1	3	2	2	3	3	1	1	1	2	0	1	1	1	1
Unclassified	na	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-50

USPTO utility patents granted in computer technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	11,797	12,143	11,872	12,697	12,883	13,625	14,645	13,613	19,072	17,533	19,061	20,843	26,489	27,115	32,527	36,536	40,524	41,102	42,763	42,369	40,182	49,393	51,572
North America	na	7,416	7,717	7,556	8,068	8,101	8,659	9,201	8,490	11,914	10,547	11,324	12,549	15,843	15,786	18,278	20,445	23,067	22,916	23,906	23,255	21,728	26,956	27,529
Canada	High	116	128	144	164	184	193	212	179	317	326	379	459	708	733	887	1,027	1,109	1,029	1,010	950	902	1,090	1,033
Mexico	Upper middle	0	1	2	3	0	1	3	5	3	1	0	2	3	4	7	3	5	7	15	12	20	20	25
United States	High	7,299	7,588	7,409	7,902	7,917	8,464	8,986	8,305	11,594	10,220	10,944	12,089	15,133	15,049	17,385	19,416	21,954	21,880	22,880	22,294	20,806	25,846	26,471
Central America and Caribbean	na	1	1	1	0	1	1	1	0	1	1	3	2	3	2	3	3	8	7	13	9	11	12	25
Puerto Rico	High	1	0	0	0	0	0	0	0	1	0	1	1	1	1	2	1	4	3	3	0	2	4	6
South America	na	3	4	1	4	2	3	4	5	8	7	6	8	14	16	16	22	28	48	41	57	58	83	113
Argentina	Upper middle	1	0	0	0	0	0	1	0	2	2	0	2	1	3	4	6	4	10	8	6	6	15	16
Brazil	Upper middle	2	4	1	2	1	2	1	1	3	4	4	6	12	12	10	15	21	33	31	46	47	64	89
Europe	na	812	846	869	1,030	1,097	1,091	1,334	1,248	1,722	1,723	1,856	2,065	2,693	2,598	3,245	3,670	4,152	4,382	4,595	4,622	4,609	5,572	5,732
EU-27 + UK[a]	na	769	796	837	976	1,039	1,024	1,258	1,186	1,633	1,633	1,754	1,947	2,532	2,404	2,978	3,353	3,769	3,914	4,108	4,107	4,049	4,916	5,060
United Kingdom	High	200	208	197	225	240	242	291	309	400	391	388	458	536	541	701	791	904	874	941	937	882	1,192	1,243
EU-27[b]	na	569	588	640	751	799	782	967	877	1,233	1,242	1,367	1,489	1,996	1,863	2,277	2,562	2,865	3,040	3,167	3,169	3,168	3,724	3,817
Austria	High	7	11	13	19	8	25	25	18	26	22	21	26	41	32	40	41	58	63	66	78	60	80	71
Belgium	High	10	11	21	23	13	14	24	14	31	27	25	32	45	43	54	64	65	58	65	72	73	90	80
Denmark	High	2	9	8	12	15	14	13	11	17	16	18	21	29	34	41	40	33	47	45	52	51	60	46
Finland	High	15	14	17	21	25	32	44	37	73	78	71	93	103	97	100	129	166	190	196	198	163	166	174
France	High	173	171	169	175	215	211	246	199	313	244	287	297	421	360	480	568	613	587	598	541	570	663	636
Germany	High	191	197	224	258	309	289	392	376	480	556	634	655	901	783	916	984	1,100	1,183	1,177	1,169	1,171	1,457	1,463
Hungary	High	1	0	1	2	0	2	1	1	1	3	2	2	4	11	6	9	8	15	13	12	18	18	22
Ireland	High	4	6	11	20	10	15	20	18	20	18	15	30	41	44	64	76	75	103	100	107	138	188	233
Italy	High	99	77	83	101	91	80	77	95	98	100	111	106	119	133	170	198	202	208	224	213	218	225	278
Netherlands	High	40	49	44	54	53	43	61	43	78	84	76	101	111	115	116	136	160	141	143	143	156	165	176
Spain	High	4	4	5	4	3	7	9	12	19	12	22	27	31	37	56	55	51	56	73	72	70	77	88
Sweden	High	23	37	42	61	52	46	46	44	66	72	62	60	88	112	155	171	191	235	277	302	273	282	275
Other Europe	na	43	51	32	54	58	66	77	62	89	90	101	119	162	193	267	317	383	468	487	515	559	656	672
Other Europe-2020[b]	na	243	258	229	279	298	309	368	371	489	481	489	576	697	734	968	1,108	1,287	1,342	1,428	1,452	1,441	1,848	1,915

Table SINV-50

USPTO utility patents granted in computer technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	0	1	1	0	0	0	0	2	1	2	2	2	1	1	2	3	2	3	2	3	5	4
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	5	6	6	6	7	6	11	9	10	19	21	18	18	31	43	40	32	58	55	63	72	81	77
Russia	Upper middle	20	25	9	16	15	30	18	12	31	22	27	39	58	72	87	93	116	130	142	138	170	206	239
Switzerland	High	16	18	15	27	33	28	44	40	44	43	47	56	77	80	111	157	194	231	236	258	263	311	284
Ukraine	Lower middle	1	0	1	1	0	0	0	0	0	0	0	1	1	4	9	10	24	29	28	27	18	30	31
Asia	na	3,444	3,446	3,294	3,422	3,500	3,630	3,848	3,632	5,055	4,903	5,498	5,818	7,406	8,036	10,117	11,360	12,015	12,355	12,756	12,927	12,343	15,067	16,433
China	Upper middle	9	11	13	26	33	35	49	55	119	158	250	347	444	522	838	1,107	1,122	1,308	1,760	2,091	2,261	3,069	3,772
India	Lower middle	2	6	10	18	15	39	41	57	100	123	172	215	371	442	567	854	1,096	1,269	1,290	1,416	1,384	1,887	2,088
Japan	High	2,857	2,738	2,526	2,625	2,694	2,793	2,825	2,587	3,508	3,210	3,416	3,382	4,167	4,489	5,408	5,766	5,790	5,384	4,963	4,854	4,334	5,298	5,316
Malaysia	Upper middle	1	1	2	1	2	4	3	10	12	20	22	28	30	21	36	34	35	35	46	45	45	62	45
Singapore	High	12	21	15	18	29	28	31	22	42	27	44	45	49	55	80	81	98	101	121	108	118	153	152
South Korea	High	374	434	472	443	376	353	392	440	644	722	829	1,004	1,428	1,475	1,705	1,874	2,182	2,469	2,937	2,897	2,787	3,022	3,315
Taiwan	High	186	233	255	291	350	378	507	461	630	640	763	791	911	1,017	1,472	1,628	1,675	1,771	1,614	1,488	1,371	1,533	1,704
Middle East	na	99	101	111	119	128	173	177	159	219	197	238	255	336	442	654	822	1,014	1,146	1,165	1,225	1,185	1,403	1,434
Israel	High	98	100	109	118	126	172	175	158	213	194	234	251	327	436	627	786	981	1,109	1,107	1,165	1,131	1,331	1,355
Africa	na	0	2	3	4	6	3	5	7	6	6	6	6	8	10	17	19	33	33	38	36	33	44	43
South Africa	Upper middle	0	1	3	3	4	3	3	7	4	3	4	3	5	4	4	5	12	15	22	23	15	29	24
Australia and Oceania	na	22	25	35	50	47	65	75	72	147	148	131	139	185	224	195	193	205	210	244	232	212	252	259
Australia	High	20	23	32	48	46	57	71	69	138	139	120	126	170	212	173	173	187	189	220	214	194	232	228
New Zealand	High	2	3	4	3	1	7	4	4	9	9	11	13	16	13	22	20	17	21	24	18	17	20	30
Unclassified	na	1	1	2	0	0	1	0	0	1	1	0	1	1	1	2	2	3	4	6	6	4	4	5

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-51

USPTO utility patents granted in IT methods for management, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	637	816	941	845	950	1,085	1,172	1,513	2,346	2,332	2,905	3,464	5,934	5,990	7,084	7,928	7,372	4,613	4,348	5,639	5,747	8,133	8,481
North America	na	519	640	758	680	759	849	904	1,159	1,787	1,800	2,264	2,778	4,856	4,896	5,794	6,555	5,964	3,607	3,355	4,448	4,505	6,369	6,490
Canada	High	9	11	16	14	16	11	21	29	34	42	66	74	121	138	166	189	184	139	117	157	136	187	197
Mexico	Upper middle	0	0	1	0	0	0	1	1	1	2	1	2	3	3	4	2	4	2	2	2	2	7	5
United States	High	510	629	740	666	743	838	882	1,130	1,752	1,757	2,198	2,702	4,732	4,755	5,624	6,364	5,775	3,466	3,236	4,288	4,367	6,175	6,287
Central America and Caribbean	na	1	0	0	0	0	1	1	0	1	1	1	2	2	1	3	1	2	4	1	1	3	3	4
Puerto Rico	High	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	2	0	0	1	2	2
South America	na	1	0	1	0	2	1	2	1	1	2	1	5	6	10	6	9	12	7	12	11	14	16	31
Argentina	Upper middle	0	0	0	0	1	0	0	1	0	0	1	0	1	2	2	2	2	2	3	2	1	4	3
Brazil	Upper middle	1	0	1	0	0	1	1	1	1	2	1	4	6	7	3	6	9	5	9	9	11	9	24
Europe	na	33	51	60	53	64	66	76	109	162	173	236	285	503	480	584	644	642	415	383	429	431	573	606
EU-27 + UK[a]	na	33	50	58	52	59	63	74	103	151	155	216	264	471	448	548	599	587	387	352	384	394	511	546
United Kingdom	High	8	16	13	18	21	26	23	28	45	39	60	81	121	107	134	167	153	90	87	105	124	168	171
EU-27[b]	na	24	34	45	34	38	37	51	75	106	116	156	183	350	341	413	432	434	297	265	278	270	343	375
Austria	High	1	0	1	1	0	2	2	1	1	2	2	3	6	4	4	6	6	5	3	7	4	8	7
Belgium	High	0	1	1	2	1	0	1	2	1	3	4	3	5	7	10	11	11	10	6	12	16	18	15
Denmark	High	1	0	1	1	1	0	1	2	2	4	0	4	15	3	7	8	4	2	4	7	6	8	3
Finland	High	0	1	2	1	4	5	6	10	14	9	11	10	17	18	20	27	28	28	24	23	17	22	19
France	High	11	10	9	9	11	6	15	18	18	22	29	24	49	54	70	61	63	47	45	49	48	58	69
Germany	High	6	13	15	11	9	12	19	24	42	50	76	97	185	167	201	217	188	112	91	81	84	98	105
Hungary	High	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	3	3	1	1	1	3	1
Ireland	High	0	1	0	1	0	1	2	2	3	4	8	9	12	17	16	16	33	25	27	31	32	43	57
Italy	High	1	0	3	1	2	3	2	2	4	4	4	7	13	19	19	26	22	15	14	12	13	15	21
Netherlands	High	1	5	8	2	5	1	2	5	8	5	6	8	18	12	16	11	8	10	6	12	9	17	17
Spain	High	0	1	0	0	1	0	1	0	1	2	2	2	4	10	13	5	16	7	12	6	8	7	8
Sweden	High	4	2	3	5	3	9	2	7	10	6	11	10	17	16	17	15	23	18	18	13	16	22	19
Other Europe	na	1	1	2	1	5	3	2	6	11	18	20	21	32	32	36	45	55	28	31	45	37	62	60
Other Europe-2020[b]	na	9	17	15	19	26	29	25	34	56	57	80	103	153	139	170	211	208	118	118	150	161	230	231
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	0	0	0	2	0	0	0	1	2	3	1	2	2	4	7	6	2	2	3	7	7	8
Russia	Upper middle	0	0	0	0	1	1	0	1	2	3	2	3	3	2	4	4	11	6	7	8	6	10	11
Switzerland	High	0	0	2	1	2	3	2	5	7	13	15	17	25	27	26	29	36	19	20	29	21	37	32
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	3	3
Asia	na	76	115	105	97	112	147	168	213	355	308	346	323	446	461	560	577	606	466	493	613	662	965	1,146

Table SINV-51

USPTO utility patents granted in IT methods for management, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	0	0	0	1	0	1	1	3	4	5	5	10	23	36	49	64	81	55	71	114	110	177	285
India	Lower middle	0	0	0	0	0	2	4	9	10	9	17	24	46	62	92	140	152	113	133	158	188	266	293
Japan	High	71	109	100	87	101	123	137	172	292	256	284	246	306	270	310	254	249	184	182	205	221	333	362
Malaysia	Upper middle	0	0	0	0	0	0	0	0	2	1	1	2	4	3	1	2	2	0	1	1	2	4	1
Singapore	High	0	1	0	0	2	1	3	2	2	3	4	4	3	8	5	10	16	10	10	9	12	26	28
South Korea	High	2	1	4	6	2	9	10	4	10	10	17	18	41	56	66	69	73	81	75	94	101	126	135
Taiwan	High	3	3	0	3	6	11	14	23	33	23	18	18	21	24	33	33	31	20	17	27	23	27	35
Middle East	na	4	5	8	7	8	9	7	11	18	12	21	30	45	56	72	78	83	75	68	90	80	136	127
Israel	High	4	5	8	7	8	9	7	11	18	12	19	29	39	51	69	73	75	69	66	79	73	128	115
Africa	na	2	0	1	3	1	2	1	0	1	0	3	3	5	7	12	7	9	5	7	6	6	11	11
South Africa	Upper middle	2	0	1	3	1	2	1	0	1	0	2	3	4	7	11	6	7	4	4	4	4	7	6
Australia and Oceania	na	2	4	8	4	5	9	14	19	22	35	32	38	71	79	53	54	54	33	30	41	45	59	67
Australia	High	2	4	8	3	3	7	14	16	21	33	32	35	66	73	49	48	46	26	27	35	40	50	62
New Zealand	High	0	1	0	1	2	2	0	3	1	1	0	3	5	6	4	6	7	6	3	7	5	9	5
Unclassified	na	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	1	1	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; IT = information technology; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-52

USPTO utility patents granted in semiconductors, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,734	7,178	8,559	10,171	10,563	10,658	10,780	9,329	10,037	9,562	9,209	10,350	14,133	14,396	13,842	15,796	17,833	18,350	18,945	19,053	17,413	18,569	18,632
North America	na	2,471	3,111	3,808	4,463	4,601	4,627	4,495	3,895	3,984	3,719	3,376	3,459	4,632	4,489	4,304	4,879	5,594	5,552	5,780	5,681	5,081	5,370	5,264
Canada	High	20	21	25	25	25	35	40	29	32	31	31	39	54	64	56	66	79	73	77	66	52	66	69
Mexico	Upper middle	0	0	0	1	1	0	0	2	0	1	2	0	0	1	2	0	1	1	0	1	0	2	3
United States	High	2,451	3,090	3,783	4,437	4,574	4,591	4,456	3,865	3,952	3,687	3,343	3,420	4,578	4,424	4,246	4,813	5,514	5,478	5,703	5,613	5,029	5,302	5,192
Central America and Caribbean	na	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	2	1	1	1	1	1	1	1
Puerto Rico	High	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	1	0	0
South America	na	0	1	0	1	0	0	0	0	0	0	0	1	1	1	0	1	1	1	2	1	3	4	4
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	2
Brazil	Upper middle	0	1	0	1	0	0	0	0	0	0	0	1	1	1	0	1	1	1	0	1	2	3	1
Europe	na	352	418	473	647	708	779	801	724	762	719	676	783	1,150	1,181	1,218	1,430	1,604	1,672	1,705	1,673	1,489	1,511	1,378
EU-27 + UK[a]	na	340	402	453	616	673	754	775	701	736	696	658	752	1,120	1,145	1,179	1,370	1,541	1,613	1,639	1,605	1,423	1,432	1,303
United Kingdom	High	27	27	36	47	62	76	85	67	62	65	62	78	86	83	81	104	94	118	96	96	86	95	97
EU-27[b]	na	313	375	417	569	611	678	691	634	674	631	595	674	1,034	1,062	1,098	1,266	1,447	1,495	1,543	1,510	1,337	1,337	1,207
Austria	High	4	7	12	13	10	16	14	11	13	23	18	29	42	57	65	79	105	128	164	186	147	144	114
Belgium	High	2	7	11	19	19	37	35	22	29	23	31	39	62	56	64	70	69	83	108	102	88	98	99
Denmark	High	0	1	0	2	2	3	4	2	5	1	2	3	7	4	3	5	5	1	2	5	4	6	4
Finland	High	5	4	5	5	6	4	10	12	10	9	7	11	14	14	14	12	16	17	24	23	21	27	33
France	High	51	69	64	96	93	101	111	99	123	116	95	130	169	186	194	240	257	267	252	266	238	229	201
Germany	High	142	167	197	252	301	347	403	397	386	380	354	367	613	593	600	670	781	771	740	715	637	611	541
Hungary	High	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1
Ireland	High	4	3	1	7	3	4	4	3	6	4	8	6	6	11	10	14	14	7	17	13	16	25	32
Italy	High	57	61	64	96	88	80	54	37	39	29	34	38	40	51	47	73	96	106	93	88	87	87	89
Netherlands	High	28	29	26	42	55	64	45	35	43	36	34	33	60	68	71	75	71	73	99	78	68	70	60
Spain	High	0	1	3	1	3	2	0	2	2	1	3	1	2	2	4	5	5	6	5	4	5	5	3
Sweden	High	21	26	35	33	28	20	8	14	14	7	9	13	12	16	17	15	22	25	24	17	15	20	12
Other Europe	na	12	16	20	32	35	25	25	23	26	23	18	31	31	36	39	60	63	59	66	68	66	79	74
Other Europe-2020[b]	na	39	43	56	78	98	101	110	90	88	88	80	109	117	119	120	164	156	177	163	164	152	174	171
Belarus	Upper middle	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	0	0	0	0	2	0	4	2	2	2	1	1	1	2	1	3	8	4	4	3	4	7	4
Russia	Upper middle	4	3	6	10	6	3	2	3	3	2	3	2	3	4	4	3	6	3	4	5	3	4	3
Switzerland	High	8	12	12	20	26	20	20	17	20	18	14	27	26	29	32	53	47	47	53	57	55	65	62

Table SINV-52

USPTO utility patents granted in semiconductors, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	0
Asia	na	2,898	3,630	4,255	5,028	5,224	5,214	5,445	4,673	5,264	5,094	5,129	6,073	8,301	8,675	8,269	9,439	10,565	11,061	11,382	11,607	10,773	11,605	11,921
China	Upper middle	2	9	5	12	26	32	48	57	69	104	108	120	177	188	236	364	496	628	814	1,112	1,046	1,617	1,650
India	Lower middle	1	1	3	2	2	5	4	1	3	5	4	3	6	5	14	22	18	15	37	34	39	41	47
Japan	High	1,866	2,215	2,387	2,728	3,105	3,255	3,356	2,831	3,068	2,836	2,689	3,205	4,406	4,532	4,289	4,756	4,964	4,907	4,554	4,441	4,024	4,171	3,947
Malaysia	Upper middle	1	3	4	11	17	11	24	27	32	48	32	34	53	53	47	40	63	81	54	55	45	50	62
Singapore	High	30	40	70	128	169	148	135	103	122	118	102	103	201	246	252	269	275	255	248	236	209	195	150
South Korea	High	449	517	549	627	706	691	751	733	952	1,050	1,217	1,641	2,220	2,323	1,987	2,172	2,534	2,733	2,830	2,721	2,483	2,589	2,848
Taiwan	High	550	838	1,233	1,516	1,186	1,056	1,109	906	1,000	921	966	955	1,212	1,308	1,421	1,796	2,198	2,414	2,818	2,972	2,894	2,914	3,177
Middle East	na	10	13	16	30	24	27	26	24	17	22	20	22	29	23	35	33	46	44	56	69	51	54	54
Israel	High	10	13	16	30	23	26	25	22	17	21	19	22	29	20	31	29	44	37	46	60	37	37	39
Africa	na	0	1	2	0	1	1	1	0	0	0	1	1	2	2	0	3	7	3	4	3	1	2	2
South Africa	Upper middle	0	1	2	0	0	0	0	0	0	0	0	0	2	2	0	1	5	2	4	1	0	1	0
Australia and Oceania	na	3	4	3	2	5	9	12	11	9	8	8	12	16	23	16	9	14	15	15	17	13	20	8
Australia	High	2	4	2	2	3	8	11	11	9	8	8	11	16	23	15	8	12	15	15	16	13	17	8
New Zealand	High	1	0	1	0	1	1	1	0	0	0	0	1	0	0	1	1	2	1	0	1	1	3	1
Unclassified	na	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	2	3	1	3	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-53

USPTO utility patents granted in optics, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,943	7,519	7,595	7,896	8,159	9,017	9,626	8,446	9,688	8,782	9,001	9,351	11,177	11,038	11,130	11,597	12,371	12,369	12,110	12,012	11,348	13,060	12,358
North America	na	2,838	2,842	2,769	3,017	3,165	3,504	3,552	3,132	3,315	2,886	2,722	2,585	2,949	2,620	2,669	2,771	2,918	2,888	2,956	3,039	2,820	3,435	3,405
Canada	High	102	79	93	90	107	135	125	104	112	101	104	108	131	126	129	122	145	128	141	156	136	180	153
Mexico	Upper middle	0	2	0	1	4	2	1	2	1	2	1	1	0	1	4	3	5	5	6	6	6	6	5
United States	High	2,736	2,761	2,676	2,925	3,054	3,366	3,425	3,026	3,202	2,783	2,617	2,475	2,818	2,494	2,536	2,646	2,768	2,755	2,809	2,878	2,678	3,249	3,246
Central America and Caribbean	na	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	0	1	1	1	1
Puerto Rico	High	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
South America	na	1	1	2	3	2	1	2	0	2	0	1	1	1	1	2	3	2	4	4	6	3	9	4
Argentina	Upper middle	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Brazil	Upper middle	0	1	2	2	1	1	0	0	2	0	1	1	1	0	0	3	2	2	3	4	3	8	3
Europe	na	790	728	795	860	821	937	1,005	816	970	834	920	828	944	866	891	1,047	1,109	1,106	1,099	1,244	1,105	1,334	1,188
EU-27 + UK[a]	na	749	678	751	806	768	880	927	752	912	793	871	786	888	818	851	981	1,044	1,035	1,029	1,171	1,040	1,235	1,107
United Kingdom	High	155	129	161	157	162	160	152	118	123	89	97	84	105	93	106	114	120	101	123	143	109	132	117
EU-27[b]	na	593	549	589	649	606	720	775	634	788	703	773	702	782	726	745	867	924	934	905	1,028	930	1,103	990
Austria	High	6	8	13	13	10	10	12	9	13	8	8	6	14	16	14	13	16	17	19	19	23	22	21
Belgium	High	92	77	83	62	43	43	32	20	30	20	20	14	24	18	18	22	31	30	38	44	45	64	63
Denmark	High	5	4	4	8	6	12	16	11	6	13	9	13	10	9	6	10	10	15	10	15	9	8	12
Finland	High	2	5	3	8	3	5	9	11	8	16	9	13	21	9	11	12	12	18	19	24	24	33	34
France	High	119	99	111	120	91	128	113	80	80	66	58	78	95	92	111	122	128	125	120	153	129	188	156
Germany	High	245	241	259	304	326	363	395	343	352	291	339	293	330	315	340	396	416	421	407	457	387	418	380
Hungary	High	3	0	0	2	0	1	2	1	4	3	3	0	3	3	0	2	2	3	3	3	3	5	3
Ireland	High	1	1	1	1	2	4	4	7	4	2	6	4	4	5	2	4	5	5	4	4	6	9	13
Italy	High	37	31	25	38	24	47	44	32	34	31	22	35	24	27	31	32	22	30	35	37	38	44	45
Netherlands	High	64	56	47	50	66	75	104	85	210	211	254	212	218	191	173	205	234	214	207	208	214	249	212
Spain	High	1	2	2	5	1	2	2	3	4	5	4	4	3	4	8	9	6	9	9	16	13	19	11
Sweden	High	18	26	41	34	31	29	37	26	32	29	26	26	29	29	22	27	30	30	21	31	25	26	19
Other Europe	na	41	49	45	54	53	57	77	64	58	41	50	42	57	47	40	66	65	71	70	73	66	100	80
Other Europe-2020[b]	na	196	178	206	211	215	218	229	182	182	130	147	126	162	140	147	180	185	172	193	217	175	232	197
Belarus	Upper middle	0	0	0	1	0	0	3	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	1	1	0	4	4	6	8	5	4	4	1	3	3	5	4	8	2	3	3	3	5	2
Russia	Upper middle	10	10	5	10	8	8	15	17	15	7	10	6	13	7	7	13	10	12	12	7	6	8	9
Switzerland	High	27	37	37	41	40	43	53	38	34	28	32	33	36	35	27	47	45	51	48	60	54	78	62

Table SINV-53

USPTO utility patents granted in optics, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	0	1	1	2	0	1	2	0	0	0	1	1	0	0	1	2	2	1	1	3	1
Asia	na	4,267	3,900	3,985	3,952	4,105	4,488	4,990	4,437	5,311	4,988	5,281	5,856	7,182	7,462	7,484	7,683	8,239	8,257	7,936	7,583	7,271	8,061	7,555
China	Upper middle	8	11	11	15	22	30	36	27	28	40	47	52	92	125	140	210	386	541	693	992	1,086	1,444	1,277
India	Lower middle	2	0	1	0	2	3	1	6	0	6	4	2	2	7	4	11	7	9	12	16	16	24	26
Japan	High	3,879	3,463	3,562	3,471	3,552	3,783	4,105	3,528	4,164	3,827	3,850	4,240	5,171	5,431	5,480	5,673	5,944	5,821	5,416	4,646	4,434	4,719	4,397
Malaysia	Upper middle	2	1	2	1	2	0	1	5	1	4	5	4	3	2	2	1	5	4	2	3	2	2	2
Singapore	High	3	4	6	8	8	11	20	23	12	12	13	13	22	17	18	14	12	27	22	23	19	22	28
South Korea	High	277	301	265	283	307	387	506	548	692	712	890	937	1,165	1,152	1,071	1,006	1,076	1,037	1,045	1,151	1,038	1,041	978
Taiwan	High	95	119	139	174	212	273	320	300	412	385	472	608	726	724	767	764	805	812	739	746	669	801	841
Middle East	na	33	28	27	48	47	64	47	40	50	48	51	59	69	49	66	69	79	82	92	106	122	184	180
Israel	High	33	28	27	47	47	63	47	39	50	48	50	58	69	48	64	68	75	76	86	99	118	175	166
Africa	na	1	1	0	0	0	1	1	2	0	1	0	0	1	2	0	1	3	4	1	4	3	1	2
South Africa	Upper middle	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	0	2	3	1	1
Australia and Oceania	na	11	18	16	15	18	21	28	19	38	24	25	22	30	38	18	23	20	27	20	28	20	33	24
Australia	High	10	17	15	15	17	18	28	17	36	23	23	20	26	37	15	19	19	22	16	23	18	28	21
New Zealand	High	1	1	1	0	1	3	0	2	2	1	2	2	5	1	2	4	1	4	4	5	2	5	4
Unclassified	na	1	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	2	1	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-54

USPTO utility patents granted in measurement, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,567	6,419	6,847	7,288	7,937	8,579	8,358	7,499	8,949	8,703	8,840	8,862	10,233	9,828	10,671	11,462	12,094	12,369	13,102	14,415	13,903	16,498	15,905
North America	na	3,864	3,877	4,041	4,198	4,442	4,855	4,705	4,216	5,061	4,735	4,723	4,640	5,120	4,982	5,232	5,518	5,721	5,822	6,163	6,718	6,362	7,496	7,225
Canada	High	134	133	125	137	139	163	173	135	151	160	158	165	183	186	202	237	241	231	268	289	303	364	348
Mexico	Upper middle	0	4	0	2	3	8	8	8	9	6	3	3	3	2	2	3	4	6	7	7	9	15	8
United States	High	3,730	3,740	3,916	4,058	4,300	4,685	4,523	4,073	4,902	4,569	4,562	4,472	4,934	4,794	5,028	5,278	5,476	5,585	5,887	6,423	6,050	7,117	6,869
Central America and Caribbean	na	2	1	0	2	1	2	1	1	3	1	2	2	2	2	2	2	1	2	4	3	2	5	4
Puerto Rico	High	1	1	0	1	0	2	1	1	1	0	1	0	1	1	2	1	1	0	2	1	1	3	2
South America	na	6	5	4	6	3	7	5	4	8	10	9	6	12	10	15	15	17	16	13	39	31	38	35
Argentina	Upper middle	1	0	1	1	1	3	2	0	1	2	2	2	5	5	3	2	6	2	4	11	5	10	12
Brazil	Upper middle	3	4	2	3	2	3	1	2	4	6	7	3	7	4	8	8	9	10	8	23	19	23	19
Europe	na	1,195	1,107	1,288	1,420	1,589	1,697	1,611	1,445	1,674	1,673	1,699	1,663	2,110	2,038	2,307	2,645	2,905	2,898	3,120	3,438	3,259	3,886	3,569
EU-27 + UK[a]	na	1,066	1,012	1,160	1,284	1,421	1,514	1,438	1,286	1,492	1,479	1,469	1,436	1,821	1,796	2,015	2,325	2,562	2,505	2,681	3,024	2,871	3,434	3,210
United Kingdom	High	166	157	180	213	218	209	241	210	234	214	198	239	303	275	324	362	384	377	418	404	392	497	421
EU-27[b]	na	900	855	980	1,071	1,203	1,305	1,197	1,076	1,258	1,265	1,270	1,196	1,519	1,522	1,691	1,963	2,178	2,127	2,263	2,620	2,479	2,937	2,789
Austria	High	16	17	16	17	28	25	30	24	36	31	29	31	47	50	46	67	70	83	112	123	105	137	147
Belgium	High	12	15	11	16	18	15	15	16	17	24	20	13	18	27	31	32	52	41	41	60	50	70	55
Denmark	High	13	13	12	11	12	16	21	20	27	21	13	16	23	30	24	26	38	36	38	46	44	63	61
Finland	High	26	24	39	27	43	50	48	34	43	44	48	50	65	43	54	54	67	63	77	98	77	83	70
France	High	190	159	176	176	165	189	155	159	182	197	212	184	250	262	306	383	406	416	424	497	431	501	489
Germany	High	485	467	540	621	707	787	728	652	730	730	718	667	832	798	890	988	1,075	1,039	1,085	1,276	1,263	1,371	1,336
Hungary	High	1	4	1	3	1	2	2	2	1	1	2	2	1	1	3	4	5	3	4	7	4	7	6
Ireland	High	1	7	8	2	6	13	10	3	11	13	8	13	17	11	10	17	20	15	26	23	19	30	36
Italy	High	43	42	44	62	58	61	63	46	55	61	59	53	75	85	83	119	119	125	120	122	145	169	161
Netherlands	High	52	44	52	51	66	65	56	46	55	57	73	72	77	93	106	117	148	143	150	164	160	259	196
Spain	High	4	2	6	4	9	3	3	9	10	7	15	17	13	23	25	24	29	26	29	27	23	45	36
Sweden	High	49	57	68	76	77	67	55	55	74	64	59	56	74	75	85	95	117	95	114	112	103	129	121
Other Europe	na	129	95	128	136	168	183	173	159	182	194	231	228	288	242	291	320	343	394	439	413	388	452	359
Other Europe-2020[b]	na	295	252	308	349	386	392	414	369	416	408	429	467	591	516	616	682	727	771	857	817	780	950	780
Belarus	Upper middle	0	1	0	1	1	1	1	0	1	1	1	1	1	0	2	1	1	0	2	3	1	3	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	11	15	16	16	20	31	28	30	32	33	54	43	60	60	56	66	70	84	69	77	59	90	68
Russia	Upper middle	18	10	11	22	20	22	14	10	17	20	14	19	23	17	22	30	38	26	35	40	34	27	34
Switzerland	High	98	67	96	95	121	123	129	116	125	134	152	160	200	158	199	213	223	273	320	274	278	314	239

Table SINV-54

USPTO utility patents granted in measurement, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	1	0	1	2	1	1	2	4	3	2	2	3	4	4	3	2	7	6	2	5	2
Asia	na	1,414	1,356	1,417	1,554	1,788	1,905	1,908	1,721	2,065	2,131	2,251	2,386	2,799	2,613	2,904	3,044	3,207	3,350	3,520	3,857	3,885	4,615	4,611
China	Upper middle	3	2	9	9	17	16	30	30	41	59	93	131	174	154	202	218	264	296	341	438	540	740	850
India	Lower middle	2	1	2	2	8	12	16	14	13	34	35	25	30	33	51	77	95	101	96	127	133	154	156
Japan	High	1,240	1,185	1,192	1,300	1,499	1,607	1,569	1,341	1,658	1,638	1,691	1,763	2,023	1,834	1,963	2,063	2,122	2,088	2,132	2,195	2,192	2,563	2,510
Malaysia	Upper middle	0	1	4	3	3	6	6	7	21	25	24	19	18	12	12	11	9	17	14	17	11	15	11
Singapore	High	8	9	15	19	22	24	19	20	13	20	23	18	22	20	27	23	29	31	43	63	68	78	80
South Korea	High	93	73	79	86	95	90	112	134	147	175	192	205	247	259	314	318	333	467	511	610	564	642	604
Taiwan	High	67	83	116	133	136	144	153	172	171	178	192	223	281	300	330	330	347	342	374	399	372	410	389
Middle East	na	46	38	60	69	79	68	70	67	84	83	99	97	118	105	135	137	148	194	193	260	269	338	358
Israel	High	46	38	59	69	76	64	69	59	79	77	92	90	109	90	113	113	109	148	140	204	196	211	243
Africa	na	4	6	5	3	2	1	4	2	5	8	3	3	1	3	4	11	10	8	10	17	10	11	11
South Africa	Upper middle	4	5	5	3	2	1	3	0	5	5	2	2	1	1	1	4	5	3	7	10	6	6	7
Australia and Oceania	na	36	27	32	36	33	44	53	44	49	62	54	64	71	73	71	90	83	77	78	82	82	108	91
Australia	High	30	16	23	28	26	37	46	36	45	55	44	53	63	62	56	69	67	59	61	63	61	84	77
New Zealand	High	5	10	9	8	7	6	7	8	4	7	9	11	8	11	15	20	17	18	17	19	21	24	13
Unclassified	na	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	2	2	4	2	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-55

USPTO utility patents granted in analysis of biological materials, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	1,042	931	847	948	867	863	854	695	937	964	993	998	1,471	1,460	1,476	1,646	1,676	1,716	1,747	2,011	2,085	2,208	2,175
North America	na	720	651	568	651	584	597	589	493	629	656	647	649	937	918	910	991	964	1,004	1,019	1,199	1,186	1,266	1,216
Canada	High	36	36	33	36	31	38	34	19	32	33	32	28	46	42	45	45	38	50	45	48	61	54	61
Mexico	Upper middle	0	1	0	0	0	0	2	0	0	0	0	1	1	2	0	1	2	1	1	2	1	1	1
United States	High	684	614	535	616	554	559	554	474	596	623	615	620	890	874	864	945	923	953	972	1,149	1,124	1,212	1,155
Central America and Caribbean	na	1	0	0	0	0	1	0	1	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1
Puerto Rico	High	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
South America	na	4	0	2	3	2	2	4	1	4	1	1	1	1	3	3	4	5	5	3	6	5	6	7
Argentina	Upper middle	1	0	1	0	0	0	2	0	1	0	0	0	0	1	0	0	2	1	1	0	1	0	1
Brazil	Upper middle	2	0	1	1	0	2	2	1	2	0	1	1	0	2	2	2	3	1	1	3	2	5	5
Europe	na	199	176	192	187	180	175	161	120	175	179	173	183	289	285	286	340	387	357	360	423	443	478	458
EU-27 + UK[a]	na	182	161	181	175	169	165	147	113	167	166	160	170	273	266	260	317	360	327	324	383	400	434	425
United Kingdom	High	45	35	37	37	37	32	31	30	41	38	33	27	49	48	48	65	70	63	60	70	70	82	78
EU-27[b]	na	137	126	144	138	132	133	116	83	126	128	127	143	224	218	212	251	290	264	264	313	330	352	348
Austria	High	5	2	3	4	4	3	3	1	1	4	2	3	7	4	10	9	10	9	7	11	9	11	8
Belgium	High	6	8	3	4	3	9	6	3	9	8	9	9	10	13	8	10	18	14	14	18	11	17	16
Denmark	High	7	4	8	6	10	9	6	5	4	6	4	1	7	10	8	10	10	11	9	12	8	10	13
Finland	High	5	13	6	10	10	5	4	4	5	2	5	6	10	5	9	5	6	10	9	7	13	11	8
France	High	27	22	30	23	24	23	17	20	32	23	28	25	39	36	36	52	62	54	56	70	68	69	71
Germany	High	61	58	58	66	56	54	52	31	52	52	45	64	104	97	88	109	104	96	95	106	128	143	135
Hungary	High	0	1	0	1	1	0	0	0	1	0	1	0	1	0	1	1	2	1	1	1	0	2	1
Ireland	High	0	0	2	2	2	1	1	0	3	1	0	0	1	2	2	5	2	3	2	1	3	3	5
Italy	High	6	4	5	3	4	6	3	3	4	4	7	6	10	12	10	13	17	13	14	15	16	19	19
Netherlands	High	7	6	10	6	4	8	8	5	2	8	8	11	12	13	12	11	22	24	15	30	25	24	24
Spain	High	2	1	1	1	2	3	1	1	1	3	6	6	3	3	4	4	6	9	11	13	14	12	14
Sweden	High	9	6	16	11	13	11	13	10	11	16	10	10	15	20	19	15	25	16	25	21	27	21	24
Other Europe	na	17	15	11	13	11	10	15	7	8	13	13	13	16	19	25	24	27	30	36	40	44	43	32
Other Europe-2020[b]	na	62	50	48	49	47	42	46	37	50	51	46	40	64	67	74	89	97	93	96	110	113	125	110
Belarus	Upper middle	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	6	2	2	4	1	2	3	2	0	4	4	4	1	4	8	5	5	5	6	7	7	10	7
Russia	Upper middle	0	3	1	2	1	4	1	0	0	3	2	1	4	1	1	4	3	3	4	3	5	5	1
Switzerland	High	10	10	6	7	8	4	11	4	7	6	6	8	11	14	15	14	17	20	24	26	30	27	23
Ukraine	Lower middle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Asia	na	94	87	67	86	81	71	84	69	105	110	151	139	217	226	245	267	278	297	310	319	381	389	410

Table SINV-55

USPTO utility patents granted in analysis of biological materials, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	0	0	0	2	2	2	2	0	2	4	9	6	18	10	23	18	26	25	30	38	58	52	74
India	Lower middle	2	2	1	2	2	3	1	2	3	1	3	4	4	4	4	10	8	5	10	14	16	15	11
Japan	High	84	75	58	73	70	56	67	58	89	90	111	102	149	161	171	164	160	174	179	173	193	210	214
Malaysia	Upper middle	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	1	3	1	0	1
Singapore	High	2	3	0	2	1	2	1	1	1	0	3	1	1	2	5	8	12	8	11	11	13	12	9
South Korea	High	3	5	4	1	2	3	4	3	6	8	10	13	26	27	25	34	42	51	54	56	67	70	65
Taiwan	High	2	3	3	6	5	5	10	5	4	5	15	11	18	19	18	30	29	33	24	23	32	28	32
Middle East	na	12	6	9	10	8	8	5	6	13	7	13	14	15	14	17	26	16	32	34	40	40	43	58
Israel	High	12	6	8	10	8	8	4	6	11	6	12	13	14	13	14	22	11	27	24	24	22	24	25
Africa	na	0	1	1	0	1	0	1	0	2	0	1	1	1	1	1	1	0	1	1	2	2	3	3
South Africa	Upper middle	0	1	1	0	1	0	1	0	2	0	0	0	1	0	1	1	0	1	1	1	2	2	2
Australia and Oceania	na	12	10	7	10	11	9	10	6	9	11	8	11	12	14	14	16	24	18	19	21	27	22	21
Australia	High	10	10	7	9	9	9	7	4	7	9	7	9	11	11	12	14	18	16	16	17	21	19	17
New Zealand	High	1	0	1	1	2	0	3	2	2	2	1	2	2	2	1	2	6	2	2	4	6	3	4
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-56

USPTO utility patents granted in control, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,478	2,582	2,640	2,625	2,637	2,835	2,983	2,667	3,363	2,820	2,825	2,893	3,787	3,931	4,799	5,317	5,669	5,440	5,874	6,892	7,306	8,723	8,736
North America	na	1,518	1,573	1,604	1,579	1,577	1,756	1,854	1,632	2,092	1,733	1,787	1,821	2,382	2,495	2,928	3,349	3,492	3,267	3,537	4,101	4,254	5,004	4,945
Canada	High	54	62	55	54	62	45	61	49	65	45	58	55	80	81	85	133	136	113	119	153	171	206	192
Mexico	Upper middle	2	0	1	0	2	1	1	2	2	0	0	3	2	3	3	1	2	2	3	4	8	9	12
United States	High	1,462	1,511	1,549	1,525	1,513	1,710	1,792	1,582	2,025	1,688	1,729	1,763	2,300	2,410	2,840	3,215	3,353	3,151	3,415	3,943	4,075	4,789	4,742
Central America and Caribbean	na	2	1	1	1	1	2	2	1	3	2	2	1	3	1	2	1	2	1	4	3	2	3	5
Puerto Rico	High	2	0	1	0	1	1	0	1	1	1	1	1	2	0	1	0	1	1	3	1	0	1	2
South America	na	3	3	4	3	1	4	4	3	7	2	1	4	4	8	9	7	7	13	11	14	19	19	19
Argentina	Upper middle	1	1	1	1	1	1	1	0	2	0	0	1	1	0	1	1	3	3	2	2	3	3	3
Brazil	Upper middle	2	0	3	1	0	2	3	2	5	1	0	2	3	6	8	4	4	9	9	9	15	14	14
Europe	na	350	360	394	410	438	423	426	422	476	377	411	383	511	529	697	743	836	776	861	991	1,036	1,223	1,185
EU-27 + UK[a]	na	328	335	373	377	412	402	405	399	449	352	386	363	475	494	657	692	779	724	805	927	958	1,138	1,099
United Kingdom	High	56	67	70	71	87	74	68	72	74	75	69	67	90	100	104	109	125	109	138	147	153	175	167
EU-27[b]	na	272	268	303	306	325	328	336	328	375	276	317	296	385	394	553	583	654	615	666	781	805	963	932
Austria	High	4	7	12	10	3	10	10	6	10	5	11	11	12	15	25	30	32	28	38	45	39	54	44
Belgium	High	4	4	7	8	5	2	4	4	3	4	5	3	6	4	8	7	9	7	13	16	17	20	16
Denmark	High	4	6	5	1	5	6	4	4	6	1	3	4	4	8	4	8	10	6	12	14	16	16	19
Finland	High	4	3	5	8	6	3	8	5	12	11	5	7	7	10	5	16	19	13	22	26	27	28	27
France	High	56	54	51	45	63	57	55	55	48	46	61	55	92	94	139	145	148	116	121	128	117	161	138
Germany	High	140	134	148	163	174	187	196	196	218	146	166	157	197	182	252	244	277	277	279	321	353	445	427
Hungary	High	1	1	0	0	0	0	0	1	2	0	1	0	0	0	0	0	1	1	2	3	2	2	4
Ireland	High	3	3	2	2	3	2	2	4	8	6	4	11	7	6	4	4	12	10	13	15	19	18	21
Italy	High	18	18	27	29	22	23	19	19	23	17	20	15	18	21	38	34	47	42	46	50	50	56	61
Netherlands	High	16	15	17	15	13	12	12	11	16	11	15	11	12	13	18	25	22	25	33	47	45	38	32
Spain	High	7	4	6	5	8	4	5	4	2	2	5	5	7	5	8	15	18	19	13	19	18	20	26
Sweden	High	15	16	22	19	16	18	19	17	25	22	16	14	20	28	34	33	35	39	44	54	61	63	62
Other Europe	na	22	24	21	32	26	21	22	23	28	25	25	20	36	35	40	51	58	52	57	64	78	85	86
Other Europe-2020[b]	na	78	92	91	103	113	95	90	94	102	101	94	87	126	136	144	161	183	161	195	210	231	260	253
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	5	4	5	5	2	4	2	7	7	5	3	7	8	8	9	10	9	8	8	16	14	18
Russia	Upper middle	1	1	2	3	2	3	1	4	3	2	3	2	3	3	3	5	7	5	8	8	8	9	10
Switzerland	High	20	16	12	23	18	16	16	15	17	16	17	14	25	24	26	33	38	34	37	44	48	51	49

Table SINV-56

USPTO utility patents granted in control, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	1	3	2	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	2	2
Asia	na	574	609	595	587	580	598	638	562	723	638	570	621	794	793	1,011	1,044	1,152	1,208	1,293	1,543	1,774	2,231	2,346
China	Upper middle	5	2	2	4	9	5	6	7	11	20	21	16	38	38	49	56	97	103	109	189	245	316	343
India	Lower middle	0	1	1	2	4	1	6	6	7	7	7	13	17	26	20	48	64	56	82	119	134	177	176
Japan	High	482	504	485	486	484	482	510	434	563	482	418	442	560	540	701	708	683	705	735	837	979	1,235	1,307
Malaysia	Upper middle	1	1	1	0	0	0	0	0	0	2	0	1	1	1	1	3	3	2	2	2	3	6	4
Singapore	High	2	2	5	3	3	5	5	7	3	3	6	8	9	11	7	7	8	16	19	24	22	29	24
South Korea	High	44	63	53	55	32	50	43	43	49	59	48	67	75	93	94	107	151	183	201	213	240	282	307
Taiwan	High	39	36	49	37	47	54	67	65	87	66	70	74	89	82	137	115	139	141	138	154	146	179	178
Middle East	na	15	17	20	20	17	23	25	16	25	25	18	24	28	38	33	43	62	70	64	99	103	133	122
Israel	High	15	16	17	19	16	23	23	15	22	22	17	23	25	31	27	31	48	56	52	78	82	102	97
Africa	na	5	4	1	7	5	3	3	2	3	3	2	3	4	3	7	9	7	8	8	7	12	8	7
South Africa	Upper middle	5	4	1	6	5	3	3	2	3	3	2	3	4	3	6	8	4	6	5	4	8	6	5
Australia and Oceania	na	9	15	21	18	19	26	32	29	33	39	34	36	60	62	111	118	110	96	94	134	105	100	106
Australia	High	9	13	20	16	16	25	29	26	31	34	32	33	57	60	107	114	106	88	89	125	96	92	100
New Zealand	High	0	1	1	2	3	1	3	3	2	5	2	3	3	3	4	4	4	7	5	8	9	8	6
Unclassified	na	1	1	1	1	0	1	0	0	0	0	1	0	1	2	0	3	1	1	2	1	0	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-57

USPTO utility patents granted in medical technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	8,257	7,993	8,142	8,329	8,235	9,247	7,513	6,295	7,381	6,735	6,146	7,102	11,505	12,726	15,200	17,537	18,454	17,331	17,657	18,887	18,188	22,401	22,099
North America	na	6,229	6,045	6,047	6,084	5,811	6,610	5,343	4,525	5,272	4,768	4,228	4,993	8,161	9,189	10,692	12,186	12,656	11,692	11,978	12,756	11,875	14,671	14,169
Canada	High	128	113	127	164	141	184	124	106	115	101	95	108	167	184	197	256	260	277	278	346	305	407	403
Mexico	Upper middle	6	2	4	3	3	3	7	5	4	2	6	1	5	7	7	12	9	9	9	14	6	12	10
United States	High	6,095	5,930	5,916	5,916	5,667	6,423	5,213	4,414	5,153	4,664	4,126	4,884	7,989	8,998	10,487	11,918	12,386	11,407	11,691	12,396	11,564	14,251	13,756
Central America and Caribbean	na	7	14	10	3	4	5	5	1	3	6	2	5	5	8	7	10	9	8	9	6	6	7	14
Puerto Rico	High	4	5	3	0	0	3	5	0	1	5	2	1	5	5	4	4	7	3	6	4	3	5	6
South America	na	22	29	22	27	32	36	16	22	10	8	9	16	18	33	39	49	49	46	31	53	42	46	52
Argentina	Upper middle	11	16	12	12	15	16	9	10	3	4	2	11	5	11	14	16	13	10	12	11	13	14	14
Brazil	Upper middle	7	8	8	8	8	12	2	7	6	1	4	2	8	15	17	17	24	22	7	21	18	17	22
Europe	na	1,212	1,162	1,312	1,373	1,373	1,459	1,231	960	1,066	1,052	969	1,114	1,865	1,855	2,401	2,876	3,159	2,961	3,029	3,158	3,127	3,729	3,727
EU-27 + UK[a]	na	1,106	1,058	1,179	1,237	1,236	1,321	1,106	858	955	943	847	985	1,662	1,618	2,114	2,543	2,779	2,547	2,669	2,776	2,747	3,271	3,273
United Kingdom	High	166	162	177	162	154	180	155	128	134	124	104	106	218	197	288	385	431	456	513	472	419	548	513
EU-27[b]	na	941	896	1,003	1,075	1,082	1,142	951	730	821	819	743	879	1,444	1,422	1,825	2,158	2,348	2,092	2,157	2,304	2,328	2,723	2,759
Austria	High	12	22	21	20	20	29	26	19	23	12	17	25	30	39	50	58	75	65	73	78	65	71	66
Belgium	High	20	13	22	18	24	20	14	9	20	15	16	25	29	39	35	65	69	41	59	56	63	63	68
Denmark	High	29	41	37	33	36	58	35	28	35	25	27	35	54	66	79	93	126	93	90	121	136	151	118
Finland	High	26	20	26	29	28	35	32	25	28	24	21	20	45	35	36	52	59	43	57	55	61	94	88
France	High	160	149	166	178	164	170	132	109	105	108	116	114	191	187	252	248	316	287	268	311	311	342	381
Germany	High	366	357	399	435	474	452	410	283	339	388	338	444	727	653	868	1,050	1,015	963	981	976	948	1,135	1,120
Hungary	High	5	2	1	4	2	4	0	3	3	2	4	0	5	6	4	6	8	6	8	13	10	9	10
Ireland	High	9	11	19	10	9	22	18	28	22	21	10	25	48	56	52	58	76	62	97	84	103	139	155
Italy	High	69	57	72	79	84	95	80	56	60	65	56	61	91	87	106	143	154	139	140	130	155	172	171
Netherlands	High	83	82	74	83	77	67	62	40	48	50	43	52	85	83	117	138	181	142	152	212	197	254	261
Spain	High	12	13	15	7	14	16	10	8	10	16	9	4	12	14	25	35	39	36	31	40	39	47	56
Sweden	High	141	111	143	168	139	161	118	111	118	82	78	68	103	137	175	182	203	178	171	183	187	187	201
Other Europe	na	105	105	133	136	138	138	125	102	111	109	122	129	204	236	287	333	380	414	360	382	380	458	454
Other Europe-2020[b]	na	271	266	310	298	291	318	280	230	245	233	226	235	422	433	576	718	811	869	873	854	798	1,006	968
Belarus	Upper middle	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0	1	2	2	1	1	2
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	6	4	12	18	17	19	16	7	13	12	7	9	25	20	25	26	25	19	13	18	21	17	28
Russia	Upper middle	10	13	22	16	14	14	10	13	9	12	13	15	12	18	25	27	27	25	23	14	20	19	31
Switzerland	High	83	83	91	97	99	95	94	74	78	69	83	92	147	176	219	260	303	331	277	290	290	362	335

Table SINV-57

USPTO utility patents granted in medical technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	2	0	1	2	2	1	1	3	2	2	2	1	3	0	1	1	3	2	2	4	4
Asia	na	622	587	576	631	762	865	703	606	777	710	750	721	1,104	1,202	1,605	1,786	1,886	1,970	1,952	2,138	2,362	2,919	3,062
China	Upper middle	11	10	9	5	14	19	15	20	21	21	25	42	76	76	104	110	104	124	186	226	275	386	527
India	Lower middle	4	5	3	4	1	6	8	5	12	7	11	12	11	14	23	40	52	55	62	74	81	108	159
Japan	High	517	481	454	516	588	681	537	441	575	555	579	555	851	913	1,173	1,298	1,326	1,336	1,216	1,282	1,337	1,576	1,542
Malaysia	Upper middle	0	0	2	1	5	4	3	2	2	1	2	2	3	2	3	4	4	8	6	9	4	7	8
Singapore	High	3	2	2	4	4	6	5	3	6	3	9	9	11	11	22	21	33	33	26	30	33	49	43
South Korea	High	22	25	29	34	43	69	36	40	45	39	50	45	73	87	116	154	210	231	269	326	407	538	515
Taiwan	High	63	61	76	68	101	78	99	94	114	82	73	56	78	98	159	155	150	173	179	182	219	248	254
Middle East	na	101	89	96	147	164	170	135	102	142	117	118	169	233	264	296	415	462	417	460	533	513	709	730
Israel	High	100	86	95	142	163	167	134	101	140	115	114	166	230	255	286	380	434	386	424	491	460	618	670
Africa	na	9	7	11	4	7	11	5	7	12	5	3	7	10	12	18	11	17	14	16	17	19	22	19
South Africa	Upper middle	8	6	11	3	4	7	5	5	9	4	2	6	8	9	14	9	12	11	13	13	14	19	8
Australia and Oceania	na	55	60	68	60	81	90	73	71	98	71	65	77	109	162	142	204	217	221	178	221	241	295	323
Australia	High	50	54	60	55	66	77	56	58	83	64	61	70	94	149	116	184	196	186	150	175	182	215	225
New Zealand	High	4	6	8	5	15	13	17	12	15	7	4	7	13	13	26	20	21	34	29	46	59	80	98
Unclassified	na	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	1	1	2	3	5	3	2	3

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-58

USPTO utility patents granted in organic fine chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,058	5,094	4,767	4,958	5,362	4,454	3,695	3,129	3,862	3,632	3,473	3,616	4,423	4,297	4,953	5,612	5,869	5,967	5,295	5,292	4,947	4,961	4,938
North America	na	2,494	2,584	2,337	2,343	2,561	2,173	1,767	1,544	1,902	1,692	1,637	1,699	2,069	1,954	2,294	2,610	2,760	2,799	2,553	2,599	2,366	2,357	2,373
Canada	High	64	81	66	62	75	64	55	40	64	55	65	77	83	80	79	86	93	89	82	68	66	69	84
Mexico	Upper middle	3	2	1	1	4	2	1	0	0	4	1	1	1	2	1	3	5	7	5	7	6	5	3
United States	High	2,427	2,501	2,270	2,281	2,483	2,107	1,711	1,504	1,838	1,633	1,571	1,621	1,985	1,872	2,214	2,521	2,663	2,703	2,466	2,524	2,294	2,283	2,286
Central America and Caribbean	na	0	3	2	3	0	2	0	2	3	0	2	1	1	1	2	1	3	2	2	2	3	3	3
Puerto Rico	High	0	3	1	0	0	1	0	0	2	0	0	1	1	1	1	0	1	1	1	1	1	3	2
South America	na	6	5	8	3	11	5	5	1	9	3	5	7	7	10	10	17	19	19	13	11	12	14	17
Argentina	Upper middle	1	1	3	0	3	1	0	0	2	1	2	1	1	1	1	3	2	2	1	1	0	1	2
Brazil	Upper middle	2	1	4	2	5	3	4	1	4	1	2	5	6	8	6	13	14	15	11	8	10	10	13
Europe	na	1,674	1,637	1,597	1,679	1,761	1,444	1,207	977	1,213	1,207	1,156	1,118	1,397	1,306	1,457	1,704	1,718	1,665	1,422	1,316	1,266	1,248	1,187
EU-27 + UK[a]	na	1,567	1,501	1,480	1,557	1,635	1,346	1,099	905	1,113	1,130	1,059	1,015	1,270	1,177	1,320	1,532	1,579	1,517	1,263	1,159	1,136	1,133	1,074
United Kingdom	High	258	252	265	254	225	206	165	143	173	193	170	156	201	186	216	207	210	211	194	193	201	201	177
EU-27[b]	na	1,309	1,249	1,215	1,302	1,409	1,140	935	762	940	936	889	859	1,069	991	1,104	1,325	1,368	1,306	1,069	966	935	932	896
Austria	High	11	16	13	14	17	10	17	9	5	12	10	9	16	6	16	16	22	21	18	10	11	14	9
Belgium	High	34	22	28	37	39	25	28	29	34	29	28	39	38	51	45	67	70	73	57	51	45	40	40
Denmark	High	30	41	31	37	37	39	27	25	23	19	17	21	35	33	30	33	24	30	26	22	27	19	24
Finland	High	7	11	8	9	18	9	12	10	7	8	6	9	10	8	8	10	11	12	8	6	12	10	11
France	High	343	351	330	364	393	305	203	180	210	243	220	184	242	262	242	311	296	297	250	223	221	214	220
Germany	High	663	594	608	640	681	548	482	353	462	437	394	392	475	380	507	608	653	574	443	406	387	401	367
Hungary	High	8	4	8	11	8	13	8	8	9	9	16	5	12	9	8	9	9	14	10	12	5	11	7
Ireland	High	2	2	1	3	4	5	3	2	1	2	1	3	5	4	4	7	6	4	7	8	5	3	9
Italy	High	114	97	94	83	92	72	64	64	68	62	78	66	94	81	90	101	111	106	97	88	77	70	65
Netherlands	High	45	49	46	51	47	43	45	38	40	47	49	48	48	51	40	54	66	76	54	46	62	62	63
Spain	High	23	22	15	11	26	27	15	17	29	26	28	32	37	35	51	45	40	38	37	37	32	33	33
Sweden	High	17	27	21	27	31	31	19	17	31	21	28	28	36	29	35	27	29	26	23	21	26	23	23
Other Europe	na	107	136	117	123	126	98	108	72	99	77	97	103	127	129	137	172	140	148	158	157	129	115	113
Other Europe-2020[b]	na	365	388	382	377	351	304	272	215	273	271	267	258	328	315	352	379	350	359	353	350	330	317	291
Belarus	Upper middle	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	5	6	8	4	7	6	7	4	5	2	4	6	7	9	8	12	12	13	16	8	12	8	4
Russia	Upper middle	14	9	10	10	8	7	7	7	9	8	6	8	10	13	6	18	15	14	11	14	15	12	12
Switzerland	High	87	115	97	104	107	81	89	57	82	65	81	86	107	101	116	136	109	115	128	127	99	93	94

Table SINV-58

USPTO utility patents granted in organic fine chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	0	1	1	1	2	1	1	0	2	1	0	1	4	2	2	2	1	2	1	0	0
Asia	na	849	836	782	882	969	767	665	566	672	673	614	722	874	960	1,125	1,183	1,275	1,382	1,220	1,264	1,190	1,233	1,252
China	Upper middle	10	9	9	10	11	12	20	15	16	21	24	37	58	58	93	132	189	214	233	256	260	304	342
India	Lower middle	23	36	43	46	78	85	73	65	84	76	84	81	100	105	114	153	143	207	178	200	141	151	138
Japan	High	758	722	649	739	777	579	485	419	490	476	412	487	579	639	726	676	681	689	563	538	511	472	448
Malaysia	Upper middle	0	0	0	0	0	2	1	0	3	1	0	3	0	2	4	3	3	2	1	0	1	2	2
Singapore	High	0	1	1	1	1	1	2	2	3	3	2	6	4	7	13	9	17	18	15	15	15	15	19
South Korea	High	37	44	58	56	73	67	55	45	48	70	64	72	89	102	118	135	161	167	172	185	196	221	238
Taiwan	High	20	22	19	28	27	21	26	19	27	24	23	35	42	47	53	72	78	77	56	63	60	61	59
Middle East	na	17	16	23	26	38	39	29	25	44	40	45	46	49	34	34	53	61	58	50	66	80	73	71
Israel	High	16	15	18	23	34	36	29	24	40	36	42	45	45	29	29	42	44	37	28	31	29	25	28
Africa	na	2	3	4	3	5	5	5	3	2	2	3	5	4	6	3	9	2	6	8	6	3	3	4
South Africa	Upper middle	2	3	3	3	5	5	5	3	1	2	2	4	3	5	2	7	1	4	6	5	2	1	3
Australia and Oceania	na	14	10	12	18	16	19	17	12	19	15	11	18	22	26	27	35	28	36	28	27	26	26	27
Australia	High	12	7	8	13	14	16	14	11	14	12	10	14	17	21	23	31	24	29	24	22	21	21	25
New Zealand	High	2	2	4	4	2	3	3	1	5	3	1	4	5	5	4	4	4	7	4	5	5	5	2
Unclassified	na	1	1	2	1	1	0	0	0	0	0	0	0	0	0	1	2	1	0	1	1	1	3	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-59

USPTO utility patents granted in biotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,203	4,229	3,652	4,127	3,752	3,399	2,978	2,589	3,590	3,548	3,229	3,352	4,284	4,369	4,494	4,735	5,303	5,342	5,530	5,757	5,773	6,106	6,236
North America	na	2,827	2,860	2,488	2,738	2,562	2,261	1,949	1,670	2,287	2,275	2,019	2,145	2,656	2,610	2,714	2,818	3,062	3,106	3,187	3,431	3,384	3,601	3,651
Canada	High	104	130	129	140	137	100	97	68	116	121	96	105	121	126	138	129	112	129	117	132	132	118	123
Mexico	Upper middle	3	2	3	4	2	2	2	1	1	0	1	3	4	2	4	4	4	2	4	4	4	5	7
United States	High	2,719	2,728	2,356	2,595	2,423	2,158	1,850	1,601	2,171	2,155	1,922	2,037	2,530	2,482	2,572	2,685	2,947	2,975	3,066	3,295	3,248	3,478	3,521
Central America and Caribbean	na	3	1	1	2	3	3	1	1	1	2	2	2	3	2	4	6	5	5	5	5	3	3	4
Puerto Rico	High	0	0	0	1	0	0	0	0	1	1	0	0	1	0	1	0	0	1	1	2	1	1	2
South America	na	4	2	3	5	5	5	7	3	14	11	7	11	14	12	15	12	15	26	20	19	23	22	27
Argentina	Upper middle	1	1	0	1	0	0	3	0	5	2	1	4	5	3	1	2	3	4	4	3	7	6	4
Brazil	Upper middle	1	1	2	4	3	4	4	2	7	6	3	4	6	5	9	8	7	17	11	10	10	10	16
Europe	na	795	842	727	852	718	695	608	518	653	685	638	642	850	895	926	976	1,188	1,207	1,267	1,206	1,245	1,301	1,359
EU-27 + UK[a]	na	737	793	668	791	661	649	567	477	602	626	582	588	772	815	852	900	1,080	1,115	1,160	1,100	1,146	1,198	1,249
United Kingdom	High	148	178	144	170	141	114	106	83	106	119	98	108	129	137	147	142	146	183	173	165	175	215	223
EU-27[b]	na	589	615	524	621	520	535	461	394	497	507	484	480	644	678	706	757	935	932	987	934	971	983	1,026
Austria	High	22	16	17	15	16	13	10	12	9	15	11	17	19	25	20	33	44	35	39	34	40	35	41
Belgium	High	40	47	41	38	40	31	33	22	28	40	28	35	43	42	42	46	50	48	54	66	61	57	56
Denmark	High	57	61	59	67	46	58	29	30	42	37	38	37	60	76	72	89	107	88	106	77	88	85	91
Finland	High	20	22	10	14	10	9	10	10	12	10	15	12	20	16	12	12	17	17	27	20	20	17	24
France	High	127	128	114	137	104	124	82	84	101	98	89	83	107	119	133	143	165	175	192	178	172	164	192
Germany	High	176	180	151	208	171	191	184	137	184	180	181	167	228	223	243	234	290	312	281	286	305	334	342
Hungary	High	4	2	1	4	3	4	7	3	3	3	1	1	3	2	4	1	3	5	8	6	2	2	2
Ireland	High	1	3	2	3	2	3	4	2	4	3	2	5	6	7	4	8	6	8	9	8	9	9	9
Italy	High	32	39	21	20	23	20	13	16	27	21	23	23	43	35	41	47	46	52	55	43	48	50	41
Netherlands	High	60	60	65	56	51	39	39	42	43	46	44	52	55	67	62	73	103	96	110	114	113	122	122
Spain	High	7	10	9	9	8	7	8	7	10	11	13	14	13	16	23	18	36	34	27	29	43	32	29
Sweden	High	35	36	27	39	38	36	36	23	27	35	32	23	30	36	39	34	50	43	42	52	46	54	62
Other Europe	na	58	49	58	61	57	46	41	42	50	58	56	54	78	80	74	77	107	92	107	106	99	102	110
Other Europe-2020[b]	na	206	227	202	231	198	160	147	124	156	178	154	163	206	216	221	219	253	275	280	272	274	317	334
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	5	8	8	6	3	7	8	5	4	7	6	10	9	10	10	12	15	17	18	19	14	16	19
Russia	Upper middle	10	5	9	7	12	6	7	10	9	17	16	15	20	25	14	15	17	12	17	12	12	10	8
Switzerland	High	41	35	40	46	38	30	23	25	35	29	28	26	45	43	46	45	67	59	68	71	71	74	80

Table SINV-59

USPTO utility patents granted in biotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	1	1	0	2	0	1	2	1	0	1	1	1	2	1	0	2	1	1	0	1
Asia	na	483	419	357	428	370	364	351	346	534	497	485	447	644	710	692	750	862	826	878	911	939	1,009	1,034
China	Upper middle	7	3	6	8	12	12	13	16	26	36	27	23	44	44	57	77	96	94	123	146	169	219	238
India	Lower middle	6	4	8	11	19	29	21	19	26	27	21	21	31	24	28	21	35	35	44	49	51	42	41
Japan	High	431	360	303	334	278	267	267	254	358	335	345	293	396	481	411	440	472	451	438	379	370	376	412
Malaysia	Upper middle	0	1	0	0	0	0	0	1	1	3	3	2	5	3	4	4	7	3	2	2	3	1	4
Singapore	High	4	3	3	3	1	4	4	4	9	7	7	8	7	9	18	20	27	26	34	31	42	46	36
South Korea	High	18	31	23	42	34	36	26	34	72	59	45	59	97	100	101	122	151	146	170	224	225	243	228
Taiwan	High	16	14	11	29	25	16	18	17	39	29	36	40	58	49	72	64	74	67	62	71	67	77	71
Middle East	na	35	42	30	35	34	37	26	16	37	33	30	44	50	59	65	81	82	89	92	108	100	93	98
Israel	High	35	42	29	34	34	37	26	16	37	32	30	44	50	58	62	79	73	84	85	99	87	78	85
Africa	na	1	3	3	4	3	2	1	0	2	2	2	3	4	4	4	6	4	11	9	5	4	8	3
South Africa	Upper middle	1	1	1	2	2	1	1	0	1	1	1	2	2	3	3	4	3	8	8	4	2	7	2
Australia and Oceania	na	54	59	43	62	57	33	36	34	61	43	47	57	64	76	73	85	84	71	71	71	73	67	58
Australia	High	51	52	38	58	45	27	27	31	49	37	40	46	51	62	59	69	64	56	55	58	62	57	48
New Zealand	High	3	7	6	4	11	5	8	3	12	7	7	11	13	14	14	16	20	15	15	13	11	10	10
Unclassified	na	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-60

USPTO utility patents granted in pharmaceuticals, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,686	5,007	4,714	5,177	5,321	4,931	3,718	3,353	4,221	3,799	3,801	4,084	5,739	5,849	6,836	7,848	8,322	8,012	7,601	8,211	7,769	8,170	8,379
North America	na	3,052	3,214	3,006	3,246	3,405	3,087	2,310	2,079	2,618	2,319	2,276	2,409	3,393	3,353	3,936	4,471	4,741	4,535	4,389	4,805	4,486	4,798	4,844
Canada	High	147	151	144	150	168	153	129	96	127	120	124	127	156	174	149	182	188	182	157	170	181	171	169
Mexico	Upper middle	1	2	5	3	0	6	2	2	2	1	3	4	5	6	10	14	12	8	11	9	8	16	8
United States	High	2,903	3,061	2,858	3,093	3,237	2,929	2,179	1,981	2,489	2,198	2,149	2,278	3,232	3,173	3,777	4,275	4,540	4,346	4,222	4,626	4,296	4,611	4,667
Central America and Caribbean	na	2	2	3	4	10	3	2	1	1	2	7	2	9	6	8	12	16	11	12	8	4	10	10
Puerto Rico	High	0	0	0	1	2	1	0	0	1	1	1	0	3	2	2	3	2	2	4	1	2	3	4
South America	na	10	8	7	10	12	16	7	5	16	9	9	13	18	19	26	30	40	33	37	31	31	43	30
Argentina	Upper middle	6	5	4	7	8	9	4	1	7	4	3	5	1	6	7	10	6	5	11	9	7	16	7
Brazil	Upper middle	1	2	3	2	2	7	1	3	7	2	4	5	12	7	12	15	19	11	18	12	14	14	11
Europe	na	1,119	1,200	1,184	1,263	1,248	1,212	904	807	985	929	964	1,023	1,469	1,499	1,720	1,940	2,050	1,937	1,742	1,849	1,718	1,752	1,831
EU-27 + UK[a]	na	1,030	1,108	1,096	1,166	1,157	1,124	835	745	910	864	888	934	1,336	1,337	1,561	1,734	1,823	1,753	1,539	1,626	1,526	1,548	1,611
United Kingdom	High	231	249	266	266	251	228	168	154	203	192	182	181	246	241	292	296	292	295	270	303	300	300	301
EU-27[b]	na	799	859	831	900	906	896	667	591	707	671	706	753	1,090	1,096	1,268	1,438	1,531	1,457	1,269	1,324	1,227	1,248	1,310
Austria	High	23	27	16	17	17	15	11	14	11	17	14	19	35	33	30	43	56	35	41	42	34	44	40
Belgium	High	37	42	44	37	53	41	41	30	42	38	40	42	57	51	54	74	79	82	81	76	77	63	75
Denmark	High	44	47	31	48	37	45	37	29	33	35	34	33	64	65	71	88	93	75	69	67	73	60	70
Finland	High	16	20	16	19	17	16	14	11	13	9	10	9	16	13	18	11	20	15	17	14	22	13	21
France	High	204	193	196	215	207	220	139	132	157	144	160	169	220	229	280	328	320	311	271	270	254	252	264
Germany	High	247	281	297	303	310	307	236	199	250	229	232	243	368	349	424	463	501	456	384	409	359	371	388
Hungary	High	8	6	7	9	12	12	7	8	7	6	10	7	14	11	12	9	8	14	9	14	10	15	12
Ireland	High	4	4	9	6	8	7	7	7	6	3	4	6	9	12	11	13	14	17	14	18	19	16	19
Italy	High	87	95	86	100	91	75	66	60	65	71	74	74	121	128	149	162	178	167	147	130	126	134	130
Netherlands	High	33	41	36	41	38	39	36	34	32	38	36	45	56	70	61	70	74	76	74	81	68	91	87
Spain	High	23	16	12	16	24	23	15	13	21	22	27	32	41	41	56	64	65	87	59	74	70	64	65
Sweden	High	64	66	69	69	81	74	43	45	49	41	52	45	65	66	74	68	79	82	65	82	76	73	93
Other Europe	na	89	92	87	97	90	88	69	61	75	65	76	89	133	162	159	206	227	184	203	222	191	204	220
Other Europe-2020[b]	na	320	341	353	363	342	316	237	216	278	258	258	270	379	403	451	502	519	479	473	525	491	504	521
Belarus	Upper middle	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Moldova	Lower middle	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	11	12	17	15	8	10	8	8	7	11	7	11	16	18	19	23	31	24	24	28	25	26	32
Russia	Upper middle	13	14	10	9	12	8	5	7	5	8	7	9	14	12	13	25	22	24	26	32	22	19	17
Switzerland	High	61	60	55	66	62	60	54	44	58	45	60	63	100	122	121	145	154	124	144	142	128	150	163

Table SINV-60

USPTO utility patents granted in pharmaceuticals, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	2	0	0	1	2	0	0	0	0	0	0	0	0	1	0	2	2	2	2	4	1	3	3
Asia	na	400	452	412	534	506	482	401	370	500	437	427	499	695	775	927	1,120	1,175	1,206	1,158	1,238	1,236	1,282	1,371
China	Upper middle	7	10	11	16	18	21	25	26	34	40	42	45	60	66	104	153	172	188	228	253	285	349	413
India	Lower middle	11	14	17	32	37	53	32	42	51	42	42	40	58	68	106	130	148	157	166	178	149	148	152
Japan	High	348	378	332	430	383	338	271	240	333	274	252	319	426	466	481	548	541	538	425	427	407	388	396
Malaysia	Upper middle	0	0	0	0	2	2	1	0	1	1	2	0	3	2	5	3	9	5	5	5	7	3	4
Singapore	High	1	2	4	1	1	3	3	2	4	4	7	4	6	10	14	17	19	23	23	22	26	35	25
South Korea	High	23	34	35	37	41	44	46	34	44	50	41	46	76	85	116	143	165	168	197	220	227	221	249
Taiwan	High	8	13	12	15	22	21	22	24	31	24	38	42	63	73	94	121	117	120	109	129	130	131	123
Middle East	na	44	63	49	48	68	72	48	47	51	55	65	75	87	103	118	148	174	165	148	159	177	163	192
Israel	High	43	61	47	46	66	70	48	44	49	54	65	73	85	100	111	145	157	146	127	137	134	125	140
Africa	na	5	4	6	7	6	8	3	3	3	6	3	6	10	9	10	17	10	11	10	9	12	15	6
South Africa	Upper middle	3	3	1	4	4	5	2	1	2	2	1	3	3	4	6	11	4	7	7	5	8	8	4
Australia and Oceania	na	53	62	44	64	64	52	42	40	46	41	50	56	59	85	92	107	115	112	103	110	105	107	95
Australia	High	48	51	36	58	49	40	32	32	39	33	43	44	47	65	76	91	103	103	91	98	91	93	84
New Zealand	High	5	11	9	6	15	11	10	8	7	8	7	12	12	20	15	16	12	9	12	12	14	14	11
Unclassified	na	2	2	2	1	3	0	0	0	0	1	0	0	0	0	1	2	0	2	2	1	1	3	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-61

USPTO utility patents granted in macromolecular chemistry, polymers, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,746	2,782	2,791	3,034	3,118	2,957	2,667	1,933	2,095	1,768	1,494	1,661	2,549	2,482	2,583	2,993	3,197	3,166	3,157	3,180	2,919	3,088	3,235
North America	na	1,272	1,320	1,313	1,391	1,458	1,315	1,122	887	938	810	697	751	1,098	1,047	1,040	1,181	1,240	1,206	1,194	1,186	1,086	1,102	1,129
Canada	High	32	32	37	49	61	36	42	28	30	31	28	26	47	30	36	40	47	59	53	71	53	39	48
Mexico	Upper middle	1	1	1	0	1	2	1	0	0	0	2	3	1	3	2	5	3	3	3	6	7	2	4
United States	High	1,240	1,287	1,275	1,342	1,396	1,277	1,079	859	907	779	667	721	1,050	1,014	1,002	1,136	1,191	1,145	1,138	1,110	1,026	1,061	1,077
Central America and Caribbean	na	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	3	2	4	1	2	1	3	2	3	1	2	3	4	4	4	3	11	7	9	7	10	6	5
Argentina	Upper middle	0	1	1	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Brazil	Upper middle	1	2	3	1	2	1	2	1	1	0	1	3	3	2	3	2	9	6	8	7	7	4	3
Europe	na	762	716	714	794	780	821	740	485	540	441	343	365	623	571	647	779	814	783	739	735	687	733	714
EU-27 + UK[a]	na	710	659	671	747	737	775	704	456	519	410	324	339	583	526	595	715	766	735	677	665	631	683	667
United Kingdom	High	53	47	53	42	52	44	48	35	31	30	18	22	42	40	38	48	42	51	52	48	58	57	50
EU-27[b]	na	657	612	618	704	686	731	656	421	487	379	306	317	540	486	557	668	724	683	625	617	573	626	616
Austria	High	6	12	12	13	13	7	6	5	8	5	5	7	11	6	18	18	28	21	29	25	26	32	35
Belgium	High	45	47	51	73	63	53	39	33	34	29	22	23	56	39	49	68	60	58	47	43	39	40	37
Denmark	High	1	2	1	2	3	2	2	3	1	1	1	2	2	3	2	5	6	6	7	6	4	5	5
Finland	High	10	11	12	17	16	17	11	9	5	7	9	7	13	8	9	19	15	18	17	16	18	21	18
France	High	90	72	81	90	82	92	86	62	67	58	42	47	71	70	81	105	108	100	100	96	103	101	110
Germany	High	385	354	341	375	358	409	390	239	275	197	164	146	260	258	276	314	362	319	274	272	226	266	240
Hungary	High	0	0	1	1	1	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	1	1	2
Ireland	High	1	1	1	1	0	1	1	3	0	1	2	1	3	4	5	4	6	2	2	3	2	2	2
Italy	High	56	54	57	67	70	57	58	31	54	36	34	45	51	44	52	53	52	55	60	64	60	60	61
Netherlands	High	50	47	43	51	62	65	51	21	26	34	16	26	49	37	42	47	55	62	55	65	61	63	67
Spain	High	4	5	5	3	3	5	4	4	4	3	1	3	5	6	5	6	8	13	7	5	9	10	10
Sweden	High	6	5	5	9	6	9	4	5	8	5	4	5	10	3	12	20	15	18	19	14	12	16	18
Other Europe	na	52	57	43	48	43	47	36	28	21	31	19	25	40	45	52	64	48	48	62	70	57	50	47
Other Europe-2020[b]	na	105	104	96	90	95	91	84	63	52	61	37	48	82	85	90	112	90	99	114	118	114	107	97
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	2	2	4	4	10	6	5	5	2	2	4	3	6	4	7	4	3	4	4	3	2	4
Russia	Upper middle	5	6	5	6	2	3	2	1	1	4	3	4	4	2	2	3	4	4	5	8	8	5	3
Switzerland	High	45	46	32	37	36	33	27	22	14	23	14	17	31	36	44	53	38	41	49	54	41	40	35

Table SINV-61

USPTO utility patents granted in macromolecular chemistry, polymers, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Asia	na	698	728	746	823	852	794	783	545	598	506	443	524	809	841	870	1,004	1,089	1,125	1,175	1,202	1,084	1,199	1,332
China	Upper middle	2	3	8	5	10	12	10	2	8	14	13	15	22	24	39	55	63	79	89	106	98	127	145
India	Lower middle	6	5	7	9	9	8	12	10	11	14	10	14	21	14	15	15	30	24	24	37	38	30	20
Japan	High	650	660	661	745	755	684	657	457	500	413	353	425	632	652	649	737	774	737	776	766	684	742	796
Malaysia	Upper middle	1	2	1	0	0	1	2	2	0	0	0	1	1	2	2	3	6	1	3	4	2	5	3
Singapore	High	1	2	1	1	3	1	2	3	4	4	1	0	4	3	5	7	8	11	9	9	7	11	12
South Korea	High	24	31	47	42	53	65	76	55	60	46	53	54	95	105	118	140	157	207	221	230	208	231	283
Taiwan	High	15	23	21	21	21	22	22	17	14	14	11	15	31	42	41	46	50	59	53	46	46	51	62
Middle East	na	4	5	7	7	9	13	7	7	9	4	2	11	5	10	12	14	30	29	28	32	35	35	44
Israel	High	3	4	5	6	4	9	3	5	4	3	2	9	3	8	6	6	12	13	12	9	10	12	15
Africa	na	1	1	1	3	5	1	0	1	0	2	1	2	0	1	1	2	0	1	1	3	1	1	3
South Africa	Upper middle	1	1	1	3	5	1	0	0	0	2	0	2	0	1	1	1	0	0	0	1	1	0	3
Australia and Oceania	na	7	10	6	13	11	11	12	5	8	3	5	5	11	6	10	10	12	15	10	14	13	10	9
Australia	High	6	10	5	12	10	11	12	5	7	2	4	5	10	5	7	9	11	14	8	14	12	9	7
New Zealand	High	1	0	0	1	0	0	0	0	1	1	1	0	2	1	3	0	1	1	2	0	1	1	1
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	3	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-62

USPTO utility patents granted in food chemistry, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	946	1,236	1,225	1,170	1,053	948	933	699	824	850	763	887	1,133	1,219	1,572	1,828	1,831	1,749	1,744	1,793	1,722	2,061	2,108
North America	na	647	810	820	778	653	594	597	478	592	636	578	698	801	869	1,150	1,324	1,261	1,203	1,192	1,218	1,194	1,392	1,386
Canada	High	21	27	25	31	23	33	22	23	22	26	29	33	55	62	59	98	90	92	63	76	94	94	78
Mexico	Upper middle	1	3	1	4	3	1	1	3	1	1	2	1	3	2	4	5	4	8	6	9	5	8	8
United States	High	624	780	794	743	627	561	573	451	569	609	547	663	744	805	1,086	1,221	1,168	1,103	1,122	1,134	1,096	1,289	1,300
Central America and Caribbean	na	2	1	2	0	1	0	1	1	0	1	0	2	1	0	1	1	1	2	1	0	0	1	1
Puerto Rico	High	1	0	1	0	1	0	1	0	0	0	0	2	0	0	0	1	0	1	1	0	0	0	0
South America	na	5	4	8	3	5	4	4	4	4	10	8	7	13	6	3	12	30	8	11	12	6	12	13
Argentina	Upper middle	3	1	3	0	2	1	1	2	2	5	5	6	1	2	1	3	0	1	2	6	2	3	3
Brazil	Upper middle	0	1	5	1	2	0	3	3	2	4	2	1	10	2	1	3	22	2	5	3	2	5	5
Europe	na	179	267	230	238	232	206	189	138	114	118	100	101	185	196	246	305	346	354	343	351	317	392	435
EU-27 + UK[a]	na	157	231	197	203	201	179	167	124	99	107	94	95	163	182	223	277	310	313	303	310	279	356	387
United Kingdom	High	24	34	29	27	34	36	27	15	14	16	11	10	19	22	28	18	27	27	24	33	25	29	32
EU-27[b]	na	132	196	168	177	167	143	140	110	85	91	83	85	144	160	196	259	284	285	279	277	254	328	355
Austria	High	3	3	4	6	2	2	8	2	3	5	3	5	5	8	4	9	9	5	5	3	2	3	4
Belgium	High	3	7	8	6	3	6	5	2	7	5	6	3	5	7	11	13	13	11	11	8	11	15	11
Denmark	High	13	24	28	15	21	19	8	15	13	13	11	9	24	19	25	23	22	20	24	24	17	21	30
Finland	High	6	9	8	7	8	7	11	5	6	1	1	2	5	2	5	8	3	8	3	4	9	3	7
France	High	25	38	19	27	31	35	22	22	15	13	13	10	26	21	30	43	48	48	41	44	34	41	53
Germany	High	34	45	35	49	42	29	45	27	16	20	17	21	24	29	41	48	48	50	51	44	44	55	63
Hungary	High	1	0	0	2	1	0	0	0	0	0	0	1	0	1	0	1	1	4	7	4	1	1	4
Ireland	High	1	0	1	2	1	3	1	1	0	1	1	1	0	1	0	1	4	6	2	2	2	3	4
Italy	High	11	16	15	22	8	11	12	9	6	9	10	10	12	8	19	18	22	21	30	25	30	35	44
Netherlands	High	24	37	34	24	31	21	21	17	13	17	11	15	30	57	41	72	87	88	83	92	83	127	110
Spain	High	2	8	3	6	8	3	3	5	3	3	4	5	8	3	4	9	10	12	12	14	12	14	12
Sweden	High	9	9	12	11	11	8	5	4	3	3	3	2	5	2	3	6	8	7	5	5	4	6	8
Other Europe	na	22	36	33	35	31	27	22	14	15	11	6	6	22	14	23	28	36	41	39	41	38	36	48
Other Europe-2020[b]	na	46	71	62	62	65	63	49	29	29	27	17	17	41	36	51	46	63	69	63	74	63	64	80
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	3	2	2	8	4	5	2	3	0	1	1	7	1	2	3	7	6	5	5	6	4	7
Russia	Upper middle	0	1	0	0	3	0	3	2	1	0	1	1	3	2	4	1	2	3	1	2	2	1	1
Switzerland	High	21	32	30	30	16	21	14	10	10	11	4	4	11	10	16	23	27	30	34	31	28	27	36
Ukraine	Lower middle	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Asia	na	99	135	136	122	134	121	125	67	90	74	73	60	106	122	151	160	163	153	159	166	158	219	229

Table SINV-62

USPTO utility patents granted in food chemistry, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	3	1	4	5	5	3	4	2	2	5	3	1	3	6	10	10	15	21	23	27	26	42	48
India	Lower middle	1	2	2	5	9	11	10	7	9	8	11	6	2	9	5	4	7	5	10	7	8	10	13
Japan	High	80	115	114	97	102	92	94	46	64	48	48	42	81	82	92	99	98	98	86	89	76	106	92
Malaysia	Upper middle	0	1	0	1	0	0	1	0	1	1	0	1	3	1	16	13	3	1	1	2	1	2	2
Singapore	High	3	2	1	1	2	1	1	1	1	1	1	0	0	1	3	1	5	1	1	2	1	2	1
South Korea	High	7	11	6	10	11	11	11	8	9	4	7	9	15	18	20	23	24	19	29	29	36	41	57
Taiwan	High	5	2	8	5	2	4	4	3	3	5	3	1	2	5	4	10	9	7	6	9	7	14	11
Middle East	na	5	4	11	7	8	8	5	3	5	4	1	2	7	7	4	12	14	15	19	21	25	22	24
Israel	High	5	4	11	6	8	8	5	3	5	4	1	2	7	5	4	9	11	13	16	15	18	16	20
Africa	na	0	3	5	3	3	3	3	0	1	1	1	1	2	2	3	2	1	1	3	2	3	2	1
South Africa	Upper middle	0	3	4	2	3	2	3	0	1	1	1	1	2	1	3	2	1	1	3	2	2	1	1
Australia and Oceania	na	10	12	14	19	16	12	9	7	18	7	2	16	19	17	12	12	16	14	17	22	19	20	18
Australia	High	8	11	8	14	11	7	7	4	14	5	1	10	14	14	9	8	13	13	11	18	16	17	14
New Zealand	High	2	1	6	5	5	5	2	3	4	2	1	7	5	3	3	3	2	2	6	4	3	3	4
Unclassified	na	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-63

USPTO utility patents granted in basic materials chemistry, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,436	3,673	3,426	3,576	3,428	3,374	2,943	2,159	2,411	2,232	2,134	2,339	3,331	3,456	3,856	4,356	4,768	4,527	4,477	4,584	4,451	4,633	4,556
North America	na	1,870	2,027	1,872	1,841	1,746	1,706	1,460	1,087	1,232	1,102	1,057	1,185	1,695	1,773	1,985	2,221	2,454	2,188	2,129	2,167	2,081	2,128	2,076
Canada	High	67	78	71	71	70	61	56	38	43	39	42	73	80	97	98	119	140	123	106	112	91	93	78
Mexico	Upper middle	3	5	4	2	4	4	2	1	0	4	1	2	4	5	5	8	13	10	9	17	18	18	10
United States	High	1,800	1,944	1,797	1,768	1,672	1,641	1,401	1,047	1,189	1,059	1,014	1,109	1,611	1,671	1,883	2,095	2,301	2,055	2,014	2,037	1,972	2,016	1,987
Central America and Caribbean	na	0	2	1	2	1	3	1	0	2	1	0	1	0	2	2	2	1	4	2	2	3	3	3
Puerto Rico	High	0	2	1	0	0	0	0	0	0	1	0	1	0	1	1	0	1	2	2	1	0	1	1
South America	na	11	21	15	10	13	13	12	9	14	11	9	13	29	24	30	19	24	25	28	24	21	26	29
Argentina	Upper middle	0	1	0	1	0	2	1	2	1	0	0	0	1	1	2	1	1	2	1	3	1	2	1
Brazil	Upper middle	3	6	7	4	4	7	5	7	9	4	6	8	15	14	9	12	14	10	20	13	11	14	20
Europe	na	919	975	905	1,017	968	936	764	572	616	536	471	495	745	721	815	923	1,055	1,010	947	961	918	959	924
EU-27 + UK[a]	na	849	908	842	941	895	878	707	531	569	496	437	448	684	669	753	845	969	924	848	864	826	869	828
United Kingdom	High	184	167	147	177	139	151	142	104	106	90	83	78	142	128	125	132	149	151	125	126	135	145	132
EU-27[b]	na	666	741	695	764	756	727	565	428	464	406	354	369	542	540	628	713	820	773	723	738	691	724	696
Austria	High	5	5	4	7	8	7	5	5	6	4	4	2	5	6	8	4	13	13	11	11	13	11	11
Belgium	High	80	88	71	66	85	72	45	39	37	28	20	33	38	35	43	53	63	41	39	41	42	41	49
Denmark	High	14	24	11	20	13	19	9	7	8	13	6	8	12	18	16	19	14	17	26	22	26	26	31
Finland	High	8	13	7	11	9	8	6	4	4	8	5	7	4	11	14	11	14	17	13	14	25	18	26
France	High	98	114	108	101	108	100	72	59	56	71	63	58	97	96	103	123	137	125	148	142	143	132	138
Germany	High	378	386	381	450	424	400	336	245	277	218	203	202	293	279	343	375	449	414	344	359	316	357	303
Hungary	High	1	1	1	3	1	2	1	2	1	0	1	0	1	1	2	3	2	1	3	1	0	0	2
Ireland	High	1	0	1	2	1	4	4	4	2	3	2	2	2	2	4	5	3	4	2	4	4	7	3
Italy	High	25	36	37	27	40	44	20	15	20	14	19	14	23	28	23	29	24	31	31	35	29	29	25
Netherlands	High	37	48	56	52	48	52	44	32	41	32	15	31	49	39	41	59	64	67	66	63	57	67	57
Spain	High	9	7	6	10	6	7	7	7	3	3	5	4	7	9	11	11	12	17	15	20	11	10	21
Sweden	High	9	16	9	14	10	12	12	6	8	10	8	6	7	12	13	12	14	13	16	15	11	13	17
Other Europe	na	69	67	63	76	73	59	57	41	46	40	34	48	62	52	62	78	86	86	99	98	92	90	96
Other Europe-2020[b]	na	253	234	210	253	212	210	199	144	152	130	117	126	204	181	187	210	235	237	224	224	227	235	228
Belarus	Upper middle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	3	4	5	6	4	3	7	2	3	3	5	3	7	3	7	10	10	9	10	11	13	14	12
Russia	Upper middle	6	5	6	5	7	6	6	4	6	8	4	6	11	5	5	10	11	10	10	10	9	11	11
Switzerland	High	59	56	52	63	61	49	41	33	36	28	24	37	43	41	48	56	62	64	73	71	63	60	68

Table SINV-63

USPTO utility patents granted in basic materials chemistry, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	2	1	0	1	1	0	1	1	0	0	1	0	1	2	1	2	1	0	2	1
Asia	na	596	611	594	681	663	676	673	453	521	555	562	613	806	869	960	1,103	1,139	1,183	1,255	1,293	1,272	1,334	1,332
China	Upper middle	8	6	5	5	14	10	16	10	14	8	15	17	26	32	43	65	80	115	151	145	177	187	202
India	Lower middle	5	10	10	13	20	17	18	16	16	9	10	15	20	11	23	34	45	54	68	76	78	90	85
Japan	High	557	553	545	603	573	584	567	375	439	472	462	478	629	683	719	823	834	800	798	807	718	761	748
Malaysia	Upper middle	0	1	1	1	1	1	1	3	1	2	3	7	5	7	4	6	7	7	8	6	4	2	5
Singapore	High	1	2	2	2	3	3	2	1	2	4	2	3	2	3	5	6	5	14	7	14	13	12	13
South Korea	High	14	26	16	35	32	42	44	32	35	43	45	64	82	98	118	110	109	138	166	193	224	218	216
Taiwan	High	9	11	13	20	18	18	25	16	14	15	25	28	41	35	44	53	54	50	53	45	56	59	57
Middle East	na	11	7	6	9	10	9	9	9	8	9	9	12	20	23	28	45	44	62	79	93	108	142	153
Israel	High	9	7	5	8	9	5	8	8	6	6	6	5	11	16	15	25	18	21	25	29	22	29	23
Africa	na	4	9	4	4	6	8	4	7	1	6	7	5	7	9	12	12	14	9	5	9	8	9	6
South Africa	Upper middle	4	7	3	3	5	5	3	7	1	6	7	4	7	9	12	11	12	8	3	8	6	6	5
Australia and Oceania	na	22	20	27	13	19	21	21	22	17	13	20	16	29	34	23	30	36	46	32	34	39	31	32
Australia	High	19	17	24	12	17	19	19	22	17	11	17	14	27	31	20	23	31	40	23	29	32	27	23
New Zealand	High	3	3	3	1	3	2	2	0	0	1	2	2	3	4	4	7	5	5	9	5	7	4	8
Unclassified	na	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-64

USPTO utility patents granted in materials, metallurgy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,146	2,319	2,094	2,371	2,402	2,311	2,038	1,585	1,602	1,454	1,356	1,676	2,330	2,326	2,522	2,647	2,771	2,804	2,760	3,029	2,981	3,452	3,399
North America	na	1,010	1,055	939	1,028	1,014	1,004	881	696	730	661	602	739	1,001	962	999	1,078	1,103	1,043	1,014	1,149	1,126	1,320	1,285
Canada	High	58	75	52	57	70	62	50	39	44	33	32	39	52	49	52	54	57	48	51	51	51	59	57
Mexico	Upper middle	5	8	10	3	6	4	3	0	4	3	2	6	6	7	6	8	8	4	5	5	4	4	7
United States	High	947	972	877	969	938	938	829	657	682	625	568	695	943	907	941	1,016	1,038	991	958	1,093	1,071	1,257	1,222
Central America and Caribbean	na	1	0	0	1	1	2	1	0	0	1	0	0	1	0	0	1	2	0	2	0	0	1	1
Puerto Rico	High	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	1
South America	na	6	5	9	9	8	8	6	2	6	7	6	9	9	14	13	10	20	18	15	15	10	18	13
Argentina	Upper middle	1	0	0	1	0	1	0	0	0	0	0	0	0	1	2	0	2	2	1	1	0	2	0
Brazil	Upper middle	1	1	2	4	3	4	2	0	3	3	2	5	5	8	5	7	12	12	11	11	4	11	9
Europe	na	513	553	553	626	618	547	488	382	358	321	300	348	497	490	548	569	608	628	609	610	614	697	690
EU-27 + UK[a]	na	460	497	507	583	566	498	445	358	331	299	276	322	465	453	499	528	562	579	551	558	560	647	636
United Kingdom	High	58	65	42	48	45	53	39	24	33	26	23	20	36	41	40	42	46	60	58	48	66	76	67
EU-27[b]	na	402	432	465	535	521	446	406	333	298	272	252	302	429	412	460	486	516	519	493	511	494	571	569
Austria	High	17	29	19	34	30	29	19	17	16	17	8	14	21	20	23	22	25	25	29	33	34	32	26
Belgium	High	13	14	15	17	23	12	20	12	14	7	10	15	23	15	15	18	28	26	26	24	19	26	31
Denmark	High	9	13	11	11	14	8	12	10	11	5	4	7	8	7	7	7	9	8	6	6	10	6	12
Finland	High	8	5	5	11	8	9	15	9	6	5	4	10	16	6	8	12	9	16	14	21	12	17	13
France	High	102	110	110	121	97	85	66	65	53	56	55	63	90	87	127	111	116	126	111	109	110	124	122
Germany	High	184	166	226	235	228	208	199	157	137	122	101	133	181	189	203	222	225	205	205	219	216	270	248
Hungary	High	2	3	1	1	1	2	1	0	0	1	1	0	1	1	0	2	1	1	1	1	1	1	2
Ireland	High	1	1	0	0	1	1	1	1	0	1	1	2	1	3	1	3	1	3	1	2	4	1	2
Italy	High	19	26	29	30	35	28	20	19	21	14	16	11	26	25	20	23	29	33	34	27	28	28	31
Netherlands	High	17	20	15	15	16	16	19	15	11	10	17	18	17	23	15	22	24	18	16	18	19	13	15
Spain	High	1	7	6	4	8	9	4	4	6	2	4	3	4	6	7	7	10	7	10	10	6	12	23
Sweden	High	20	35	24	45	49	34	25	19	20	29	26	22	30	25	23	26	25	36	25	31	21	28	33
Other Europe	na	53	56	46	44	52	49	43	25	27	22	24	26	33	37	49	42	46	49	59	52	54	49	55
Other Europe-2020[b]	na	112	121	88	91	97	101	82	49	60	48	47	46	68	78	88	84	92	109	116	100	120	126	122
Belarus	Upper middle	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	8	5	8	5	6	6	10	5	4	4	7	2	7	5	8	8	9	9	9	8	6	5	5
Russia	Upper middle	12	9	6	9	11	9	12	7	7	5	4	8	9	6	3	8	8	8	10	7	9	6	6
Switzerland	High	33	39	29	27	31	26	20	10	14	12	10	14	14	21	33	23	27	27	30	32	35	34	42

Table SINV-64

USPTO utility patents granted in materials, metallurgy, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	2	1	2	3	4	0	3	1	0	0	1	1	2	1	0	1	1	2	1	1	0	0
Asia	na	593	661	558	664	723	710	625	477	467	438	421	539	763	802	908	928	970	1,042	1,056	1,175	1,162	1,326	1,320
China	Upper middle	4	5	5	4	6	2	8	3	6	11	9	20	32	32	55	61	87	90	98	149	154	186	190
India	Lower middle	3	5	5	4	8	8	15	9	11	11	10	6	10	8	16	17	18	21	19	18	25	20	28
Japan	High	530	586	499	580	643	632	535	416	395	362	358	433	614	629	684	679	689	718	713	769	754	868	827
Malaysia	Upper middle	0	0	0	0	0	0	3	1	2	1	1	0	1	1	1	1	2	0	0	2	1	0	1
Singapore	High	1	0	2	1	3	4	4	2	2	1	1	3	2	2	2	3	3	6	11	8	9	10	7
South Korea	High	35	46	33	56	41	44	37	33	33	31	26	51	73	98	101	119	128	157	172	193	177	199	219
Taiwan	High	20	19	14	17	22	19	22	12	18	21	17	26	31	30	46	45	40	45	40	32	40	39	42
Middle East	na	5	8	9	7	6	6	6	5	9	6	9	10	11	14	21	23	29	29	36	46	42	61	60
Israel	High	5	7	8	6	4	6	6	5	8	5	7	7	7	8	8	8	12	6	11	9	9	11	9
Africa	na	2	6	4	10	6	6	8	6	11	3	3	7	9	9	7	12	8	11	5	9	3	4	3
South Africa	Upper middle	2	5	3	10	6	6	7	6	10	3	3	7	9	9	7	12	8	10	5	7	3	4	1
Australia and Oceania	na	15	30	21	25	26	27	24	16	20	18	16	25	39	35	27	26	30	32	22	23	25	24	26
Australia	High	13	30	20	23	26	26	23	15	20	18	15	24	37	33	24	24	30	30	20	22	23	21	24
New Zealand	High	2	0	2	2	0	2	1	1	0	1	1	1	1	2	3	1	1	3	2	1	1	3	1
Unclassified	na	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0

na = not applicable, metric not calculated at this level.

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[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-65

USPTO utility patents granted in surface technology, coating, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,142	2,360	2,506	2,655	2,677	2,619	2,476	1,918	1,762	1,666	1,574	1,565	2,228	2,307	2,604	2,767	2,917	3,037	3,190	3,578	3,529	3,934	3,838
North America	na	1,156	1,270	1,329	1,422	1,393	1,407	1,271	1,042	906	866	798	814	1,067	1,077	1,220	1,272	1,270	1,331	1,381	1,543	1,460	1,656	1,615
Canada	High	29	28	35	41	42	39	34	29	29	29	20	18	21	36	51	39	40	40	53	55	52	56	60
Mexico	Upper middle	0	2	0	1	0	0	3	0	1	1	1	1	0	0	1	2	1	2	3	4	5	6	3
United States	High	1,127	1,240	1,294	1,379	1,351	1,368	1,234	1,013	877	836	777	796	1,045	1,041	1,167	1,231	1,229	1,289	1,325	1,485	1,403	1,594	1,552
Central America and Caribbean	na	2	2	3	2	7	6	3	1	2	1	1	0	1	1	0	3	1	0	0	0	0	0	0
Puerto Rico	High	1	0	0	1	0	2	0	0	1	0	0	0	0	0	0	3	1	0	0	0	0	0	0
South America	na	2	2	0	2	0	2	4	1	1	3	2	2	3	3	5	11	4	7	5	6	8	14	10
Argentina	Upper middle	1	0	0	0	0	0	2	0	0	0	0	0	0	1	1	1	0	0	0	0	1	1	1
Brazil	Upper middle	1	2	0	1	0	1	0	1	1	2	2	0	1	1	1	4	2	5	3	4	3	9	7
Europe	na	369	390	391	482	462	444	404	306	310	258	253	219	396	417	448	472	495	578	591	661	657	704	670
EU-27 + UK[a]	na	340	359	359	438	424	406	363	282	279	235	227	206	366	382	412	428	460	533	535	602	607	655	629
United Kingdom	High	38	44	37	51	51	36	28	26	25	27	22	16	40	48	51	54	48	69	52	67	67	64	56
EU-27[b]	na	302	314	322	387	373	371	335	256	254	208	205	190	325	334	361	374	412	464	482	535	541	592	573
Austria	High	7	10	10	14	14	10	8	6	6	6	6	5	10	12	12	12	14	12	20	23	22	25	22
Belgium	High	17	9	11	17	17	13	8	12	8	9	8	12	17	20	17	16	20	24	25	26	26	35	34
Denmark	High	1	2	4	1	5	4	2	2	1	1	3	3	3	5	4	4	8	4	7	7	9	9	8
Finland	High	8	7	6	13	11	14	19	11	16	9	10	15	13	10	7	15	12	15	19	31	27	35	30
France	High	53	50	53	60	51	57	50	30	35	33	26	35	53	43	57	63	72	78	80	98	106	108	105
Germany	High	155	181	168	209	202	205	184	141	132	98	96	81	157	158	165	184	209	237	224	245	249	264	255
Hungary	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0
Ireland	High	0	0	0	0	2	2	2	0	2	0	4	2	2	3	6	2	5	4	4	4	3	6	4
Italy	High	26	19	28	27	22	24	20	13	17	16	10	13	20	19	26	20	17	26	25	21	32	38	36
Netherlands	High	11	10	16	11	17	15	15	14	10	14	14	9	17	19	20	20	20	24	31	38	27	25	27
Spain	High	2	1	2	0	4	1	3	3	2	2	0	1	4	4	7	3	5	8	11	10	5	13	11
Sweden	High	22	24	23	31	25	20	24	21	25	15	21	11	22	37	37	28	23	22	22	21	21	24	24
Other Europe	na	28	31	32	44	38	37	41	24	31	23	26	13	30	35	37	44	36	45	57	58	50	49	41
Other Europe-2020[b]	na	67	75	68	95	89	73	69	50	56	50	48	29	70	83	87	97	83	114	109	126	117	112	97
Belarus	Upper middle	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	2	2	2	1	2	1	3	3	4	2	7	2	1	4	3	4	2	4	7	6	1	3	3
Russia	Upper middle	7	5	7	12	7	8	6	3	4	4	2	3	3	4	5	1	1	3	5	4	4	6	4
Switzerland	High	17	22	19	29	27	24	28	15	21	14	14	7	24	24	26	36	28	32	41	44	43	37	32

Table SINV-65

USPTO utility patents granted in surface technology, coating, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	2	2	1	1	1	1	1	1	0	1	2	0	0	0	1	1	1	3	2	0	0	0	0
Asia	na	599	673	766	726	792	741	770	557	532	520	507	516	740	785	909	986	1,119	1,095	1,176	1,328	1,361	1,495	1,486
China	Upper middle	2	3	2	4	4	3	4	6	6	6	4	7	25	20	34	50	63	60	92	120	134	177	169
India	Lower middle	0	2	0	0	1	1	1	2	2	1	3	1	3	4	6	7	7	9	13	13	13	21	18
Japan	High	541	586	650	618	656	615	623	451	417	425	392	413	562	604	673	669	763	749	753	836	873	966	947
Malaysia	Upper middle	0	0	0	0	1	0	1	1	1	0	0	0	0	0	1	3	3	2	2	1	3	4	5
Singapore	High	0	1	4	7	8	8	7	6	5	4	3	3	5	4	4	4	6	6	12	10	11	9	11
South Korea	High	28	37	54	39	68	59	76	54	65	43	68	68	91	92	102	112	148	179	203	247	213	220	224
Taiwan	High	28	43	54	58	54	54	57	38	37	41	35	24	52	60	87	140	128	87	98	99	109	94	106
Middle East	na	6	8	3	6	11	9	6	4	5	7	3	5	7	12	10	13	14	13	21	22	25	43	34
Israel	High	6	8	3	6	11	9	6	4	5	6	3	5	7	11	7	7	12	10	15	12	12	18	16
Africa	na	2	2	4	4	1	0	1	0	0	0	0	0	3	0	4	1	2	2	3	2	1	1	0
South Africa	Upper middle	2	2	3	3	1	0	1	0	0	0	0	0	2	0	3	1	1	1	2	2	1	1	0
Australia and Oceania	na	6	11	10	12	10	9	16	8	5	10	10	9	10	11	8	9	13	13	12	15	16	20	22
Australia	High	5	9	9	11	9	9	14	7	5	9	8	7	10	10	8	9	11	10	11	11	13	17	19
New Zealand	High	1	2	1	2	1	0	2	0	0	1	2	2	1	1	0	0	2	2	1	4	2	3	3
Unclassified	na	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-66

USPTO utility patents granted in microstructural technology and nanotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	408	438	471	574	681	886	1,011	950	1,117	1,018	1,039	1,123	1,469	1,437	1,392	1,533	1,646	1,460	1,267	1,117	882	967	966
North America	na	200	213	239	309	371	504	568	551	612	558	571	569	698	669	654	729	784	695	601	534	400	453	469
Canada	High	3	5	5	5	2	15	15	14	16	12	17	11	22	22	22	20	24	22	20	14	8	16	15
Mexico	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	1	0	1	1
United States	High	197	208	234	304	369	489	553	537	595	545	553	558	676	646	632	708	759	672	581	519	391	436	453
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	0	1	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0
South America	na	0	1	0	0	0	1	0	1	0	0	0	0	1	1	2	1	2	1	0	2	1	2	2
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Brazil	Upper middle	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	1	2	1	0	1	1	1	1
Europe	na	65	52	50	58	73	86	101	101	116	113	110	125	201	206	207	235	245	241	213	202	180	181	175
EU-27 + UK[a]	na	60	47	44	52	67	76	89	93	104	106	97	116	183	185	193	218	225	223	193	188	167	169	160
United Kingdom	High	9	9	8	6	10	10	14	16	15	12	10	15	17	15	14	20	25	22	19	20	14	23	16
EU-27[b]	na	50	38	37	46	58	66	75	77	89	93	87	101	166	171	179	198	200	201	174	168	153	145	143
Austria	High	1	0	1	0	0	0	1	2	2	2	3	2	5	5	6	6	2	6	3	6	7	6	10
Belgium	High	2	1	0	1	2	0	3	1	3	2	3	5	8	10	10	11	8	9	7	8	9	13	10
Denmark	High	0	0	0	0	1	2	1	2	1	2	3	2	1	1	1	2	2	3	3	1	3	5	2
Finland	High	1	1	0	0	1	1	2	2	1	1	0	2	2	4	5	4	2	3	5	8	3	8	4
France	High	16	13	9	9	11	12	14	15	13	14	13	18	46	42	40	38	45	44	35	28	28	27	21
Germany	High	20	17	18	21	27	38	36	41	47	49	41	44	63	62	72	80	85	85	69	71	71	50	61
Hungary	High	0	0	0	1	0	0	0	0	0	0	1	0	2	1	0	0	1	1	0	1	0	0	0
Ireland	High	0	0	0	1	1	1	1	0	2	0	1	1	2	1	2	4	3	1	1	2	2	1	4
Italy	High	2	1	1	3	4	2	5	3	7	8	8	5	10	14	7	13	13	16	14	15	11	22	20
Netherlands	High	4	3	1	5	5	5	5	6	9	11	10	14	20	15	22	25	24	16	20	18	13	7	7
Spain	High	0	1	1	2	1	1	1	0	0	0	1	1	2	2	1	4	5	5	4	3	2	2	0
Sweden	High	2	1	5	2	3	3	5	4	2	4	4	5	5	8	10	6	7	8	6	4	3	3	3
Other Europe	na	5	5	6	6	6	10	11	8	12	7	13	8	18	21	14	16	20	18	20	14	13	13	15
Other Europe-2020[b]	na	15	14	13	12	16	20	25	24	27	20	23	24	35	35	28	37	45	39	39	34	27	36	31
Belarus	Upper middle	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	0	1	1	1	0	2	0	2	0	1	1	1	1	1	0	1	1	0	1	1	0	1
Russia	Upper middle	1	1	2	2	2	2	2	2	2	1	3	2	2	2	2	4	4	2	4	3	1	0	3
Switzerland	High	4	3	3	4	3	6	7	6	7	4	8	5	14	15	10	10	14	12	14	10	10	9	10
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0
Asia	na	140	169	175	189	228	285	330	284	369	327	346	409	551	539	513	543	589	497	428	360	281	310	294

Table SINV-66

USPTO utility patents granted in microstructural technology and nanotechnology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	1	0	0	0	1	1	3	3	8	7	7	17	23	22	29	47	65	60	59	60	40	58	65
India	Lower middle	0	0	0	0	1	1	2	1	2	2	1	2	1	2	4	6	8	9	6	7	7	4	3
Japan	High	129	155	159	170	193	244	264	229	277	236	236	274	360	352	310	300	299	213	172	115	88	92	73
Malaysia	Upper middle	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	2	2
Singapore	High	0	1	0	1	2	4	3	3	3	4	4	4	6	4	8	6	13	11	14	13	8	11	11
South Korea	High	9	11	6	13	20	26	37	32	51	42	63	80	112	112	91	103	112	109	87	72	57	64	56
Taiwan	High	2	3	10	5	11	9	19	15	27	35	33	30	49	46	70	79	92	93	88	91	79	77	83
Middle East	na	2	3	3	4	2	5	5	3	3	5	5	7	7	9	12	17	17	17	17	15	14	15	18
Israel	High	2	3	3	4	2	5	5	3	3	4	5	6	7	7	8	12	11	9	13	11	8	7	6
Africa	na	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	3	2	1	1	1	1	0	1
South Africa	Upper middle	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0
Australia and Oceania	na	1	1	2	13	7	6	7	10	16	13	7	12	10	12	5	4	7	8	6	3	5	5	6
Australia	High	1	1	2	13	7	6	7	10	16	13	7	11	10	12	5	4	7	7	5	3	5	5	6
New Zealand	High	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-67

USPTO utility patents granted in chemical engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,442	3,692	3,448	3,467	3,328	3,317	2,983	2,577	2,726	2,460	2,463	2,479	3,425	3,480	3,695	4,018	4,361	4,600	4,766	5,002	4,925	5,587	5,625
North America	na	1,996	2,234	2,030	1,955	1,844	1,897	1,740	1,491	1,572	1,401	1,362	1,383	1,816	1,871	1,969	2,074	2,213	2,331	2,360	2,581	2,423	2,758	2,806
Canada	High	92	89	94	101	87	82	74	59	74	56	52	58	68	81	97	83	110	118	124	125	127	139	158
Mexico	Upper middle	1	3	2	2	4	3	3	1	1	1	0	1	2	3	3	5	3	5	4	6	9	7	5
United States	High	1,904	2,142	1,934	1,851	1,752	1,812	1,663	1,432	1,497	1,344	1,310	1,324	1,746	1,787	1,869	1,986	2,100	2,208	2,232	2,450	2,287	2,612	2,643
Central America and Caribbean	na	1	0	1	0	1	0	0	1	1	2	1	1	2	0	2	1	1	1	2	2	4	2	2
Puerto Rico	High	0	0	1	0	1	0	0	1	0	1	0	1	2	0	1	0	1	1	2	2	3	1	2
South America	na	11	23	13	13	8	5	11	7	6	7	9	7	6	12	13	13	24	17	16	22	18	18	25
Argentina	Upper middle	0	3	3	1	1	2	1	0	1	1	0	1	1	0	1	2	1	1	0	4	1	2	1
Brazil	Upper middle	3	7	6	5	4	3	7	3	3	4	4	4	5	7	9	6	13	9	11	13	14	13	16
Europe	na	859	892	862	900	889	839	712	616	683	572	589	562	831	853	906	1,022	1,134	1,137	1,198	1,156	1,161	1,336	1,314
EU-27 + UK[a]	na	785	812	788	826	810	774	657	578	633	528	544	510	775	778	820	927	1,025	1,039	1,097	1,064	1,076	1,239	1,206
United Kingdom	High	90	112	93	97	84	85	87	68	72	82	73	58	101	84	104	112	131	136	131	146	132	157	150
EU-27[b]	na	695	700	694	729	726	689	569	510	561	447	471	451	674	694	716	815	893	904	966	918	945	1,082	1,056
Austria	High	18	18	11	15	14	11	8	9	10	11	7	8	11	10	12	14	21	22	24	24	25	21	22
Belgium	High	17	13	17	24	16	16	16	15	15	11	15	16	23	29	31	36	33	35	34	33	25	35	42
Denmark	High	23	23	24	14	15	11	7	11	13	11	7	12	15	18	26	20	17	20	23	24	33	33	32
Finland	High	20	20	27	31	27	35	25	17	21	10	16	12	20	26	16	16	23	28	33	32	32	40	44
France	High	125	136	138	165	164	148	111	99	94	97	79	81	121	118	118	140	162	155	175	167	158	177	202
Germany	High	330	331	327	331	340	333	271	243	274	210	227	222	316	332	331	395	413	416	428	401	410	482	440
Hungary	High	1	1	2	0	2	1	1	1	1	1	1	0	2	1	0	3	3	3	2	4	2	5	3
Ireland	High	3	3	3	1	1	3	4	4	4	1	5	2	3	5	3	10	6	7	10	7	7	10	8
Italy	High	53	51	50	47	48	33	44	40	43	33	27	30	60	54	48	54	65	54	78	67	84	85	81
Netherlands	High	44	32	37	38	45	44	42	36	34	28	39	37	42	40	58	60	64	76	70	75	84	86	87
Spain	High	6	15	11	10	11	10	6	5	9	5	10	5	10	9	15	8	14	18	13	15	17	20	22
Sweden	High	51	50	39	51	40	41	28	27	37	26	35	23	45	44	49	54	61	52	61	53	54	66	56
Other Europe	na	74	80	74	74	79	64	55	38	50	44	45	53	56	74	86	95	109	98	101	92	85	97	108
Other Europe-2020[b]	na	164	192	167	171	163	149	143	106	122	125	118	111	157	158	190	207	240	234	232	238	216	254	257
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	6	17	10	14	18	10	13	9	7	12	9	12	12	14	18	17	19	20	19	18	13	14	17
Russia	Upper middle	15	11	11	9	15	12	8	5	11	7	6	7	9	9	14	18	21	13	14	14	12	12	13
Switzerland	High	51	46	49	46	42	41	32	24	29	23	28	30	32	49	48	55	64	61	62	54	54	65	65

Table SINV-67

USPTO utility patents granted in chemical engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	3	2	3	2	1	1	1	2	0	2	1	1	0	3	2	0	2	0	0	0	2	4
Asia	na	514	483	481	549	527	524	471	412	419	434	463	495	712	682	719	803	873	991	1,066	1,095	1,159	1,287	1,292
China	Upper middle	10	9	14	14	16	11	18	13	24	19	20	29	46	60	74	81	93	124	147	171	209	268	281
India	Lower middle	7	9	10	9	7	9	12	11	14	15	9	8	11	11	7	13	28	32	45	39	53	55	59
Japan	High	400	372	363	396	391	371	343	290	281	293	303	318	466	438	455	482	489	547	574	562	560	616	619
Malaysia	Upper middle	1	0	1	0	0	1	1	1	0	2	1	0	0	2	3	3	3	1	2	3	7	2	2
Singapore	High	1	1	1	4	5	6	3	5	2	3	4	4	6	9	10	11	14	12	16	16	23	23	19
South Korea	High	30	31	24	33	28	33	28	36	38	38	62	72	100	97	102	126	144	185	190	207	214	229	216
Taiwan	High	62	60	67	91	76	90	65	53	60	64	63	63	82	65	67	84	100	85	88	92	89	82	88
Middle East	na	17	21	22	20	21	18	14	13	9	10	9	10	20	17	34	45	56	62	68	92	107	137	133
Israel	High	17	20	15	18	18	15	12	11	7	8	7	8	14	13	16	25	25	30	32	29	35	43	35
Africa	na	6	8	8	6	9	10	9	5	7	8	5	8	5	7	8	11	6	9	8	4	7	5	10
South Africa	Upper middle	6	7	7	5	9	10	8	5	4	7	5	7	4	6	7	9	6	8	7	3	5	4	8
Australia and Oceania	na	37	31	31	24	30	24	26	32	28	27	25	12	34	39	43	48	53	53	46	49	45	43	40
Australia	High	32	28	29	20	23	21	19	27	24	24	21	12	32	34	41	43	49	47	39	42	41	38	34
New Zealand	High	5	3	1	3	7	3	6	5	4	3	4	1	2	5	2	5	5	6	7	7	5	5	5
Unclassified	na	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	1	1	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-68

USPTO utility patents granted in environmental technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	1,750	1,750	1,737	1,767	1,686	1,643	1,524	1,342	1,455	1,437	1,509	1,548	2,056	2,007	2,260	2,630	2,740	2,679	2,547	2,861	2,686	3,102	2,949
North America	na	1,089	1,081	1,084	1,032	997	947	864	758	883	849	905	895	1,167	1,141	1,270	1,404	1,483	1,375	1,338	1,436	1,313	1,504	1,479
Canada	High	42	58	77	75	70	60	56	51	58	46	55	51	64	54	69	72	69	75	63	68	80	82	93
Mexico	Upper middle	0	0	0	2	1	3	1	1	2	0	3	0	0	1	3	4	2	4	3	5	3	3	3
United States	High	1,047	1,023	1,007	955	926	884	807	707	823	803	848	844	1,103	1,086	1,198	1,329	1,413	1,297	1,272	1,363	1,230	1,419	1,383
Central America and Caribbean	na	1	0	1	0	0	0	0	1	0	0	0	2	0	0	1	1	1	0	1	2	3	3	1
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	2	3	1
South America	na	3	1	1	1	4	3	3	1	1	3	5	4	3	10	4	8	5	9	7	7	6	8	10
Argentina	Upper middle	1	0	0	0	1	2	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
Brazil	Upper middle	1	1	0	0	2	2	1	1	1	2	1	1	2	4	0	2	2	1	3	3	3	2	8
Europe	na	311	331	315	391	329	315	274	243	244	259	262	281	382	383	423	553	558	589	524	625	549	664	578
EU-27 + UK[a]	na	287	309	294	357	314	298	259	227	231	247	248	265	362	364	406	524	528	555	497	593	519	626	547
United Kingdom	High	39	40	27	29	37	39	36	29	42	26	34	33	45	44	58	62	82	72	68	69	61	82	68
EU-27[b]	na	248	269	267	327	277	259	223	198	189	221	214	232	316	320	348	462	446	483	429	524	458	545	480
Austria	High	6	5	3	9	6	4	4	2	3	8	4	5	6	5	6	10	8	14	13	12	10	12	10
Belgium	High	7	10	8	9	13	7	4	4	7	3	5	8	14	9	9	23	14	16	16	23	13	23	21
Denmark	High	3	12	7	15	7	7	2	6	4	6	7	8	4	6	7	8	11	7	9	9	11	13	16
Finland	High	16	14	10	14	8	11	8	9	7	7	5	5	9	8	6	9	13	11	11	12	10	17	13
France	High	50	51	51	78	48	40	32	30	30	45	38	36	54	52	47	76	59	55	70	77	73	80	68
Germany	High	118	125	140	145	134	141	120	116	106	114	119	130	174	173	216	258	248	281	230	273	215	241	229
Hungary	High	1	0	0	0	0	0	1	0	0	0	2	0	2	2	2	1	2	0	2	0	4	1	1
Ireland	High	0	2	2	0	1	1	1	1	0	1	1	1	1	3	0	2	3	4	2	4	2	3	4
Italy	High	13	8	11	12	17	11	13	4	8	9	5	8	10	16	16	21	24	26	20	25	42	48	31
Netherlands	High	7	18	12	18	21	16	12	7	7	8	11	14	19	17	13	25	23	22	16	32	23	32	26
Spain	High	2	1	2	4	3	1	4	3	1	4	2	3	4	3	4	4	6	6	3	8	6	9	7
Sweden	High	23	20	19	21	19	20	19	13	17	13	14	12	17	23	15	21	25	34	29	36	35	49	40
Other Europe	na	24	23	21	35	15	17	15	16	14	12	13	16	21	19	18	29	30	34	27	32	30	37	31
Other Europe-2020[b]	na	63	62	48	64	51	56	51	45	55	38	47	49	66	62	75	92	112	106	95	102	91	119	99
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	1	0	0	0	0	0	1	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	6	4	3	7	3	6	6	7	2	7	4	8	8	6	4	8	9	13	12	11	9	7	9
Russia	Upper middle	6	8	6	13	3	4	3	5	3	1	4	3	3	3	3	8	5	3	4	2	6	6	5
Switzerland	High	9	9	12	13	8	6	7	5	6	3	2	5	8	8	9	10	16	17	10	18	14	21	15

Table SINV-68

USPTO utility patents granted in environmental technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
Asia	na	326	310	313	311	336	353	357	308	302	300	314	333	463	440	517	590	629	631	613	721	725	829	788
China	Upper middle	3	2	4	5	3	6	7	2	5	5	5	12	25	24	32	28	52	45	63	91	100	146	146
India	Lower middle	1	0	1	1	2	6	3	6	3	3	3	3	4	6	9	11	16	12	16	22	21	22	27
Japan	High	280	259	261	252	264	282	285	250	253	242	252	251	360	342	379	427	441	452	416	442	424	480	429
Malaysia	Upper middle	0	0	0	0	1	0	1	0	0	0	0	1	1	0	1	1	1	2	1	1	1	0	1
Singapore	High	0	1	0	1	0	3	2	3	0	0	2	2	3	2	2	4	3	3	3	5	5	6	9
South Korea	High	20	19	20	21	31	28	26	18	21	23	23	36	45	38	51	78	87	94	87	116	145	137	142
Taiwan	High	21	29	26	29	34	27	32	26	20	26	28	28	23	25	43	39	26	23	26	41	26	36	33
Middle East	na	7	12	9	14	12	13	9	11	11	17	12	21	21	19	28	45	34	48	48	51	68	68	63
Israel	High	5	12	7	13	10	12	9	10	11	14	10	19	18	15	15	24	22	25	25	26	31	25	26
Africa	na	2	3	5	8	3	4	3	3	8	3	2	1	1	2	2	5	2	3	2	2	3	4	4
South Africa	Upper middle	2	3	4	8	3	4	2	3	7	3	1	1	1	2	2	4	2	2	2	2	2	3	4
Australia and Oceania	na	11	11	10	10	7	8	15	17	4	7	10	12	19	12	16	24	27	24	13	17	19	24	25
Australia	High	10	10	8	9	7	7	14	17	3	6	8	11	15	12	15	22	24	22	12	16	16	23	24
New Zealand	High	1	1	2	1	0	1	1	0	0	1	2	1	4	1	1	2	3	3	1	2	4	1	1
Unclassified	na	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-69

USPTO utility patents granted in handling, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,094	4,267	4,177	4,135	3,977	3,816	3,237	2,835	3,036	2,597	2,676	2,725	3,582	3,660	3,763	4,485	4,810	4,895	4,942	5,347	5,311	6,249	6,192
North America	na	2,449	2,624	2,507	2,411	2,278	2,114	1,775	1,632	1,693	1,426	1,326	1,352	1,757	1,861	1,815	2,170	2,286	2,342	2,477	2,586	2,586	3,099	3,079
Canada	High	125	123	131	137	96	115	94	68	80	64	65	57	87	91	97	106	116	113	129	139	146	170	147
Mexico	Upper middle	2	5	6	10	14	8	4	4	2	1	2	3	2	4	4	4	6	6	3	5	5	7	10
United States	High	2,322	2,497	2,370	2,263	2,168	1,991	1,677	1,560	1,611	1,361	1,260	1,292	1,668	1,765	1,714	2,061	2,165	2,223	2,345	2,442	2,435	2,921	2,922
Central America and Caribbean	na	3	2	1	0	0	4	0	3	3	2	2	3	0	1	3	1	0	0	3	1	2	2	3
Puerto Rico	High	2	0	0	0	0	1	0	3	2	1	1	1	0	0	1	0	0	0	1	1	1	0	1
South America	na	7	12	9	13	4	6	8	4	3	8	4	10	7	13	8	15	15	11	16	16	18	20	21
Argentina	Upper middle	1	3	5	4	3	1	2	0	1	2	1	2	1	0	2	2	0	2	4	1	3	5	4
Brazil	Upper middle	5	7	5	8	0	4	6	3	2	4	2	3	5	12	4	8	12	7	10	12	11	12	13
Europe	na	1,061	1,001	1,065	1,055	1,024	1,019	856	722	755	653	733	669	907	879	940	1,138	1,272	1,219	1,183	1,413	1,355	1,539	1,467
EU-27 + UK[a]	na	961	915	970	948	930	921	767	651	676	588	650	596	814	783	846	1,008	1,130	1,065	1,057	1,263	1,230	1,401	1,336
United Kingdom	High	116	106	112	111	94	99	78	81	61	64	64	59	80	86	99	105	113	109	85	94	126	124	133
EU-27[b]	na	846	809	858	836	836	822	689	570	614	525	585	537	734	697	747	903	1,017	956	972	1,168	1,104	1,277	1,203
Austria	High	17	15	23	18	8	26	16	18	7	19	11	15	24	15	23	33	41	28	37	48	44	54	58
Belgium	High	25	19	15	14	12	6	13	9	9	11	9	6	10	15	8	11	17	16	17	29	31	31	27
Denmark	High	14	12	12	15	17	17	15	8	8	9	16	7	13	22	16	20	21	28	28	32	27	27	30
Finland	High	45	34	31	23	36	44	20	24	26	17	33	41	36	29	36	47	39	38	44	99	90	67	60
France	High	105	108	108	115	124	112	101	76	89	63	65	61	96	108	108	138	131	125	126	138	130	177	165
Germany	High	383	369	395	396	373	377	289	244	280	252	253	246	318	284	332	378	463	440	413	472	438	481	471
Hungary	High	0	0	1	0	0	0	1	1	0	0	0	0	1	3	1	1	0	2	1	1	1	0	2
Ireland	High	4	3	6	3	2	5	4	5	4	2	2	6	4	7	3	2	10	3	8	6	3	9	7
Italy	High	136	122	126	118	120	145	136	113	100	90	117	92	124	115	111	141	127	134	129	146	159	202	163
Netherlands	High	39	55	45	55	57	35	35	27	39	19	38	29	46	33	33	56	70	66	81	85	79	98	92
Spain	High	21	13	21	19	18	15	16	13	16	11	14	11	18	18	21	23	30	19	31	44	35	42	43
Sweden	High	54	53	72	58	62	38	42	31	34	30	25	21	42	42	46	45	61	45	43	54	51	67	60
Other Europe	na	100	86	95	108	94	99	89	71	80	65	84	73	92	96	94	130	142	154	126	150	125	138	130
Other Europe-2020[b]	na	215	192	207	219	188	197	167	152	141	129	148	132	173	183	193	235	256	263	211	245	251	262	263
Belarus	Upper middle	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Norway	High	12	11	13	16	6	7	6	2	4	5	7	6	10	5	8	3	6	12	14	15	12	14	19
Russia	Upper middle	1	1	0	1	1	1	1	0	3	4	0	0	1	2	0	0	6	5	4	2	3	3	2
Switzerland	High	85	73	81	87	85	90	81	65	73	55	76	67	81	89	82	123	125	130	104	125	103	114	102

Table SINV-69

USPTO utility patents granted in handling, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	1	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
Asia	na	528	576	546	602	624	618	549	429	539	467	573	643	846	860	929	1,095	1,155	1,240	1,176	1,247	1,260	1,487	1,518
China	Upper middle	6	7	3	6	7	14	10	15	16	13	15	21	33	29	56	84	102	117	112	117	158	215	228
India	Lower middle	2	1	2	0	1	0	3	3	0	2	0	0	2	2	9	5	4	13	13	13	13	27	39
Japan	High	398	423	398	453	474	454	410	314	408	355	443	469	648	680	674	798	833	894	858	882	879	990	1,011
Malaysia	Upper middle	4	1	2	0	0	0	3	3	1	1	3	4	2	1	3	1	4	3	4	1	5	3	3
Singapore	High	3	1	5	4	4	8	3	4	6	8	3	4	5	6	6	7	6	10	6	9	7	13	10
South Korea	High	43	53	43	55	34	38	30	26	43	33	42	57	55	51	65	87	94	87	83	115	97	125	119
Taiwan	High	71	92	94	82	102	103	88	63	66	55	66	88	100	89	113	112	108	110	92	103	96	110	103
Middle East	na	10	8	14	6	10	12	8	9	7	9	6	9	14	12	20	20	30	26	33	29	32	47	43
Israel	High	8	6	13	5	9	12	8	9	6	9	6	8	13	9	16	17	23	24	26	22	26	34	30
Africa	na	7	9	7	6	7	7	7	10	5	4	5	6	8	4	10	4	4	9	6	6	8	6	4
South Africa	Upper middle	7	7	7	6	7	5	4	4	2	3	4	4	8	4	10	4	3	6	4	6	5	6	2
Australia and Oceania	na	28	33	27	41	31	37	34	26	32	28	28	33	43	30	37	41	47	47	47	47	49	47	54
Australia	High	19	25	24	34	27	34	27	22	26	25	26	32	36	26	28	33	39	37	40	39	43	39	43
New Zealand	High	9	8	3	7	3	3	6	5	6	4	3	2	7	4	8	8	8	11	6	8	6	8	11
Unclassified	na	0	2	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-70

USPTO utility patents granted in machine tools, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,780	4,251	4,447	4,566	4,111	4,296	3,987	3,492	4,078	3,274	2,690	2,494	3,164	3,321	3,658	4,080	4,165	4,330	4,263	4,645	4,410	5,064	4,830
North America	na	2,095	2,348	2,352	2,388	2,113	2,153	1,994	1,782	2,073	1,624	1,244	1,195	1,501	1,575	1,632	1,848	1,924	1,914	1,905	2,076	1,913	2,167	2,050
Canada	High	90	113	122	100	102	98	91	79	99	78	63	58	77	72	87	80	90	78	86	82	79	96	79
Mexico	Upper middle	2	4	1	5	2	1	2	1	2	1	1	1	1	2	4	2	6	2	3	4	5	3	2
United States	High	2,003	2,231	2,229	2,283	2,009	2,054	1,902	1,702	1,972	1,545	1,180	1,137	1,423	1,501	1,542	1,766	1,829	1,834	1,816	1,990	1,830	2,068	1,969
Central America and Caribbean	na	1	0	2	0	2	1	1	2	1	0	0	1	0	0	1	0	1	1	1	2	1	1	1
Puerto Rico	High	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0
South America	na	1	7	6	3	4	4	7	4	4	5	4	3	6	4	4	8	2	6	5	9	8	10	7
Argentina	Upper middle	0	1	1	0	0	0	2	1	0	0	1	1	0	1	0	2	0	1	1	1	1	1	0
Brazil	Upper middle	0	6	2	2	4	2	5	2	4	3	2	2	5	2	4	3	2	4	3	7	7	7	4
Europe	na	820	892	962	966	870	944	840	688	795	672	607	539	699	720	865	963	941	1,020	991	1,102	1,032	1,150	1,151
EU-27 + UK[a]	na	752	826	882	891	801	854	757	631	716	625	562	498	652	677	797	903	874	956	927	1,036	947	1,070	1,066
United Kingdom	High	85	62	76	87	72	57	65	47	71	51	46	39	57	56	79	87	71	83	62	73	77	82	73
EU-27[b]	na	667	765	806	805	729	798	691	583	645	574	516	459	596	621	718	816	803	874	864	963	870	989	993
Austria	High	18	22	28	41	27	26	27	25	29	21	23	20	20	27	27	31	44	42	44	58	38	42	42
Belgium	High	11	8	5	5	7	10	7	7	5	4	5	4	15	7	7	11	11	11	13	10	13	14	13
Denmark	High	4	3	5	11	6	11	14	6	5	5	6	5	3	7	3	6	7	8	9	12	7	10	8
Finland	High	18	19	20	28	19	17	15	13	15	10	8	8	13	7	12	4	11	18	9	15	9	13	13
France	High	61	71	72	79	78	76	61	54	70	54	53	44	55	57	70	78	93	85	83	96	86	107	88
Germany	High	379	422	463	436	409	479	403	356	390	363	309	262	371	377	452	512	475	520	516	561	509	578	565
Hungary	High	1	1	0	0	1	1	2	0	1	3	1	1	1	1	2	2	1	2	3	4	1	1	1
Ireland	High	1	2	4	2	2	6	2	2	1	0	1	1	3	3	3	1	2	4	9	6	2	3	4
Italy	High	75	98	97	77	77	72	64	38	58	43	37	41	32	49	57	54	57	61	64	78	72	76	93
Netherlands	High	30	22	21	25	23	21	21	16	13	15	10	11	16	15	27	21	18	27	29	29	34	36	36
Spain	High	5	6	12	7	7	2	5	1	4	3	2	5	7	6	10	18	6	8	8	17	10	17	26
Sweden	High	61	89	75	87	69	69	66	59	51	51	54	53	54	55	46	68	64	74	62	60	65	58	70
Other Europe	na	68	66	80	74	69	90	83	58	79	47	45	41	47	43	68	60	67	64	64	66	85	80	85
Other Europe-2020[b]	na	154	127	156	161	142	146	148	105	150	98	91	80	103	99	147	147	139	147	126	139	162	162	158
Belarus	Upper middle	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	5	2	4	3	4	3	0	2	5	1	1	0	4	2	2	6	5	6	4	7	4	4	4
Russia	Upper middle	4	2	5	9	3	6	5	7	6	1	3	3	2	2	1	2	4	2	2	2	4	4	3
Switzerland	High	56	58	68	58	59	77	72	47	63	43	38	35	36	35	63	47	54	52	53	55	71	68	71

Table SINV-70

USPTO utility patents granted in machine tools, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	1	2	1	1	0	0	0	0	1	0	2	0	0	1	1	1	2	0	1	1	1
Asia	na	805	956	1,081	1,146	1,073	1,136	1,085	976	1,145	930	798	723	909	979	1,090	1,173	1,205	1,312	1,295	1,383	1,381	1,654	1,551
China	Upper middle	5	7	9	15	17	27	22	29	34	25	22	39	47	57	77	74	103	116	140	174	157	219	232
India	Lower middle	1	2	0	1	4	0	1	0	0	2	2	2	2	4	5	7	3	11	13	20	18	12	15
Japan	High	622	676	738	758	692	744	677	576	668	528	485	437	600	636	682	720	759	780	785	831	864	1,078	980
Malaysia	Upper middle	0	1	1	0	3	1	2	2	2	5	2	1	2	3	4	7	4	3	5	4	2	3	3
Singapore	High	1	4	7	15	8	10	9	7	7	16	6	8	6	5	6	8	5	7	11	4	4	8	2
South Korea	High	28	35	39	40	40	49	41	40	52	40	43	47	50	43	57	64	96	97	98	110	102	115	101
Taiwan	High	148	230	287	314	306	304	331	320	379	314	236	187	203	229	255	289	231	294	237	236	232	216	217
Middle East	na	30	20	24	30	22	31	24	12	32	26	17	20	16	24	32	59	64	48	39	38	46	49	40
Israel	High	29	20	22	28	20	30	23	12	31	25	16	18	15	23	28	52	59	43	37	32	40	40	32
Africa	na	3	4	4	4	5	2	2	2	3	2	3	0	3	1	5	3	2	3	4	3	2	5	3
South Africa	Upper middle	3	4	4	4	5	2	2	2	3	2	3	0	3	1	5	3	2	3	4	2	2	5	3
Australia and Oceania	na	25	24	16	29	21	27	34	26	26	14	17	13	30	18	29	27	26	24	21	31	24	25	26
Australia	High	21	19	16	26	17	24	28	24	23	12	16	9	28	14	24	23	22	20	15	26	17	21	21
New Zealand	High	5	5	0	3	5	3	6	2	2	3	1	4	2	4	5	4	5	4	6	6	7	4	5
Unclassified	na	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-71

USPTO utility patents granted in engines, pumps, turbines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,495	3,423	4,148	4,850	4,895	4,918	4,651	4,207	4,610	3,949	3,737	3,644	4,524	4,806	6,082	6,242	6,757	6,688	6,666	7,636	7,903	8,774	8,601
North America	na	1,552	1,480	1,865	2,189	2,334	2,172	1,994	1,860	2,031	1,715	1,590	1,707	2,047	2,296	2,835	2,922	3,059	3,090	3,151	3,480	3,642	4,175	3,935
Canada	High	57	67	91	109	95	103	89	107	119	108	79	110	122	105	138	133	128	139	131	177	162	213	239
Mexico	Upper middle	3	2	1	0	1	2	2	0	0	1	0	0	3	2	4	3	3	3	8	8	8	9	17
United States	High	1,492	1,411	1,773	2,080	2,237	2,067	1,904	1,753	1,912	1,606	1,511	1,597	1,922	2,190	2,693	2,786	2,927	2,947	3,012	3,296	3,472	3,953	3,679
Central America and Caribbean	na	0	2	1	1	0	1	2	2	2	0	3	2	0	3	6	4	5	2	1	0	3	2	3
Puerto Rico	High	0	0	1	0	0	0	2	2	0	0	1	0	0	1	4	2	3	1	1	0	2	1	3
South America	na	6	9	7	12	9	16	7	3	17	9	8	4	7	16	15	15	20	28	18	19	18	28	22
Argentina	Upper middle	0	1	1	3	4	4	1	0	2	2	1	0	3	3	1	0	1	1	2	0	2	1	1
Brazil	Upper middle	4	6	5	7	2	8	5	2	14	7	6	2	4	13	12	10	15	19	11	17	14	22	17
Europe	na	827	822	1,016	1,206	1,147	1,202	1,186	1,036	1,079	963	942	886	1,170	1,223	1,603	1,635	1,858	1,766	1,752	2,051	2,108	2,182	2,233
EU-27 + UK[a]	na	773	777	965	1,118	1,080	1,146	1,133	1,001	1,013	916	887	830	1,106	1,155	1,529	1,534	1,767	1,672	1,650	1,942	1,992	2,082	2,105
United Kingdom	High	100	99	102	151	116	105	101	108	128	107	102	103	168	162	229	225	276	239	224	291	271	322	282
EU-27[b]	na	673	679	863	967	964	1,041	1,032	893	885	809	785	727	938	993	1,300	1,308	1,492	1,433	1,426	1,651	1,721	1,760	1,823
Austria	High	11	13	31	41	28	36	38	30	29	19	21	12	23	14	28	33	41	28	32	37	38	36	52
Belgium	High	7	7	12	6	10	12	11	7	9	14	11	10	5	7	17	14	24	22	16	26	40	44	37
Denmark	High	20	9	8	11	10	17	16	14	7	16	14	8	28	59	88	78	101	94	89	110	100	109	107
Finland	High	8	4	7	10	10	8	2	12	10	10	5	4	8	8	16	4	13	12	15	19	15	16	10
France	High	126	100	112	102	92	97	106	85	129	126	116	140	179	201	248	222	312	297	289	336	349	362	397
Germany	High	404	441	568	645	662	715	704	626	580	509	493	442	535	545	697	732	772	758	765	862	844	873	857
Hungary	High	1	0	3	0	0	1	0	0	1	0	0	1	2	2	0	4	2	0	4	2	2	1	2
Ireland	High	2	1	2	3	2	1	1	1	1	0	2	1	2	3	1	3	5	3	3	3	4	6	6
Italy	High	33	39	43	44	51	65	72	56	59	52	56	48	69	71	87	81	93	89	85	110	146	142	160
Netherlands	High	9	10	11	23	22	13	11	12	6	11	13	7	17	16	33	24	28	32	26	26	27	28	35
Spain	High	4	1	8	7	5	9	10	7	2	4	4	5	11	18	18	23	30	30	31	43	46	33	27
Sweden	High	42	48	53	69	69	61	53	39	46	41	37	43	43	40	45	68	57	48	50	57	78	71	88
Other Europe	na	54	44	50	88	66	56	53	36	66	46	54	56	64	68	74	102	91	94	102	108	116	99	128
Other Europe-2020[b]	na	154	143	152	239	183	161	154	143	194	153	157	159	232	230	303	327	367	333	326	399	387	422	410
Belarus	Upper middle	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	1	3	3	7	2	3	3	3	6	2	7	6	10	6	8	21	14	9	13	12	15	6	16
Russia	Upper middle	10	7	11	22	21	11	5	6	6	8	6	6	13	13	18	14	10	15	15	15	14	15	22
Switzerland	High	43	31	36	55	40	38	39	23	47	33	35	40	39	45	46	63	61	63	69	79	80	68	79

Table SINV-71

USPTO utility patents granted in engines, pumps, turbines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	0	0	0	2	3	2	7	2	2	3	2	0	1	2	1	1	1	0	2	1	1
Asia	na	1,059	1,077	1,218	1,398	1,362	1,477	1,425	1,259	1,448	1,225	1,164	1,018	1,257	1,237	1,563	1,598	1,738	1,740	1,668	2,008	2,071	2,318	2,321
China	Upper middle	1	1	4	8	10	8	13	5	7	13	21	21	33	41	65	63	69	82	74	119	120	179	188
India	Lower middle	0	1	1	3	0	3	2	3	4	7	4	8	13	30	42	54	68	68	58	63	75	83	112
Japan	High	968	975	1,099	1,226	1,190	1,278	1,201	1,081	1,237	1,047	971	832	1,038	954	1,183	1,218	1,289	1,253	1,212	1,434	1,433	1,573	1,460
Malaysia	Upper middle	1	0	0	0	0	0	2	0	1	2	0	1	1	1	0	1	2	2	2	2	1	4	2
Singapore	High	2	2	1	0	1	2	1	1	2	1	1	1	3	5	11	10	12	14	11	7	7	8	6
South Korea	High	55	47	36	64	72	80	114	97	102	79	97	78	86	108	135	150	197	194	218	268	331	354	425
Taiwan	High	32	49	77	97	86	102	89	68	91	76	69	78	81	99	127	100	100	123	91	111	99	113	123
Middle East	na	14	12	12	18	10	20	8	10	6	9	16	11	19	13	26	28	33	27	36	40	35	41	50
Israel	High	13	11	9	17	9	14	6	9	5	9	13	8	17	9	19	19	21	13	21	17	17	14	15
Africa	na	4	1	2	2	1	3	3	3	2	3	1	3	3	3	2	5	7	3	3	5	4	3	5
South Africa	Upper middle	4	1	1	1	1	3	3	2	2	3	0	2	3	3	2	5	5	3	3	4	2	3	3
Australia and Oceania	na	30	22	27	22	33	27	26	34	26	23	14	14	21	14	32	34	36	33	35	31	20	23	33
Australia	High	27	21	26	19	30	21	22	30	21	15	13	10	16	13	28	28	29	29	31	27	18	21	32
New Zealand	High	3	1	1	3	3	5	2	4	4	8	1	4	5	1	3	5	7	3	4	5	1	3	1
Unclassified	na	3	0	1	1	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	1	3	2	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-72

USPTO utility patents granted in textile and paper machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,765	3,762	4,135	4,374	4,284	4,009	3,844	3,075	3,229	2,893	2,994	2,881	3,817	3,889	3,897	3,958	4,330	3,913	3,473	3,153	3,104	3,425	3,382
North America	na	1,595	1,515	1,608	1,689	1,634	1,534	1,470	1,108	1,089	870	783	771	1,051	1,020	1,136	1,229	1,364	1,058	1,001	948	927	982	940
Canada	High	58	44	53	54	54	42	32	30	42	27	32	28	44	30	44	47	42	44	39	34	26	28	34
Mexico	Upper middle	4	2	2	2	3	1	4	3	1	1	3	1	1	2	3	3	1	1	1	3	1	1	2
United States	High	1,533	1,470	1,552	1,633	1,578	1,491	1,435	1,076	1,046	841	748	743	1,005	989	1,088	1,180	1,321	1,012	961	911	900	954	904
Central America and Caribbean	na	1	1	0	0	0	2	2	5	5	2	1	0	0	2	0	0	0	0	2	2	2	3	1
Puerto Rico	High	0	1	0	0	0	2	2	5	5	2	1	0	0	1	0	0	0	0	2	2	2	3	1
South America	na	4	2	1	5	5	3	8	3	5	6	8	6	9	15	4	10	7	5	7	6	6	5	9
Argentina	Upper middle	2	0	0	1	1	1	2	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0
Brazil	Upper middle	2	2	0	3	4	2	5	3	5	4	8	6	9	15	3	7	5	3	6	5	4	4	8
Europe	na	994	967	1,091	1,083	997	917	848	661	610	476	495	446	584	572	599	600	604	576	507	563	543	654	649
EU-27 + UK[a]	na	922	891	1,006	1,004	933	852	802	619	561	439	469	416	548	543	566	564	559	539	476	519	503	602	599
United Kingdom	High	89	92	75	101	93	79	59	54	47	33	29	28	46	40	53	60	62	59	43	50	43	54	58
EU-27[b]	na	833	799	931	903	840	773	743	564	513	406	440	389	503	503	513	504	496	480	433	469	461	548	542
Austria	High	31	28	26	28	22	19	22	11	16	9	13	9	13	7	17	19	13	16	18	11	16	20	15
Belgium	High	36	28	67	53	54	34	46	31	40	24	26	23	22	26	28	20	23	27	18	23	20	29	30
Denmark	High	7	18	11	13	9	11	6	8	6	6	3	4	7	5	2	4	8	5	8	9	8	6	9
Finland	High	61	70	58	75	91	65	80	49	44	32	37	28	32	40	37	31	31	33	26	29	24	31	37
France	High	82	68	68	64	74	70	52	38	50	36	44	30	48	45	50	50	54	55	48	64	53	62	60
Germany	High	477	439	461	472	405	408	381	297	240	200	202	196	256	234	239	209	205	191	161	152	151	196	185
Hungary	High	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
Ireland	High	0	2	1	0	0	1	1	0	2	4	8	3	3	2	4	26	7	5	4	13	8	6	5
Italy	High	58	56	86	59	52	54	49	42	47	35	34	36	40	48	39	50	37	42	45	51	37	54	74
Netherlands	High	22	18	31	28	31	19	27	20	22	13	27	26	38	30	24	34	30	40	38	40	43	49	39
Spain	High	7	15	26	29	31	45	29	31	15	12	14	6	11	20	23	23	36	31	35	42	54	59	46
Sweden	High	46	58	88	78	68	44	47	35	30	34	30	25	28	44	43	32	48	30	22	26	32	17	27
Other Europe	na	72	76	85	78	64	65	47	42	50	36	26	30	36	29	33	37	45	37	31	44	40	53	50
Other Europe-2020[b]	na	161	168	160	180	157	144	105	96	97	70	55	58	82	68	86	96	107	96	74	94	82	106	108
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	3	2	1	1	1	0	0	0	1	2	0	1	1	2	2	2	1	2	1	0	0	1	2
Russia	Upper middle	2	2	1	6	2	4	2	1	1	1	1	1	1	1	1	0	1	1	0	0	0	2	2
Switzerland	High	66	71	83	70	60	58	42	40	48	33	24	28	34	26	28	32	39	33	26	41	33	35	34

Table SINV-72

USPTO utility patents granted in textile and paper machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Asia	na	1,126	1,243	1,402	1,506	1,541	1,454	1,409	1,159	1,247	1,244	1,338	1,384	1,714	1,834	2,006	2,010	2,280	2,202	1,886	1,575	1,557	1,699	1,696
China	Upper middle	2	2	5	3	5	3	8	8	9	13	10	16	17	24	26	31	42	40	50	67	60	66	87
India	Lower middle	0	0	1	2	0	3	2	0	2	1	2	2	3	5	4	4	4	5	6	9	10	13	8
Japan	High	1,047	1,159	1,297	1,389	1,393	1,328	1,250	1,030	1,096	1,096	1,181	1,210	1,522	1,660	1,816	1,791	2,083	2,029	1,725	1,380	1,383	1,498	1,468
Malaysia	Upper middle	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	1	0	1	0	2	2	0
Singapore	High	2	3	3	7	14	14	12	7	6	10	6	2	6	5	9	11	15	9	11	21	21	26	22
South Korea	High	32	42	53	45	62	47	56	55	75	76	91	96	109	82	95	95	69	65	55	46	44	45	58
Taiwan	High	40	37	41	59	66	57	79	57	58	46	46	58	54	54	53	76	63	50	34	50	36	45	48
Middle East	na	12	14	14	17	25	19	18	9	16	10	12	14	18	17	22	31	38	42	50	38	36	47	50
Israel	High	11	13	13	17	24	19	17	9	16	10	12	14	18	17	22	30	36	41	49	38	30	45	48
Africa	na	1	0	1	1	2	0	2	0	0	1	0	1	1	0	1	2	3	3	1	0	0	1	1
South Africa	Upper middle	1	0	1	1	2	0	2	0	0	1	0	0	0	0	1	2	3	3	1	0	0	1	1
Australia and Oceania	na	30	19	17	73	80	79	87	130	257	285	358	259	439	429	129	75	35	26	18	19	32	34	35
Australia	High	26	18	15	71	77	78	86	128	257	285	357	259	436	427	129	74	33	25	17	16	31	32	32
New Zealand	High	3	2	2	2	4	1	1	2	0	0	0	0	3	2	0	1	3	0	1	1	0	0	1
Unclassified	na	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-73

USPTO utility patents granted in other special machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	5,165	5,210	5,000	5,097	5,005	5,138	4,661	3,725	4,180	3,596	3,459	3,451	4,984	5,169	5,527	5,964	6,479	6,325	6,756	7,165	7,216	8,420	8,533
North America	na	3,313	3,443	3,230	3,282	3,131	3,249	2,899	2,416	2,627	2,267	2,227	2,197	3,096	3,178	3,344	3,625	3,917	3,751	4,084	4,352	4,313	4,977	4,957
Canada	High	163	182	192	217	201	153	149	139	157	160	162	138	191	170	184	178	216	181	197	224	237	247	252
Mexico	Upper middle	6	5	1	0	6	5	4	1	6	1	1	4	8	3	4	9	5	4	8	11	8	12	8
United States	High	3,144	3,256	3,037	3,065	2,924	3,092	2,746	2,276	2,464	2,106	2,065	2,056	2,897	3,006	3,156	3,439	3,696	3,566	3,879	4,117	4,068	4,718	4,697
Central America and Caribbean	na	2	1	1	2	0	1	1	2	2	3	1	0	2	3	2	0	5	3	3	2	3	4	5
Puerto Rico	High	2	0	0	1	0	1	1	2	2	3	1	0	2	2	1	0	2	2	3	0	1	2	2
South America	na	11	10	12	8	9	14	6	7	10	9	8	8	18	11	21	10	21	18	28	36	20	24	36
Argentina	Upper middle	2	3	6	2	6	5	2	3	1	1	3	4	3	4	5	4	2	4	9	11	2	4	1
Brazil	Upper middle	5	5	2	5	4	7	3	4	6	5	5	5	11	6	9	6	13	8	13	22	16	17	23
Europe	na	916	935	918	987	988	973	935	692	778	678	579	612	905	958	1,052	1,228	1,357	1,363	1,360	1,401	1,461	1,679	1,686
EU-27 + UK[a]	na	836	871	850	920	929	918	885	656	737	636	548	574	844	892	985	1,161	1,280	1,275	1,284	1,309	1,370	1,575	1,576
United Kingdom	High	84	106	92	99	93	88	70	65	63	57	52	52	62	86	93	93	119	117	110	117	141	145	136
EU-27[b]	na	752	764	759	821	836	830	815	591	674	579	497	522	782	805	892	1,068	1,161	1,158	1,174	1,192	1,229	1,430	1,441
Austria	High	23	33	35	32	38	29	30	24	28	20	12	19	19	23	24	29	31	35	44	54	54	61	52
Belgium	High	28	28	23	34	34	20	30	25	31	25	19	31	37	41	35	46	51	56	56	71	104	86	63
Denmark	High	9	18	14	15	12	19	14	10	19	17	17	10	13	23	25	21	36	42	40	36	47	41	36
Finland	High	11	16	16	22	17	20	25	19	18	7	7	8	10	11	16	25	16	18	22	24	27	28	30
France	High	119	127	131	137	129	133	119	89	107	86	96	89	136	143	138	181	181	205	205	188	193	243	233
Germany	High	351	345	347	347	358	374	348	265	294	273	212	224	349	335	359	438	502	474	460	457	443	525	556
Hungary	High	0	0	0	0	2	2	1	1	2	0	0	0	0	2	2	3	3	1	5	4	4	1	7
Ireland	High	1	8	4	5	5	4	10	3	3	3	4	1	4	4	11	8	6	3	3	4	6	14	12
Italy	High	72	55	60	69	91	71	102	55	61	52	50	54	81	81	97	109	109	115	116	106	114	152	151
Netherlands	High	69	55	66	79	63	57	58	36	46	43	29	35	59	62	81	113	117	99	119	120	120	141	141
Spain	High	17	11	6	13	17	20	16	10	13	10	15	14	21	20	24	26	27	35	25	24	32	41	72
Sweden	High	48	58	50	60	61	71	46	44	37	35	27	23	42	47	68	55	61	61	57	82	58	72	55
Other Europe	na	79	64	68	67	59	55	50	36	41	41	31	38	61	67	66	67	77	88	76	92	91	104	109
Other Europe-2020[b]	na	163	170	159	166	152	143	120	101	104	98	82	90	123	153	160	160	196	205	186	209	232	249	245
Belarus	Upper middle	3	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Moldova	Lower middle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Norway	High	12	12	13	8	4	11	5	8	6	4	4	6	13	9	9	6	10	11	10	8	13	12	14
Russia	Upper middle	7	6	6	4	2	4	6	2	2	2	3	3	6	9	4	5	5	5	8	8	7	8	11
Switzerland	High	54	42	45	51	47	36	36	25	29	32	22	24	37	45	52	50	50	64	50	61	60	63	71

Table SINV-73

USPTO utility patents granted in other special machines, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	0	1	1	3	0	0	0	1	1	1	1	1	2	0	2	1	1	0	6	2	3	4
Asia	na	847	738	748	727	792	800	741	539	687	564	571	560	862	909	978	982	1,025	1,069	1,150	1,228	1,268	1,569	1,650
China	Upper middle	9	11	10	12	13	14	10	14	16	16	19	16	37	44	43	65	69	94	102	125	158	217	252
India	Lower middle	1	1	2	2	2	2	5	6	5	3	2	3	4	6	7	16	17	15	17	19	25	29	34
Japan	High	731	617	630	598	608	637	576	398	510	427	428	396	628	628	681	641	662	677	744	741	769	919	961
Malaysia	Upper middle	2	2	2	1	2	1	4	0	3	2	3	1	4	5	7	5	8	6	6	10	9	11	14
Singapore	High	3	2	2	4	7	9	12	9	4	2	3	6	6	10	7	10	13	13	15	10	11	12	15
South Korea	High	27	28	25	37	46	37	34	38	40	41	39	48	64	82	90	109	126	133	131	171	162	199	203
Taiwan	High	74	76	77	72	114	99	98	73	106	73	76	87	114	132	138	132	126	124	131	145	129	171	155
Middle East	na	26	20	26	29	32	39	29	30	27	24	27	27	38	45	63	61	79	63	63	70	81	87	101
Israel	High	26	19	25	27	32	37	29	27	27	24	27	24	38	39	54	53	65	51	47	53	59	66	86
Africa	na	5	5	7	7	8	9	4	4	7	2	9	8	9	6	7	6	7	10	10	11	6	11	10
South Africa	Upper middle	5	5	6	7	7	8	3	4	7	2	9	8	8	6	7	6	6	9	9	10	5	9	8
Australia and Oceania	na	44	57	57	54	44	53	46	36	41	49	36	39	53	59	59	50	69	48	56	65	62	67	88
Australia	High	38	47	46	45	36	40	37	30	34	41	29	34	48	50	44	37	51	37	40	51	43	46	66
New Zealand	High	6	9	11	10	8	12	9	6	7	8	6	4	5	9	15	12	18	11	16	15	19	21	21
Unclassified	na	0	1	2	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	2	0	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-74

USPTO utility patents granted in thermal processes and apparatus, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	1,650	1,755	1,764	1,845	1,653	1,613	1,506	1,429	1,489	1,244	1,037	1,072	1,491	1,461	1,683	1,903	2,091	2,244	2,370	2,948	2,998	3,516	3,281
North America	na	944	951	953	995	907	919	869	798	845	660	546	587	803	760	887	1,035	1,100	1,149	1,198	1,421	1,396	1,717	1,588
Canada	High	69	59	63	63	48	45	52	49	58	45	36	37	49	37	53	51	48	62	78	78	77	82	80
Mexico	Upper middle	1	3	7	5	4	2	2	1	6	3	2	0	2	6	2	2	7	4	1	8	8	6	8
United States	High	873	888	882	927	854	872	816	748	782	612	509	549	752	718	832	982	1,045	1,082	1,118	1,335	1,310	1,629	1,499
Central America and Caribbean	na	0	2	1	0	1	3	0	0	2	0	0	2	0	0	0	1	0	2	2	1	1	2	1
Puerto Rico	High	0	1	1	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	1
South America	na	3	2	13	17	7	7	5	2	4	1	1	3	4	6	3	3	9	6	3	9	5	9	9
Argentina	Upper middle	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Brazil	Upper middle	1	1	12	16	7	3	3	1	4	1	1	3	4	5	3	3	8	6	1	8	5	7	7
Europe	na	316	342	348	357	286	302	252	216	225	216	175	172	233	253	315	359	437	471	445	559	567	621	577
EU-27 + UK[a]	na	280	295	308	323	259	282	239	202	207	201	162	153	218	229	298	329	403	437	410	520	520	584	526
United Kingdom	High	30	36	34	37	25	26	23	25	19	17	16	14	13	17	30	26	43	40	39	48	44	50	55
EU-27[b]	na	250	260	274	287	234	256	216	177	188	184	146	140	205	211	268	303	360	397	371	473	475	534	471
Austria	High	4	6	5	10	3	4	4	2	5	5	4	5	4	6	7	7	10	9	12	18	14	13	12
Belgium	High	3	4	5	7	4	4	2	2	3	1	1	2	2	2	3	6	15	10	9	15	13	19	10
Denmark	High	12	8	10	5	3	6	5	6	3	7	4	2	5	8	15	10	15	17	16	22	18	19	28
Finland	High	15	8	6	11	7	9	16	7	6	5	4	3	2	3	10	9	8	16	11	11	15	13	16
France	High	50	59	54	60	53	45	34	23	34	31	21	19	27	30	41	43	55	60	73	79	77	98	60
Germany	High	103	113	120	119	113	125	102	90	96	93	77	72	103	107	116	142	146	162	137	189	188	196	171
Hungary	High	0	2	2	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	3	0	1
Ireland	High	1	0	3	2	0	0	1	1	0	1	0	1	2	1	3	3	2	3	3	2	5	5	8
Italy	High	22	20	24	29	21	26	19	21	16	20	12	15	26	18	26	30	35	50	37	57	60	62	58
Netherlands	High	11	6	11	8	8	11	10	10	10	5	10	6	11	10	12	14	16	12	20	18	26	40	27
Spain	High	5	3	5	4	5	6	4	4	2	3	2	3	4	4	13	14	13	21	14	12	11	14	20
Sweden	High	22	27	28	25	13	14	15	11	10	9	11	11	12	16	15	17	28	21	27	35	26	33	30
Other Europe	na	35	47	39	34	27	20	12	13	18	15	13	19	15	24	17	30	33	34	35	39	47	36	51
Other Europe-2020[b]	na	66	83	74	70	52	46	36	38	37	32	29	33	28	42	47	55	77	74	74	86	92	87	107
Belarus	Upper middle	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	4	6	7	4	6	1	2	2	3	3	2	3	1	0	2	4	4	3	4	5	5	2	5
Russia	Upper middle	4	4	5	4	2	1	1	2	2	2	0	3	2	3	2	3	1	1	1	3	4	6	7
Switzerland	High	27	34	23	23	18	18	8	8	13	10	11	11	9	18	13	18	26	28	27	25	29	26	29

Table SINV-74

USPTO utility patents granted in thermal processes and apparatus, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	3	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Asia	na	369	429	416	446	416	363	363	389	402	349	301	294	435	414	448	472	513	573	668	893	972	1,105	1,048
China	Upper middle	9	5	10	15	12	16	17	16	14	20	26	20	34	35	45	43	55	53	78	95	117	174	176
India	Lower middle	1	1	2	0	0	2	1	2	2	2	2	4	5	6	10	9	8	12	15	19	22	30
Japan	High	243	305	314	318	274	243	201	227	214	178	149	139	235	226	221	232	264	304	361	514	523	579	524
Malaysia	Upper middle	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	0	0	3	2	1	0
Singapore	High	0	1	2	1	4	2	2	0	3	0	0	2	3	1	2	1	4	2	1	1	1	4	2
South Korea	High	81	81	57	46	60	47	77	86	104	106	81	78	102	107	117	125	113	132	158	198	226	254	236
Taiwan	High	34	36	30	62	65	54	64	57	65	43	43	53	56	40	56	59	64	71	59	64	81	67	78
Middle East	na	4	12	11	9	10	7	7	12	5	5	7	2	7	11	11	20	20	28	30	44	33	37	35
Israel	High	4	11	7	7	7	6	6	11	3	3	5	1	6	10	5	10	12	15	13	17	14	10	11
Africa	na	0	0	4	3	2	1	4	3	1	3	0	1	1	2	2	3	0	1	4	4	6	2	3
South Africa	Upper middle	0	0	4	2	1	1	2	2	1	2	0	1	1	2	2	3	0	1	4	4	6	1	3
Australia and Oceania	na	14	19	20	19	26	11	7	10	5	11	7	10	7	13	17	11	13	15	20	17	18	22	20
Australia	High	13	18	16	17	24	9	6	9	5	11	7	8	7	10	14	9	12	13	15	14	16	18	16
New Zealand	High	2	1	4	1	2	2	2	1	1	1	0	1	0	3	3	2	1	2	4	3	3	4	3
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-75

USPTO utility patents granted in mechanical elements, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,254	4,560	4,814	4,893	4,944	4,625	4,265	3,758	4,165	3,493	3,290	3,309	4,266	4,434	5,288	5,862	6,303	6,819	6,766	7,542	7,231	8,283	8,014
North America	na	2,111	2,232	2,317	2,286	2,238	2,093	1,958	1,731	1,958	1,562	1,409	1,413	1,880	1,909	2,197	2,547	2,672	2,984	3,020	3,358	3,213	3,595	3,379
Canada	High	79	94	87	92	115	97	94	87	91	78	54	66	79	87	109	111	138	145	153	186	160	182	176
Mexico	Upper middle	4	3	5	5	6	3	5	7	2	5	6	1	3	2	3	4	8	8	10	12	19	17	17
United States	High	2,028	2,135	2,225	2,189	2,117	1,993	1,858	1,637	1,865	1,480	1,349	1,345	1,798	1,819	2,084	2,431	2,526	2,831	2,857	3,159	3,033	3,396	3,186
Central America and Caribbean	na	0	0	5	1	2	0	0	0	3	0	1	1	2	1	3	2	3	2	3	2	2	3	2
Puerto Rico	High	0	0	3	0	0	0	0	0	2	0	0	0	1	0	1	0	2	1	1	1	1	1	0
South America	na	13	11	9	13	6	13	15	6	13	7	6	7	6	8	16	20	13	21	23	25	21	26	21
Argentina	Upper middle	1	3	4	3	0	2	2	2	2	1	2	1	2	1	2	2	2	4	3	0	1	1	1
Brazil	Upper middle	9	7	4	10	6	11	14	4	7	5	3	4	3	6	14	15	9	16	18	22	18	22	17
Europe	na	1,056	1,099	1,271	1,346	1,318	1,159	1,083	962	1,006	843	838	819	1,082	1,147	1,427	1,559	1,678	1,774	1,746	1,930	1,799	2,145	2,158
EU-27 + UK[a]	na	999	1,059	1,210	1,286	1,262	1,106	1,048	928	964	811	809	789	1,038	1,087	1,365	1,480	1,589	1,678	1,672	1,839	1,711	2,037	2,036
United Kingdom	High	127	118	132	142	156	119	102	90	96	80	80	84	111	104	129	125	148	171	183	178	222	245	210
EU-27[b]	na	873	941	1,078	1,144	1,106	987	945	838	868	731	729	705	927	983	1,236	1,355	1,441	1,507	1,489	1,661	1,489	1,792	1,827
Austria	High	22	20	21	28	28	27	28	17	28	14	18	22	32	29	41	46	58	52	45	58	62	62	58
Belgium	High	12	12	12	10	11	9	10	18	21	13	9	17	25	13	9	18	17	23	26	37	27	27	27
Denmark	High	15	10	13	14	12	11	15	11	16	12	10	4	17	16	21	24	26	23	35	32	28	34	31
Finland	High	10	11	13	19	14	14	13	7	9	5	4	3	11	3	11	6	6	15	19	24	19	21	27
France	High	161	149	157	159	154	137	115	108	111	80	83	87	117	125	161	156	204	242	208	259	226	277	256
Germany	High	513	598	679	745	708	652	606	555	561	472	492	464	603	638	788	874	869	895	858	937	812	963	1,006
Hungary	High	0	1	1	3	2	2	2	1	3	1	0	2	3	2	4	6	2	1	3	3	3	3	8
Ireland	High	0	2	1	3	3	2	3	0	0	0	1	1	2	3	3	3	4	8	8	7	5	6	5
Italy	High	41	46	64	61	68	50	61	47	44	51	43	49	61	67	84	104	102	99	118	103	122	158	150
Netherlands	High	23	24	24	26	30	28	32	25	23	24	15	14	20	29	36	36	43	40	60	58	58	65	60
Spain	High	19	9	7	12	14	9	10	7	6	4	9	7	8	13	12	13	19	20	16	14	21	22	29
Sweden	High	52	54	80	63	57	37	43	38	40	49	41	28	22	38	57	57	77	66	66	96	79	99	96
Other Europe	na	57	39	61	60	56	53	36	33	42	32	29	30	43	61	62	79	88	96	74	92	88	108	122
Other Europe-2020[b]	na	183	157	193	202	212	172	138	124	138	112	109	114	155	164	191	204	236	267	257	269	310	352	332
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Norway	High	16	13	7	11	12	16	10	15	16	9	7	9	15	19	17	15	29	23	20	28	24	31	36
Russia	Upper middle	3	3	4	5	2	2	4	0	3	4	2	1	1	6	6	10	8	7	4	6	6	6	9
Switzerland	High	36	23	46	41	39	31	18	17	21	18	20	18	25	35	35	50	42	57	43	49	51	58	63

Table SINV-75

USPTO utility patents granted in mechanical elements, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	1	1	1	2	1	1	1	1	0	1	0	0	0	0	0	1	1	0	1	0	1	1	1
Asia	na	1,040	1,174	1,172	1,196	1,340	1,322	1,168	1,021	1,147	1,047	1,004	1,032	1,255	1,327	1,590	1,678	1,861	1,962	1,884	2,133	2,105	2,419	2,343
China	Upper middle	2	5	9	11	6	11	11	13	11	11	18	15	39	57	90	113	89	120	125	180	179	244	290
India	Lower middle	0	1	0	0	1	2	5	1	3	2	2	4	6	6	10	14	17	24	21	31	34	41	55
Japan	High	864	977	1,012	1,009	1,102	1,100	967	821	943	822	754	760	936	1,000	1,162	1,192	1,270	1,287	1,237	1,315	1,328	1,513	1,428
Malaysia	Upper middle	0	0	1	1	1	1	0	1	0	3	2	1	1	2	2	2	2	1	2	2	2	3	1
Singapore	High	1	1	1	0	3	4	3	2	2	1	0	3	1	2	4	2	3	7	5	5	4	7	6
South Korea	High	86	93	52	53	83	69	52	56	55	78	89	95	127	107	131	149	228	271	286	406	379	404	355
Taiwan	High	87	96	95	120	144	136	130	127	133	129	137	154	143	153	190	204	248	248	206	191	177	203	206
Middle East	na	9	16	12	15	11	10	7	6	10	6	7	12	12	16	17	16	34	33	40	46	33	40	47
Israel	High	9	14	12	15	10	10	7	4	8	6	5	10	11	12	12	9	22	26	29	31	22	25	28
Africa	na	2	1	3	3	2	3	5	3	5	4	5	5	7	2	1	6	4	3	5	4	4	4	7
South Africa	Upper middle	2	1	3	3	2	3	5	2	5	4	5	5	5	1	1	6	3	3	4	4	3	3	6
Australia and Oceania	na	23	28	25	33	27	25	28	29	25	23	20	19	23	25	36	34	38	39	44	42	50	50	56
Australia	High	20	25	24	28	23	21	26	23	23	20	14	14	19	23	31	27	31	34	33	33	37	41	44
New Zealand	High	3	3	1	5	4	4	2	6	3	4	5	5	4	2	5	7	7	5	11	8	14	10	13
Unclassified	na	1	0	1	1	0	0	0	0	0	0	0	1	0	0	1	1	0	1	2	3	3	1	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-76

USPTO utility patents granted in transport, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	6,289	6,427	7,227	7,872	7,738	7,418	7,057	6,517	7,011	6,359	6,146	6,034	7,793	7,650	8,626	9,888	10,990	12,000	12,108	13,380	13,378	15,352	15,314
North America	na	3,635	3,556	4,023	4,119	3,906	3,806	3,635	3,426	3,666	3,286	3,016	2,914	3,747	3,606	3,943	4,405	4,780	5,230	5,426	6,056	6,212	7,090	7,138
Canada	High	160	152	179	189	174	207	213	184	200	170	169	164	185	196	192	230	236	248	234	272	296	334	313
Mexico	Upper middle	4	1	4	10	4	4	3	4	3	2	5	2	6	5	3	9	13	21	19	53	85	88	69
United States	High	3,471	3,403	3,841	3,921	3,728	3,596	3,419	3,238	3,463	3,113	2,842	2,747	3,556	3,406	3,748	4,165	4,531	4,960	5,173	5,732	5,830	6,668	6,755
Central America and Caribbean	na	1	3	3	3	1	6	2	4	2	2	3	2	1	1	1	4	2	2	5	3	5	7	5
Puerto Rico	High	1	1	3	1	1	4	1	3	0	1	1	0	0	0	1	2	1	1	3	2	4	2	2
South America	na	10	10	11	15	13	20	13	5	8	8	7	2	12	19	12	18	21	20	25	24	31	36	26
Argentina	Upper middle	2	1	1	4	2	3	2	0	1	2	3	0	1	1	1	2	1	1	1	0	3	3	1
Brazil	Upper middle	8	5	8	8	9	15	7	5	6	5	4	2	10	17	8	15	16	16	20	22	25	31	22
Europe	na	1,231	1,319	1,570	1,894	1,863	1,792	1,576	1,331	1,400	1,239	1,233	1,195	1,611	1,654	2,029	2,450	2,608	2,870	2,668	2,932	2,766	3,254	3,158
EU-27 + UK[a]	na	1,181	1,270	1,519	1,840	1,806	1,738	1,535	1,295	1,364	1,210	1,207	1,159	1,564	1,600	1,975	2,375	2,519	2,778	2,588	2,842	2,687	3,151	3,048
United Kingdom	High	106	105	140	179	138	120	113	122	116	95	79	88	115	118	168	165	203	224	248	261	284	338	280
EU-27[b]	na	1,075	1,165	1,379	1,661	1,668	1,619	1,421	1,174	1,248	1,115	1,129	1,072	1,450	1,482	1,807	2,210	2,316	2,554	2,339	2,582	2,403	2,813	2,768
Austria	High	11	19	26	23	24	32	25	30	29	17	14	26	41	36	34	51	38	44	49	48	63	72	82
Belgium	High	17	14	17	19	19	30	21	21	17	15	13	17	20	26	32	42	41	44	54	59	37	42	44
Denmark	High	7	7	11	13	15	11	6	3	5	5	3	7	10	10	9	12	10	21	18	22	17	16	23
Finland	High	14	10	14	11	15	12	13	11	19	11	7	7	9	7	13	12	16	16	17	27	21	20	19
France	High	194	209	239	238	261	260	255	205	212	210	197	177	262	289	386	451	544	535	467	548	526	568	557
Germany	High	679	755	888	1,146	1,084	1,031	891	695	737	652	668	638	875	851	1,020	1,259	1,275	1,464	1,305	1,424	1,295	1,581	1,494
Hungary	High	2	1	1	4	3	0	3	1	3	1	1	2	3	2	4	6	4	6	10	5	5	16	15
Ireland	High	2	4	4	5	4	3	2	6	3	4	6	4	1	5	5	4	4	1	7	10	10	6	14
Italy	High	60	59	69	82	79	96	85	79	100	75	83	73	80	99	129	163	156	171	145	159	165	183	199
Netherlands	High	16	15	27	29	47	30	23	36	24	25	28	30	25	29	38	48	58	54	61	60	58	62	63
Spain	High	20	14	15	15	24	17	12	21	29	34	20	22	38	32	45	45	47	47	44	49	44	54	63
Sweden	High	49	57	56	68	83	82	71	46	57	47	69	52	72	71	75	93	95	119	119	126	112	124	124
Other Europe	na	50	48	51	54	56	54	41	35	36	29	26	36	47	54	54	75	88	92	80	89	79	103	110
Other Europe-2020[b]	na	156	153	191	233	195	174	155	157	152	124	105	123	162	172	222	240	292	316	328	350	362	441	390
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	15	24	20	21	22	16	15	20	12	9	5	17	19	19	21	16	25	23	26	23	24	27	29
Russia	Upper middle	6	6	3	1	3	5	5	0	3	2	4	2	1	4	4	4	2	9	4	6	7	9	10
Switzerland	High	23	16	25	29	24	27	18	12	18	16	14	15	23	24	24	45	50	42	40	49	33	48	51

Table SINV-76

USPTO utility patents granted in transport, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	2	0	1	1	2	1	1	0	0	0	0	0	1	0	0	1	1	2	1	1	0	1	2
Asia	na	1,349	1,477	1,551	1,782	1,900	1,722	1,770	1,686	1,870	1,748	1,825	1,863	2,339	2,282	2,559	2,900	3,449	3,756	3,843	4,210	4,217	4,775	4,813
China	Upper middle	2	6	7	11	14	6	11	17	15	13	29	32	28	46	64	113	112	138	157	218	286	376	425
India	Lower middle	0	1	0	2	0	0	4	4	3	8	3	6	10	6	19	27	19	30	31	55	56	72	92
Japan	High	1,094	1,247	1,283	1,458	1,545	1,423	1,459	1,402	1,530	1,459	1,532	1,552	1,953	1,876	2,031	2,255	2,702	2,850	2,790	2,985	2,958	3,324	3,277
Malaysia	Upper middle	0	3	3	0	0	0	1	1	1	0	0	0	2	3	2	2	2	3	1	4	4	2	5
Singapore	High	1	1	3	3	6	2	3	2	1	6	4	2	5	9	4	5	8	8	10	14	5	14	18
South Korea	High	76	56	50	70	96	73	72	95	122	101	110	124	165	194	218	288	408	529	638	725	693	794	825
Taiwan	High	171	164	205	235	235	216	219	163	196	160	142	145	167	145	219	209	192	196	209	203	207	188	164
Middle East	na	16	19	15	13	10	16	9	12	7	19	8	14	19	33	28	42	53	50	60	64	64	98	75
Israel	High	12	15	11	12	8	14	8	12	5	14	4	13	18	26	24	28	33	38	51	47	54	79	60
Africa	na	7	8	9	4	2	4	5	5	8	3	8	4	6	3	2	6	6	3	8	12	14	3	9
South Africa	Upper middle	7	8	9	4	2	3	5	5	8	3	8	4	5	3	2	5	5	3	7	10	9	3	7
Australia and Oceania	na	39	34	44	42	43	51	48	47	50	54	47	40	56	52	52	63	71	66	72	80	68	89	90
Australia	High	37	28	35	36	39	44	37	37	40	50	39	35	49	45	44	50	55	47	58	56	49	69	75
New Zealand	High	3	6	8	6	5	7	10	10	10	4	8	6	7	7	8	13	16	18	15	24	19	19	15
Unclassified	na	2	1	2	0	0	0	0	1	1	0	0	0	1	0	0	0	1	3	1	0	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

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Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-77

USPTO utility patents granted in furniture, games, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,822	4,851	4,870	4,562	4,637	4,669	4,207	3,480	3,915	3,424	3,203	3,153	4,487	4,476	4,705	5,084	5,723	5,605	5,683	6,134	5,889	6,754	6,646
North America	na	3,563	3,620	3,592	3,224	3,254	3,202	2,900	2,421	2,779	2,427	2,227	2,200	3,127	3,107	3,148	3,459	3,929	3,855	3,945	4,229	4,014	4,529	4,301
Canada	High	163	174	167	167	154	139	114	105	120	101	96	95	144	134	116	164	187	165	174	197	180	223	200
Mexico	Upper middle	4	3	6	3	4	2	6	4	0	1	4	5	6	3	7	9	6	10	10	5	5	6	12
United States	High	3,396	3,443	3,419	3,053	3,096	3,061	2,780	2,312	2,659	2,325	2,128	2,100	2,977	2,970	3,024	3,287	3,736	3,680	3,761	4,027	3,829	4,300	4,090
Central America and Caribbean	na	7	6	1	4	2	2	2	2	4	3	3	2	5	5	5	1	8	3	2	3	3	4	6
Puerto Rico	High	4	1	1	2	0	0	1	1	4	1	0	1	3	3	3	0	4	3	2	3	2	2	2
South America	na	8	8	5	4	6	10	6	11	4	3	4	3	6	7	4	8	11	7	9	7	8	13	11
Argentina	Upper middle	1	3	0	0	5	1	3	3	2	2	2	0	1	0	0	1	2	1	0	0	3	2	1
Brazil	Upper middle	3	3	2	1	1	4	1	3	1	0	0	2	4	4	3	6	6	4	7	5	3	9	6
Europe	na	449	530	510	514	438	463	376	294	368	284	297	325	415	496	558	650	724	731	694	716	731	758	777
EU-27 + UK[a]	na	420	485	464	465	387	417	341	268	344	263	264	297	374	453	515	575	629	625	603	629	639	664	683
United Kingdom	High	63	70	85	81	77	77	53	58	64	58	48	57	80	89	110	124	123	120	118	126	116	131	126
EU-27[b]	na	357	415	380	384	310	341	289	210	280	205	216	239	295	364	405	451	506	505	485	503	523	533	557
Austria	High	15	30	23	22	18	23	13	15	25	17	17	21	24	36	23	37	41	43	29	43	32	36	26
Belgium	High	7	6	3	7	6	4	3	4	3	2	7	3	9	11	11	11	13	7	8	15	15	14	10
Denmark	High	16	17	15	19	7	11	13	5	6	4	4	5	3	10	11	15	16	13	14	18	21	18	22
Finland	High	7	7	3	5	10	7	6	6	7	5	4	4	6	7	6	5	7	11	14	16	13	11	15
France	High	67	92	74	84	74	77	63	34	52	35	41	39	36	53	61	57	62	75	73	54	50	59	58
Germany	High	107	126	113	117	100	105	88	58	86	75	66	85	99	118	142	168	168	153	141	147	152	160	173
Hungary	High	0	3	1	1	0	1	1	0	0	0	2	2	4	0	2	0	4	2	3	3	6	0	0
Ireland	High	2	5	5	5	3	1	2	5	5	1	2	1	2	6	3	4	6	7	7	6	5	7	6
Italy	High	61	57	69	51	43	57	50	44	49	32	34	43	64	63	60	60	77	78	90	74	92	85	90
Netherlands	High	17	28	26	29	12	16	17	13	12	8	13	11	19	23	43	37	32	47	37	49	42	46	60
Spain	High	17	16	15	14	13	12	9	8	13	6	11	14	7	10	12	11	15	15	13	17	23	16	22
Sweden	High	37	25	29	27	21	16	16	14	15	16	11	12	14	23	20	35	54	36	40	51	59	52	56
Other Europe	na	29	45	46	49	51	45	35	26	23	21	33	29	40	43	43	75	95	105	90	86	92	94	94
Other Europe-2020[b]	na	93	115	131	130	127	122	87	84	87	79	81	86	120	132	153	198	217	226	208	212	208	225	220
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	2	2	2	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Norway	High	5	12	11	8	13	9	5	6	3	4	8	6	8	10	8	10	9	18	5	10	7	10	7
Russia	Upper middle	3	1	0	3	3	3	1	1	0	0	1	0	4	3	5	7	3	6	4	9	3	6	4
Switzerland	High	21	31	33	34	33	31	28	20	19	17	23	22	24	30	30	55	70	69	66	53	73	66	72

Table SINV-77

USPTO utility patents granted in furniture, games, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	2	0	2
Asia	na	708	627	703	755	882	933	875	708	705	663	633	585	877	790	899	880	946	904	941	1,084	1,031	1,359	1,426
China	Upper middle	32	32	36	55	57	72	54	55	60	56	64	69	101	80	139	117	136	145	188	231	234	318	391
India	Lower middle	1	1	1	0	0	3	1	1	1	1	2	1	1	4	7	2	6	7	16	16	17	21	24
Japan	High	275	232	254	309	356	389	316	254	286	277	253	242	376	338	418	395	454	376	363	400	381	511	484
Malaysia	Upper middle	1	1	3	1	2	2	7	3	5	3	7	2	4	4	4	4	5	2	2	1	3	4	3
Singapore	High	2	1	1	1	1	2	3	4	2	3	4	3	4	1	1	3	2	7	4	9	3	5	8
South Korea	High	54	51	37	45	48	61	80	71	56	74	82	98	146	114	83	114	128	116	145	167	163	249	249
Taiwan	High	341	304	371	339	412	398	415	318	294	249	220	170	244	246	244	238	213	246	220	253	229	241	260
Middle East	na	23	18	15	14	14	12	11	11	14	15	12	12	19	27	36	31	33	46	35	37	35	32	44
Israel	High	22	16	15	13	14	12	11	9	13	12	10	9	17	25	31	25	21	31	26	33	29	25	36
Africa	na	11	8	4	7	6	11	7	7	6	5	4	4	5	3	9	4	10	3	4	2	1	4	6
South Africa	Upper middle	10	7	4	7	6	10	6	5	6	5	3	2	5	3	9	4	10	2	3	2	1	3	5
Australia and Oceania	na	50	35	39	39	35	37	29	27	35	24	22	21	33	40	47	51	63	55	53	55	63	52	73
Australia	High	42	30	33	29	28	33	24	19	27	21	19	20	22	32	37	44	51	49	45	42	49	42	61
New Zealand	High	9	5	7	10	7	4	5	8	8	3	3	1	9	8	10	7	12	6	7	13	13	10	11
Unclassified	na	2	0	1	1	0	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	3	2	3

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-78

USPTO utility patents granted in other consumer goods, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,560	3,956	3,674	3,538	3,326	2,956	2,892	2,402	2,678	2,460	2,404	2,327	3,175	3,087	3,453	3,686	3,891	4,059	4,284	4,576	4,580	5,304	5,254
North America	na	2,317	2,583	2,409	2,196	2,031	1,834	1,795	1,506	1,628	1,479	1,378	1,357	1,897	1,755	2,031	2,146	2,291	2,479	2,607	2,675	2,758	3,095	3,003
Canada	High	76	93	102	86	79	81	87	47	50	60	49	46	68	60	81	86	92	91	104	103	95	118	100
Mexico	Upper middle	2	3	2	4	9	5	3	4	2	2	1	1	3	5	3	5	7	5	11	6	8	6	6
United States	High	2,239	2,488	2,305	2,106	1,943	1,748	1,705	1,455	1,576	1,418	1,328	1,310	1,826	1,691	1,947	2,054	2,192	2,383	2,493	2,565	2,655	2,971	2,898
Central America and Caribbean	na	3	2	5	3	2	3	2	1	1	2	2	2	2	5	4	1	2	0	1	4	2	3	4
Puerto Rico	High	2	1	2	1	1	1	0	0	0	2	1	0	0	2	2	0	2	0	1	2	2	1	1
South America	na	2	7	6	3	6	11	11	5	8	9	4	6	7	4	7	11	14	15	7	12	18	12	19
Argentina	Upper middle	1	2	2	1	0	1	4	1	4	4	1	1	2	1	1	3	2	1	1	1	0	3	2
Brazil	Upper middle	1	4	3	1	6	8	4	2	5	3	1	4	5	3	4	8	12	13	5	10	14	8	15
Europe	na	471	478	538	574	518	433	436	345	388	363	354	334	470	514	573	645	666	615	659	728	727	912	897
EU-27 + UK[a]	na	438	448	500	526	491	396	409	322	355	334	323	308	423	470	520	587	608	545	602	639	634	787	756
United Kingdom	High	76	58	87	85	90	76	62	58	45	55	45	43	56	64	70	107	90	90	85	119	123	164	159
EU-27[b]	na	362	390	413	441	400	320	347	264	310	279	278	265	367	406	449	480	518	455	517	520	511	622	596
Austria	High	12	14	21	21	19	14	9	5	14	13	15	4	15	13	15	19	19	17	27	27	23	28	25
Belgium	High	8	11	6	7	10	4	9	11	6	5	3	4	9	14	10	12	17	12	20	17	18	27	19
Denmark	High	7	9	5	3	4	4	4	6	5	2	5	4	4	4	8	13	8	11	7	10	9	12	9
Finland	High	4	5	3	4	7	3	6	3	8	7	6	4	7	4	6	7	7	6	11	15	13	14	11
France	High	94	127	110	108	99	78	72	66	81	61	75	53	78	96	83	86	114	78	90	95	99	106	117
Germany	High	130	125	142	175	169	133	156	100	115	123	101	114	156	173	202	214	220	189	201	180	196	225	225
Hungary	High	0	0	0	1	0	1	1	1	0	0	0	0	0	1	0	0	0	1	1	1	0	2	1
Ireland	High	3	3	3	4	3	0	1	0	2	1	2	2	2	1	2	0	1	1	3	4	3	5	8
Italy	High	65	48	72	64	55	45	57	44	43	43	41	51	58	48	65	55	64	71	80	92	75	103	81
Netherlands	High	14	21	21	17	11	11	7	8	11	8	15	15	12	16	20	23	25	25	31	29	35	38	38
Spain	High	7	11	6	11	6	9	11	6	9	3	5	4	11	12	15	10	5	16	8	10	9	12	17
Sweden	High	17	13	18	23	11	14	11	14	10	8	4	5	14	17	14	30	22	15	25	27	14	30	21
Other Europe	na	33	30	39	48	28	36	27	23	34	29	31	26	48	43	53	58	58	70	58	89	93	125	141
Other Europe-2020[b]	na	109	88	125	132	118	112	89	81	79	84	76	69	103	107	124	165	148	160	143	207	216	289	300
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	3	2	1	6	3	4	3	2	1	1	1	2	2	0	3	4	6	6	2	2	3	5	5
Russia	Upper middle	1	0	1	0	1	4	2	2	0	2	2	0	1	1	4	2	1	2	2	4	6	3	5
Switzerland	High	28	27	33	38	22	26	19	19	30	24	26	23	44	37	45	42	41	43	39	65	67	99	117

Table SINV-78

USPTO utility patents granted in other consumer goods, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	3	2
Asia	na	722	843	689	723	726	630	604	502	614	571	629	592	746	756	786	811	833	873	941	1,085	996	1,205	1,246
China	Upper middle	31	35	23	37	33	26	35	30	38	33	37	40	59	62	69	69	75	105	151	219	218	235	298
India	Lower middle	0	1	0	0	1	0	2	1	3	1	4	2	5	4	10	14	5	14	14	15	19	25	29
Japan	High	382	436	356	362	359	317	282	246	295	274	309	325	374	340	301	316	353	340	346	341	302	417	412
Malaysia	Upper middle	0	0	1	0	2	2	2	0	2	1	1	2	3	1	2	1	2	3	2	6	5	3	4
Singapore	High	2	4	6	1	5	6	2	4	10	3	6	7	10	7	7	9	8	3	2	4	3	8	5
South Korea	High	120	132	90	64	75	78	90	87	122	132	160	127	185	216	281	271	272	291	295	375	331	384	374
Taiwan	High	184	232	209	255	249	196	191	132	138	125	110	87	108	122	113	126	112	106	126	117	112	126	117
Middle East	na	16	13	8	14	15	18	15	12	9	11	15	14	13	13	21	31	39	38	37	35	40	37	36
Israel	High	16	11	7	13	15	18	15	12	9	11	9	14	10	10	18	16	32	27	23	28	33	27	29
Africa	na	2	4	4	4	2	2	2	2	2	0	3	3	3	4	1	4	5	5	3	1	6	4	4
South Africa	Upper middle	2	4	4	4	2	1	2	1	2	0	3	3	2	2	0	4	4	4	3	1	5	4	4
Australia and Oceania	na	26	27	15	23	27	25	28	28	28	26	20	21	37	36	30	37	40	34	26	36	31	36	47
Australia	High	19	21	13	15	19	21	24	25	23	21	18	18	35	32	27	32	34	29	20	29	24	28	36
New Zealand	High	7	6	1	8	8	4	3	3	5	4	2	2	3	4	4	5	6	5	6	7	6	7	9
Unclassified	na	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

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USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-79

USPTO utility patents granted in civil engineering, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,030	4,216	4,472	4,495	4,453	4,246	3,945	3,491	3,942	3,321	3,199	3,457	4,851	4,542	5,157	5,901	6,476	6,602	6,714	7,023	7,054	8,281	7,943
North America	na	2,918	3,064	3,228	3,215	3,073	2,912	2,809	2,467	2,790	2,315	2,226	2,432	3,421	3,126	3,512	3,964	4,319	4,419	4,435	4,637	4,723	5,334	5,104
Canada	High	225	231	248	288	233	204	206	186	188	169	150	190	250	256	271	289	305	348	354	399	408	481	445
Mexico	Upper middle	4	4	3	5	5	3	2	1	1	4	2	4	4	5	8	11	10	10	17	13	21	28	20
United States	High	2,690	2,829	2,978	2,922	2,835	2,705	2,601	2,280	2,601	2,142	2,075	2,239	3,168	2,864	3,233	3,664	4,004	4,061	4,064	4,225	4,294	4,826	4,639
Central America and Caribbean	na	1	5	4	5	2	4	2	5	0	5	2	3	4	2	5	4	6	4	5	3	2	2	4
Puerto Rico	High	0	5	4	2	2	4	2	0	0	4	0	2	3	0	2	1	2	2	3	2	1	1	3
South America	na	4	15	15	12	10	13	10	4	9	10	16	11	14	17	18	25	28	34	24	20	25	38	37
Argentina	Upper middle	1	3	3	2	3	1	1	1	2	2	5	1	5	4	6	2	9	4	8	4	4	5	5
Brazil	Upper middle	2	7	9	4	4	4	4	1	6	6	6	4	6	6	5	15	12	16	9	11	14	20	24
Europe	na	619	649	747	792	869	801	632	558	670	538	504	579	850	845	959	1,155	1,243	1,224	1,270	1,271	1,254	1,505	1,422
EU-27 + UK[a]	na	562	598	672	710	803	731	584	522	614	489	453	525	758	755	856	1,027	1,102	1,072	1,105	1,103	1,087	1,343	1,220
United Kingdom	High	121	130	170	147	193	172	157	132	189	119	118	106	175	171	201	205	257	221	244	255	247	283	239
EU-27[b]	na	441	469	503	562	611	559	427	389	425	370	336	419	583	584	655	821	845	851	862	849	840	1,059	981
Austria	High	20	29	21	32	30	37	27	22	27	19	13	18	20	38	31	41	35	26	24	30	34	55	44
Belgium	High	15	9	9	24	13	12	12	14	10	11	9	15	32	13	30	22	32	36	37	32	44	43	56
Denmark	High	13	11	8	21	16	19	9	8	9	6	13	11	12	20	25	25	30	37	55	34	28	55	42
Finland	High	19	17	10	16	16	15	11	11	13	11	5	11	19	9	14	24	19	21	23	30	25	24	29
France	High	59	74	78	91	79	74	67	61	75	51	50	74	96	91	101	135	151	139	119	126	113	153	133
Germany	High	197	213	232	235	293	248	182	160	173	153	136	173	224	231	265	336	352	363	323	353	324	400	361
Hungary	High	1	0	0	1	0	2	0	1	0	1	0	0	2	1	1	1	2	1	2	3	1	1	4
Ireland	High	1	3	4	3	4	3	4	1	3	1	2	3	5	3	5	4	7	11	4	11	10	13	10
Italy	High	40	38	42	30	67	59	30	29	35	37	29	45	63	63	56	73	70	80	88	73	82	108	111
Netherlands	High	21	21	38	40	39	34	31	31	45	41	30	27	33	26	52	43	45	40	56	57	69	77	73
Spain	High	11	7	11	11	11	14	10	21	10	11	6	11	20	22	19	26	23	27	28	22	31	30	39
Sweden	High	44	43	41	53	40	41	43	26	22	27	30	23	52	58	48	77	60	52	77	58	59	69	57
Other Europe	na	57	51	75	82	66	70	48	37	56	50	50	54	92	90	103	129	141	152	164	168	166	163	202
Other Europe-2020[b]	na	178	181	244	230	258	242	205	169	246	169	168	160	267	261	305	334	398	373	408	422	413	446	441
Belarus	Upper middle	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	22	18	33	41	33	34	23	23	34	29	32	34	51	50	60	69	79	99	109	112	103	109	138
Russia	Upper middle	3	3	5	4	2	3	6	2	7	6	4	6	12	7	8	12	13	14	20	15	19	14	15
Switzerland	High	31	29	34	36	26	33	17	10	13	12	13	12	27	31	31	41	39	32	29	32	33	25	36

Table SINV-79

USPTO utility patents granted in civil engineering, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	1	1	0	3	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	2	1	3
Asia	na	386	405	386	373	422	423	401	386	386	391	380	367	456	433	508	586	663	710	767	872	804	1,057	992
China	Upper middle	4	5	8	13	10	12	16	14	25	33	38	30	56	61	85	100	120	120	150	195	207	287	337
India	Lower middle	1	0	1	0	0	0	2	2	2	2	1	2	4	7	9	11	17	19	19	40	36	47	39
Japan	High	232	233	234	211	205	183	163	170	180	160	149	166	203	199	204	247	276	315	314	338	294	400	355
Malaysia	Upper middle	3	0	1	1	3	0	2	1	1	2	3	2	4	3	2	8	4	8	7	7	5	4	4
Singapore	High	2	1	4	3	4	3	9	3	5	2	6	3	7	6	5	8	18	19	19	23	20	41	22
South Korea	High	27	33	34	32	40	57	40	42	38	51	44	36	62	43	64	69	90	99	124	139	120	137	123
Taiwan	High	113	129	102	112	159	166	169	152	133	139	138	123	119	111	130	138	134	125	128	125	120	134	105
Middle East	na	12	8	17	22	18	17	18	16	16	14	21	16	28	26	52	48	72	68	85	82	113	180	223
Israel	High	11	6	14	21	17	15	13	11	12	9	10	8	18	16	28	19	28	24	24	25	30	38	33
Africa	na	19	14	10	11	8	15	9	9	11	6	9	6	5	17	12	12	21	10	11	14	12	18	16
South Africa	Upper middle	19	14	10	10	8	14	7	9	9	5	8	6	5	16	10	11	16	9	9	13	11	15	14
Australia and Oceania	na	71	55	64	66	52	60	65	47	58	43	40	43	72	75	91	105	124	131	117	123	121	145	143
Australia	High	63	46	61	55	46	53	59	40	49	37	36	39	64	63	81	87	105	116	103	108	102	113	126
New Zealand	High	8	9	4	11	6	8	5	7	9	5	4	4	8	12	10	18	19	15	15	15	18	32	17
Unclassified	na	0	1	0	1	0	0	0	0	1	0	1	1	2	1	0	0	1	1	2	0	1	1	1

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-80

USPTO utility patents unassigned under the WIPO classification, by region, country, or economy: 1998-2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	23	45	73	102	51	36	72	82	65	52	25	121	244	379	492	708	990	983	1,082	1,185	1,099	1,506	1,698
North America	na	17	27	45	68	32	23	34	54	34	35	13	59	102	172	200	276	353	374	419	506	425	587	653
Canada	High	9	8	5	2	2	0	0	4	2	0	0	3	3	8	4	22	18	19	21	23	22	32	26
Mexico	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0
United States	High	9	19	41	66	30	23	34	50	32	35	13	56	99	164	196	254	335	355	396	483	402	555	627
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
South America	na	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	3	1
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Brazil	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Europe	na	4	10	8	16	7	4	8	7	5	6	1	12	31	34	52	76	95	108	121	114	131	185	198
EU-27 + UK[a]	na	4	9	8	16	6	4	8	7	5	6	1	12	30	34	49	72	86	98	115	109	118	174	188
United Kingdom	High	0	3	2	5	2	1	1	1	1	1	0	3	5	8	10	10	25	22	18	16	25	36	44
EU-27[b]	na	4	6	6	11	5	3	8	6	5	5	1	9	25	25	39	61	61	76	97	93	93	137	143
Austria	High	0	0	0	1	0	0	0	0	1	1	0	0	2	0	1	3	3	2	7	5	7	4	5
Belgium	High	0	0	1	1	0	0	0	0	0	0	0	0	3	1	0	0	2	1	6	5	5	5	6
Denmark	High	0	0	0	1	1	1	0	1	0	0	0	0	2	1	5	2	1	2	2	3	2	1	6
Finland	High	0	0	0	0	0	0	2	0	1	1	0	0	0	0	2	3	1	5	2	4	6	8	2
France	High	0	1	0	1	0	2	3	0	2	2	0	5	0	2	6	5	5	12	13	13	7	13	12
Germany	High	4	5	4	5	3	0	1	1	0	1	1	1	9	14	18	32	32	42	47	40	39	66	68
Hungary	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3
Ireland	High	0	0	0	2	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	1	4	3	1
Italy	High	0	0	1	0	0	0	0	1	0	0	0	1	3	0	2	4	5	3	5	3	5	9	6
Netherlands	High	0	0	0	0	0	0	0	2	0	0	0	1	3	3	2	3	4	2	4	9	2	7	13
Spain	High	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	0	1	2	3	1	3
Sweden	High	0	0	0	1	0	0	1	1	1	0	0	1	3	4	2	7	5	5	7	7	11	12	13
Other Europe	na	0	1	0	0	1	0	0	0	0	0	0	0	2	1	3	5	10	10	6	5	13	12	10
Other Europe-2020[b]	na	0	4	2	6	3	1	1	1	1	1	0	3	7	9	13	15	34	32	24	22	38	48	55
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0	0	1	2	0
Russia	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	3	3	3	2	2
Switzerland	High	0	1	0	0	1	0	0	0	0	0	0	0	0	1	3	3	5	5	3	2	9	8	7
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Asia	na	2	7	17	18	12	8	30	19	25	10	11	50	109	167	233	342	508	465	521	544	520	702	815

Table SINV-80

USPTO utility patents unassigned under the WIPO classification, by region, country, or economy: 1998-2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	0	0	0	1	0	0	0	0	0	1	0	1	4	4	9	17	28	30	51	46	37	71	130
India	Lower middle	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	4	6	4	4	8	6	10	12
Japan	High	2	7	14	14	12	8	28	18	21	9	6	35	81	135	191	276	392	350	339	361	317	427	435
Malaysia	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1
Singapore	High	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	4	3	2	1	4	1	2	3
South Korea	High	0	0	1	3	0	0	1	1	3	0	4	7	19	20	27	30	67	72	112	115	139	182	216
Taiwan	High	0	0	2	1	0	0	1	0	1	0	0	4	3	8	5	11	12	8	12	8	15	11	14
Middle East	na	0	0	0	0	0	1	0	2	0	0	0	1	1	4	3	7	12	10	16	15	18	20	19
Israel	High	0	0	0	0	0	0	0	2	0	0	0	1	1	4	3	7	11	10	14	14	17	18	14
Africa	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
South Africa	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Australia and Oceania	na	0	1	1	0	0	0	0	0	0	1	0	0	1	1	4	5	18	26	5	6	4	8	11
Australia	High	0	0	1	0	0	0	0	0	0	1	0	0	1	1	4	5	18	25	3	5	3	6	10
New Zealand	High	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	1	2	1
Unclassified	na	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office; WIPO = World Intellectual Property Organization.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under WIPO classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-81

U.S. university USPTO utility patent awards, by WIPO technical field: 1998–2020

(Number)

WIPO technical field	1998–2020	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Pharmaceuticals	17,428	643	717	661	627	625	555	472	398	502	451	419	448	674	634	809	885	1,001	1,051	1,083	1,182	1,108	1,221	1,262
Biotechnology	17,280	816	886	728	788	699	623	568	474	656	589	537	577	703	640	702	733	836	810	923	959	950	1,027	1,055
Medical technology	10,152	250	292	238	235	244	311	241	209	228	198	214	225	360	383	467	575	644	666	708	780	793	943	949
Measurement	7,786	191	227	219	230	220	257	294	247	283	266	282	283	346	373	391	399	389	413	436	451	469	564	555
Organic fine chemistry	6,442	224	215	229	231	266	223	188	185	221	176	163	184	249	207	283	310	360	381	434	435	430	419	429
Computer technology	5,646	123	100	90	116	119	119	138	120	178	164	165	178	267	280	325	343	371	355	393	378	382	474	468
Analysis of biological materials	5,033	181	161	134	165	142	141	137	124	146	152	176	168	259	245	235	281	294	274	292	343	325	331	326
Electrical machinery, apparatus, energy	3,809	88	101	82	82	89	100	113	99	123	99	93	97	166	132	155	177	218	233	263	299	296	338	366
Optics	3,461	102	108	128	104	143	137	152	146	151	141	136	136	155	127	166	156	176	181	178	176	154	195	213
Semiconductors	3,429	71	80	81	100	108	140	99	98	100	95	80	110	162	164	170	201	225	229	238	236	209	225	208
Chemical engineering	2,786	80	87	80	78	70	99	86	81	80	74	72	71	118	106	121	146	154	171	177	209	193	204	227
Microstructural technology, nanotechnology	2,460	38	37	47	50	65	78	91	89	108	109	104	104	140	157	144	186	181	182	144	123	92	93	96
Basic materials chemistry	2,064	57	68	62	72	51	70	59	54	61	45	46	53	72	84	97	137	117	124	139	134	162	163	138
Macromolecular chemistry, polymers	1,868	51	74	61	67	73	83	52	46	64	53	37	51	86	71	73	105	95	97	116	128	123	128	133
Other special machines	1,840	66	66	65	75	81	80	57	55	54	57	45	56	73	71	77	88	85	88	98	100	114	143	145
Materials, metallurgy	1,780	67	60	60	63	63	61	51	48	54	53	40	61	74	74	80	99	85	101	111	111	105	128	129
Digital communication	1,728	14	11	26	28	27	23	33	35	64	61	55	62	87	114	118	90	127	119	112	116	112	160	133
Surface technology, coating	1,549	39	52	63	58	57	58	50	45	40	48	43	37	66	61	75	80	80	81	88	103	108	110	106
Telecommunications	1,536	33	30	26	36	49	42	59	42	55	54	49	56	62	62	84	70	77	85	86	96	107	139	135
Audio-visual technology	1,250	51	43	33	45	37	41	38	35	53	39	37	38	44	40	67	70	54	74	77	88	74	93	81
Environmental technology	1,123	41	37	41	36	46	35	38	25	43	33	25	43	41	46	44	58	72	58	56	77	65	81	79
Basic communication processes	1,049	23	20	20	15	20	24	44	47	44	48	51	53	48	65	51	61	57	54	63	53	62	60	66
Engines, pumps, turbines	866	20	27	23	27	25	31	23	24	30	27	30	34	42	37	44	42	48	44	64	49	60	59	55
Control	853	25	18	20	19	23	24	19	18	31	25	15	21	32	31	37	47	46	41	55	69	69	88	80
Food chemistry	728	44	49	43	33	27	26	18	17	26	17	11	19	25	21	34	35	35	40	41	39	41	44	43
Transport	569	7	22	17	18	16	14	21	20	19	17	14	11	25	28	24	33	33	33	29	30	48	42	48
Civil engineering	535	17	21	22	15	19	15	20	18	10	15	10	12	18	24	19	29	26	33	35	31	38	48	42
Mechanical elements	507	15	15	18	18	19	17	19	13	18	18	11	10	16	20	23	30	28	26	26	39	30	41	36
Textile and paper machines	497	20	15	15	16	20	14	21	12	19	19	14	12	20	21	22	33	25	24	34	25	29	33	34
Machine tools	466	21	24	13	17	19	19	22	14	18	19	14	20	18	23	21	24	30	20	18	22	19	26	26
Thermal processes and apparatus	345	13	11	7	11	10	15	14	10	11	10	8	8	12	10	9	17	19	16	20	19	28	33	35
Other consumer goods	333	13	13	12	6	9	7	9	5	5	13	4	5	12	15	16	18	17	18	26	30	19	26	34
IT methods for management	312	8	5	5	6	2	4	4	9	12	11	14	12	17	24	17	24	32	14	16	15	18	22	23
Handling	297	9	7	3	6	7	5	5	5	4	6	4	1	9	8	14	16	18	20	21	25	26	39	39
Furniture, games	223	7	5	7	5	4	6	7	5	5	8	4	5	6	6	15	12	14	11	16	16	17	23	21

Table SINV-81

U.S. university USPTO utility patent awards, by WIPO technical field: 1998−2020

(Number)

WIPO technical field	1998−2020	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Unclassified	134	0	1	3	3	1	1	0	4	0	3	0	5	7	7	6	8	8	9	10	13	8	18	22

IT = information technology; USPTO = U.S. Patent and Trademark Office; WIPO = World Intellectual Property Organization.

Note(s):

Patents are allocated according to patent ownership information. Data include institutions affiliated with academic institutions, such as university and alumni organizations, foundations, university associations, and affiliated hospitals. Universities vary in how patents are assigned (e.g., to boards of regents, individual campuses, or entities with or without affiliation with the university). Patents are classified under the WIPO classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. For instance, a patent that is classified under five different technological fields will see each of its technological fields receive a 0.2 count of the patent, so that the patent accounts for a count of 1.0 across all technological fields. Patents were also fractionally allocated among regions, countries, or economies based on the proportion of residences of all assignees. As such, data across technical fields sum to the total number of granted academic patents in the United States. Data across technical fields also sum to the total number of patents granted by the USPTO.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021.

Science and Engineering Indicators

Table SINV-82

Citation of S&E articles in USPTO utility patents, by cited field, cited author country, and patent sector: 2013–20

(Number)

Field, country, and sector	2013	2014	2015	2016	2017	2018	2019	2020
All fields, all sectors	623,841	691,285	681,731	662,071	676,063	639,413	721,579	695,833
Foreign	320,953	361,726	362,248	354,143	365,413	348,842	390,667	379,447
Unknown country	3,368	3,447	3,136	2,891	2,813	2,573	2,389	2,083
United States	299,520	326,112	316,348	305,037	307,837	287,999	328,523	314,303
Academic	193,502	210,438	207,402	202,694	204,551	193,482	222,375	214,305
Business	56,951	62,571	57,851	53,991	54,777	49,267	54,272	50,410
Federal government	12,023	12,759	12,434	11,918	11,904	11,597	12,651	12,350
FFRDCs	5,999	6,817	6,326	6,335	6,391	5,933	6,845	6,274
Nonprofit	16,207	17,612	17,887	16,683	16,802	15,776	18,751	17,961
State and local government	285	300	249	298	227	221	275	252
Joint and unknown sectors	14,553	15,614	14,198	13,118	13,186	11,723	13,355	12,751
Agricultural sciences	3,262	3,571	3,306	3,162	3,246	3,241	3,848	4,058
Foreign	1,912	2,155	2,157	2,108	2,176	2,159	2,717	2,910
Unknown country	13	9	10	6	6	6	9	7
United States	1,337	1,407	1,139	1,048	1,064	1,076	1,122	1,142
Academic	911	996	809	704	749	759	801	819
Business	153	132	113	115	107	118	106	119
Federal government	185	179	143	164	144	148	149	151
FFRDCs	3	4	6	9	11	5	12	5
Nonprofit	5	6	6	4	5	4	5	4
State and local government	0	1	1	1	0	0	1	2
Joint and unknown sectors	79	88	59	52	48	42	48	43
Astronomy and astrophysics	86	115	96	159	108	96	88	122
Foreign	63	77	62	110	77	57	50	53
Unknown country	0	0	0	0	0	0	0	0
United States	22	37	34	49	31	39	38	69
Academic	11	22	20	32	14	24	20	40
Business	3	3	4	4	1	4	2	4
Federal government	1	5	4	7	8	6	9	9
FFRDCs	5	5	4	4	5	4	4	12
Nonprofit	2	2	1	0	2	1	1	4
State and local government	0	0	0	0	0	0	0	0
Joint and unknown sectors	0	0	1	3	2	0	1	0
Biological and biomedical sciences	165,743	179,638	180,692	170,841	176,542	173,297	197,223	196,939
Foreign	81,005	88,941	88,881	83,814	86,875	85,664	96,410	95,828

Table SINV-82

Citation of S&E articles in USPTO utility patents, by cited field, cited author country, and patent sector: 2013–20

(Number)

Field, country, and sector	2013	2014	2015	2016	2017	2018	2019	2020
Unknown country	772	772	720	683	647	643	579	486
United States	83,966	89,925	91,091	86,344	89,021	86,990	100,234	100,625
Academic	53,295	56,695	57,724	54,903	56,743	56,100	65,474	66,356
Business	14,754	15,979	15,974	15,034	15,656	14,208	15,737	15,150
Federal government	5,310	5,679	5,700	5,371	5,353	5,221	5,735	5,827
FFRDCs	983	1,112	989	970	924	953	1,141	1,066
Nonprofit	5,755	6,291	6,643	6,485	6,839	7,120	8,537	8,719
State and local government	84	95	92	90	76	96	111	106
Joint and unknown sectors	3,784	4,074	3,968	3,490	3,429	3,290	3,498	3,402
Chemistry	55,879	58,294	58,221	56,560	57,074	54,434	59,085	60,033
Foreign	32,007	33,912	34,254	33,023	33,658	32,543	35,590	36,362
Unknown country	83	63	38	42	40	45	46	43
United States	23,789	24,320	23,930	23,495	23,377	21,846	23,449	23,629
Academic	17,534	17,934	17,603	17,574	17,411	16,590	17,762	17,970
Business	3,382	3,524	3,409	3,292	3,073	2,593	2,687	2,653
Federal government	613	575	571	530	583	590	532	561
FFRDCs	841	857	817	798	842	824	1,045	1,083
Nonprofit	832	902	1,013	753	899	738	827	750
State and local government	7	9	5	14	8	6	9	14
Joint and unknown sectors	581	519	512	533	560	504	588	598
Computer and information sciences	80,173	90,345	86,354	85,850	87,897	90,400	100,567	95,529
Foreign	39,170	44,294	43,626	44,235	48,044	50,350	57,000	56,415
Unknown country	643	718	618	571	473	401	363	308
United States	40,360	45,334	42,110	41,044	39,379	39,649	43,204	38,806
Academic	25,673	29,608	28,115	27,560	26,928	27,417	29,505	26,375
Business	11,428	12,394	11,065	10,733	9,991	9,830	10,919	9,951
Federal government	323	341	318	333	347	432	417	284
FFRDCs	451	494	484	487	422	410	575	501
Nonprofit	963	1,001	819	712	531	406	466	405
State and local government	2	1	0	1	0	0	0	0
Joint and unknown sectors	1,520	1,495	1,308	1,218	1,160	1,154	1,322	1,290
Engineering	66,662	74,534	71,915	71,997	74,915	69,128	81,911	79,314
Foreign	34,068	37,918	37,680	38,077	40,102	37,646	45,251	45,109
Unknown country	346	369	305	315	284	254	247	219
United States	32,248	36,247	33,930	33,605	34,529	31,228	36,413	33,986

Table SINV-82

Citation of S&E articles in USPTO utility patents, by cited field, cited author country, and patent sector: 2013–20

(Number)

Field, country, and sector	2013	2014	2015	2016	2017	2018	2019	2020
Academic	20,458	23,226	22,823	23,001	23,608	21,584	25,852	24,812
Business	7,822	8,533	6,970	6,438	6,785	5,871	6,240	5,158
Federal government	778	854	848	777	877	864	951	902
FFRDCs	1,174	1,365	1,200	1,386	1,343	1,258	1,493	1,377
Nonprofit	824	937	807	723	655	524	567	492
State and local government	17	26	21	33	17	13	17	17
Joint and unknown sectors	1,175	1,305	1,261	1,246	1,244	1,115	1,292	1,228
Geosciences, atmospheric, and ocean sciences	2,835	3,414	3,151	2,837	3,562	3,180	4,583	3,775
Foreign	1,348	1,688	1,528	1,365	1,760	1,595	2,267	1,845
Unknown country	78	92	68	72	68	51	78	45
United States	1,409	1,634	1,555	1,400	1,734	1,534	2,238	1,885
Academic	606	698	735	624	766	618	826	778
Business	471	566	502	433	597	585	945	703
Federal government	95	90	69	100	89	66	90	84
FFRDCs	69	77	60	73	72	46	64	47
Nonprofit	54	63	67	39	70	94	109	85
State and local government	2	0	2	3	0	0	2	2
Joint and unknown sectors	112	141	120	127	141	125	203	186
Health sciences	159,640	173,813	171,100	165,970	171,075	157,953	179,569	172,834
Foreign	79,312	85,860	84,854	82,850	85,634	81,136	91,566	89,290
Unknown country	1,245	1,233	1,201	1,044	1,129	1,050	960	886
United States	79,082	86,720	85,045	82,076	84,312	75,767	87,043	82,659
Academic	51,535	55,928	55,688	54,616	55,789	50,608	58,506	55,935
Business	10,134	11,985	11,293	10,451	11,489	10,226	11,039	10,440
Federal government	3,575	3,822	3,685	3,574	3,458	3,295	3,750	3,606
FFRDCs	245	215	259	243	263	199	221	206
Nonprofit	7,343	7,945	8,139	7,612	7,492	6,599	7,855	7,170
State and local government	166	163	124	150	123	102	133	106
Joint and unknown sectors	6,084	6,662	5,858	5,430	5,698	4,738	5,538	5,197
Materials science	10,022	11,293	11,517	10,572	11,447	10,519	12,245	11,090
Foreign	6,143	7,156	7,583	7,122	7,654	7,207	8,303	7,631
Unknown country	22	22	22	15	15	10	10	17
United States	3,857	4,115	3,912	3,435	3,778	3,303	3,932	3,442
Academic	2,467	2,666	2,608	2,369	2,626	2,269	2,799	2,439
Business	669	617	577	423	486	399	414	371

Table SINV-82

Citation of S&E articles in USPTO utility patents, by cited field, cited author country, and patent sector: 2013–20

(Number)

Field, country, and sector	2013	2014	2015	2016	2017	2018	2019	2020
Federal government	204	241	231	200	166	142	172	143
FFRDCs	313	420	366	315	364	355	419	362
Nonprofit	47	47	44	41	41	25	31	29
State and local government	0	0	0	0	0	0	0	0
Joint and unknown sectors	156	124	87	87	95	112	97	99
Mathematics and statistics	1,086	1,113	970	963	1,003	1,278	1,517	1,401
Foreign	532	578	478	485	556	686	789	703
Unknown country	4	3	2	2	9	0	1	2
United States	550	532	490	476	438	592	728	697
Academic	413	410	379	359	351	467	578	547
Business	68	55	48	41	32	45	54	71
Federal government	14	15	11	19	12	14	9	12
FFRDCs	26	23	9	13	20	37	44	39
Nonprofit	11	11	13	12	8	19	26	14
State and local government	0	0	0	0	0	0	0	0
Joint and unknown sectors	19	19	30	32	15	9	17	14
Natural resources and conservation	1,312	1,414	1,361	1,492	1,504	1,547	1,707	1,944
Foreign	763	834	829	958	944	968	1,093	1,250
Unknown country	4	7	4	3	3	1	2	4
United States	544	573	527	531	557	579	612	690
Academic	353	371	347	363	379	360	407	452
Business	83	73	69	56	61	63	63	77
Federal government	46	63	53	50	55	56	68	78
FFRDCs	30	32	29	31	26	64	39	53
Nonprofit	6	1	2	2	7	7	8	8
State and local government	2	4	2	3	2	2	1	2
Joint and unknown sectors	25	29	26	26	26	26	25	21
Physics	72,260	88,176	87,750	85,951	81,770	68,491	72,047	61,272
Foreign	42,714	56,189	58,167	57,619	55,522	46,415	46,312	38,486
Unknown country	140	141	132	113	115	92	78	56
United States	29,407	31,845	29,451	28,219	26,133	21,983	25,656	22,730
Academic	18,338	19,766	18,628	18,420	16,873	14,297	17,225	15,044
Business	7,181	7,703	6,807	6,043	5,495	4,478	5,051	4,714
Federal government	838	851	770	746	775	724	710	640
FFRDCs	1,853	2,212	2,096	2,002	2,093	1,773	1,782	1,518

Table SINV-82

Citation of S&E articles in USPTO utility patents, by cited field, cited author country, and patent sector: 2013–20

(Number)

Field, country, and sector	2013	2014	2015	2016	2017	2018	2019	2020
Nonprofit	313	325	306	274	224	191	270	246
State and local government	3	1	1	2	0	1	1	1
Joint and unknown sectors	882	987	844	732	673	519	618	568
Psychology	4,191	4,895	4,787	5,139	5,282	5,239	6,346	6,701
Foreign	1,660	1,861	1,938	2,150	2,146	2,154	2,958	3,164
Unknown country	11	14	15	23	23	19	12	7
United States	2,520	3,020	2,835	2,966	3,113	3,065	3,376	3,530
Academic	1,574	1,818	1,703	1,898	2,022	2,104	2,253	2,389
Business	779	982	989	892	961	823	987	982
Federal government	31	31	27	38	31	34	32	47
FFRDCs	3	0	2	1	6	4	3	6
Nonprofit	30	51	16	20	24	35	32	26
State and local government	2	0	0	0	0	0	0	1
Joint and unknown sectors	101	139	98	116	69	65	69	79
Social sciences	690	670	511	578	638	610	843	821
Foreign	255	263	212	228	266	262	361	403
Unknown country	6	5	1	1	1	1	4	4
United States	429	402	298	349	371	347	478	414
Academic	333	300	222	271	292	284	367	351
Business	25	27	31	35	44	22	29	18
Federal government	11	11	3	7	5	6	28	5
FFRDCs	2	1	4	2	2	1	1	0
Nonprofit	22	31	13	5	6	11	17	10
State and local government	0	0	0	0	0	0	0	2
Joint and unknown sectors	35	31	25	28	24	23	37	27

FFRDC = federally funded research and development center; USPTO = U.S. Patent and Trademark Office.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; PatentsView, USPTO, accessed June 2021; Elsevier, Scopus abstract and citation database, accessed May 2021.

Science and Engineering Indicators

Table SINV-83

Number of GitHub repositories contributed to by selected entities: 2009−19

(Number)

Institution	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Administrative Office of the U.S. Courts	na	na	na	na	1	na	2	13	4	4	3
Agency for International Development	na	na	na	na	1	1	3	1	1	7	9
Appalachian Regional Commission	na	na	na	na	na	na	na	na	na	na	1
Department of Agriculture	na	na	na	na	4	4	3	38	15	20	20
Department of Commerce	4	6	4	14	17	58	63	110	156	181	210
Department of Defense	na	na	2	1	8	16	50	42	56	58	88
Department of Education	na	na	na	na	1	na	na	2	2	na	na
Department of Energy	42	51	98	157	418	914	1,267	1,608	2,000	2,281	2,362
Department of Health and Human Services	na	2	4	16	27	42	67	92	187	197	229
Department of Homeland Security	na	na	na	na	na	1	1	6	18	23	17
Department of Justice	na	na	na	na	na	na	1	na	na	na	2
Department of Labor	na	na	na	na	2	na	4	na	11	3	4
Department of State	na	na	na	na	na	7	4	na	na	1	na
Department of the Interior	na	na	1	1	17	47	50	55	99	149	118
Department of the Treasury	na	na	na	na	na	1	na	na	na	1	2
Department of Transportation	na	na	na	1	1	4	5	3	10	10	11
Department of Veterans Affairs	na	na	na	16	1	13	5	16	12	8	5
Environmental Protection Agency	na	na	na	na	3	3	3	12	10	12	17
Federal Communications Commission	na	na	na	1	3	na	na	na	na	1	na
General Services Administration	na	na	na	na	na	27	54	82	61	53	42
Library of Congress	na	na	1	1	1	4	1	4	3	6	1
National Aeronautics and Space Administration	4	3	8	12	40	90	135	134	196	221	263
Office of Personnel Management	na	na	na	na	na	na	na	1	na	na	na
Office of Science and Technology Policy	na	na	na	na	na	na	na	1	na	na	na
Small Business Administration	na	na	na	na	na	na	na	1	1	7	4
Smithsonian Institution	na	na	na	na	4	24	11	6	11	23	28
Microsoft	2	7	31	270	173	520	1,722	3,138	5,842	6,817	6,845
RedHat	123	161	225	410	913	1,325	1,955	2,673	4,678	7,422	5,005
University of California, Berkeley	9	15	27	55	211	405	676	951	1,531	1,651	1,630

na = not applicable; no items are assigned to the entity.

Note(s):
Included repositories are those with an Open-Source Initiative approved open-source license; software shared through other licenses are excluded. Public higher education institutions and selected private entities are included as benchmarks. Overall in terms of number of repositories contributed to, Microsoft and RedHat are the two largest contributors from the private sector and UC Berkeley from higher education institutions. The highest contributor to open-source software is the Department of Energy, which encompasses 17 national laboratories, 16 of which were included in the data. The exception is the Department of Energy's SLAC National Accelerator Laboratory, formerly known as Stanford Linear Accelerator. Due to data constraints, these repositories are attributed to the operator, rather than to the Department of Energy.

Source(s):
Robbins C, Korkmaz G, Guci L, Santiago Calderón J, Kramer B. 2021. *A First Look at Open-Source Software Investment in the United States and Other Countries, 2009–2019*.

Science and Engineering Indicators

Table SINV-84

Number of registered USPTO trademarks, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	88,760	88,615	110,487	106,745	146,872	130,946	113,693	121,571	153,331	170,786	194,477	177,391	165,234	180,083	187,604	194,341	204,710	213,804	232,564	255,097	273,182	312,209	283,479
North America	na	79,064	78,348	98,185	94,782	127,513	110,278	95,533	102,886	128,641	142,946	162,872	147,492	137,702	151,577	157,467	162,028	170,912	175,503	182,272	189,787	192,207	217,533	190,272
Canada	High	2,020	1,886	2,228	2,033	2,927	2,908	2,747	2,841	3,394	3,336	3,868	3,736	3,555	4,001	3,705	3,831	3,933	4,160	4,332	4,766	4,823	5,445	5,267
Mexico	Upper middle	249	238	290	208	364	407	390	486	485	631	801	699	695	850	814	901	928	961	959	1,001	1,000	1,109	1,010
United States	High	76,794	76,224	95,667	92,541	124,223	106,964	92,396	99,559	124,762	138,977	158,203	143,057	133,452	146,726	152,948	157,296	166,051	170,382	176,981	184,020	186,382	210,979	183,994
Central America and Caribbean	na	179	223	202	224	352	335	382	396	461	575	546	488	492	532	536	606	555	674	696	757	628	840	745
Puerto Rico	High	41	79	59	83	112	58	105	108	136	161	127	120	137	189	200	200	223	276	289	347	271	395	373
South America	na	194	196	187	185	375	511	481	463	576	580	688	595	586	566	642	641	664	718	741	831	864	955	850
Argentina	Upper middle	53	28	42	34	76	112	108	89	121	142	155	126	141	142	127	150	110	108	126	113	147	130	118
Brazil	Upper middle	51	58	66	54	128	150	151	152	187	183	204	196	179	150	205	206	257	287	273	328	330	367	328
Europe	na	5,762	5,827	7,360	7,296	12,502	13,280	11,297	11,761	16,052	17,886	20,045	19,356	17,482	17,725	18,407	19,323	19,712	20,631	22,992	22,956	25,115	26,937	24,730
EU-27 + UK[a]	na	5,066	5,129	6,429	6,473	10,999	11,617	9,909	10,217	13,885	15,412	17,327	16,828	15,262	15,331	15,914	16,745	16,983	17,637	19,822	20,038	21,727	23,009	20,984
United Kingdom	High	730	688	965	1,013	1,719	2,000	1,960	1,952	2,455	2,741	3,234	3,369	3,316	3,145	3,263	3,651	3,960	4,137	4,628	4,817	5,109	5,490	5,115
EU-27[b]	na	4,336	4,441	5,464	5,461	9,280	9,617	7,949	8,265	11,431	12,671	14,093	13,459	11,945	12,186	12,651	13,094	13,024	13,500	15,194	15,221	16,617	17,519	15,869
Austria	High	72	93	131	98	221	263	186	205	288	316	368	361	318	327	349	366	373	396	459	460	432	537	449
Belgium	High	115	124	123	132	277	248	195	213	303	351	359	354	341	322	329	388	401	312	407	453	573	533	449
Denmark	High	134	125	135	150	218	251	213	235	340	355	403	423	399	346	364	393	378	432	530	462	488	537	450
Finland	High	85	60	92	100	190	191	133	164	161	230	216	213	201	222	217	240	228	249	335	323	401	367	370
France	High	937	883	1,166	1,127	1,778	1,879	1,476	1,463	2,036	2,207	2,380	2,254	2,172	2,198	2,166	2,353	2,285	2,224	2,402	2,523	2,702	2,665	2,462
Germany	High	1,280	1,426	1,773	1,766	3,136	3,301	2,805	2,849	3,809	3,984	4,457	4,385	3,699	3,617	3,641	3,703	3,549	3,593	3,965	4,077	4,211	4,626	4,057
Hungary	High	10	12	6	16	16	16	10	16	27	20	35	26	38	25	37	46	35	48	36	49	65	62	64
Ireland	High	115	65	110	150	197	182	186	160	211	248	304	272	230	274	286	298	289	411	417	401	487	477	448
Italy	High	614	662	776	676	1,160	1,147	949	1,051	1,638	1,953	2,154	1,823	1,535	1,718	1,716	1,796	1,844	1,888	2,024	2,059	2,246	2,499	2,154
Netherlands	High	332	365	418	434	754	749	573	657	835	935	961	1,036	862	901	968	854	950	923	1,117	1,021	1,215	1,248	1,152
Spain	High	274	274	277	308	542	544	477	510	758	846	961	847	792	817	915	961	920	1,008	1,199	1,119	1,064	1,210	1,184
Sweden	High	234	235	279	339	502	511	448	406	483	529	640	616	592	576	668	671	612	664	786	795	847	947	844
Other Europe	na	696	698	932	823	1,504	1,663	1,388	1,544	2,167	2,475	2,718	2,528	2,220	2,394	2,493	2,578	2,729	2,994	3,170	2,919	3,389	3,928	3,746
Other Europe-2020[b]	na	1,426	1,386	1,896	1,835	3,222	3,663	3,348	3,496	4,622	5,216	5,952	5,897	5,536	5,539	5,755	6,230	6,689	7,131	7,798	7,736	8,498	9,418	8,860

Table SINV-84

Number of registered USPTO trademarks, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	1	0	0	0	0	0	0	3	1	4	7	9	4	16	10	19	10	9	15	12	19	33	53
Moldova	Lower middle	0	0	0	0	1	0	0	4	14	3	9	1	4	1	4	1	8	8	5	10	6	17	10
Norway	High	41	55	70	58	124	110	73	70	111	165	182	182	197	185	162	179	187	182	207	197	259	301	233
Russia	Upper middle	9	8	16	14	25	50	41	49	122	114	135	135	128	186	247	235	262	244	216	236	348	405	399
Switzerland	High	582	580	781	674	1,224	1,363	1,139	1,244	1,624	1,862	2,004	1,879	1,595	1,711	1,703	1,719	1,771	2,085	2,096	1,908	2,029	2,171	2,112
Ukraine	Lower middle	0	0	0	1	5	3	3	6	20	27	21	19	27	33	34	24	59	45	73	86	199	265	293
Asia	na	1,980	2,022	2,540	2,606	3,711	4,218	4,006	4,301	5,379	6,319	7,381	6,753	6,497	7,129	7,891	8,976	9,869	12,913	21,855	36,601	49,610	60,437	61,632
China	Upper middle	321	344	445	422	678	809	732	815	1,291	1,802	2,202	2,042	1,956	2,466	2,822	3,303	4,031	6,475	15,033	29,230	41,830	51,254	52,431
India	Lower middle	26	38	46	73	64	91	95	88	114	126	165	181	186	192	216	226	246	313	337	407	474	645	639
Japan	High	988	1,052	1,190	1,249	1,733	1,971	1,860	1,995	2,360	2,480	2,726	2,511	2,339	2,237	2,278	2,798	2,680	2,775	2,902	2,827	2,957	3,361	3,248
Malaysia	Upper middle	18	11	19	18	21	28	29	21	47	49	57	50	80	62	55	49	47	56	59	61	116	84	95
Singapore	High	66	40	76	93	123	122	136	111	150	200	259	217	248	251	318	345	317	356	450	490	499	576	604
South Korea	High	142	139	176	204	273	389	385	390	427	584	748	740	736	904	1,116	1,133	1,374	1,710	1,845	2,410	2,316	2,876	3,003
Taiwan	High	368	352	523	495	729	660	628	746	823	894	1,039	807	759	829	879	909	908	957	968	904	1,027	1,165	1,054
Middle East	na	159	139	186	216	359	345	273	271	307	356	443	431	457	509	597	596	631	788	931	935	1,226	1,367	1,311
Israel	High	144	119	164	192	313	307	226	209	248	283	353	309	332	324	430	409	416	531	584	636	912	1,028	963
Africa	na	62	42	51	55	97	157	93	106	117	126	158	156	161	167	150	192	207	225	176	169	211	241	218
South Africa	Upper middle	52	28	37	42	72	123	69	82	90	90	106	97	112	108	88	124	129	130	97	88	107	124	98
Australia and Oceania	na	383	356	490	485	842	957	829	891	1,257	1,387	1,733	1,619	1,471	1,480	1,531	1,605	1,800	1,902	2,362	2,446	2,811	3,421	3,411
Australia	High	333	279	390	402	725	768	657	744	1,051	1,169	1,434	1,365	1,209	1,227	1,306	1,385	1,475	1,583	1,984	2,060	2,386	2,903	2,898
New Zealand	High	48	75	98	81	115	174	155	141	198	211	291	240	247	245	217	210	303	314	359	375	406	506	493
Unclassified	na	979	1,463	1,287	898	1,122	866	801	497	542	612	611	503	387	398	385	375	361	452	541	615	510	479	310

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-85

Nice classes in trademark data, by business sector

(Nice classes)

Business sector	Abbreviation (if applicable)	Nice class	Class description
Agricultural products and services	Agriculture		
		29	Meat, fish, poultry, and game; meat extracts; preserved, frozen, dried, and cooked fruits and vegetables; jellies, jams, compotes; eggs; milk, cheese, butter, yogurt, and other milk products; oils and fats for food.
		30	Coffee, tea, cocoa, and artificial coffee; rice, pasta, and noodles; tapioca and sago; flour and preparations made from cereals; bread, pastries, and confectionery; chocolate; ice cream, sorbets, and other edible ices; sugar, honey, treacle; yeast, baking powder; salt, seasonings, spices, preserved herbs; vinegar, sauces, and other condiments; ice (frozen water).
		31	Raw and unprocessed agricultural, aquacultural, horticultural, and forestry products; raw and unprocessed grains and seeds; fresh fruits and vegetables, fresh herbs; natural plants and flowers; bulbs, seedlings, and seeds for planting; live animals; foodstuffs and beverages for animals; malt.
		32	Beers; non-alcoholic beverages; mineral and aerated waters; fruit beverages and fruit juices; syrups and other non-alcoholic preparations for making beverages.
		33	Alcoholic beverages, except beers; alcoholic preparations for making beverages.
		43	Services for providing food and drink; temporary accommodation.
Chemicals			
		1	Chemicals for use in industry, science, and photography, as well as in agriculture, horticulture, and forestry; unprocessed artificial resins, unprocessed plastics; fire extinguishing and fire prevention compositions; tempering and soldering preparations; substances for tanning animal skins and hides; adhesives for use in industry; putties and other paste fillers; compost, manures, fertilizers; biological preparations for use in industry and science.
		2	Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; colorants, dyes; inks for printing, marking, and engraving; raw natural resins; metals in foil and powder form for use in painting, decorating, printing, and art.
		4	Industrial oils and greases, wax; lubricants; dust-absorbing, wetting, and binding compositions; fuels and illuminants; candles and wicks for lighting.
Construction and infrastructure	Construction		
		6	Common metals and their alloys, ores; metal materials for building and construction; transportable buildings of metal; non-electric cables and wires of common metal; small items of metal hardware; metal containers for storage or transport; safes.
		17	Unprocessed and semi-processed rubber, gutta-percha, gum, asbestos, mica, and substitutes for all these materials; plastics and resins in extruded form for use in manufacture; packing, stopping, and insulating materials; flexible pipes, tubes, and hoses, not of metal.
		19	Materials, not of metal, for building and construction; rigid pipes, not of metal, for building; asphalt, pitch, tar, and bitumen; transportable buildings, not of metal; monuments, not of metal.
		37	Building construction; repair; installation services.
		40	Treatment of materials.
Household equipment			
		8	Hand tools and implements, hand-operated; cutlery; side arms, except firearms; razors.
		11	Apparatus and installations for lighting, heating, cooling, steam generating, cooking, drying, ventilating, water supply, and sanitary purposes.
		20	Furniture, mirrors, picture frames; containers, not of metal, for storage or transport; unworked or semi-worked bone, horn, whalebone, or mother-of-pearl; shells; meerschaum; yellow amber.
		21	Household or kitchen utensils and containers; cookware and tableware, except forks, knives, and spoons; combs and sponges; brushes, except paintbrushes; brush-making materials; articles for cleaning purposes; unworked or semi-worked glass, except building glass; glassware, porcelain, and earthenware.

Table SINV-85

Nice classes in trademark data, by business sector

(Nice classes)

Business sector	Abbreviation (if applicable)	Nice class	Class description
Leisure, education, and training	Leisure and education		
		13	Firearms; ammunition and projectiles; explosives; fireworks.
		15	Musical instruments; music stands and stands for musical instruments; conductors' batons.
		16	Paper and cardboard; printed matter; bookbinding material; photographs; stationery and office requisites, except furniture; adhesives for stationery or household purposes; drawing materials and materials for artists; paintbrushes; instructional and teaching materials; plastic sheets, films, and bags for wrapping and packaging; printers' type, printing blocks.
		28	Games, toys, and playthings; video game apparatus; gymnastic and sporting articles; decorations for Christmas trees.
		41	Education; providing of training; entertainment; sporting and cultural activities.
Management, communications, real estate, and financial services	Business services		
		35	Advertising; business management; business administration; office functions.
		36	Insurance; financial affairs; monetary affairs; real estate affairs.
Pharmaceuticals, health, and cosmetics	Health		
		3	Non-medicated cosmetics and toiletry preparations; non-medicated dentifrices; perfumery, essential oils; bleaching preparations and other substances for laundry use; cleaning, polishing, scouring, and abrasive preparations.
		5	Pharmaceuticals, medical, and veterinary preparations; sanitary preparations for medical purposes; dietetic food and substances adapted for medical or veterinary use, food for babies; dietary supplements for human beings and animals; plasters, materials for dressings; material for stopping teeth, dental wax; disinfectants; preparations for destroying vermin; fungicides, herbicides.
		10	Surgical, medical, dental, and veterinary apparatus and instruments; artificial limbs, eyes, and teeth; orthopedic articles; suture materials; therapeutic and assistive devices adapted for the disabled; massage apparatus; apparatus, devices, and articles for nursing infants; sexual activity apparatus, devices, and articles.
		44	Medical services; veterinary services; hygienic and beauty care for human beings or animals; agriculture, horticulture, and forestry services.
Scientific research, information, and communication technology	Research and technology		
		9	Scientific, research, navigation, surveying, photographic, cinematographic, audiovisual, optical, weighing, measuring, signaling, detecting, testing, inspecting, life-saving, and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating, or controlling the distribution or use of electricity; apparatus and instruments for recording, transmitting, reproducing, or processing sound, images, or data; recorded and downloadable media, computer software, blank digital or analogue recording and storage media; mechanisms for coin-operated apparatus; cash registers, calculating devices; computers and computer peripheral devices; diving suits, divers' masks, ear plugs for divers, nose clips for divers and swimmers, gloves for divers, breathing apparatus for underwater swimming; fire-extinguishing apparatus.
		38	Telecommunications.
		42	Scientific and technological services and research and design relating thereto; industrial analysis and industrial research services; design and development of computer hardware and software.
		45	Legal services; security services for the physical protection of tangible property and individuals; personal and social services rendered by others to meet the needs of individuals.

Table SINV-85

Nice classes in trademark data, by business sector

(Nice classes)

Business sector	Abbreviation (if applicable)	Nice class	Class description
Textiles – clothing and accessories	Clothing		
		14	Precious metals and their alloys; jewelry, precious and semi-precious stones; horological and chronometric instruments.
		18	Leather and imitations of leather; animal skins and hides; luggage and carrying bags; umbrellas and parasols; walking sticks; whips, harnesses, and saddlery; collars, leashes, and clothing for animals.
		22	Ropes and string; nets; tents and tarpaulins; awnings of textile or synthetic materials; sails; sacks for the transport and storage of materials in bulk; padding, cushioning, and stuffing materials, except of paper, cardboard, rubber, or plastics; raw fibrous textile materials and substitutes therefor.
		23	Yarns and threads for textile use.
		24	Textiles and substitutes for textiles; household linen; curtains of textile or plastic.
		25	Clothing, footwear, headwear.
		26	Lace, braid and embroidery, and haberdashery ribbons and bows; buttons, hooks and eyes, pins and needles; artificial flowers; hair decorations; false hair.
		27	Carpets, rugs, mats and matting, linoleum, and other materials for covering existing floors; wall hangings, not of textile.
		34	Tobacco and tobacco substitutes; cigarettes and cigars; electronic cigarettes and oral vaporizers for smokers; smokers' articles; matches.
Transportation and logistics	Transportation		
		7	Machines, machine tools, power-operated tools; motors and engines, except for land vehicles; machine coupling and transmission components, except for land vehicles; agricultural implements, other than hand-operated hand tools; incubators for eggs; automatic vending machines.
		12	Vehicles; apparatus for locomotion by land, air, or water.
		39	Transport; packaging and storage of goods; travel arrangement.

Note(s):

Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Business sectors based on class groups are those defined by Edital.

Source(s):

World Intellectual Property Organization.

Science and Engineering Indicators

Table SINV-86

Number of U.S. registered USPTO trademarks, by Nice class: 1998–2020

(Number)

Nice class	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All classes	76,794	76,224	95,667	92,541	124,223	106,964	92,396	99,559	124,762	138,977	158,203	143,057	133,452	146,726	152,948	157,296	166,051	170,382	176,981	184,020	186,382	210,979	183,994
1	1,195	1,148	1,289	1,272	1,710	1,540	1,303	1,326	1,505	1,597	1,749	1,557	1,520	1,736	1,669	1,710	1,786	1,913	1,729	1,779	1,827	1,835	1,700
2	337	350	398	429	524	485	398	519	593	569	547	513	454	522	478	475	488	572	521	503	463	545	459
3	2,181	2,210	2,456	2,457	3,119	3,042	2,692	2,913	3,975	4,106	4,533	4,292	3,674	4,350	4,276	4,577	4,804	5,079	5,249	5,562	6,235	7,319	6,853
4	311	366	383	375	506	456	329	469	465	530	487	514	501	605	571	537	562	565	620	664	654	727	761
5	2,558	2,855	2,869	3,154	3,610	3,441	3,099	3,158	4,018	4,266	4,791	4,220	4,199	4,427	4,683	4,606	5,032	4,935	5,083	5,292	6,027	6,964	6,385
6	815	877	1,025	916	1,247	1,048	968	937	1,116	1,313	1,377	1,164	1,186	1,207	1,174	1,083	1,227	1,217	1,208	1,259	1,250	1,440	1,240
7	1,428	1,464	1,905	1,749	2,242	1,767	1,532	1,613	1,810	2,049	2,246	2,106	1,748	1,837	1,756	1,859	1,930	1,842	1,991	2,079	2,048	2,282	1,881
8	478	463	517	551	631	601	497	632	708	807	778	699	601	718	733	702	829	805	921	1,065	1,111	1,228	1,035
9	10,792	10,506	12,574	11,865	15,852	13,801	11,136	11,580	13,309	13,945	15,605	13,508	12,680	13,904	14,617	14,848	15,850	15,927	16,056	15,849	15,279	16,442	13,842
10	1,357	1,282	1,327	1,642	2,062	1,911	1,645	1,779	1,977	2,167	2,403	2,231	2,160	2,339	2,474	2,389	2,506	2,444	2,427	2,698	2,836	3,231	3,000
11	1,124	1,193	1,493	1,449	2,020	1,779	1,500	1,630	1,988	2,237	2,368	2,169	1,972	2,063	2,157	2,102	2,241	2,449	2,552	2,732	2,856	3,249	2,578
12	935	1,061	1,194	1,232	1,572	1,294	1,238	1,330	1,631	1,693	1,783	1,555	1,427	1,555	1,421	1,515	1,586	1,620	1,856	1,900	1,967	1,998	1,787
13	165	147	163	210	223	183	192	229	335	337	407	385	417	398	430	428	513	579	645	625	766	674	598
14	712	637	930	825	1,072	982	920	1,073	1,396	1,568	1,720	1,586	1,542	1,792	1,899	1,967	2,080	2,004	2,066	2,080	2,034	2,357	1,917
15	125	140	216	181	258	211	167	207	273	302	298	261	287	307	267	319	366	314	292	319	284	308	265
16	5,995	5,639	6,428	5,667	6,959	6,095	5,231	5,629	6,668	6,969	7,639	6,302	5,226	5,623	5,262	5,123	4,798	4,672	4,739	4,675	4,758	5,545	4,636
17	451	398	581	486	669	664	537	532	595	648	739	679	631	662	605	608	633	635	657	687	696	761	549
18	540	497	629	558	828	750	707	830	1,056	1,172	1,485	1,377	1,263	1,349	1,429	1,453	1,414	1,585	1,594	1,757	1,948	2,216	1,815
19	648	671	827	857	1,174	1,028	923	992	1,293	1,379	1,536	1,292	1,118	1,100	1,110	1,082	1,027	1,078	1,135	1,145	1,130	1,307	1,090
20	1,208	1,365	1,643	1,394	1,847	1,765	1,583	1,638	1,796	1,995	2,296	1,857	1,751	1,970	1,993	2,069	1,990	2,127	2,128	2,472	2,834	3,238	2,698
21	932	993	1,259	1,030	1,449	1,341	1,222	1,398	1,436	1,585	1,773	1,694	1,592	1,879	1,843	2,098	2,154	2,406	2,625	3,039	3,436	3,877	3,345
22	112	118	147	159	175	204	177	209	221	235	249	227	216	227	261	246	241	263	300	375	381	380	398
23	37	47	33	29	32	37	45	36	112	67	55	53	45	54	65	78	75	75	78	85	84	98	45
24	425	372	517	427	638	613	555	595	670	735	921	771	726	766	783	835	918	929	953	1,118	1,381	1,439	1,263
25	4,116	3,564	4,935	3,995	5,237	4,747	4,667	5,577	6,955	8,106	9,324	8,868	8,730	9,873	10,410	11,243	12,310	12,789	13,260	14,180	14,733	16,399	14,894
26	140	128	232	169	213	228	196	199	274	310	342	331	354	391	438	457	466	428	521	497	625	724	618
27	160	189	311	272	294	297	233	242	258	294	370	307	247	260	240	281	312	301	321	367	500	567	422
28	3,350	3,022	3,327	3,319	4,009	3,515	3,416	3,375	4,280	4,039	4,376	3,791	3,592	3,851	3,892	4,052	4,541	4,473	4,501	4,728	5,014	5,705	4,722
29	1,456	1,270	1,232	1,115	1,742	1,561	1,490	1,645	1,946	2,078	2,393	2,054	1,971	2,099	2,095	2,228	2,403	2,415	2,659	2,713	2,752	2,999	2,550
30	2,492	2,408	2,026	1,916	2,994	2,622	2,411	2,800	3,395	3,633	3,842	3,540	3,438	3,978	4,040	4,208	5,024	4,838	4,821	5,112	5,195	5,874	5,132
31	851	830	743	687	1,033	1,011	915	958	1,180	1,252	1,321	1,199	1,117	1,339	1,275	1,235	1,262	1,344	1,367	1,614	1,687	1,820	1,666
32	921	853	606	531	825	794	650	860	1,050	1,078	1,417	1,277	1,327	1,526	1,712	2,184	2,855	3,247	3,620	3,765	3,521	3,569	2,764
33	430	448	384	431	688	719	694	921	1,359	1,599	2,009	1,762	1,721	1,907	2,051	2,153	2,580	2,943	2,772	2,954	2,934	3,314	2,963
34	327	262	205	183	280	284	292	295	331	318	478	554	483	528	666	793	992	1,142	1,384	1,188	853	849	809

Table SINV-86

Number of U.S. registered USPTO trademarks, by Nice class: 1998–2020

(Number)

Nice class	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
35	6,049	6,685	10,010	10,622	14,559	12,090	9,817	10,606	14,141	16,533	19,300	17,800	16,749	18,295	19,252	19,273	19,733	20,018	20,180	20,162	19,876	22,333	19,335
36	3,910	3,952	5,730	5,879	7,873	6,599	5,836	5,991	8,137	9,020	9,977	8,269	7,236	7,557	7,836	7,816	8,375	8,296	8,921	8,910	8,716	10,194	9,097
37	1,125	1,266	1,753	1,529	2,357	1,907	1,698	1,938	2,728	3,102	3,585	3,103	2,740	2,784	2,928	2,910	3,055	3,195	3,389	3,485	3,622	4,093	3,641
38	1,161	1,043	1,719	1,893	2,311	1,645	1,368	1,343	1,668	1,997	2,296	1,944	1,717	1,708	1,711	1,646	1,579	1,501	1,467	1,339	1,238	1,324	1,169
39	962	1,015	1,431	1,341	1,732	1,376	1,108	1,155	1,496	1,753	1,984	1,765	1,611	1,772	1,867	1,902	1,875	1,927	1,977	2,163	1,994	2,309	2,012
40	541	580	766	684	1,003	969	846	887	1,158	1,300	1,560	1,560	1,255	1,359	1,403	1,395	1,337	1,451	1,406	1,518	1,457	1,793	1,479
41	5,201	5,389	7,572	7,214	10,227	9,275	8,443	9,153	12,196	14,473	17,146	15,712	14,923	16,518	17,725	18,414	18,842	19,576	21,165	22,109	21,825	25,773	22,779
42	8,528	8,350	11,606	11,607	15,705	9,049	5,331	4,962	5,743	6,633	7,458	7,356	6,980	7,937	8,821	9,262	9,821	10,348	10,596	11,313	11,520	13,240	11,819
43	10	8	7	6	167	1,330	1,783	2,205	3,114	3,567	3,967	3,663	3,305	3,913	4,207	4,355	4,664	5,173	5,544	6,011	6,020	6,852	5,551
44	2	1	2	1	122	1,201	1,718	2,150	2,864	3,499	4,158	3,944	3,824	4,228	4,512	4,897	5,058	5,068	5,684	6,071	6,116	7,335	6,401
45	1	2	13	7	49	411	610	774	1,149	1,688	2,694	2,781	2,757	3,132	3,520	3,513	3,535	3,505	3,666	3,681	3,540	4,074	3,656
Unclassified	197	161	257	227	386	296	279	268	395	433	424	463	439	381	389	370	384	373	333	382	361	378	374

USPTO = U.S. Patent and Trademark Office.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-87

Number of registered USPTO trademarks in the business sector of agriculture, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,582	7,347	6,344	5,901	9,859	10,790	10,390	12,093	15,864	17,517	19,620	17,728	16,801	18,937	19,568	21,069	23,716	25,022	26,591	28,297	28,474	31,403	26,994
North America	na	6,451	6,130	5,251	4,940	7,841	8,441	8,336	9,778	12,561	13,802	15,604	14,161	13,469	15,489	15,999	17,079	19,552	20,730	21,655	23,007	22,951	25,376	21,584
Canada	High	196	212	174	184	248	244	251	232	321	308	347	379	302	368	307	362	379	417	457	421	451	479	525
Mexico	Upper middle	95	101	79	70	143	159	141	158	197	287	309	286	288	359	313	354	385	353	416	417	390	470	433
United States	High	6,160	5,817	4,998	4,687	7,449	8,037	7,944	9,388	12,043	13,206	14,948	13,496	12,880	14,762	15,379	16,363	18,788	19,960	20,782	22,169	22,109	24,427	20,625
Central America and Caribbean	na	39	44	39	35	70	83	68	88	92	141	155	127	144	137	125	135	129	175	174	186	175	199	191
Puerto Rico	High	10	11	12	8	22	13	14	11	15	32	16	24	32	40	43	42	38	59	52	72	59	75	75
South America	na	95	93	79	72	125	209	184	183	256	260	283	230	246	231	231	235	218	217	246	282	257	285	229
Argentina	Upper middle	30	13	25	21	42	57	62	44	84	91	84	74	83	75	77	80	62	57	62	63	76	67	46
Brazil	Upper middle	11	12	2	5	16	32	15	19	38	44	39	32	37	19	24	29	45	43	50	62	51	60	39
Europe	na	701	786	664	592	1,300	1,420	1,213	1,368	2,043	2,318	2,507	2,288	1,996	2,169	2,311	2,581	2,651	2,647	3,015	3,132	3,172	3,377	2,895
EU-27 + UK[a]	na	603	683	582	523	1,141	1,235	1,064	1,151	1,725	1,962	2,109	1,969	1,716	1,860	1,941	2,188	2,217	2,198	2,539	2,699	2,797	2,861	2,493
United Kingdom	High	52	44	45	39	88	103	115	97	174	204	248	221	263	261	298	346	329	341	411	420	440	533	449
EU-27[b]	na	552	639	538	484	1,053	1,132	949	1,054	1,551	1,758	1,861	1,749	1,453	1,599	1,643	1,842	1,888	1,857	2,129	2,279	2,358	2,327	2,044
Austria	High	9	13	11	5	22	12	28	23	36	32	40	44	31	23	26	28	29	37	30	37	48	46	30
Belgium	High	26	23	21	23	28	37	39	40	55	54	46	55	41	57	57	57	78	48	66	68	60	62	66
Denmark	High	13	13	10	7	28	19	12	17	29	34	24	26	27	19	25	22	33	20	47	46	49	36	25
Finland	High	10	7	8	8	18	3	3	12	7	10	16	11	5	12	6	9	12	14	18	24	26	29	19
France	High	116	145	143	125	235	233	164	205	286	348	349	330	294	258	320	385	367	332	368	463	454	452	401
Germany	High	65	81	53	48	230	223	151	163	233	267	246	270	226	201	211	244	287	293	307	303	302	277	225
Hungary	High	1	4	2	1	3	1	2	1	3	4	5	4	8	5	3	9	6	4	5	7	8	12	11
Ireland	High	22	10	5	19	25	26	29	28	52	48	41	51	37	38	41	46	55	65	61	65	89	69	73
Italy	High	118	161	122	109	200	231	211	201	322	362	422	335	276	437	367	410	393	396	407	484	544	558	483
Netherlands	High	44	55	51	32	80	100	76	81	97	130	146	150	109	112	122	105	137	131	145	127	149	143	117
Spain	High	84	76	53	81	118	138	143	179	277	275	278	250	226	218	245	318	269	259	323	344	291	312	293
Sweden	High	14	17	17	6	13	23	18	29	23	32	26	33	36	33	55	39	31	32	32	39	56	56	59
Other Europe	na	98	103	82	69	158	184	149	218	319	356	398	319	281	309	370	393	434	449	476	433	374	516	402
Other Europe-2020[b]	na	150	148	126	108	247	287	264	315	493	560	646	540	543	570	668	739	763	790	887	853	814	1,049	851
Belarus	Upper middle	0	0	0	0	0	0	0	1	0	1	6	3	2	6	5	7	2	2	4	2	7	5	12

Table SINV-87

Number of registered USPTO trademarks in the business sector of agriculture, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Moldova	Lower middle	0	0	0	0	1	0	0	4	14	3	7	1	4	1	3	1	2	5	4	3	4	7	6
Norway	High	12	8	1	3	11	11	6	6	16	12	22	15	13	24	16	12	18	10	21	14	17	35	15
Russia	Upper middle	4	1	3	2	9	17	15	15	51	41	48	44	27	41	66	55	44	69	93	82	90	85	74
Switzerland	High	74	75	62	54	104	119	101	149	175	219	221	181	178	172	186	231	236	247	184	217	134	199	169
Ukraine	Lower middle	0	0	0	0	4	1	0	0	12	17	8	6	6	8	11	3	17	14	27	16	16	33	20
Asia	na	176	169	187	141	263	304	305	343	485	551	604	533	583	566	583	654	773	835	967	1,154	1,336	1,586	1,543
China	Upper middle	43	38	43	25	55	52	57	73	99	118	163	162	121	156	153	182	212	221	300	431	574	663	559
India	Lower middle	3	5	10	13	11	16	16	14	25	15	20	21	23	25	21	30	32	34	41	42	44	83	70
Japan	High	51	63	69	46	93	108	95	103	169	179	173	170	202	135	175	177	191	265	260	275	279	304	304
Malaysia	Upper middle	4	1	2	0	4	2	2	4	17	16	23	10	15	17	11	10	7	5	15	10	14	10	23
Singapore	High	11	9	8	10	6	7	15	18	21	26	30	23	31	19	33	31	39	46	49	64	62	42	70
South Korea	High	20	14	15	11	24	29	24	35	38	74	71	57	88	91	80	85	124	115	138	173	158	242	267
Taiwan	High	25	23	11	19	36	41	35	49	56	45	56	29	35	55	47	69	52	61	62	60	93	119	126
Middle East	na	13	15	13	11	26	26	26	25	34	49	55	30	48	72	78	72	85	76	134	122	122	118	119
Israel	High	5	5	4	3	11	12	13	9	20	22	29	18	25	18	31	19	28	17	33	35	32	40	43
Africa	na	20	12	14	18	34	60	31	48	53	46	53	42	62	62	47	61	63	49	39	45	50	60	49
South Africa	Upper middle	14	10	13	16	30	55	28	46	48	43	47	36	56	48	39	45	51	37	26	28	34	33	30
Australia and Oceania	na	66	73	75	66	162	196	194	226	282	298	291	276	229	179	155	213	209	256	323	329	372	361	344
Australia	High	52	60	54	44	128	144	149	186	218	233	217	216	160	106	111	149	143	196	232	242	268	242	225
New Zealand	High	15	13	21	22	34	45	45	38	64	62	72	60	70	70	44	63	62	60	87	86	98	116	116
Unclassified	na	21	26	23	27	38	52	33	34	57	51	68	40	23	31	40	40	37	39	39	42	38	41	40

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.
Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-88

Number of registered USPTO trademarks in the business sector of business services, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	10,431	11,090	16,420	17,275	23,877	20,309	17,008	17,996	23,990	27,585	31,755	28,613	26,319	28,322	29,783	29,947	31,061	31,488	32,883	32,992	32,759	37,471	32,973
North America	na	10,125	10,786	15,932	16,717	22,779	19,043	15,954	16,920	22,686	25,965	29,773	26,574	24,488	26,412	27,614	27,657	28,669	28,857	29,680	29,752	29,178	33,199	29,069
Canada	High	161	136	182	201	325	326	276	292	377	357	448	455	455	495	456	504	492	451	494	562	482	579	531
Mexico	Upper middle	5	13	9	15	23	28	24	31	31	55	49	49	47	66	69	65	69	92	85	118	104	93	106
United States	High	9,959	10,637	15,741	16,501	22,431	18,689	15,653	16,597	22,278	25,553	29,277	26,069	23,985	25,851	27,088	27,088	28,108	28,314	29,101	29,072	28,592	32,527	28,432
Central America and Caribbean	na	10	12	14	32	54	34	76	71	87	74	46	65	56	58	75	55	75	75	119	117	86	130	100
Puerto Rico	High	1	3	10	20	26	11	46	51	61	36	20	15	26	32	37	27	43	36	76	80	59	86	71
South America	na	9	7	10	13	25	43	24	20	31	37	32	32	50	42	60	60	63	61	79	67	94	97	88
Argentina	Upper middle	1	1	1	0	3	8	5	1	3	3	5	1	8	5	7	11	9	7	6	7	16	10	13
Brazil	Upper middle	3	1	7	8	10	12	6	5	8	11	14	14	15	20	26	28	30	31	33	30	34	40	44
Europe	na	223	209	348	365	767	871	709	754	898	1,149	1,415	1,438	1,283	1,323	1,421	1,517	1,567	1,611	1,842	1,856	1,982	2,216	2,098
EU-27 + UK[a]	na	192	165	284	327	673	755	613	637	779	976	1,197	1,211	1,119	1,123	1,214	1,312	1,336	1,392	1,568	1,598	1,691	1,856	1,765
United Kingdom	High	49	52	93	83	214	221	214	190	254	326	428	425	403	395	390	448	492	479	550	553	602	652	624
EU-27[b]	na	144	112	190	244	459	534	399	446	525	650	769	786	716	728	824	865	844	913	1,018	1,045	1,088	1,204	1,141
Austria	High	2	5	5	4	5	12	5	8	9	27	11	21	20	18	18	29	20	21	22	28	21	24	29
Belgium	High	5	6	6	7	23	20	13	10	14	15	24	21	25	21	22	20	30	23	29	34	38	41	43
Denmark	High	2	1	4	5	8	6	7	7	12	11	22	21	22	15	17	31	19	29	45	37	49	45	38
Finland	High	3	1	4	4	11	12	4	4	8	10	8	6	12	11	12	17	17	19	17	26	24	19	23
France	High	28	23	42	44	88	100	60	65	69	74	131	116	123	133	153	159	139	143	158	163	158	193	187
Germany	High	41	35	59	93	125	164	153	185	219	198	227	247	191	187	172	204	192	196	221	247	242	306	265
Hungary	High	0	0	0	3	2	3	0	3	2	2	1	4	3	1	3	1	3	7	2	5	7	4	6
Ireland	High	13	2	3	7	10	13	14	6	11	24	22	24	18	26	41	26	17	31	41	47	42	26	35
Italy	High	9	7	9	15	34	56	33	33	44	67	79	57	64	57	67	72	79	102	119	96	107	127	109
Netherlands	High	19	21	29	32	69	66	48	52	53	86	81	90	68	69	84	73	83	85	84	90	102	98	100
Spain	High	11	7	14	10	38	35	26	21	33	62	64	65	67	78	80	92	95	92	89	88	87	102	99
Sweden	High	6	2	7	11	26	22	21	24	20	30	34	31	34	29	46	40	41	53	49	53	65	67	59
Other Europe	na	31	44	64	39	94	116	96	117	120	173	218	227	164	200	207	205	231	219	274	258	291	360	333
Other Europe-2020[b]	na	80	96	158	122	308	337	310	307	374	499	646	652	567	594	597	652	723	698	823	811	894	1,012	957

Table SINV-88

Number of registered USPTO trademarks in the business sector of business services, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	1	1	1	1	2	0	2	4
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	2	0	1	0
Norway	High	0	0	2	2	10	9	4	2	5	7	12	15	13	8	9	11	11	14	19	19	22	26	20
Russia	Upper middle	1	1	0	0	1	5	2	4	7	6	11	10	15	22	24	31	29	19	17	21	36	35	30
Switzerland	High	28	41	58	35	78	98	83	100	94	138	161	166	112	148	136	129	133	141	171	154	172	188	184
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	2	3	1	3	2	2	2	10	7	6	7	13	26	24
Asia	na	30	39	56	83	129	187	145	133	169	182	265	270	218	276	370	409	421	553	765	830	1,046	1,406	1,231
China	Upper middle	4	5	14	12	26	23	30	18	41	39	81	69	47	76	103	152	145	234	373	459	605	795	659
India	Lower middle	0	1	1	2	4	8	3	11	9	10	13	21	18	21	18	13	15	28	36	23	40	50	65
Japan	High	18	27	20	36	43	86	52	55	58	65	71	73	65	81	77	99	92	89	123	104	136	171	144
Malaysia	Upper middle	0	0	0	1	0	2	5	2	1	4	3	5	4	2	8	7	2	6	7	5	16	7	9
Singapore	High	2	1	4	11	14	15	7	6	15	16	22	27	22	28	65	45	32	38	59	59	61	89	80
South Korea	High	2	0	8	10	12	17	13	16	19	23	26	29	27	29	53	50	78	90	100	115	114	218	200
Taiwan	High	3	5	8	9	26	28	26	22	18	23	38	40	25	24	34	32	44	53	48	48	47	48	51
Middle East	na	4	5	6	8	17	15	16	20	20	22	43	45	58	53	43	58	43	80	80	81	102	100	100
Israel	High	1	5	4	7	14	11	11	16	14	15	26	19	35	20	24	23	20	36	43	39	53	60	55
Africa	na	7	3	6	3	4	9	5	5	9	18	16	22	21	27	15	25	19	27	24	17	17	22	25
South Africa	Upper middle	6	1	2	2	3	2	4	5	6	9	5	11	10	15	4	13	11	18	14	6	10	10	6
Australia and Oceania	na	13	14	21	23	50	64	44	42	64	103	124	126	110	102	137	134	179	197	256	235	217	268	246
Australia	High	11	13	15	21	49	60	39	34	54	83	99	107	97	87	125	120	155	167	223	203	198	223	204
New Zealand	High	2	2	6	2	2	4	3	8	10	18	23	19	10	15	12	13	21	30	31	30	19	44	37
Unclassified	na	10	16	27	31	53	44	35	31	24	36	42	41	36	30	49	33	26	28	40	37	35	31	15

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-89

Number of registered USPTO trademarks in the business sector of chemicals, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	2,284	2,340	2,585	2,584	3,585	3,378	2,764	3,174	3,551	3,756	3,984	3,798	3,477	3,933	3,913	3,909	3,989	4,301	4,298	4,380	4,611	4,821	4,651
North America	na	1,914	1,932	2,146	2,142	2,835	2,583	2,127	2,447	2,685	2,813	2,929	2,725	2,571	2,989	2,839	2,860	2,944	3,178	3,029	3,092	3,084	3,277	3,083
Canada	High	66	58	68	66	80	87	80	116	104	106	127	125	81	115	104	100	86	113	139	128	121	145	138
Mexico	Upper middle	5	10	9	1	15	15	17	18	19	12	20	16	15	11	17	38	22	16	19	18	19	25	24
United States	High	1,843	1,864	2,070	2,076	2,740	2,481	2,030	2,314	2,562	2,696	2,783	2,584	2,475	2,862	2,718	2,722	2,835	3,049	2,871	2,946	2,944	3,107	2,921
Central America and Caribbean	na	2	2	2	1	4	4	5	4	3	1	5	2	4	12	7	7	5	17	8	4	10	8	13
Puerto Rico	High	0	0	2	0	2	1	1	3	0	0	1	2	1	4	2	5	0	16	1	0	4	6	11
South America	na	3	7	12	3	8	16	8	10	5	14	11	16	9	12	13	11	27	45	22	22	33	30	24
Argentina	Upper middle	2	1	0	0	1	0	1	3	0	2	0	0	2	1	3	2	2	1	6	3	2	1	1
Brazil	Upper middle	1	5	9	1	4	10	3	3	3	8	3	11	2	2	1	3	20	30	11	8	20	26	14
Europe	na	269	295	330	338	564	595	482	519	648	673	707	764	639	629	710	672	669	694	828	746	872	887	872
EU-27 + UK[a]	na	231	266	279	294	501	540	435	471	548	586	619	660	571	557	622	598	584	580	718	650	754	756	724
United Kingdom	High	16	17	27	37	58	76	64	66	63	77	75	105	65	57	76	98	105	96	121	77	104	125	110
EU-27[b]	na	215	248	252	256	442	465	371	405	486	509	544	555	506	499	545	501	479	484	597	573	650	631	614
Austria	High	0	2	4	3	3	4	4	4	10	6	14	6	8	8	11	5	5	11	9	13	8	12	11
Belgium	High	4	8	10	6	18	13	18	21	10	19	20	27	20	19	16	14	10	13	20	18	25	17	22
Denmark	High	14	16	11	15	18	21	17	18	19	18	38	27	19	35	25	23	18	18	28	30	20	30	27
Finland	High	8	2	4	5	12	9	5	7	5	4	7	11	10	8	8	9	7	5	21	5	17	9	20
France	High	36	30	29	42	65	77	49	64	73	65	68	66	58	86	73	103	82	84	81	106	137	95	109
Germany	High	106	125	129	112	206	221	173	180	209	255	241	253	236	188	256	183	180	191	188	188	212	207	208
Hungary	High	0	1	0	1	0	0	0	1	0	1	2	1	1	1	0	1	0	1	2	1	1	1	2
Ireland	High	1	1	3	2	3	2	4	4	3	2	3	1	1	2	3	6	7	7	14	13	13	9	13
Italy	High	11	23	19	11	26	22	31	26	44	55	36	41	34	50	47	53	41	52	76	57	68	67	59
Netherlands	High	17	26	28	34	60	65	43	41	79	53	64	71	75	64	50	49	64	40	64	55	63	94	54
Spain	High	4	4	2	7	9	11	9	14	9	10	18	20	11	12	18	22	15	23	36	38	25	36	38
Sweden	High	13	10	11	12	16	16	12	15	17	13	16	16	12	11	23	17	19	16	29	26	31	18	20
Other Europe	na	38	29	51	44	63	55	47	48	100	88	88	104	68	72	88	73	85	114	109	96	119	131	148
Other Europe-2020[b]	na	54	46	78	82	122	131	111	114	162	165	163	210	133	130	164	171	190	210	231	173	222	256	258
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Norway	High	4	1	6	2	1	6	7	4	3	9	11	10	9	9	10	4	15	14	7	7	10	14	9
Russia	Upper middle	1	0	1	0	0	1	0	3	13	3	2	4	4	8	3	7	12	5	7	5	13	7	6
Switzerland	High	32	28	42	41	57	48	34	37	79	72	70	84	51	53	68	51	49	87	87	72	84	98	112

Table SINV-89

Number of registered USPTO trademarks in the business sector of chemicals, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	1	0	3	2	1	1	1	0	0	1	2	1	3	1	1	1	2	1	5
Asia	na	75	73	70	73	116	124	102	159	169	212	270	248	212	249	292	311	293	317	355	447	542	540	590
China	Upper middle	10	6	4	5	10	10	11	20	32	40	65	55	54	75	76	103	100	111	131	211	311	338	378
India	Lower middle	1	0	1	1	0	4	1	2	5	2	2	1	1	8	6	7	5	8	6	10	7	8	10
Japan	High	52	55	55	57	81	88	70	110	97	130	156	162	111	128	151	157	137	149	146	171	148	137	138
Malaysia	Upper middle	3	1	0	0	0	0	1	2	1	2	0	3	4	2	4	1	2	2	4	1	8	1	1
Singapore	High	0	0	1	1	4	3	3	0	7	1	2	2	5	1	7	9	9	1	8	13	4	7	7
South Korea	High	4	3	0	7	10	6	7	10	16	15	26	18	22	19	15	19	27	27	40	29	39	39	32
Taiwan	High	5	7	9	3	10	6	8	14	12	20	20	6	15	15	23	12	11	16	18	11	20	8	15
Middle East	na	5	1	0	6	11	6	8	7	4	12	9	6	13	11	11	11	14	14	10	16	24	25	12
Israel	High	5	1	0	4	10	6	7	6	4	9	5	5	12	8	9	6	6	9	8	10	15	16	4
Africa	na	2	3	1	2	3	3	1	0	2	3	9	0	1	2	6	4	8	9	8	1	1	5	6
South Africa	Upper middle	2	3	1	2	3	3	1	0	2	2	2	0	0	1	3	2	2	9	7	0	1	5	4
Australia and Oceania	na	7	16	9	10	27	21	15	15	25	23	35	24	18	18	32	29	26	25	34	44	34	44	51
Australia	High	5	9	8	10	23	17	13	15	22	20	31	16	16	16	26	27	20	18	29	35	30	39	44
New Zealand	High	3	7	1	0	3	4	2	0	3	3	4	8	2	2	6	2	5	7	5	9	4	6	7
Unclassified	na	8	12	15	10	18	26	16	12	10	6	10	12	10	11	3	4	2	2	5	9	10	4	2

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-90

Number of registered USPTO trademarks in the business sector of clothing, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,941	6,998	9,550	8,006	10,927	10,488	9,964	11,425	14,588	16,500	19,081	17,885	17,062	18,820	19,958	21,563	23,375	25,289	29,356	35,666	40,233	46,391	43,400
North America	na	6,797	6,027	8,206	6,825	9,047	8,389	8,069	9,376	11,643	13,171	15,342	14,442	13,960	15,675	16,646	17,753	19,220	20,057	21,027	22,205	23,204	25,811	22,831
Canada	High	193	179	210	171	242	207	235	257	308	307	330	325	303	376	395	320	357	451	476	458	582	691	560
Mexico	Upper middle	36	34	58	37	36	40	42	62	63	58	69	42	51	57	60	78	55	92	74	100	84	90	90
United States	High	6,569	5,813	7,938	6,617	8,768	8,142	7,792	9,057	11,272	12,806	14,944	14,075	13,606	15,242	16,192	17,354	18,807	19,515	20,478	21,647	22,539	25,029	22,182
Central America and Caribbean	na	37	38	42	23	35	53	53	34	64	58	71	66	74	76	75	126	85	108	108	129	84	124	99
Puerto Rico	High	6	5	7	9	7	7	9	7	17	22	13	24	21	13	30	34	30	46	36	42	27	59	54
South America	na	18	27	22	24	58	57	71	48	86	85	108	72	76	59	87	77	93	109	96	90	119	114	93
Argentina	Upper middle	3	4	3	1	2	11	13	11	9	12	13	12	7	11	9	4	7	7	8	7	4	7	10
Brazil	Upper middle	8	12	13	14	38	31	38	23	47	40	41	28	39	24	40	36	45	52	42	41	55	41	30
Europe	na	722	580	869	764	1,245	1,292	1,162	1,275	1,823	2,065	2,295	2,056	1,760	1,861	1,963	2,174	2,248	2,327	2,499	2,537	2,717	2,794	2,600
EU-27 + UK[a]	na	642	521	764	679	1,064	1,094	967	1,056	1,481	1,706	1,951	1,734	1,496	1,568	1,627	1,839	1,950	1,983	2,132	2,172	2,296	2,331	2,132
United Kingdom	High	72	60	96	96	146	178	196	208	315	347	389	400	360	365	360	473	519	544	594	644	654	650	562
EU-27[b]	na	570	460	668	582	918	916	771	848	1,166	1,360	1,561	1,335	1,137	1,204	1,267	1,366	1,431	1,438	1,538	1,527	1,642	1,681	1,570
Austria	High	12	11	15	15	24	34	20	16	33	27	37	33	30	27	35	31	38	45	39	43	47	50	28
Belgium	High	8	4	6	14	24	19	27	33	31	36	41	28	22	30	32	39	49	19	47	62	83	70	32
Denmark	High	12	6	8	15	16	16	10	22	25	33	39	46	33	29	30	38	44	45	47	43	47	72	55
Finland	High	1	0	2	7	6	6	6	5	8	9	15	12	5	9	23	13	15	15	27	26	20	30	25
France	High	107	80	145	93	141	155	171	153	213	237	241	236	203	218	204	213	244	240	225	214	238	246	232
Germany	High	101	82	118	105	165	177	161	143	219	230	268	252	231	226	218	257	258	242	280	297	295	291	296
Hungary	High	2	0	0	0	0	1	1	2	0	2	2	2	2	3	7	2	2	6	5	6	3	3	9
Ireland	High	6	5	22	10	8	15	9	5	12	10	14	21	14	19	16	17	12	25	27	23	22	21	31
Italy	High	188	154	202	173	307	264	207	251	332	455	531	388	325	350	323	363	390	373	412	397	367	400	370
Netherlands	High	40	31	38	43	68	53	38	74	87	81	85	100	94	85	95	85	86	95	96	92	108	104	108
Spain	High	55	57	59	50	79	82	49	52	82	98	103	74	63	85	90	97	100	113	117	90	108	102	112
Sweden	High	18	11	11	29	30	40	21	35	43	36	55	54	46	43	101	112	68	63	76	86	99	103	89
Other Europe	na	80	59	105	85	181	198	195	219	343	359	345	322	263	292	336	335	298	345	367	366	420	463	468
Other Europe-2020[b]	na	153	120	201	182	327	376	391	427	657	706	734	722	623	657	697	808	817	889	961	1,010	1,074	1,113	1,031
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3	2	3	0	2	1	6	5

Table SINV-90

Number of registered USPTO trademarks in the business sector of clothing, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Norway	High	1	1	3	3	14	11	6	3	7	13	9	10	10	10	12	17	12	13	18	16	30	22	28
Russia	Upper middle	0	0	1	0	1	5	1	1	3	12	10	12	14	26	24	19	25	21	17	24	44	36	39
Switzerland	High	67	53	93	72	148	154	160	173	250	262	238	233	193	210	237	230	184	241	231	245	218	262	248
Ukraine	Lower middle	0	0	0	0	0	0	0	0	1	0	1	0	1	2	3	1	2	4	5	7	36	31	43
Asia	na	271	261	308	269	390	537	477	532	734	868	957	977	934	912	935	1,141	1,405	2,373	5,223	10,348	13,630	17,017	17,196
China	Upper middle	68	67	80	66	105	172	152	167	265	337	393	398	374	426	502	597	814	1,729	4,458	9,520	12,804	16,019	16,144
India	Lower middle	6	7	10	6	9	16	14	14	22	26	33	31	32	36	41	29	36	43	47	75	104	149	140
Japan	High	122	121	132	118	171	210	167	225	255	293	303	335	340	240	185	254	275	266	298	268	301	317	337
Malaysia	Upper middle	0	1	0	2	2	2	1	0	4	3	4	5	5	3	3	4	5	5	3	6	14	9	9
Singapore	High	1	1	10	3	1	4	6	6	8	15	23	21	18	16	11	17	22	19	23	32	42	41	43
South Korea	High	29	24	27	32	37	73	61	52	63	80	81	99	93	91	94	115	149	180	255	322	201	269	327
Taiwan	High	31	31	43	31	53	42	59	48	74	73	80	54	53	73	64	87	70	83	103	84	89	111	79
Middle East	na	10	8	17	7	24	17	13	22	31	32	35	45	48	25	38	45	48	63	96	67	87	115	116
Israel	High	9	8	16	4	13	11	11	15	21	27	29	23	29	14	25	29	19	33	30	43	69	88	73
Africa	na	5	7	2	5	10	14	8	9	11	13	7	11	8	11	12	14	24	23	10	19	34	36	18
South Africa	Upper middle	5	2	1	4	9	10	7	6	7	7	4	7	6	6	6	10	11	7	3	10	10	10	6
Australia and Oceania	na	60	33	61	58	73	81	72	87	145	132	186	163	161	161	171	196	221	204	273	244	316	353	416
Australia	High	52	28	42	44	57	69	59	67	119	112	152	138	135	130	152	176	186	184	246	225	292	315	363
New Zealand	High	8	5	18	14	15	11	13	18	24	19	33	23	24	31	18	18	35	20	27	18	22	35	51
Unclassified	na	21	18	23	31	46	50	40	42	51	76	80	53	42	41	30	36	29	24	24	27	42	28	29

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.
Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-91

Number of registered USPTO trademarks in the business sector of construction, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,206	4,440	5,792	5,317	7,806	6,961	6,137	6,447	8,451	9,606	10,956	9,919	8,773	9,115	9,235	9,064	9,309	9,671	10,084	10,598	11,038	12,643	11,315
North America	na	3,734	3,957	5,160	4,639	6,737	5,893	5,227	5,550	7,188	8,103	9,183	8,141	7,291	7,500	7,563	7,410	7,620	7,927	8,150	8,474	8,512	9,773	8,385
Canada	High	145	150	191	157	273	256	242	247	286	342	353	304	331	364	313	302	307	310	329	359	318	342	339
Mexico	Upper middle	9	15	17	10	15	21	14	17	12	19	33	39	30	26	29	30	34	42	26	22	39	37	47
United States	High	3,581	3,792	4,952	4,472	6,450	5,616	4,972	5,286	6,890	7,742	8,797	7,798	6,929	7,111	7,221	7,078	7,279	7,576	7,795	8,093	8,155	9,394	7,999
Central America and Caribbean	na	4	6	6	5	6	5	6	6	7	15	10	14	14	9	12	9	16	14	11	21	13	16	12
Puerto Rico	High	1	2	4	4	3	2	2	1	3	5	4	5	4	5	6	6	11	7	4	7	9	10	2
South America	na	6	4	7	11	22	26	32	23	21	29	34	30	9	19	31	17	19	28	23	28	17	31	25
Argentina	Upper middle	1	0	1	2	0	2	3	0	2	1	2	3	2	4	0	3	2	1	3	3	0	4	2
Brazil	Upper middle	4	2	0	2	8	10	10	15	12	16	19	8	5	7	14	7	12	13	9	12	7	12	14
Europe	na	339	342	454	463	769	773	633	620	886	1,033	1,180	1,208	1,035	1,130	1,114	1,090	1,061	1,142	1,229	1,238	1,342	1,387	1,317
EU-27 + UK[a]	na	301	304	404	414	698	689	580	562	796	951	1,045	1,068	922	1,006	1,003	960	919	1,019	1,087	1,091	1,174	1,227	1,165
United Kingdom	High	30	32	53	43	85	93	78	86	113	102	130	141	160	152	157	135	141	154	173	170	181	174	179
EU-27[b]	na	271	272	350	371	613	596	501	476	682	849	915	927	762	854	846	825	778	864	913	922	993	1,053	986
Austria	High	11	9	11	10	22	18	24	29	32	43	44	38	36	33	36	31	44	37	49	30	45	45	44
Belgium	High	10	14	5	11	22	17	15	22	29	23	31	29	24	20	26	31	26	25	23	27	46	35	28
Denmark	High	3	3	8	6	10	12	19	15	22	27	19	28	21	21	26	26	12	26	20	18	25	26	24
Finland	High	2	3	4	4	11	14	6	16	12	19	22	26	17	30	23	27	17	20	24	28	28	24	25
France	High	43	40	60	67	89	87	67	64	107	95	105	103	93	117	135	112	91	85	108	98	112	119	114
Germany	High	107	100	139	151	244	229	186	166	241	302	379	395	296	344	311	285	264	306	345	332	341	353	341
Hungary	High	0	1	1	1	1	0	0	2	0	0	1	1	0	1	2	1	1	1	2	5	1	2	2
Ireland	High	4	5	6	3	4	12	10	7	5	7	10	9	16	5	8	14	10	15	19	18	12	30	17
Italy	High	34	28	46	41	70	62	58	59	96	132	120	114	107	105	101	117	128	122	112	132	147	178	135
Netherlands	High	23	24	19	30	42	49	31	33	44	44	52	56	49	54	44	53	53	55	55	62	56	68	70
Spain	High	14	17	22	18	43	40	34	17	35	55	45	49	39	48	45	43	46	67	60	63	52	56	73
Sweden	High	15	17	18	15	34	33	32	30	28	61	42	34	33	46	44	44	39	50	39	49	48	44	41
Other Europe	na	38	38	51	48	71	85	53	58	90	83	135	139	113	123	110	130	142	123	142	146	168	160	152
Other Europe-2020[b]	na	68	70	104	92	156	177	132	144	203	185	265	280	273	275	268	265	283	277	315	316	349	334	331
Belarus	Upper middle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	1	2	1	2
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	6	2	9	9	11	10	6	3	8	11	16	21	19	16	13	19	15	15	20	11	19	21	17
Russia	Upper middle	1	2	0	0	1	1	1	0	3	6	7	10	7	6	11	8	14	5	4	11	15	13	11
Switzerland	High	29	31	39	37	56	67	45	50	66	51	97	92	67	81	61	70	83	76	84	80	92	81	83

Table SINV-91

Number of registered USPTO trademarks in the business sector of construction, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	2	1	0	3	1	1	0	2	2	1	1	4	6	9	8
Asia	na	86	93	118	138	177	159	158	179	258	321	425	400	331	372	406	412	475	445	553	712	1,028	1,233	1,413
China	Upper middle	5	14	13	15	23	27	41	42	73	118	155	166	137	163	136	180	196	184	295	440	720	906	1,047
India	Lower middle	2	4	1	0	4	1	2	2	2	3	4	6	4	3	10	5	13	14	14	12	22	21	13
Japan	High	45	38	54	63	77	70	54	85	107	104	141	133	104	114	140	155	163	136	138	145	162	159	154
Malaysia	Upper middle	3	1	1	3	3	2	4	0	3	3	6	5	10	3	5	1	0	6	2	4	8	2	7
Singapore	High	2	1	2	3	4	6	8	2	5	8	16	9	10	14	16	12	12	17	14	10	10	16	31
South Korea	High	7	4	4	16	16	17	16	12	19	23	26	20	13	24	32	24	39	40	38	45	45	56	49
Taiwan	High	22	30	37	34	46	25	26	28	40	56	72	45	41	45	61	25	45	38	47	47	48	58	46
Middle East	na	3	4	4	8	6	10	13	8	14	8	16	15	17	13	23	19	16	22	20	26	30	49	30
Israel	High	3	2	3	8	5	9	8	8	11	6	10	10	8	11	14	13	10	14	12	19	23	33	20
Africa	na	4	0	2	2	6	6	7	3	3	1	6	7	2	4	2	5	7	9	4	1	2	8	3
South Africa	Upper middle	4	0	1	2	5	5	7	3	2	0	6	4	2	3	2	2	3	8	3	1	1	5	2
Australia and Oceania	na	18	19	19	32	45	57	42	43	60	75	82	94	64	60	72	92	86	78	82	84	90	133	124
Australia	High	15	13	17	31	44	40	34	39	51	64	62	81	48	50	59	80	65	62	61	70	73	115	99
New Zealand	High	3	6	2	1	1	16	8	4	10	10	20	13	16	10	13	12	21	16	21	14	17	18	25
Unclassified	na	13	15	23	20	37	33	19	15	13	21	20	11	11	7	11	11	8	6	11	14	4	13	6

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-92

Number of registered USPTO trademarks in the business sector of health, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	7,571	7,791	8,250	8,969	11,532	12,661	12,015	13,254	17,073	18,540	20,894	19,520	18,513	19,886	20,418	21,281	22,293	23,136	24,854	26,879	29,865	34,936	33,544
North America	na	6,268	6,484	6,819	7,398	9,120	9,845	9,393	10,285	13,172	14,406	16,358	15,134	14,293	15,879	16,391	16,930	17,891	18,020	18,957	20,217	21,872	25,546	23,385
Canada	High	147	121	140	135	180	229	207	238	285	305	372	389	352	415	337	360	383	412	450	519	561	593	669
Mexico	Upper middle	22	15	26	9	29	21	33	47	53	62	99	58	83	121	109	102	108	82	63	75	97	104	78
United States	High	6,098	6,348	6,654	7,254	8,912	9,595	9,153	10,000	12,834	14,039	15,886	14,687	13,857	15,343	15,944	16,469	17,400	17,527	18,444	19,623	21,214	24,849	22,638
Central America and Caribbean	na	25	48	20	28	31	26	35	67	41	76	96	77	64	61	66	80	77	80	74	79	86	108	80
Puerto Rico	High	7	30	4	11	15	1	7	11	5	14	30	17	13	24	28	24	26	22	28	35	30	48	37
South America	na	13	13	7	7	14	21	50	49	38	50	79	54	48	60	53	52	64	59	73	78	77	118	111
Argentina	Upper middle	1	1	4	3	3	7	3	9	4	15	14	4	4	12	10	10	7	5	8	4	9	5	15
Brazil	Upper middle	6	4	0	2	6	4	33	27	20	22	34	28	19	23	15	22	24	30	35	44	40	60	48
Europe	na	999	996	1,086	1,213	1,851	2,119	1,972	2,135	2,945	3,089	3,301	3,240	2,935	2,851	2,697	2,871	2,862	3,210	3,521	3,360	3,736	3,876	3,698
EU-27 + UK[a]	na	866	873	938	1,071	1,601	1,777	1,648	1,771	2,430	2,593	2,736	2,660	2,455	2,290	2,237	2,372	2,318	2,485	2,822	2,779	3,044	3,101	2,920
United Kingdom	High	105	112	118	131	183	216	274	270	349	352	421	441	407	421	366	476	473	468	612	623	647	690	725
EU-27[b]	na	761	761	821	941	1,418	1,561	1,374	1,502	2,080	2,240	2,316	2,219	2,049	1,869	1,871	1,896	1,845	2,017	2,210	2,156	2,396	2,411	2,195
Austria	High	7	2	7	6	12	12	9	13	24	27	28	34	38	27	41	24	31	28	45	38	35	50	35
Belgium	High	15	25	11	26	33	45	16	29	48	75	75	67	64	45	46	59	47	38	55	46	79	74	66
Denmark	High	35	31	28	46	50	68	55	56	109	87	79	91	140	82	81	72	71	123	101	82	68	83	78
Finland	High	11	6	9	8	17	18	20	21	17	29	12	20	21	19	16	28	22	17	28	34	38	37	30
France	High	264	269	293	305	450	508	436	454	646	711	676	590	572	506	453	480	544	502	570	537	636	535	502
Germany	High	234	237	252	289	450	518	469	499	599	644	675	691	545	583	545	591	451	499	498	565	564	565	521
Hungary	High	2	3	0	1	1	0	1	4	9	5	9	5	8	2	9	14	6	9	5	4	10	8	9
Ireland	High	26	15	27	39	54	34	49	38	57	62	71	56	50	69	69	65	73	116	95	94	132	154	119
Italy	High	51	67	73	57	109	121	64	105	172	208	236	217	175	144	181	176	195	213	190	212	212	261	257
Netherlands	High	44	36	40	52	88	88	83	92	126	114	119	142	102	111	130	108	104	103	130	127	147	151	153
Spain	High	24	33	41	49	55	49	68	88	92	113	157	119	95	88	124	100	96	132	202	149	151	187	146
Sweden	High	32	29	32	51	82	71	72	69	110	80	100	110	162	86	68	88	86	104	135	129	104	139	95
Other Europe	na	133	124	148	142	250	342	324	364	515	497	565	579	479	561	461	498	544	725	700	581	692	775	778
Other Europe-2020[b]	na	238	236	265	273	433	558	598	634	864	849	986	1,020	886	982	826	975	1,017	1,194	1,311	1,203	1,339	1,465	1,503

Table SINV-92

Number of registered USPTO trademarks in the business sector of health, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	0	0	0	0	0	0	0	1	0	0	2	0	2	0	1	1	2	0	0	1	4	8
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0
Norway	High	7	9	3	4	6	8	11	9	17	14	16	14	37	24	13	28	18	20	13	23	39	32	18
Russia	Upper middle	0	0	1	1	0	4	4	7	13	8	17	13	10	17	27	19	36	30	20	15	13	46	66
Switzerland	High	109	103	128	117	221	306	278	312	425	441	487	509	393	473	390	379	441	611	614	486	564	569	563
Ukraine	Lower middle	0	0	0	0	0	0	0	2	0	1	3	1	3	5	3	4	2	1	3	10	23	32	46
Asia	na	178	171	215	230	341	422	384	514	630	666	737	701	824	711	846	1,025	1,059	1,224	1,594	2,467	3,378	4,446	5,579
China	Upper middle	25	31	34	32	64	80	61	87	87	125	134	120	155	159	196	235	306	363	669	1,292	2,015	2,722	3,825
India	Lower middle	8	3	4	11	5	9	17	15	10	10	16	14	15	22	30	35	51	32	34	68	78	98	106
Japan	High	100	97	109	125	202	238	217	255	366	349	362	349	396	288	313	414	405	436	390	464	408	571	535
Malaysia	Upper middle	4	3	3	3	4	7	6	3	7	7	5	12	25	10	10	10	14	12	12	13	20	15	17
Singapore	High	5	2	9	13	9	10	11	15	25	20	37	26	29	28	43	58	39	45	63	78	84	76	84
South Korea	High	17	17	32	23	31	33	46	67	67	90	111	106	117	124	174	183	154	238	310	426	592	764	849
Taiwan	High	17	15	25	19	25	32	23	57	58	50	59	58	70	71	62	85	72	80	94	100	132	134	114
Middle East	na	29	26	31	27	52	50	42	47	52	58	80	62	71	103	105	88	102	136	141	155	208	238	230
Israel	High	27	25	28	26	48	43	36	42	47	53	72	54	59	75	96	79	80	104	109	114	168	199	188
Africa	na	5	6	5	4	5	14	12	13	8	8	18	15	20	18	24	23	16	22	23	20	32	37	38
South Africa	Upper middle	5	3	3	3	0	11	3	2	4	5	10	11	10	10	10	17	10	13	12	13	21	22	15
Australia and Oceania	na	38	27	47	38	67	108	91	103	133	147	170	164	192	155	199	168	188	226	290	304	357	466	400
Australia	High	31	19	39	34	62	90	71	91	113	128	141	133	153	129	162	132	145	176	241	235	294	376	332
New Zealand	High	7	7	8	4	6	18	17	12	18	19	29	31	38	25	37	35	42	50	49	68	61	89	67
Unclassified	na	17	21	20	26	51	56	38	42	54	40	56	73	67	49	38	45	34	158	181	199	120	100	24

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.
Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-93

Number of registered USPTO trademarks in the business sector of household equipment, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,459	4,633	5,868	5,314	7,325	6,815	6,064	6,744	7,648	8,583	9,519	8,480	7,865	8,811	8,917	9,227	9,642	10,517	12,583	16,916	21,576	26,098	25,372
North America	na	3,928	4,169	5,117	4,593	6,177	5,681	5,006	5,538	6,196	6,876	7,510	6,688	6,201	6,968	6,992	7,256	7,495	8,092	8,544	9,678	10,657	12,106	10,161
Canada	High	168	135	184	165	221	183	198	210	253	233	270	247	260	313	241	252	253	279	293	340	387	477	474
Mexico	Upper middle	18	19	21	4	9	13	7	29	14	19	25	23	25	25	25	32	28	26	26	29	33	36	32
United States	High	3,743	4,015	4,911	4,425	5,947	5,486	4,801	5,299	5,928	6,624	7,215	6,418	5,916	6,630	6,727	6,971	7,214	7,787	8,226	9,309	10,237	11,593	9,655
Central America and Caribbean	na	11	14	19	25	25	21	32	25	33	39	30	15	19	37	25	29	20	22	25	37	21	32	42
Puerto Rico	High	2	1	4	0	4	2	4	0	1	6	3	1	5	6	6	8	7	9	3	11	6	6	6
South America	na	6	1	6	8	14	15	24	24	28	16	17	18	15	16	13	7	18	23	27	41	26	34	37
Argentina	Upper middle	0	0	0	1	2	2	5	1	4	1	2	2	2	3	1	0	1	2	3	1	4	4	2
Brazil	Upper middle	1	1	2	5	11	8	10	15	12	5	7	8	8	3	9	3	8	9	16	21	14	19	16
Europe	na	356	309	503	485	784	729	641	744	893	1,022	1,231	1,124	1,016	1,050	1,046	1,049	1,150	1,106	1,307	1,314	1,563	1,768	1,564
EU-27 + UK[a]	na	314	271	449	428	670	633	562	655	801	895	1,096	1,006	888	944	916	924	1,033	982	1,174	1,185	1,369	1,547	1,322
United Kingdom	High	41	26	49	40	70	103	86	102	116	115	150	154	148	135	139	153	176	186	230	237	290	305	269
EU-27[b]	na	273	245	400	388	601	530	476	553	685	780	946	852	740	809	776	771	858	796	944	948	1,079	1,241	1,053
Austria	High	5	6	5	5	13	13	12	21	23	22	27	31	22	32	25	24	23	30	29	33	36	39	46
Belgium	High	3	5	6	6	13	7	15	7	23	26	19	25	18	10	19	20	21	18	24	25	35	32	22
Denmark	High	10	8	8	11	11	16	13	21	17	22	35	44	18	24	21	38	28	18	39	39	50	46	33
Finland	High	5	5	6	9	5	8	7	11	9	15	10	11	7	14	16	20	15	11	25	23	17	26	35
France	High	54	43	72	72	99	85	73	65	97	83	124	101	106	120	120	128	139	112	123	131	121	119	102
Germany	High	90	91	139	128	211	200	185	202	222	298	352	317	304	278	273	252	275	242	283	285	310	369	294
Hungary	High	0	0	2	1	1	0	0	0	1	0	2	2	2	1	1	2	1	1	0	0	2	3	2
Ireland	High	5	4	1	3	6	5	2	4	3	5	6	10	4	13	12	10	10	9	13	10	15	29	18
Italy	High	45	34	69	65	95	88	76	106	165	176	192	146	113	138	123	104	152	136	158	163	168	192	163
Netherlands	High	18	19	39	35	55	30	28	46	43	63	57	57	64	67	59	58	77	66	96	84	113	113	91
Spain	High	19	9	20	19	34	24	19	24	29	26	40	45	30	40	29	34	34	39	53	31	41	67	71
Sweden	High	12	18	23	28	48	40	33	27	34	21	49	30	32	44	40	40	42	47	53	56	51	78	60
Other Europe	na	42	38	54	57	114	96	78	89	91	127	135	118	127	106	131	125	117	124	133	128	193	222	241
Other Europe-2020[b]	na	83	64	103	97	183	199	165	191	208	242	285	273	276	241	270	278	293	310	362	366	483	527	510
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	2	3	5
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	2	1
Norway	High	2	6	7	6	16	6	5	13	7	12	12	15	8	13	6	10	9	12	12	8	13	15	15
Russia	Upper middle	0	0	0	0	1	3	3	4	1	3	1	3	9	5	10	10	9	8	4	7	15	27	31
Switzerland	High	38	32	46	41	82	81	67	65	73	92	103	82	92	74	97	85	76	92	82	77	89	73	86

Table SINV-93

Number of registered USPTO trademarks in the business sector of household equipment, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1	1	1	2	10	34	41	41
Asia	na	118	107	160	157	240	271	273	320	376	510	588	517	493	612	712	768	783	1,126	2,483	5,637	8,906	11,680	13,069
China	Upper middle	27	28	36	30	59	72	81	85	137	229	277	239	233	318	369	359	437	723	2,073	5,107	8,357	10,969	12,349
India	Lower middle	1	1	4	6	4	3	6	3	4	2	6	7	6	3	6	6	4	11	11	11	25	28	32
Japan	High	38	25	57	51	62	68	80	100	88	112	118	107	103	105	115	149	108	144	154	174	165	223	200
Malaysia	Upper middle	2	1	6	2	3	2	1	1	4	4	1	2	2	4	3	1	2	2	2	3	8	8	8
Singapore	High	0	1	3	0	4	1	5	3	9	8	6	9	8	5	4	9	9	19	24	28	25	39	38
South Korea	High	7	9	9	13	19	28	23	27	37	50	67	62	48	76	107	116	119	117	118	213	181	237	251
Taiwan	High	39	36	42	51	81	84	67	90	94	98	103	79	85	91	97	119	96	99	87	87	114	135	126
Middle East	na	7	3	3	5	12	6	12	15	10	15	9	8	10	19	27	17	14	21	28	39	119	113	102
Israel	High	7	3	3	4	10	5	7	11	8	12	9	7	8	16	25	17	11	16	24	36	113	97	83
Africa	na	3	2	6	3	2	12	2	4	3	4	6	6	7	1	7	7	10	8	8	10	21	9	7
South Africa	Upper middle	2	1	5	2	2	11	2	2	3	1	1	4	4	1	3	7	4	4	4	7	7	6	3
Australia and Oceania	na	17	14	36	23	39	55	54	43	82	81	103	89	90	96	85	85	143	110	143	139	251	332	377
Australia	High	14	14	25	20	36	39	47	36	66	72	91	75	77	87	72	79	121	93	124	115	217	297	332
New Zealand	High	2	0	10	3	3	16	7	7	15	8	11	12	12	8	12	5	18	15	18	22	30	33	40
Unclassified	na	14	15	19	15	31	26	20	31	27	22	25	14	13	12	10	8	9	8	17	20	13	24	13

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-94

Number of registered USPTO trademarks in the business sector of leisure and education, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	16,123	15,538	19,184	18,173	23,910	21,696	19,738	20,898	26,654	29,386	33,564	29,856	27,822	30,071	31,260	32,164	33,030	33,925	36,616	39,275	41,343	48,933	44,238
North America	na	15,172	14,610	18,021	16,874	22,049	19,684	17,879	19,042	24,256	26,626	30,470	27,015	25,035	27,374	28,202	28,983	29,720	30,271	32,037	33,278	33,430	38,912	33,896
Canada	High	307	261	293	258	342	358	362	377	452	434	492	459	512	568	514	537	528	537	534	696	662	760	782
Mexico	Upper middle	29	12	22	26	31	47	68	72	51	73	113	106	78	109	111	110	132	122	162	126	122	147	113
United States	High	14,836	14,337	17,706	16,590	21,676	19,279	17,449	18,593	23,752	26,119	29,865	26,450	24,445	26,698	27,577	28,336	29,060	29,613	31,342	32,456	32,646	38,005	33,000
Central America and Caribbean	na	12	29	13	28	39	55	57	50	61	80	55	47	53	66	70	62	60	69	64	87	70	92	80
Puerto Rico	High	4	19	6	14	8	7	11	15	18	16	17	15	21	33	27	28	37	40	38	65	42	46	55
South America	na	14	17	17	18	37	48	27	48	48	31	53	57	48	55	49	53	44	65	55	75	93	90	89
Argentina	Upper middle	7	1	2	4	10	7	7	15	9	10	13	15	14	10	10	18	6	13	13	7	16	11	13
Brazil	Upper middle	7	9	13	5	11	19	8	15	22	10	27	22	15	21	16	16	20	25	25	31	36	39	40
Europe	na	503	501	696	669	1,054	1,194	1,112	1,080	1,469	1,639	1,797	1,791	1,778	1,572	1,804	1,822	1,911	1,959	2,198	2,190	2,433	2,790	2,562
EU-27 + UK[a]	na	439	450	605	589	933	1,055	1,006	964	1,308	1,470	1,596	1,619	1,604	1,398	1,597	1,632	1,699	1,731	1,951	1,965	2,169	2,449	2,244
United Kingdom	High	109	103	156	164	238	266	301	309	353	425	456	476	526	425	472	523	560	609	609	676	724	827	739
EU-27[b]	na	330	348	449	424	695	790	705	655	954	1,046	1,140	1,143	1,077	973	1,125	1,109	1,139	1,123	1,343	1,289	1,445	1,622	1,505
Austria	High	15	22	26	16	37	49	25	17	37	34	50	39	29	35	34	46	41	46	61	75	41	79	39
Belgium	High	8	9	16	11	25	23	15	13	21	27	29	28	29	34	30	29	35	34	33	39	52	38	30
Denmark	High	9	14	5	8	15	14	17	13	25	22	29	31	40	19	25	32	34	27	51	40	39	40	34
Finland	High	16	2	7	13	21	37	30	30	29	40	25	17	25	32	31	35	29	42	41	39	52	56	43
France	High	70	65	80	72	114	142	117	99	132	148	154	186	187	186	187	178	174	174	187	183	187	212	205
Germany	High	100	104	150	137	230	247	255	244	366	324	378	396	340	285	300	301	296	275	335	325	344	374	321
Hungary	High	1	0	2	2	1	5	0	0	4	2	4	4	5	2	5	5	2	3	8	8	13	5	7
Ireland	High	8	7	14	18	27	17	17	20	17	30	47	34	29	23	28	30	32	36	38	24	35	35	49
Italy	High	25	37	53	36	56	63	56	57	93	115	132	109	106	95	124	99	118	103	127	105	139	146	147
Netherlands	High	28	31	33	37	46	68	65	51	72	95	85	75	76	75	93	82	88	70	85	76	135	123	133
Spain	High	23	13	16	20	57	52	38	40	70	79	70	59	73	66	80	78	77	81	98	115	93	115	107
Sweden	High	18	35	36	39	38	44	52	40	40	55	51	72	49	43	65	71	66	60	91	75	92	114	101
Other Europe	na	64	50	91	81	121	139	106	117	161	169	201	172	174	174	207	190	212	228	247	226	264	341	318
Other Europe-2020[b]	na	173	153	247	245	359	405	407	425	514	593	657	648	701	599	679	713	772	836	855	902	988	1,168	1,057

Table SINV-94

Number of registered USPTO trademarks in the business sector of leisure and education, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	2	4
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
Norway	High	1	3	9	4	12	11	3	7	6	16	11	13	20	10	15	13	24	12	25	21	21	27	25
Russia	Upper middle	2	1	4	4	3	5	5	4	10	11	9	7	10	20	24	16	23	26	21	24	42	51	50
Switzerland	High	51	43	75	66	100	109	88	96	130	117	156	134	119	124	143	135	131	144	158	136	138	167	139
Ukraine	Lower middle	0	0	0	1	0	1	0	2	1	1	1	0	5	3	0	2	3	4	7	8	24	39	39
Asia	na	330	291	339	438	540	530	506	526	609	752	854	630	635	723	785	874	912	1,088	1,793	3,051	4,589	6,155	6,667
China	Upper middle	82	78	115	145	173	165	131	144	199	241	272	192	194	306	315	280	332	447	1,137	2,415	3,851	5,310	5,823
India	Lower middle	2	2	1	5	6	6	7	12	10	7	15	7	16	19	15	14	15	38	36	45	36	54	54
Japan	High	168	146	123	201	249	260	277	269	279	318	367	260	257	230	261	358	323	354	341	321	339	354	393
Malaysia	Upper middle	0	1	1	5	0	1	2	0	0	1	4	1	5	4	5	5	4	7	7	10	15	12	4
Singapore	High	5	6	8	11	17	6	14	15	16	38	25	21	28	42	48	52	35	42	47	47	60	95	63
South Korea	High	21	23	29	21	25	17	25	24	29	55	80	63	60	55	69	76	99	102	133	136	179	210	209
Taiwan	High	51	34	56	46	63	60	45	53	62	77	79	70	59	53	58	70	80	68	71	61	74	84	78
Middle East	na	9	8	5	10	12	7	15	21	20	34	32	45	41	38	61	81	73	123	99	117	193	210	179
Israel	High	8	7	5	9	9	6	13	14	16	28	23	30	26	24	42	64	57	94	72	97	159	179	150
Africa	na	3	1	4	7	9	13	7	6	11	4	10	13	13	18	10	15	18	25	14	20	18	23	28
South Africa	Upper middle	3	1	3	5	7	7	6	2	8	3	8	8	7	9	6	10	10	6	6	8	9	13	15
Australia and Oceania	na	47	48	58	81	96	98	92	90	136	167	223	204	173	177	229	238	255	291	326	418	482	619	708
Australia	High	46	31	45	64	84	82	71	71	117	142	202	180	151	154	197	223	229	254	286	380	434	583	658
New Zealand	High	1	17	14	16	12	13	17	19	17	25	20	20	22	23	30	15	25	37	39	36	45	35	50
Unclassified	na	33	35	30	49	73	69	42	35	44	53	70	55	45	48	49	35	35	33	29	39	34	42	28

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.
Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-95

Number of registered USPTO trademarks in the business sector of research and technology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	23,041	22,546	29,455	28,985	39,627	30,942	23,426	23,441	27,831	30,689	35,676	32,934	30,987	34,090	36,488	37,752	39,726	41,812	45,520	49,434	51,941	56,689	49,369
North America	na	21,028	20,442	26,568	25,972	34,779	25,748	19,222	19,393	22,677	25,043	29,021	26,455	24,937	27,535	29,554	30,216	31,793	32,361	32,773	33,284	32,677	36,243	31,544
Canada	High	529	529	628	580	811	803	749	697	775	751	913	808	752	802	832	890	944	979	917	1,032	1,012	1,091	1,007
Mexico	Upper middle	16	13	29	20	51	39	28	37	33	29	56	58	51	52	53	58	65	101	71	70	88	73	50
United States	High	20,482	19,901	25,911	25,372	33,917	24,906	18,445	18,658	21,869	24,263	28,053	25,590	24,135	26,681	28,669	29,268	30,784	31,281	31,785	32,182	31,576	35,079	30,487
Central America and Caribbean	na	34	22	38	43	81	47	36	41	62	65	59	48	38	62	59	87	77	98	92	72	68	99	108
Puerto Rico	High	11	7	10	15	26	12	8	7	11	19	20	15	10	30	17	22	28	38	46	31	33	51	53
South America	na	12	16	11	15	56	54	39	33	37	39	41	54	63	46	76	95	82	72	87	105	107	121	122
Argentina	Upper middle	6	4	5	1	13	13	9	5	5	6	13	12	16	11	8	21	10	12	12	15	16	18	11
Brazil	Upper middle	1	8	5	7	19	17	13	16	15	20	12	27	29	21	42	44	36	31	35	56	47	57	65
Europe	na	1,207	1,246	1,725	1,762	3,018	3,194	2,490	2,408	3,207	3,488	4,029	3,982	3,774	3,825	3,991	4,213	4,283	4,577	4,943	5,078	5,603	5,974	5,576
EU-27 + UK[a]	na	1,078	1,092	1,520	1,568	2,678	2,843	2,237	2,168	2,881	3,032	3,542	3,609	3,350	3,403	3,543	3,737	3,757	4,055	4,390	4,537	4,946	5,224	4,864
United Kingdom	High	214	209	270	337	551	618	525	531	574	624	754	847	836	747	834	872	977	1,080	1,112	1,212	1,239	1,340	1,248
EU-27[b]	na	863	882	1,250	1,231	2,128	2,225	1,712	1,637	2,306	2,408	2,788	2,762	2,514	2,656	2,709	2,865	2,780	2,975	3,278	3,326	3,708	3,884	3,616
Austria	High	7	15	30	24	46	69	44	55	60	78	81	81	69	82	91	104	109	116	134	124	104	141	135
Belgium	High	31	26	34	22	70	58	28	25	50	68	56	56	79	77	64	101	84	75	88	116	128	140	119
Denmark	High	34	23	42	28	52	61	45	48	63	72	90	80	60	67	90	77	89	95	118	102	108	128	106
Finland	High	22	25	35	33	75	67	41	47	48	72	86	75	81	69	66	69	77	95	116	106	149	115	113
France	High	171	138	224	242	384	389	262	221	324	351	414	414	420	459	416	492	414	429	466	506	540	544	496
Germany	High	303	335	507	484	830	906	754	751	1,057	967	1,125	1,074	911	901	931	924	927	905	961	1,025	1,115	1,233	1,139
Hungary	High	4	1	1	6	5	4	4	4	6	2	8	2	8	8	4	10	13	18	5	13	17	23	11
Ireland	High	30	15	24	45	55	53	47	40	49	53	78	59	55	73	61	66	66	97	96	95	112	94	84
Italy	High	65	74	97	80	133	142	101	109	182	197	190	218	182	210	206	226	196	232	244	239	261	303	245
Netherlands	High	83	104	110	119	191	184	136	151	181	212	224	229	172	218	222	192	199	230	290	236	276	276	258
Spain	High	24	51	30	31	78	78	64	47	81	79	129	127	134	126	145	136	145	150	180	153	166	183	185
Sweden	High	68	61	79	86	146	164	131	94	121	149	201	171	132	178	166	174	162	188	220	217	228	265	269
Other Europe	na	129	155	205	194	339	351	253	240	326	457	487	373	424	423	448	476	526	522	553	541	657	749	712
Other Europe-2020[b]	na	343	364	475	531	890	969	778	770	900	1,080	1,241	1,219	1,261	1,169	1,282	1,348	1,503	1,602	1,665	1,752	1,895	2,089	1,960

Table SINV-95

Number of registered USPTO trademarks in the business sector of research and technology, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belarus	Upper middle	0	0	0	0	0	0	0	0	1	2	1	1	1	3	1	6	2	1	4	4	3	9	13
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	1	0	2	0	1	2
Norway	High	7	20	22	20	38	33	20	16	38	53	61	60	58	56	59	53	55	65	59	67	73	89	74
Russia	Upper middle	1	2	5	7	5	11	9	10	17	19	27	21	27	35	50	58	60	56	27	38	62	94	74
Switzerland	High	111	126	170	158	281	296	207	201	249	349	361	265	304	288	293	316	345	340	386	362	418	414	415
Ukraine	Lower middle	0	0	0	0	0	1	0	1	2	4	4	9	8	6	9	8	17	9	19	15	34	46	55
Asia	na	523	609	779	810	1,088	1,294	1,255	1,196	1,388	1,544	1,865	1,733	1,618	1,947	2,162	2,472	2,763	3,927	6,710	9,956	12,532	13,115	10,940
China	Upper middle	44	54	72	64	119	154	120	126	223	341	404	373	404	509	661	848	1,081	2,023	4,779	7,949	10,610	10,954	8,897
India	Lower middle	2	11	13	19	19	23	19	11	17	35	45	63	60	44	58	67	64	93	102	106	110	131	131
Japan	High	285	361	423	418	530	629	637	598	680	649	709	677	540	676	619	749	692	667	713	627	673	796	733
Malaysia	Upper middle	1	1	3	0	3	10	5	7	7	6	10	3	10	13	4	10	10	11	7	9	11	12	13
Singapore	High	34	15	25	36	53	63	59	37	41	53	81	61	87	90	81	97	103	112	142	144	121	132	166
South Korea	High	26	32	30	55	70	133	143	122	120	133	192	224	194	304	390	366	487	664	613	808	682	730	682
Taiwan	High	127	132	211	213	283	276	264	282	287	318	403	300	290	293	323	303	303	322	328	280	290	322	272
Middle East	na	77	67	96	130	187	198	114	89	108	105	150	158	136	153	196	188	217	228	289	281	294	337	379
Israel	High	76	63	90	127	185	194	107	78	99	95	139	134	123	127	159	156	175	193	239	227	246	276	316
Africa	na	9	5	10	5	18	20	11	14	12	23	25	31	19	17	18	27	35	45	35	30	33	37	38
South Africa	Upper middle	8	5	7	3	8	15	7	13	8	13	19	13	10	9	8	15	23	24	18	14	14	17	12
Australia and Oceania	na	94	92	141	125	235	226	175	208	272	292	416	402	355	445	364	380	406	436	522	533	568	700	612
Australia	High	89	78	124	109	204	188	130	179	244	257	359	358	314	399	330	343	342	367	455	460	475	600	531
New Zealand	High	5	14	17	15	30	36	37	28	27	35	57	41	40	43	33	33	60	69	59	70	90	98	78
Unclassified	na	58	46	87	124	166	162	83	60	69	89	70	71	46	59	69	75	71	69	70	95	59	62	51

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-96

Number of registered USPTO trademarks in the business sector of transportation, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	4,144	4,475	5,770	5,438	7,465	6,271	5,433	5,637	7,088	7,987	8,835	8,058	7,090	7,607	7,559	7,895	8,062	8,181	9,315	10,139	10,841	12,313	11,139
North America	na	3,448	3,646	4,708	4,451	5,755	4,672	4,037	4,283	5,175	5,701	6,253	5,688	5,015	5,374	5,270	5,506	5,620	5,629	6,079	6,413	6,278	6,908	5,948
Canada	High	108	100	159	113	200	212	144	170	225	189	212	239	202	185	197	195	199	206	237	246	244	284	233
Mexico	Upper middle	14	6	20	16	9	23	14	14	13	17	28	23	27	26	29	35	29	35	18	25	25	34	35
United States	High	3,326	3,540	4,530	4,322	5,545	4,437	3,878	4,098	4,937	5,495	6,013	5,426	4,786	5,164	5,044	5,277	5,392	5,388	5,824	6,142	6,009	6,590	5,680
Central America and Caribbean	na	5	8	7	6	7	7	12	9	8	27	20	26	26	13	17	16	11	16	19	22	12	30	20
Puerto Rico	High	0	2	1	2	0	1	3	2	3	11	3	2	6	4	6	4	3	3	5	5	2	10	9
South America	na	17	11	19	15	19	24	21	25	26	17	28	28	24	27	28	33	33	40	32	41	41	32	33
Argentina	Upper middle	2	3	1	1	2	5	1	1	3	1	8	3	4	9	2	2	7	3	7	4	4	4	5
Brazil	Upper middle	10	4	17	5	7	10	15	15	12	8	9	18	10	10	18	17	16	22	17	23	26	12	20
Europe	na	437	554	677	636	1,141	1,082	870	850	1,232	1,397	1,566	1,455	1,259	1,308	1,338	1,324	1,302	1,353	1,602	1,499	1,688	1,859	1,541
EU-27 + UK[a]	na	395	497	596	575	1,032	985	785	777	1,131	1,231	1,420	1,281	1,136	1,174	1,206	1,172	1,162	1,208	1,432	1,354	1,478	1,653	1,347
United Kingdom	High	42	31	57	42	86	124	106	93	143	169	183	156	148	183	167	126	186	178	217	206	226	190	206
EU-27[b]	na	354	466	539	533	946	861	680	684	989	1,062	1,237	1,125	988	991	1,038	1,046	976	1,030	1,216	1,149	1,252	1,462	1,141
Austria	High	5	9	18	11	38	40	16	20	25	19	35	33	33	41	32	42	32	26	41	39	47	49	51
Belgium	High	6	7	8	7	22	9	8	11	21	8	18	17	18	8	18	18	19	18	22	19	26	23	22
Denmark	High	3	11	12	8	11	16	17	17	19	29	27	28	19	35	25	35	29	30	36	23	33	30	31
Finland	High	9	9	12	9	15	16	10	11	17	22	15	24	18	17	17	13	16	13	18	12	30	21	37
France	High	49	49	77	68	113	103	77	73	87	95	116	113	114	112	103	104	89	121	112	121	119	150	114
Germany	High	132	235	225	217	441	416	318	314	443	498	567	487	418	422	424	462	419	442	545	509	486	651	447
Hungary	High	0	0	0	0	2	1	1	1	2	1	2	1	4	1	2	2	1	0	2	0	3	1	4
Ireland	High	0	2	5	6	6	6	5	7	2	7	8	7	5	8	5	14	7	10	13	11	15	10	8
Italy	High	67	77	84	86	127	98	104	103	186	181	205	195	153	132	175	174	150	159	176	170	228	267	183
Netherlands	High	15	19	30	20	53	45	26	36	52	56	47	66	53	46	67	48	60	47	71	72	66	76	67
Spain	High	18	7	20	21	31	31	26	27	50	47	58	36	55	55	57	40	42	52	39	48	48	47	59
Sweden	High	36	35	45	61	68	57	54	44	47	53	65	64	57	63	59	44	58	51	63	63	73	63	51
Other Europe	na	41	57	81	61	109	97	85	73	101	166	145	174	123	135	132	152	140	145	170	145	210	207	194
Other Europe-2020[b]	na	83	87	137	102	195	221	190	166	244	336	329	330	271	317	299	278	326	323	386	350	436	397	400
Belarus	Upper middle	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	2	1	2
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Norway	High	0	6	8	5	7	4	5	6	4	18	11	10	10	15	10	12	11	7	14	11	16	20	12
Russia	Upper middle	0	0	1	0	3	1	1	1	5	4	3	11	7	7	10	11	10	5	7	8	17	12	19
Switzerland	High	40	47	68	51	94	84	75	60	81	119	107	132	84	87	88	92	91	107	100	79	119	115	111

Table SINV-96

Number of registered USPTO trademarks in the business sector of transportation, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	1	3	5	3	7	11	7	12
Asia	na	192	208	306	267	426	389	398	397	558	711	816	739	648	758	791	910	977	1,020	1,410	1,992	2,625	3,253	3,404
China	Upper middle	14	22	35	27	44	56	49	53	134	214	256	267	238	279	310	366	409	441	819	1,407	1,982	2,579	2,749
India	Lower middle	3	5	2	10	2	6	10	5	11	16	12	10	10	11	12	22	11	13	10	15	11	21	19
Japan	High	109	119	149	135	224	216	212	194	258	280	325	245	223	240	240	286	293	269	338	278	346	328	309
Malaysia	Upper middle	1	1	4	2	1	0	3	2	4	4	2	4	3	7	2	0	1	2	2	1	3	6	5
Singapore	High	7	4	6	4	12	6	10	9	4	15	18	17	10	7	11	16	17	17	21	14	29	39	21
South Korea	High	10	14	22	18	29	37	27	25	21	41	67	63	73	89	100	100	96	135	100	142	122	109	137
Taiwan	High	47	40	81	70	105	65	74	102	121	134	130	124	86	110	109	107	131	134	109	119	120	145	146
Middle East	na	4	5	12	6	11	12	14	17	13	22	14	15	14	17	10	15	17	25	34	29	47	61	43
Israel	High	4	3	11	2	8	11	13	11	8	15	10	10	9	11	5	4	11	15	15	16	33	40	28
Africa	na	5	4	2	6	5	6	11	5	3	7	8	10	7	8	9	10	8	9	13	5	3	6	6
South Africa	Upper middle	4	3	1	4	4	4	6	5	2	5	5	5	6	6	8	4	4	6	5	1	2	4	5
Australia and Oceania	na	23	20	23	29	48	52	50	33	58	69	103	76	78	86	83	70	82	78	111	117	124	142	132
Australia	High	19	16	20	26	38	38	44	25	47	57	81	59	58	67	71	56	68	66	84	95	104	112	109
New Zealand	High	3	3	3	3	10	10	5	8	11	12	23	12	15	18	10	13	14	11	23	22	20	30	22
Unclassified	na	14	21	17	23	54	27	21	17	15	37	28	22	19	15	14	10	12	11	14	21	23	21	11

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong. Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-97

Number of registered USPTO trademarks unassigned under the Nice classification, by region, country, or economy: 1998−2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	975	1,414	1,270	782	958	635	754	462	592	637	593	600	526	493	504	471	508	462	465	521	503	512	484
North America	na	199	166	257	231	393	299	283	275	402	439	429	469	443	382	397	378	389	380	339	389	364	381	385
Canada	High	2	5	0	4	5	3	3	4	7	6	5	6	4	1	8	8	5	7	6	6	3	2	10
Mexico	Upper middle	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
United States	High	197	161	257	227	386	296	279	268	395	433	424	463	439	381	389	370	384	373	333	382	361	378	374
Central America and Caribbean	na	0	1	0	0	0	2	0	1	2	0	1	1	0	0	5	0	0	0	1	2	0	1	0
Puerto Rico	High	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	1	0	0	0	0	0	1	0	0	3	3	2	0	0	1	1	2	0	1	1	0	2	0
Argentina	Upper middle	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	Upper middle	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	1	0	0	0	0	2	0
Europe	na	5	8	9	8	9	10	13	8	8	11	17	10	7	8	12	12	8	4	9	7	8	9	7
EU-27 + UK[a]	na	4	7	8	6	7	9	13	6	6	10	16	10	4	8	9	11	8	4	9	7	8	4	7
United Kingdom	High	1	1	0	0	0	3	2	1	0	0	0	3	0	5	3	1	2	1	0	0	3	2	2
EU-27[b]	na	3	6	8	6	7	6	11	5	6	10	16	7	4	3	6	10	6	3	9	7	5	2	5
Austria	High	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Belgium	High	0	0	0	0	0	0	0	0	2	0	0	1	1	1	0	0	0	0	0	0	0	0	1
Denmark	High	0	0	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
France	High	0	1	2	0	0	0	0	1	2	1	2	0	1	1	2	1	2	2	4	3	0	0	0
Germany	High	1	2	3	2	3	0	0	1	0	0	0	2	1	0	0	0	0	0	2	0	0	0	0
Hungary	High	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	High	0	0	0	0	0	0	0	1	0	0	3	0	1	0	0	4	0	0	0	0	0	0	0
Italy	High	1	1	2	2	1	1	7	1	1	5	11	3	0	0	1	2	2	0	3	2	3	0	3
Netherlands	High	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	1
Spain	High	0	1	1	0	0	2	1	1	0	1	0	1	0	0	2	0	0	0	0	0	2	2	0
Sweden	High	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Other Europe	na	1	1	1	2	2	1	0	2	2	1	1	0	3	0	3	1	0	0	0	0	0	5	0
Other Europe-2020[b]	na	2	2	1	2	2	4	2	3	2	1	1	3	3	5	6	2	2	1	0	0	3	7	2
Belarus	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moldova	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	High	1	1	1	2	2	1	0	2	2	1	1	0	3	0	3	1	0	0	0	0	0	5	0
Ukraine	Lower middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asia	na	0	1	1	0	1	1	2	1	2	2	1	6	1	1	8	0	7	4	2	7	0	5	0

Table SINV-97

Number of registered USPTO trademarks unassigned under the Nice classification, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Upper middle	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
India	Lower middle	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0
Japan	High	0	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	1	0	0	1	0
Malaysia	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Singapore	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	2	0
Taiwan	High	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	3	0	6	0	0	0
Middle East	na	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	2	0	0	0	1	0	0	1
Israel	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Africa	na	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
South Africa	Upper middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia and Oceania	na	0	0	1	0	0	1	0	0	0	1	0	1	0	1	2	0	5	0	2	0	0	1	1
Australia	High	0	0	1	0	0	1	0	0	0	1	0	1	0	1	1	0	2	0	2	0	0	0	1
New Zealand	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Unclassified	na	770	1,238	1,003	542	555	321	455	177	178	181	142	111	75	95	73	79	97	74	111	114	130	113	90

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom; USPTO = U.S. Patent and Trademark Office.

[a] The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

[b] Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):
Trademarks are allocated according to holder information. Trademarks are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named holders. China includes Hong Kong.
Trademarks are classified under the 11th edition of the Nice classification of goods and services, which classifies trademarks under 34 categories of goods and 11 categories of services. Fractional counts of trademarks were assigned to each category to assign the proper weight of a trademark to the corresponding category under the classification. These counts are then grouped under 10 industry sectors following a mapping defined by Edital.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; USPTO data hosted by Reed Tech (LexisNexis), accessed June 2021.

Science and Engineering Indicators

Table SINV-98

Venture capital in selected countries, regions, or economies: 2000−20

(Millions of dollars)

Region, country, or economy	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	2,639	1,348	950	1,026	1,410	1,944	3,505	4,737	8,749	5,295	9,100	15,204	16,156	21,841	44,393	78,614	86,305	127,924	217,060	226,423	277,025
United States	2,105	1,002	723	853	970	1,397	2,308	3,124	5,956	3,197	5,565	8,255	9,668	12,201	23,025	31,791	34,437	48,889	88,713	106,480	129,182
Canada	16	7	35	15	75	16	93	52	224	184	168	282	485	663	962	1,005	1,244	1,621	2,901	4,384	3,493
Rest of North America	NA	NA	NA	NA	NA	NA	NA	NA	1	3	10	53	35	55	208	191	80	81	173	629	796
Europe	195	216	111	109	252	276	465	749	1,123	983	1,479	2,882	2,737	3,728	6,134	9,572	11,434	16,260	23,765	34,592	41,173
Central America	NA	NA	6	5	4	NA	1	NA	NA	15	NA	1	1	60	23	14	17	20	63	51	121
South America	NA	27	0	NA	1	0	NA	1	11	7	6	146	173	711	283	411	367	507	1,678	3,207	3,024
China	18	7	5	4	22	120	338	351	776	481	1,289	2,224	1,421	1,541	7,036	23,065	30,275	42,566	74,789	39,821	60,197
India	115	5	6	14	28	59	87	168	151	148	236	571	561	938	4,116	6,677	2,525	10,177	6,699	13,858	12,215
Rest of Asia	127	31	56	19	10	37	88	147	215	152	83	437	418	1,109	1,538	3,827	3,765	4,831	13,064	17,174	19,323
Africa	NA	NA	NA	NA	NA	2	NA	2	NA	11	15	62	74	45	209	878	157	496	485	860	649
Middle East	57	52	7	6	48	34	119	133	240	107	192	254	498	635	697	885	1,528	1,899	3,252	3,874	5,107
Oceania	6	0	NA	0	0	3	7	11	51	7	58	38	85	155	162	298	478	578	1,478	1,494	1,745

NA = not available; data were not provided by this region, country, or economy.

Note(s):
China includes Hong Kong. Country, region, and economy is attributed to location of the headquarters of the investing company. See Table SINV-2 for list of countries counted with each region.

Source(s):
Venture capital and private equity database, PitchBook, accessed 12 September 2021.

Science and Engineering Indicators

Table SINV-99

Venture capital investment by firms headquartered in the United States and in China, by industry sector: 2000–20.

(Millions of dollars)

Country, industry sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
United States																					
Total	2,105.21	1,002.22	723.31	853.38	969.83	1,397.00	2,307.87	3,124.44	5,956.19	3,197.48	5,565.18	8,254.59	9,667.53	12,201.40	23,024.75	31,791.38	34,437.12	48,889.14	88,713.11	106,479.87	129,181.65
Business to business	1,285.31	74.47	87.61	120.36	138.54	259.15	541.81	400.78	2,371.62	440.46	846.61	1,207.41	1,400.29	1,668.43	2,817.37	5,252.39	4,986.06	8,122.15	7,634.25	20,723.67	14,559.57
Business to consumer	101.93	39.71	15.57	37.73	49.06	65.10	183.69	496.72	443.02	402.28	710.12	1,339.40	1,821.71	1,843.77	4,002.50	4,748.59	4,663.56	7,801.21	27,547.64	19,718.58	23,621.69
Energy	1.70	3.30	13.47	25.75	41.51	23.17	184.94	234.55	459.41	226.31	988.90	803.95	740.79	327.80	853.50	915.86	957.56	830.53	1,433.16	1,480.92	1,980.01
Financial services	6.90	13.41	4.45	1.67	NA	24.11	12.34	85.59	76.65	68.35	90.67	145.46	85.83	717.06	1,257.40	891.19	2,227.30	1,731.89	3,886.47	6,085.72	5,969.22
Health care	83.74	114.71	205.61	249.31	257.36	434.95	607.79	709.62	1,104.42	966.67	1,150.98	1,697.71	1,751.11	2,401.06	3,705.63	5,721.57	6,713.19	9,588.36	14,383.94	17,341.35	28,414.91
Information technology	622.13	755.82	393.49	411.34	472.14	561.13	764.04	1,149.82	1,324.31	991.08	1,681.33	2,724.60	3,401.32	4,999.43	10,110.78	13,790.79	14,154.67	19,692.75	31,744.52	39,546.18	51,788.81
Material and resources	3.50	0.80	3.11	7.22	11.22	29.39	13.26	47.36	176.76	102.33	96.57	336.06	466.48	243.85	277.57	470.99	734.78	1,122.25	2,083.13	1,583.45	2,847.44
China																					
Total	17.51	7.22	5.00	4.41	22.29	120.37	337.52	350.65	776.37	481.19	1,289.35	2,223.83	1,421.05	1,541.29	7,035.59	23,064.85	30,274.58	42,565.69	74,789.34	39,821.10	60,196.54
Business to business	9.57	3.61	3.57	3.26	1.38	0.25	73.01	65.99	239.14	310.18	331.32	451.35	209.77	223.97	578.78	3,388.08	4,000.04	4,903.31	8,654.70	6,347.66	5,988.76
Business to consumer	NA	NA	NA	0.01	11.00	37.40	34.53	164.96	186.02	17.43	421.31	877.79	631.96	521.85	2,779.67	7,280.48	11,186.83	17,580.65	28,559.52	12,727.55	17,214.27
Energy	NA	0.73	NA	NA	NA	NA	NA	NA	61.46	2.97	33.25	117.60	14.20	42.49	66.59	224.27	111.88	91.41	510.23	418.40	438.05
Financial services	NA	NA	NA	NA	NA	NA	25.00	5.00	NA	NA	40.00	NA	10.51	41.93	307.66	1,337.41	3,055.46	1,629.60	5,107.58	459.23	449.55
Health care	NA	NA	0.13	NA	0.21	0.32	3.24	52.02	45.84	25.96	243.41	175.72	102.01	130.39	700.02	1,634.09	2,190.31	3,563.74	3,958.27	5,400.48	12,068.30
Information technology	7.94	2.88	1.30	1.14	9.70	81.67	201.74	62.03	128.14	103.04	215.38	584.52	438.81	566.38	2,584.15	9,094.69	9,695.33	14,658.99	27,874.19	14,417.01	23,834.28
Material and resources	NA	NA	NA	NA	NA	0.73	NA	0.65	115.77	21.61	4.68	16.85	13.79	14.28	18.72	105.83	34.73	137.99	124.85	50.77	203.33

NA = not available; data were not provided by country at this level.

Note(s):

Business to business includes commercial products, commercial services, commercial transportation, and other business products and services. Business to consumer includes apparel and accessories, consumer durables, consumer nondurables, retail, transportation, media, restaurants, hotels and leisure, services (nonfinancial), and other consumer product services. Energy includes energy equipment, exploration, production and refining, energy services, utilities, and other energy. Financial services includes capital markets and institutions, commercial banks, insurance, and other financial services. Health care includes health care devices and supplies, health care services, health care technology systems, pharmaceuticals and biotechnology, and other health care. Information technology (IT) includes communications and networking, computer hardware, semiconductors, IT services, software, and other information technology. Materials and resources includes agriculture, chemicals and gases, construction (nonwood), forestry, metals, minerals and mining, textiles, and other materials. Industries classified by PitchBook on the basis of the firm's primary industry.

Source(s):

Venture capital and private equity database, PitchBook, accessed 12 September 2021.

Science and Engineering Indicators

Table SINV-100

PitchBook venture capital industry verticals and technologies

(List of industries or technologies and definitions)

Industry or technology	Definition
Three-dimensional (3D) printing	3D printing is also known as additive manufacturing and refers to the manufacturing process and all technology related to printing a 3D object. 3D printing encompasses the actual printer as well as software, including 3D versions of computer-aided design, which utilizes multiple data points to create cross-sectional patterns of the object to be formed.
Advanced manufacturing	Advanced manufacturing refers to companies utilizing innovative and novel technologies to improve products or processes related to manufacturing. This encompasses technologies such as 3D printing, sensors and Internet of Things platforms, automation and robotics, artificial intelligence/ machine learning and big data applications, wearable devices and exoskeletons, augmented and virtual reality applications, as well as software relating to enterprise resource planning and warehouse management systems.
Advertising technology	Advertising technology consists of all technologies, software, and services used for delivering, controlling, and targeting online advertising. This includes an extensive range of products and services (e.g., ad exchanges, contextual advertising, personalized advertising, adware, and retargeting).
Agricultural technology	Agricultural technology includes companies that provide services, engage in scientific research, or develop technology with the express purpose of enhancing the sustainability of agriculture. This includes wireless sensors to monitor soil, air, and animal health; hydroponic and aquaponic systems; remote-controlled irrigation systems; aerial photo technology to analyze field conditions; biotechnology platforms for crop yields; data analysis software to augment planting, herd, poultry, and livestock management; automation software to manage farm task workflows; and accounting software to track and manage facility and task expenses.
Artificial intelligence (AI) and machine learning	Companies in AI and machine learning develop technologies that enable computers to autonomously learn, deduce, and act through utilization of large datasets. The technology enables development of systems that collect and store massive amounts of data and analyze that content to make decisions based on probability and statistical analysis. Applications for AI and machine learning include speech recognition, computer vision, robotic control, and accelerating processes in the empirical sciences in which large datasets are essential, such as gene-sequencing in life sciences.
Audio technology	Audio technology (or developers of software and hardware technology for the music industry) includes providers of on-demand music services, such as Spotify and Apple Music, that connect products from music artists with the public. This also includes developers of audio technology for the professional and consumer sound markets, including earphones, transmitters, automobile sound systems, and home and studio systems. NOTE: Audio technology does NOT include retailers of physical audio products, such as electronics stores or installers of home audio equipment.
Augmented reality (AR)	AR is a technology that overlays superimposed computer-generated images over a user's view of the real world, thus altering and/ or enhancing one's current perception of reality. Companies in this space are involved with hardware and software development, content creation, and distribution related to AR products.
Autonomous cars	Autonomous cars are street-legal vehicles that can sense their environments and navigate without human interaction. Companies in this field include related technology, which is based on radar, lidar, global positioning system (GPS), odometry, software, and computer vision.
Business-to-business (B2B) payments	B2B payment companies develop software intended to facilitate transactions between businesses. This technology is primarily intended to improve the speed, security, and affordability of existing B2B payment solutions. This includes companies involved in accounts receivable and accounts payable software, electronic invoicing, international payments networks, blockchain B2B solutions, payments analytics, virtual payment cards, and supply chain and procurement software.
Beauty	This vertical encompasses beauty companies that are incorporating digital technologies into their products or services, providing bespoke products that target a niche group of users or are manufacturing and marketing their products as natural, clean, and organic.
Big data	Big data companies provide a product or service whose core technology handles data that are too large for traditional database systems, usually due to data volume, data velocity, or data variety.
Blockchain / cryptocurrency	Blockchain refers to a distributed public database that keeps a permanent and incorruptible record of digital transactions. Blockchains are unique in that they cannot be controlled by a single entity and have no single point of failure. Furthermore, blockchains can be programmed to store more than just financial information. This space includes companies involved in developing blockchain applications related to smart contracts, crowd funding, supply chain auditing, cryptocurrency, identity management, intellectual property, and file storage. Cryptocurrency refers to a virtual medium of exchange, created and stored electronically in the blockchain, distinguishable from other currencies in that it uses cryptographic technology to decentralize the creation of monetary units and securely verify transactions. This space includes companies providing services or developing technology related to the exchange of cryptocurrency, the storage of cryptocurrency, the facilitation of payments using cryptocurrency, and securing cryptocurrency ledgers via mining activities.
Cannabis	Cannabis companies are involved in the production, retail distribution, digital media, therapeutics, business solutions, or development of consumer products related to cannabis. This includes marijuana dispensaries, laboratory testing equipment and services, medical marijuana, cannabinoid-based pharmaceuticals, vaporizers and accessories, cannabis cultivation, and online content and networking related to cannabis.
Car-sharing	Car-sharing is a model of car rental whereby users rent cars for short periods of time, often by the hour. The act of renting usually takes place via a mobile application.
Clean technology	The primary purpose of clean technology companies is developing new technologies related to clean energy production, transmission, storage, or use; water treatment and management; and/ or efficiency in energy or resource management and use.

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PitchBook venture capital industry verticals and technologies

(List of industries or technologies and definitions)

Industry or technology	Definition
Climate technology	Companies in this industry include those developing technologies to mitigate or adapt to the effects of climate change, including decarbonization and renewable energy, in transportation, agriculture, and industry.
Cloud technology and development operations	Companies in this category develop, operationalize, and monitor software applications, including developing related tools for collaboration, testing, and operation.
Construction technology	Construction technology companies build hardware and software solutions intended to increase the efficiency and productivity of operations related to construction, building, and infrastructure. This includes project management software, construction robots, job site survey drones, building information modeling, augmented and virtual reality applications for construction, modular and prefabrication solutions, equipment marketplaces, and risk management tools.
Cybersecurity	Cybersecurity consists of information technology companies that provide their software using client-server architectures that host the application in a centralized, off-site location.
Digital health	Digital health companies engage in building hardware and software solutions to empower individuals to more easily keep track of their health and offer healthcare providers better tools to communicate with and treat patients. This space includes a host of mobile applications designed to track fitness activity, sleep, nutrition, weight, and medication intake, as well as telemedicine programs to make it easier to connect with health professionals, electronic health record and clinical workflow software, digital wearable devices, remote monitoring and diagnostics software, artificial intelligence platforms, and genomics testing technology.
E-commerce	Examples of e-commerce companies include (1) a retailer who specifically sells online consumer products and services; (2) a company that provides logistics services for online retailers; or (3) a company that provides technology and web-design services for creating e-commerce websites.
Educational technology	Educational technology is software and hardware created to enhance teaching practices and improve learning outcomes. This includes online academic courses, online educational games, and audio-visual technology, such as smart boards and online grading/ administrative systems.
Ephemeral content	Ephemeral content companies provide online platforms for the sharing and temporary display of photos, videos, messages, documents, and other content. The key aspect is that the content vanishes from the Web after a certain time frame (usually minutes or hours).
eSports	Competitive gaming at a professional level, or eSports, is played in an organized format, such as a tournament or league, and with a specific goal, such as winning a championship and/ or receiving prize money. This vertical includes eSports teams, streaming and broadcasting platforms, communication and social applications used for gaming, marketing tools, analytics and training services for eSports athletes, fantasy and virtual gambling, gaming hardware manufacturers, tournament and event hosts, and developers and publishers of eSports titles.
Female technology	Female technology refers to the development and application of technologies, products, and services intended to improve outcomes related to women's health. Companies in this space service the following use cases: period care, aging and menopause, sexual health, pregnancy and childbirth, pre- and postnatal solutions, fertility management, and pelvic health.
Financial technology	Financial technology companies use new technologies including the Internet, blockchain, software, and algorithms to offer or facilitate financial services usually provided by traditional banks including loans, payments, wealth, or investment management. Financial technology companies are also software providers automating financial processes or addressing core business needs of financial firms. This includes makers of automatic teller machines (ATMs), electronic trading portals, and point-of-sale software.
Food technology	Food technology companies develop technology intended to improve consumer experiences around food selection, purchasing, and consumption. This space includes all of the *restaurant technology* vertical in addition to food ordering and delivery applications, food waste recyclers, meal kits and recipe boxes, cooking and chef communities, novel foods, and online grocery retail.
Gaming	This vertical collects all companies existing within the video game ecosystem. This includes companies developing and publishing titles, building tools and services for video game studios and players, and providing accessories and peripherals intended for gaming. Online poker and casino games are excluded from this space, while gambling related to eSports is included.
Health technology	Health technology companies provide mobile and other information technologies to improve healthcare delivery while decreasing costs. Health technology entails the use of technology and services—including cloud computing, Internet services, and digital records and image management—to optimize patient-centric healthcare.
Human resources technology	Human resources technology companies develop software designed to improve human resource management operations and hiring processes. This includes applications used for recruiting, applicant tracking, applicant screening, performance management, benefits administration, employee engagement, and employee analytics.
Impact investing	Impact investing companies only include those that have received investment from funds and/ or investors with an investment preference of "seeks impact investment." For a fund to qualify as an impact fund, it must invest for financial returns as well as create a positive social or environmental impact and be actively measuring the impact that is created, or it must self-identify as an impact fund. The category also includes companies that have received investment from "not-for-profit venture capital" investors.

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PitchBook venture capital industry verticals and technologies

(List of industries or technologies and definitions)

Industry or technology	Definition
Industrials	This vertical serves as an industry aggregate intended to capture companies engaged in providing industrial and commercial supplies and services, diversified trading, distribution operations, and transportation services. Industrials comprise the infrastructure vertical combined with the following industries: Aerospace & Defense, Building Products, Construction & Engineering, Electrical Equipment, Machinery, Distributors & Wholesale, Printing Services, Environmental Services, Office Services, Security Services, Consulting Services, Human Capital Services, B2B Transportation, and B2C (business-to-consumer) Transportation.
Infrastructure	Infrastructure companies own physical assets necessary for the movement of goods, multimodal commerce, or power generation. This includes toll roads and bridges, airports, railroad networks, bus terminals, ports, and power plants.
InsurTech	InsurTech companies utilize technology to increase the speed, efficiency, accuracy, and convenience of processes across the insurance value chain. This includes quote comparison websites, insurance telematics, insurance domotics (home automation), peer-to-peer insurance, corporate platforms, online brokers, cyber insurance, underwriting software, claims software, and digital sales enabling.
Internet of Things	An Internet of Things company provides a product that is enabled with sensors and actuators embedded in physical objects, and/ or software that uses this sensor data to improve the user experience or allows for sharing this data with a network of other devices, often using the same Internet protocol that connects the Internet. This includes radio frequency identification technology, as well as codes that can be scanned with a smartphone; appliances and thermostats that can be regulated remotely by a smartphone or other monitoring device; and other remotely controlled, embedded devices.
Life sciences	Life sciences companies are involved in sciences dealing with living organisms and life processes, including biology, pharmaceuticals, biomedical technology, and nutraceuticals.
Lifestyles of Health and Sustainability (LOHAS) and Wellness	LOHAS and Wellness companies provide consumer products or services focused on health, the environment, green technology, social justice, personal development, and sustainable living. This includes providers of nutritional supplements, fitness products, organic foods and textiles, ecotourism, electric vehicles, socially conscious investing and financing, ecologically conscious furnishings, housewares, and cleaning supplies.
Manufacturing	Manufacturing companies produce products that require the heavy use of capital equipment and raw materials.
Marketing technology	Marketing technology is digital technology that automates and simplifies tasks for marketers, reducing the need for information technology involvement. This vertical includes search engine optimization (SEO) tools for evaluating and ranking site pages, writing SEO-friendly copy, and performing real-time keyword research; technology that supports marketing, online ads, and sponsorship; applications that aid content creation, landing page optimization, merchandising, usability, and analytics; and retention and growth tools that focus on personalization, loyalty programs, e-mail marketing, and customer relationship management.
Micromobility	Micromobility includes transportation solutions that target the "last mile" problem, whereby users have difficulty getting from their starting destination to a major transportation hub such as a bus or railway station. Distances covered by these solutions typically average less than 6 miles, with bicycles and scooters being the most prevalent form of transportation.
Mobile	Mobile companies are those whose primary revenue source comes from providing services for mobile devices or enabling mobile communications.
Mobile commerce	Mobile commerce companies build mobile applications to assist in the buying and selling of goods and services through a wireless Internet-connected device such as a phone or tablet. This includes bill payments, mobile retail, mobile banking services, peer-to-peer payment transferring applications, and mobile point-of-sale applications.
Mobility technology	Mobility technology companies provide improved transportation, automotive, and shipping technologies and services, including autonomous vehicles, ridesharing, micromobility, connectivity and fleet management, delivery, electrification, auto commerce and urban air mobility.
Mortgage technology	Mortgage technology companies leverage digital technologies to improve efficiency and speed in phases of the mortgage life cycle, such as mortgage origination, underwriting, servicing, and closing. This includes mortgage processing and workflow software providers, technology-based mortgage lenders, mortgage data and analytics, and digital mortgage brokers.
Nanotechnology	Nanotechnology companies engage in creating products that depend on the ability to manipulate materials at an atomic level, usually due to the materials exhibiting novel properties at the subatomic level.
Oil and gas	Oil and gas companies are involved in the extraction, production, refining, transportation, and/ or processing of oil and natural gas resources, as well as related products. This vertical encompasses all of the upstream (exploration, extraction, operating of wells), midstream (transportation via pipeline, oil tanker, rail, or truck of refined and unrefined goods), and downstream (refining and processing of crude oil, as well as purifying of raw natural gas) sectors of the oil and gas industry.
Oncology	Oncology companies are involved in the diagnosis or treatment of cancer without regard to whether they do so through the production of pharmaceuticals, devices, or services-based models.
Pet technology	Pet technology companies enhance pet ownership and pet quality of life through the creation of digital devices, novel services, and pet-related applications. This includes pet health and monitoring devices, pet genetics services, social media applications designed for pets, pet care and dog walking applications, pet food delivery services, and assorted digital devices intended for pet care.

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PitchBook venture capital industry verticals and technologies

(List of industries or technologies and definitions)

Industry or technology	Definition
Real estate technology	Real estate technology companies develop and leverage technology intended to help facilitate the purchase, management, maintenance, and investment into both residential and commercial real estate. This includes subsectors such as property management software, Internet of Things home devices, property listing and rental services, mortgage and lending applications, data analysis tools, virtual reality modeling software, augmented reality design applications, marketplaces, mortgage technology, and crowdfunding websites.
Restaurant technology	Restaurant technology companies develop hardware and software intended to help restaurants increase profitability, efficiency, and customer engagement. This includes the provision of guest Wi-Fi and phone charging stations, customer acquisition and retention programs, order kiosks, point-of-sale systems, tabletop devices, restaurant management software, 3D food printing, and mobile applications related to online ordering, booking and reservations, payment, and restaurant reviews and discovery.
Ridesharing	Ridesharing is the hailing of a ride via application or platform, usually met by a private vehicle and sometimes a taxi. Though "sharing" is in the name, this definition is not restricted to pool rides or lines where passengers from different parties ride together. The term also encompasses private rides, which consist of a driver and one-trip party only.
Robotics and drones	Robotics and drones companies provide automated or remote-controlled mechanical devices and technology. This includes machinery programmed to perform repetitive tasks, such as manufacturing and loading; precision tasks such as surgery or semiconductor production; and remote-operated movement or travel, such as that provided by unmanned aerial vehicles, subsea vehicles, and land vehicles.
Software as a service	Software as a service (SaaS) refers to information technology companies that provide software that is available for login through the Internet and that sell that software to customers through an ongoing subscription. A SaaS company sells software for online use that a person or company has to purchase. Companies like Zenefits, PitchBook, Workday, and Salesforce are all SaaS companies that offer online software for which a user pays through an ongoing subscription.
Space technology	Space technology companies provide services, engage in scientific research, or develop technology related to space flight, satellites, or space exploration. This includes microsatellites, nanosatellites, ground station networks, rocket technology, payload systems, spacecraft development, satellite imagery, satellite telecommunications, space-based data, space materials, space tourism, and asteroid mining.
Technology, media, and telecommunications	Technology, media, and telecommunications (TMT) serves as an industry aggregate intended to capture companies that exist within the TMT value chain. This includes companies providing network infrastructure, companies developing technologies utilizing those networks, and companies leveraging those technologies to distribute digital content. TMT comprises all technology-related verticals combined with the following industries: Business-to-Consumer (B2C) Electronics, Healthcare Technology Systems, and the entire Information Technology sector.
Virtual reality	Virtual reality refers to technology, including hardware and software, that provides an immersive, three-dimensional user experience in a virtual world. Virtual reality environments are provided through a computer screen augmented with wearable devices, such as head-mounted stereoptical displays or sensor-embedded gloves. Virtual reality also includes remote communication environments, where users interact with each other through computer-generated avatars.
Wearables and quantified self	Wearables and quantified self refers to a consumer healthcare sector that entails sensor-based tracking of aspects of a user's life, including moods, nutrition, and activities. This category includes the use of wireless sensors that can be attached to a person through clothing, attached to the body, or ingested into the body. The data are used for self-tracking for better understanding of individual health and behavioral capacities. Common uses for this technology include fitness assessment, stress analysis, sleep monitoring, biofeedback applications, and monitoring of behavioral changes.

Source(s):
Vertical descriptions, venture capital and private equity database, PitchBook, accessed 2 June 2021.

Science and Engineering Indicators