

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	0	1	0	1	0	0	0	1	1	1	2	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

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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