

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 <sup>a</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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

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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.

<sup>a</sup> The United Kingdom was a part of the EU for data purposes from 1973 to 2019.<sup>b</sup> 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.