

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

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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.

<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.