

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

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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.

<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.