

TABLE S8-21

USPTO patents and patent families granted in macromolecular chemistry, polymers, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families		
World	2,908	4,301	2,937	4,819	2,938	4,174	3,199	3,935	3,266	4,202	3,113	4,700	2,796	4,521	2,027	4,841	2,189	5,389	1,855	5,412	1,561	4,700	1,739	4,632	2,676	5,370	2,637	7,013	2,765	8,406	3,192	8,972	3,431	8,727	3,367	8,652	3,375	10,882	3,378	9,867	3,114	9,966
North America	1,374	816	1,414	779	1,408	726	1,499	691	1,553	693	1,414	581	1,199	475	946	344	992	351	861	321	738	266	800	288	1,177	384	1,148	317	1,152	284	1,374	309	1,328	243	1,308	204	1,192	164	1,192	164		
Canada	34	19	33	22	38	17	50	13	62	26	39	19	43	19	29	14	31	17	33	15	29	15	27	20	47	27	31	17	37	20	43	21	50	22	61	26	55	29	76	23	56	19
Mexico	1	0	1	1	1	0	0	0	1	0	2	0	1	0	1	0	0	0	0	0	2	1	3	2	1	1	4	1	2	1	3	1	6	1	3	1	6	9	7	8		
Puerto Rico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
United States	1,340	797	1,379	756	1,369	708	1,449	678	1,490	667	1,373	562	1,154	456	916	330	960	334	829	306	707	251	770	267	1,129	356	1,114	299	1,113	263	1,245	275	1,321	286	1,264	242	1,264	207	1,226	173	1,129	137
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Central and South America	3	1	3	2	4	2	2	2	3	1	2	1	3	0	2	3	3	4	1	2	2	3	3	6	4	5	5	16	4	10	3	11	12	6	8	3	9	5	8	6	10	14
Argentina	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Brazil	1	0	1	0	3	1	1	1	2	0	1	0	2	1	1	1	3	3	1	1	1	3	3	6	3	5	2	15	3	9	5	10	2	8	1	8	4	8	6	13		
All others	1	1	1	1	0	0	1	0	0	0	1	0	1	0	0	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	0	3	1	2	1	0	1	0	3	7	1	
Europe	795	684	747	663	744	640	822	556	814	582	852	589	772	596	504	639	564	617	465	509	362	478	381	455	653	466	603	532	685	662	820	576	866	554	816	600	786	571	775	722	726	629
EU	740	456	687	445	700	482	772	400	768	403	802	363	735	361	475	375	540	413	337	279	310	337	353	251	609	258	554	318	630	415	750	340	812	335	765	339	718	408	700	468	664	392
Austria	6	12	12	11	12	11	13	11	13	14	9	12	7	10	5	15	8	10	5	3	5	8	7	7	12	14	7	13	18	18	18	11	29	18	21	13	30	21	25	21	27	20
Belgium	45	18	48	14	52	15	73	10	63	9	54	15	39	6	33	5	35	13	29	9	23	13	23	7	57	9	39	9	49	7	70	8	61	11	58	4	48	8	43	11	39	10
Denmark	2	1	2	0	3	3	2	0	5	0	2	1	4	1	3	0	2	0	2	0	2	2	2	1	3	0	5	0	3	0	5	0	10	0	8	3	9	1	7	2	5	
Finland	10	12	11	7	12	15	18	10	17	3	17	9	12	7	9	5	7	6	9	7	6	9	7	9	13	7	8	13	9	12	19	15	16	13	18	14	17	26	17	20	20	
France	91	108	75	97	84	91	93	96	88	104	94	108	89	92	66	110	69	137	62	95	43	65	48	49	74	58	76	88	87	113	89	119	89	107	110	106	102	101	119	111	94	
Germany	397	109	363	101	352	103	385	100	371	104	419	84	402	89	246	103	288	134	203	85	169	64	154	43	270	46	272	40	293	45	328	55	380	53	332	54	288	55	287	73	238	68
Hungary	0	1	0	1	1	4	1	4	0	2	1	4	0	0	0	3	0	1	0	1	0	0	0	2	1	2	1	5	0	1	0	2	1	0	1	0	1	2	1	2		
Ireland	1	1	1	0	1	0	1	0	0	0	2	0	1	1	4	1	0	1	0	0	3	1	1	0	4	3	4	2	6	1	4	2	4	2	1	2	1	3	3	3		
Italy	58	49	54	73	59	91	68	42	71	44	59	22	60	71	32	28	55	10	39	9	34	10	48	8	54	11	45	17	53	3	56	19	56	2	63	5	63	45	62	34		
Netherlands	54	43	49	39	45	40	53	36	63	31	68	32	54	22	23	12	27	10	36	13	16	7	26	11	50	19	37	12	43	8	48	16	56	18	63	8	56	10	67	18	63	11
Spain	4	6	5	9	5	18	3	12	4	7	5	12	4	12	4	13	4	10	3	12	1	12	3	16	5	17	6	20	5	25	6	20	8	20	14	19	7	23	6	10	16	
Sweden	8	7	9	9	7	8	9	5	9	6	11	8	4	9	6	6	8	6	4	6	4	9	5	11	9	10	6	9	4	13	4	23	4	17	4	19	4	22	4	16	8	
United Kingdom	61	12	54	14	59	11	50	8	56	11	47	9	55	10	38	7	34	7	33	5	19	6	23	6	47	10	43	7	42	8	51	9	45	7	55	8	58	8	53	9	61	4
All others	4	78	3	70	8	71	4	66	8	68	15	46	5	33	6	63	5	70	6	67	7	76	4	81	8	53	7	83	8	105	9	96	11	95	10	139	8	124	11	105		
Other Europe	56	228	60	218	44	158	50	156	46	180	50	226	36	235	29	264	24	204	34	199	25	199	28	203	43	209	49	214	56	247	218	54	236	68	261	68	254	62	254	62	236	
Former Soviet Union	1	8	0	4	0	6	0	8	0	9	0	27	0	67	0	23	0	26	0	35	0	39	1	29	1	19	0	21	0	12	1	10	1	16	1	14	0	13	0	12		
Norway	1	2	3	3	2	2	4	6	4	1	10	1	6	1	5	2	5	4	2	5	2	4	4	3	3	6	2	4	1	7	3	4	1	5	2	5	1	3	1	3		
Russia	6	206	7	193	6	140	6	127	2	162	3	190	2	156	1	231	1	164	5	147	3	149	4	165	5	172	2	181	4	225	6	215	4	231	6	136	9	228	8	208		
Switzerland	47	11	47	18	33	9	39	14	38	7	35	8	27	10	23	6	15	10	23	12	16	5	17	6	32	11	37	10	45	9	57	9	42	13	43	14	53	12	58	11	45	15
All others	1	1	3	0	3	1	1	1	2	0	2	0	1	1	0	1	3	0	4	0	4	2	2	0	3	0	3	0	4	0	1	1	3	2	1	3	1	3	1	5	1	
Asia	723	2,779	756	3,338	767	2,765	850	2,662	869	2,906	818	3,512	801	3,429	560	3,843	612	4,409	517	4,568	450	3,939	535	3,870	825	4,497	862	6,137	897	7,437	1,045	8,071	1,131	7,828	1,166	7,751	1,216	10,023				

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	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families			
China	2	45	4	57	8	141	5	171	10	147	13	416	10	684	3	623	8	872	14	751	13	804	15	1,152	22	1,513	24	2,769	40	3,604	57	3,749	63	3,749	81	5,160	93	7,248	109	6,010	102	6,564	
India	6	5	6	3	7	3	9	5	9	6	8	9	12	14	10	6	11	12	10	10	14	10	14	11	21	11	14	5	16	6	15	5	32	11	24	7	37	4	40	2			
Japan	675	2,438	685	2,451	680	2,341	770	2,296	772	2,384	704	2,583	673	2,158	469	1,999	512	1,706	422	2,459	359	2,317	432	2,231	644	2,488	665	2,841	667	2,984	765	3,344	802	3,056	761	1,775	797	1,866	784	1,736	709	1,582	
Malaysia	1	1	2	1	1	0	0	0	0	0	1	0	2	1	1	0	0	1	2	4	0	2	1	3	1	4	3	7	6	5	9	1	5	3	9	4	9	4	12	2	6		
Singapore	1	0	2	2	1	2	1	0	3	1	1	0	2	0	3	1	4	1	4	2	1	1	1	1	4	2	3	0	5	1	8	1	9	2	13	3	10	1	10	2	9	2	
South Korea	24	254	34	787	49	236	43	123	53	312	67	443	77	489	56	1,167	61	1,738	48	1,278	54	752	55	363	97	421	109	434	122	755	145	830	163	822	214	607	231	732	236	1,026	215	889	
Taiwan	14	36	23	34	22	41	22	65	22	55	23	60	23	82	18	46	16	77	15	63	12	54	15	108	33	55	43	75	44	78	50	175	54	177	64	190	56	156	49	120	48	89	
All others	0	1	2	3	1	1	0	0	0	0	1	1	2	1	1	1	1	1	0	1	1	1	1	2	2	1	3	1	4	2	3	7	3	7	3	1	4	5	2	2	3		
Middle East	4	1	7	5	7	5	8	6	10	3	14	7	8	8	8	5	10	1	5	3	2	1	12	2	6	4	11	6	14	8	18	7	35	14	33	35	20	35	15	40	11		
Israel	4	1	6	2	6	2	7	4	5	2	10	3	4	1	6	2	4	2	0	2	1	4	2	10	1	4	2	8	17	8	10	1	16	14	2	14	0	12	0	14	1		
All others	1	0	0	3	2	3	1	2	5	2	4	4	4	7	2	2	5	1	1	3	0	0	1	1	2	2	3	6	6	8	6	18	13	17	12	16	20	23	15	26	10		
Africa	1	9	1	5	1	8	3	5	5	3	2	7	1	4	1	3	0	1	4	1	2	7	2	7	1	5	2	1	2	1	3	1	1	2	1	3	1	4	2	2			
South Africa	1	9	1	5	1	5	3	1	5	1	2	1	3	0	0	0	0	2	0	2	0	6	2	7	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
All others	0	0	0	0	0	3	0	4	0	2	0	5	0	1	1	3	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	3	1	1	1	3	2	4	1	2	2		
Australia and Oceania	7	3	10	7	6	4	14	12	11	14	12	3	12	8	5	5	9	4	4	4	6	5	6	3	11	9	6	4	11	4	9	12	14	17	14	11	15	14	15	4	14	9	
Australia	7	3	10	7	6	4	12	12	11	14	11	3	12	8	5	5	4	4	3	4	4	6	4	6	3	10	9	3	7	4	9	8	11	14	15	14	15	4	15	4	13	9	
New Zealand	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	1	4	0	0	1	1	1	2	0	3	0	0	0	0		
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Unclassified	0	6	0	20	0	24	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0

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

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. 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. (2012) is used to fill in missing information on priority patents using information in successive filings within the patent families (see technical documentation for details). Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. 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 the year for which its output is accounted. The EU includes 28 member countries. China includes Hong Kong.

Source(s)

Science-Metrix; PATSTAT, accessed April 2019; PatentsView, USPTO, accessed June 2019.