



TABLE S8-27

## USPTO patents and patent families granted in chemical engineering, 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		
China	10	81	9	112	14	204	14	205	16	260	11	579	18	668	24	738	29	1,831	46	2,072	61	3,005	73	4,431	81	4,654	93	5,334	124	8,750	146	10,286	170	10,463	207	11,334						
India	7	4	9	5	10	5	9	4	7	5	9	10	12	8	11	4	14	7	15	9	8	3	10	8	11	5	7	8	13	9	28	32	8	45	11	39	9	52	7			
Japan	400	2,205	374	2,479	362	1,952	396	2,206	392	2,209	372	2,050	345	2,142	290	2,206	279	2,331	293	2,560	303	2,409	315	2,482	459	2,726	436	2,926	447	3,032	477	2,522	486	2,439	544	1,754	569	1,915	559	1,787	556	1,561
Malaysia	1	0	0	0	1	0	0	0	0	0	1	2	1	2	1	3	0	7	2	18	2	2	0	2	0	12	3	11	3	2	11	2	14	2	14	3	18	6	18	6	14	
Singapore	1	2	1	1	1	1	4	3	5	2	6	1	3	3	5	3	2	2	3	2	4	2	4	2	6	2	10	2	10	1	13	1	11	2	16	2	16	2	22	3		
South Korea	29	234	31	504	24	210	34	155	28	264	33	425	28	561	36	1,153	38	1,495	37	1,714	62	1,250	72	942	96	1,164	96	1,563	99	2,115	122	2,417	179	1,886	185	2,090	205	2,501	212	2,574		
Taiwan	62	77	60	78	67	97	91	149	76	119	90	133	76	117	53	132	60	169	64	170	63	155	62	133	81	195	66	182	83	267	82	188	85	300	86	293	85	203				
All others	3	9	1	7	2	3	2	4	3	3	3	7	0	1	3	2	4	0	1	1	3	0	1	3	0	1	3	1	3	3	4	6	4	9	3	5	4	8	5	8		
Middle East	17	7	21	13	23	13	20	14	21	15	18	12	14	11	13	11	9	7	9	8	8	10	6	17	9	34	16	20	22	44	27	61	27	67	32	90	41	106	32			
Israel	17	5	20	11	16	5	18	5	18	6	15	7	12	4	11	6	7	3	1	6	3	14	8	13	3	16	7	25	5	29	4	29	4	30	7	27	8	34	4			
All others	0	2	1	2	7	7	2	9	3	9	3	5	2	7	2	5	2	5	1	5	2	7	2	3	6	9	18	17	20	18	31	22	32	22	36	25	63	33	72	28		
Africa	6	14	8	18	8	27	6	15	9	14	10	14	9	15	5	14	7	11	8	11	5	13	8	12	7	14	8	10	11	4	9	5	8	5	4	4	7	4				
South Africa	6	10	7	10	7	15	5	11	9	6	10	4	8	9	5	10	4	7	7	10	7	5	12	6	4	8	7	6	9	1	6	2	8	2	7	0	3	0	5	1		
All others	0	4	1	8	1	11	1	5	0	8	0	10	1	5	0	4	2	1	1	4	0	1	1	5	0	4	0	11	1	9	2	3	1	7	1	3	2	5	1	4	2	3
Australia and Oceania	37	16	31	24	31	26	24	28	30	21	24	23	26	26	32	23	27	20	25	28	13	19	34	27	39	34	43	45	48	41	52	46	52	40	46	42	49	16	46	35		
Australia	32	15	28	23	29	26	20	27	23	21	21	22	19	26	27	22	24	26	22	24	25	27	32	34	32	41	44	46	46	43	39	48	46	38	39	41	42	15	41	34		
New Zealand	5	1	3	1	1	0	3	1	7	0	3	0	6	0	5	1	3	1	3	0	4	1	1	0	2	1	5	3	2	1	5	1	5	2	6	1	7	1	5	0		
All others	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	0	0	0	0	0	0	0	0	0	0	
Unclassified	0	29	0	185	0	77	0	24	0	4	0	1	0	9	0	10	0	15	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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.