

Table SINV-43

U.S. specialization index of international patent families, by WIPO technical field: 1998–2020

(Index)

WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All technical fields	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Analysis of biological materials	1.52	1.6	1.3	1.45	1.18	1.29	1.15	1.11	1.19	1.25	1.29	1.28	1.29	1.26	1.11	1.02	0.98	1.0	1.06	1.27	1.3	1.2	1.27
Audio-visual technology	0.75	0.69	0.83	0.89	0.9	0.97	0.99	0.92	0.83	0.77	0.81	0.81	0.76	0.83	1.01	1.06	1.25	1.37	1.35	1.27	1.19	1.05	1.05
Basic communication processes	1.23	1.24	1.32	1.36	1.48	1.57	1.69	1.76	1.97	2.17	2.05	1.87	1.7	1.66	1.64	1.72	1.71	1.72	1.83	1.66	1.55	1.74	1.89
Basic materials chemistry	1.0	0.99	0.97	0.89	0.87	0.78	0.71	0.63	0.66	0.63	0.65	0.65	0.68	0.71	0.65	0.54	0.59	0.58	0.55	0.62	0.63	0.61	0.58
Biotechnology	1.81	1.89	1.46	1.54	1.54	1.22	1.03	1.02	1.1	1.35	1.41	1.57	1.26	1.24	1.14	1.03	1.1	1.18	1.34	1.52	1.36	0.99	0.9
Chemical engineering	0.99	1.04	0.97	0.88	0.81	0.85	0.81	0.81	0.87	0.86	0.84	0.81	0.85	0.89	0.76	0.76	0.72	0.64	0.66	0.65	0.61	0.61	0.58
Civil engineering	0.67	0.69	0.76	0.76	0.76	0.69	0.68	0.66	0.59	0.53	0.58	0.64	0.68	0.63	0.65	0.73	0.73	0.72	0.72	0.72	0.76	0.78	0.74
Computer technology	1.78	1.8	1.74	1.73	1.8	1.86	1.97	2.15	2.33	2.33	2.4	2.47	2.42	2.43	2.5	2.5	2.45	2.3	2.23	1.9	1.8	1.75	1.69
Control	0.98	1.02	1.08	1.02	0.99	1.04	1.13	1.17	1.35	1.3	1.44	1.23	1.2	1.21	1.17	1.17	1.16	1.15	1.07	1.13	1.16	1.17	1.11
Digital communication	1.43	1.41	1.37	1.38	1.53	1.48	1.62	1.72	1.46	1.42	1.49	1.36	1.31	1.25	1.37	1.41	1.52	1.72	1.87	1.81	1.69	1.47	1.58
Electrical machinery, apparatus, energy	0.87	0.88	0.87	0.85	0.81	0.8	0.89	0.85	0.82	0.79	0.8	0.81	0.73	0.69	0.63	0.62	0.61	0.67	0.7	0.69	0.69	0.68	0.66
Engines, pumps, turbines	0.69	0.61	0.78	0.86	0.97	0.86	0.85	0.91	0.83	0.8	0.74	0.77	0.77	0.9	0.96	0.91	0.9	0.98	1.01	1.14	1.31	1.32	1.32
Environmental technology	0.9	0.81	0.75	0.71	0.64	0.6	0.57	0.52	0.53	0.55	0.63	0.66	0.63	0.57	0.55	0.56	0.58	0.54	0.52	0.54	0.52	0.56	0.51
Food chemistry	0.71	0.78	0.72	0.65	0.58	0.41	0.49	0.39	0.41	0.5	0.41	0.32	0.37	0.43	0.38	0.34	0.35	0.42	0.39	0.65	0.67	0.86	0.94
Furniture, games	1.48	1.56	1.49	1.41	1.46	1.4	1.28	1.25	1.25	1.22	1.05	0.98	1.09	1.09	1.04	0.94	0.94	1.01	0.94	0.96	0.94	0.99	0.99
Handling	0.91	1.02	1.02	0.94	0.87	0.83	0.77	0.86	0.88	0.83	0.8	0.8	0.78	0.86	0.77	0.87	0.77	0.72	0.65	0.61	0.66	0.69	0.69
IT methods for management	2.09	2.42	2.32	2.05	1.91	1.87	1.9	2.11	1.77	1.49	1.74	1.92	2.34	2.3	2.33	2.55	2.24	1.84	1.56	1.81	1.9	2.19	1.68
Machine tools	0.76	0.87	0.87	0.86	0.75	0.8	0.79	0.78	0.84	0.87	0.65	0.6	0.66	0.74	0.72	0.76	0.72	0.53	0.44	0.42	0.41	0.42	0.42
Macromolecular chemistry, polymers	0.85	0.82	0.78	0.76	0.76	0.65	0.64	0.64	0.59	0.65	0.65	0.66	0.66	0.57	0.5	0.49	0.5	0.48	0.44	0.45	0.44	0.43	0.43
Materials, metallurgy	0.44	0.45	0.41	0.44	0.42	0.4	0.38	0.35	0.33	0.3	0.26	0.29	0.3	0.27	0.25	0.22	0.22	0.21	0.21	0.23	0.27	0.29	0.28
Measurement	1.06	1.0	1.01	1.03	1.06	1.13	1.13	1.15	1.28	1.35	1.27	1.13	0.98	0.91	0.84	0.78	0.76	0.76	0.79	0.76	0.74	0.71	0.67
Mechanical elements	0.87	0.86	0.89	0.89	0.88	0.8	0.81	0.77	0.82	0.77	0.67	0.68	0.75	0.8	0.76	0.85	0.89	0.89	0.84	0.87	0.9	0.94	0.95
Medical technology	1.81	1.91	1.68	1.68	1.54	1.57	1.35	1.44	1.48	1.57	1.44	1.47	1.63	1.87	1.92	1.92	1.79	1.76	1.76	1.72	1.72	1.79	1.81
Microstructural technology and nanotechnology	1.22	1.37	1.67	1.72	1.81	2.11	1.82	1.55	0.72	0.45	0.41	0.44	0.35	0.43	0.51	0.7	0.97	1.08	1.03	0.93	0.8	0.71	0.73
Optics	0.78	0.8	0.78	0.83	0.83	0.91	0.93	0.92	0.81	0.75	0.69	0.63	0.58	0.53	0.51	0.5	0.54	0.64	0.68	0.68	0.69	0.68	0.79
Organic fine chemistry	1.1	1.19	1.02	1.05	1.1	1.01	0.87	0.92	0.96	1.04	1.09	1.12	0.99	0.96	0.88	0.91	0.9	0.79	0.79	0.83	0.81	0.71	0.69
Other consumer goods	1.32	1.33	1.27	1.21	1.15	1.02	1.03	0.91	0.94	0.96	1.01	0.93	1.02	0.99	0.92	1.01	1.03	1.19	1.17	1.15	1.17	1.22	1.28
Other special machines	0.97	0.99	0.92	0.9	0.87	0.9	0.8	0.8	0.77	0.77	0.72	0.75	0.84	0.85	0.77	0.75	0.76	0.76	0.81	0.81	0.86	0.9	0.88
Pharmaceuticals	1.5	1.61	1.09	1.16	1.18	1.1	0.87	0.94	0.89	1.0	1.08	1.06	0.92	0.82	0.89	0.92	0.88	0.91	1.1	1.27	1.2	1.22	1.23
Semiconductors	0.69	0.74	0.83	0.86	0.95	1.0	1.04	0.93	0.76	0.8	0.82	0.89	0.89	0.82	0.74	0.84	0.86	1.0	1.09	1.05	1.0	0.91	0.98
Surface technology, coating	0.77	0.82	0.79	0.83	0.85	0.88	0.93	0.91	0.86	0.94	0.93	0.93	0.91	0.92	0.89	0.9	0.76	0.7	0.66	0.68	0.66	0.61	0.63
Telecommunications	1.05	1.02	1.0	1.04	1.1	1.11	1.21	1.25	1.17	1.17	1.33	1.44	1.33	1.39	1.6	1.52	1.42	1.4	1.45	1.51	1.39	1.16	1.15
Textile and paper machines	0.7	0.63	0.71	0.71	0.7	0.74	0.73	0.67	0.61	0.6	0.6	0.48	0.49	0.46	0.53	0.51	0.54	0.45	0.41	0.38	0.38	0.4	0.42
Thermal processes and apparatus	0.55	0.49	0.51	0.56	0.53	0.57	0.53	0.52	0.4	0.37	0.34	0.35	0.42	0.45	0.4	0.41	0.41	0.49	0.47	0.49	0.51	0.54	0.6

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WIPO technical field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Transport	0.97	0.84	0.99	1.0	0.93	0.85	0.85	0.85	0.83	0.85	0.74	0.72	0.76	0.81	0.76	0.72	0.77	0.91	0.91	0.97	1.07	1.06	1.09

IT = information technology; WIPO = World Intellectual Property Organization.

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 WIPO classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. Patent families unclassified under the WIPO classification are not accounted for in the total when normalization is performed in the computation of the specialization index to avoid underestimating specialization for countries where these unclassified families are more prominent because of data gaps in International Patent Classification codes availability in PATSTAT.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators