

European Union

Industry Profile

As a region, the European Union (EU) likely ranks as the largest producer and consumer of TDMs on the basis of the region's large trade volumes and various, though incomplete, estimates of TDM production. Since trade data are readily available, but data on EU TDM industry size, employment, and production are not, much of the following discussion and data are trade related. EU TDM producers have been affected by many of the same issues challenging TDM producers in the United States and Japan.

Also, EU TDM producers

benefit from a variety of EU programs for funding of training and R&D projects. Two TDM industries in the EU stand out, those of Germany and Portugal. The German TDM industry ranks as the largest exporter and importer in the EU, is a leader in the production of high-precision and high-complexity TDMs, and relies on extensive R&D, but has high labor costs. In contrast, the Portuguese TDM industry has been successful in exporting and is known for adopting the latest computer technologies despite the fact that Portugal has a small industrial base on which its TDM industry can depend.

Market Characteristics and Trends

Customer Base

The principal issues affecting the EU TDM industry include rising labor costs within the EU and a migration of EU customers to low-cost foreign production locations and emerging markets. EU customers have shifted production to locations both within the EU, such as Spain, and externally, including Eastern European and Asian nations, particularly China.³⁶⁸ For example, EU molders are investing in the Czech Republic, Poland, Hungary, Slovenia, and Croatia as demand in these countries rises for

Unique industry characteristics and significant strengths and weaknesses of the EU TDM industry

Unique industry characteristic:

- Relatively small number of TDM producers in each EU member country

Strengths:

- Tradition of craftsmanship in the production of dies and molds
- Some EU TDM producers have short lead times (time required to produce a die or mold), but others do not.
- Skilled in producing high-precision and complex dies and molds
- EU programs to support TDM R&D
- EU TDM producers may benefit from lower production costs at facilities in neighboring Eastern European countries

Weaknesses:

- High labor costs, particularly in northern Europe
 - EU customers have moved production to foreign locations, particularly China and Southeast Asia
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³⁶⁸ United Kingdom design software industry representative, interview by USITC staff, Feb. 19, 2002.

automobiles, consumer and business electronics, and disposable medical products.³⁶⁹ Siemens, a large German electronics and electrical equipment producer, and Nokia, the Finnish cellular telephone producer, for example, have established extensive production facilities in China. EU TDM producers, faced with a contracting domestic market and increasing global competition, are also affected by rising labor costs and restrictive labor rules in the EU. Thus, they are seeking improvements in delivery times and cost reductions through productivity gains from investments in machinery, design, and manufacturing software. High cost EU TDM producers are taking advantage of lower labor costs in Spain, Portugal, and Eastern European countries such as the Czech Republic, Poland, and Hungary.

Trade

The EU has a large but slightly declining trade surplus in TDM products. In 2001, the EU TDM trade surplus totaled \$1.6 billion, declining somewhat steadily from \$1.8 billion in 1997 (table 4-21).³⁷⁰ During 1997-2001, a number of EU members, mostly smaller countries, had chronic trade deficits in TDMs. However, the United Kingdom (UK) had the largest trade deficit, totaling \$107 million in 2001, up from \$91 million in 1997. Also, France moved from a trade surplus of \$72 million in 1997 to a trade deficit of \$43 million in 2001. Over the past 5 years, Germany's trade surplus eroded, rising during 1997-99, but then declining by more than \$100 million in 2000-01. The TDM trade surpluses of Austria and Portugal grew steadily during 1997-2001.

EU TDM exports fluctuated between \$4.4 billion and \$4.8 billion over the past 5 years. The EU's largest TDM exporter is Germany at almost \$1.5 billion, followed by Italy at almost \$1.1 billion in 2001 (table 4-20). During 1997-2001, exports of TDMs from Austria and Portugal rose, and exports of TDMs from the UK declined.

EU TDM imports ranged between \$2.7 billion and almost \$3.1 billion during 1997-2001 (table 4-21). The largest importer of TDMs was Germany, followed by France and Italy in 2001. Spanish imports of TDMs rose substantially during 1998-2000 as compared with 1997. German imports of TDMs dramatically rose between 1997 and 1998 and remained at a higher level, whereas French imports increased steadily throughout the period.

The EU's major external trading partners, by TDM product groupings, are shown in tables 4-22 and 4-23. In 2001, the largest supplier of non-EU TDM imports was Switzerland, accounting for almost 23 percent of all non-EU TDM imports, followed by Japan at 18 percent and the United States at 15 percent (table 4-22). Other leading suppliers were the Czech Republic, Hungary, and Poland, imports from which have all consistently risen. With regard to TDM exports, the United States was the largest external EU market, accounting for almost 16 percent of the total, followed by Switzerland (table 4-23). Other major markets were the Czech Republic and China, to

³⁶⁹ Agostino von Hassell, The Repton Group, "International Molding Report: Eastern Europe: An Undiscovered market," *Injection Molding Magazine*, Dec. 2000, found at <http://www.imment.com/articlelibrary/archive/getOneArticle.php3?getArtID=1447>, retrieved June 6, 2002.

³⁷⁰ This discussion includes EU internal and external trade.

Table 4-21
Tools, dies, and industrial molds: European Union (EU) imports, exports, and trade balance,
1997-2001

(1,000 dollars)

Item	1997	1998	1999	2000	2001
EU exports:					
Germany	1,483,188	1,611,948	1,626,058	1,457,716	1,465,487
Italy	1,050,604	1,072,966	1,031,259	914,442	1,083,378
France	404,210	441,295	435,618	399,291	394,798
Austria	247,712	249,949	287,160	320,358	336,300
United Kingdom	267,768	245,977	283,204	242,517	213,233
Belgium-Luxembourg ¹	284,781	317,539	282,329	328,151	281,675
Spain	278,576	289,633	319,808	289,964	284,958
Portugal	255,528	264,691	268,928	260,740	298,679
Netherlands	111,399	119,097	103,202	93,298	67,887
Sweden	53,273	65,290	58,783	50,130	42,758
Denmark	64,079	60,801	49,272	51,266	49,074
Ireland	31,635	32,630	21,799	18,966	20,642
Finland	15,970	18,090	25,587	18,741	16,272
Greece	6,351	5,091	5,607	2,143	2,726
Total	4,555,074	4,794,997	4,798,614	4,447,723	4,557,867
EU imports:					
Germany	769,102	891,429	868,981	818,602	833,632
Italy	315,910	377,254	372,149	333,439	361,917
France	328,240	359,507	406,585	425,948	437,818
Austria	175,786	183,926	206,484	234,105	218,107
United Kingdom	359,175	408,570	348,389	379,583	320,142
Belgium-Luxembourg ¹	169,386	188,849	229,187	208,684	208,864
Spain	121,919	203,085	180,530	203,286	148,305
Portugal	41,983	43,820	47,575	43,370	52,641
Netherlands	155,413	139,975	108,603	99,055	90,711
Sweden	158,196	128,002	107,252	91,246	95,255
Denmark	52,931	68,348	64,378	59,069	58,844
Ireland	33,299	37,499	44,768	45,572	43,727
Finland	34,327	37,819	36,499	46,085	41,036
Greece	23,678	22,657	21,264	20,478	17,438
Total	2,739,345	3,090,740	3,042,644	3,008,522	2,928,437
Trade balance:					
Germany	714,086	720,519	757,077	639,114	631,855
Italy	734,694	695,712	659,110	581,003	721,461
France	75,970	81,788	29,033	-26,657	-43,020
Austria	71,926	66,023	80,676	86,253	118,193
United Kingdom	-91,407	-162,593	-65,185	-137,066	-106,909
Belgium-Luxembourg ¹	115,395	128,690	53,142	119,467	72,811
Spain	156,657	86,548	139,278	86,678	136,653
Portugal	213,545	220,871	221,353	217,370	246,038
Netherlands	-44,014	-20,878	-5,401	-5,757	-22,824
Sweden	-104,923	-62,712	-48,469	-41,116	-52,497
Denmark	11,148	-7,547	-15,106	-7,803	-9,770
Ireland	-1,664	-4,869	-22,969	-26,606	-23,085
Finland	-18,357	-19,729	-10,912	-27,344	-24,764
Greece	-17,327	-17,566	-15,657	-18,335	-14,712
Grand total	1,815,729	1,704,257	1,755,970	1,439,201	1,629,430

¹ Belgium and Luxembourg reported data as a single entity during 1997-98, but separately thereafter.

Note.—Currency conversions are based on monthly averages calculated by GTIS, Inc. from rates published by the Federal Reserve Bank of New York.

Source: Global Trade Information Services, Inc., World Trade Atlas internet database, found at <http://www.gtis.com>.

Table 4-22
Tools, dies, and industrial molds: European Union (EU) imports, by selected countries and by country groups, 1997-2001

(1,000 dollars)					
Item	1997	1998	1999	2000	2001
Industrial molds:					
EU external trade:					
Switzerland	206,205	232,046	215,730	193,068	225,145
United States	90,451	114,247	120,275	132,659	114,925
Czech Republic	51,255	74,811	85,751	90,269	94,725
Japan	70,006	79,588	90,097	110,279	77,052
Hungary	35,137	44,430	52,693	53,535	59,860
Poland	25,309	29,851	34,313	35,104	42,138
All other	188,095	193,379	231,920	245,170	253,125
Subtotal	666,458	768,352	830,779	860,084	866,970
EU internal trade	1,118,611	1,256,412	1,152,393	1,075,220	1,001,114
Total	1,785,069	2,024,764	1,983,172	1,935,304	1,868,084
NAFTA	122,553	147,668	150,638	166,285	153,725
China & Hong Kong	18,332	15,385	19,094	23,586	28,395
Tools and dies:					
EU external trade:					
Japan	110,290	115,579	101,648	116,637	162,952
United States	73,905	126,447	109,891	94,279	70,190
Switzerland	65,971	68,436	63,682	64,733	64,280
Czech Republic	13,698	14,731	23,475	29,768	41,139
Slovenia	8,881	6,297	6,354	11,571	11,688
Poland	6,046	7,422	11,038	6,522	10,348
All other	46,207	46,308	48,456	74,391	62,725
Subtotal	324,998	385,220	364,544	397,901	423,322
EU internal trade	469,039	482,154	506,709	488,543	442,539
Total	794,037	867,374	871,253	886,444	865,861
NAFTA	76,682	128,980	111,287	104,242	75,931
China & Hong Kong	2,630	3,226	1,145	2,023	2,067
Jigs and fixtures:					
EU external trade:					
United States	18,834	19,358	19,580	22,041	19,586
Switzerland	16,414	18,599	19,215	17,668	18,902
Japan	10,512	12,804	9,634	15,038	11,830
Czech Republic	5,346	6,932	6,153	7,063	7,219
Poland	2,718	2,636	2,508	2,898	3,042
Taiwan	2,262	2,726	2,603	2,443	2,480
All other	12,387	21,095	17,355	15,808	16,600
Subtotal	68,473	84,150	77,048	82,959	79,659
EU internal trade	91,767	114,452	111,170	103,815	114,832
Total	160,240	198,602	188,218	186,774	194,491
NAFTA	19,146	20,926	19,980	22,395	20,091
China & Hong Kong	1,423	1,855	1,230	2,212	2,451
Total:					
EU external trade:					
Switzerland	288,590	319,080	298,627	275,469	308,327
Japan	190,808	207,971	201,379	241,954	251,834
United States	183,190	260,053	249,746	248,979	204,701
Czech Republic	70,299	96,474	115,379	127,101	143,084
Hungary	42,018	50,188	62,133	61,564	71,576
Poland	34,072	39,909	47,858	44,524	55,528
All other	250,952	264,047	297,249	341,353	334,901
Subtotal	1,059,929	1,237,722	1,272,371	1,340,944	1,369,951
EU internal trade	1,679,416	1,853,018	1,770,273	1,667,578	1,558,486
Grand total	2,739,345	3,090,740	3,042,644	3,008,522	2,928,437
NAFTA	218,381	297,574	281,906	292,922	249,747
China & Hong Kong	22,385	20,466	21,468	27,822	32,913

Note.—Currency conversions are based on monthly averages calculated by GTIS, Inc. from rates published by the Federal Reserve Bank of New York.

Source: Global Trade Information Services, Inc., World Trade Atlas internet database, found at <http://www.gtis.com>.

Table 4-23
Tools, dies, and industrial molds: European Union (EU) exports, by selected countries and by country groups, 1997-2001

(1,000 dollars)					
Item	1997	1998	1999	2000	2001
Industrial molds:					
EU external trade:					
United States	231,464	260,632	293,917	249,122	233,466
Switzerland	169,469	185,479	179,379	169,735	189,116
Czech Republic	78,954	120,254	118,042	124,876	147,279
Mexico	64,403	79,168	98,300	63,533	96,973
China	39,626	37,118	50,630	34,566	96,716
Poland	63,032	72,113	73,252	77,893	84,745
All other	757,578	799,385	722,876	641,975	701,828
Subtotal	1,404,526	1,554,149	1,536,396	1,361,700	1,550,123
EU internal trade	1,675,259	1,807,468	1,740,242	1,622,922	1,598,421
Total	3,079,785	3,361,617	3,276,638	2,984,622	3,148,544
NAFTA	323,748	372,194	431,586	346,114	357,046
China & Hong Kong	64,789	55,159	68,340	47,183	111,614
Tools and dies:					
EU external trade:					
United States	77,638	84,414	100,407	58,786	52,059
Switzerland	58,333	65,876	60,595	59,817	51,638
Czech Republic	14,631	18,346	44,198	38,247	38,233
Poland	28,537	18,433	30,865	20,768	21,672
China	5,702	16,822	95,401	12,049	21,111
Hungary	12,972	15,756	18,227	15,692	19,842
All other	238,341	225,950	185,436	163,892	165,346
Subtotal	436,154	445,597	535,129	369,251	369,901
EU internal trade	792,397	720,207	729,698	852,156	757,970
Total	1,228,551	1,165,804	1,264,827	1,221,407	1,127,871
NAFTA	110,462	126,549	130,303	79,610	72,604
China & Hong Kong	12,678	23,294	100,926	18,760	26,752
Jigs and fixtures:					
EU external trade:					
United States	36,738	47,786	34,377	35,705	33,381
Switzerland	13,706	16,824	16,051	13,985	14,340
Czech Republic	5,919	5,945	8,148	6,913	11,491
Japan	8,500	7,349	5,970	5,919	10,366
Norway	5,062	2,613	1,816	1,407	5,360
Slovakia	632	2,187	4,600	4,501	5,070
All other	51,773	50,200	50,946	48,311	56,600
Subtotal	122,330	132,904	121,908	116,741	136,608
EU internal trade	124,412	134,671	135,239	124,960	144,842
Total	246,742	267,575	257,147	241,701	281,450
NAFTA	43,003	55,651	40,766	41,511	42,244
China & Hong Kong	1,909	3,666	3,755	3,201	4,197
Totals:					
EU external trade:					
United States	345,840	392,833	428,700	343,613	318,906
Switzerland	241,508	268,179	256,025	243,537	255,094
Czech Republic	99,503	144,545	170,389	170,036	197,004
China	46,844	57,118	149,086	49,325	121,219
Mexico	99,354	123,527	127,182	83,948	118,519
Poland	93,031	92,419	107,058	101,647	110,318
All other	1,036,931	1,054,028	954,993	855,586	935,572
Subtotal	1,963,011	2,132,649	2,193,433	1,847,692	2,056,632
EU internal trade	2,592,063	2,662,348	2,605,181	2,600,031	2,501,235
Grand total	4,555,074	4,794,997	4,798,614	4,447,723	4,557,867
NAFTA	477,213	554,394	602,655	467,235	471,894
China & Hong Kong	79,376	82,119	173,021	69,144	142,563

Note.—Currency conversions are based on monthly averages calculated by GTIS, Inc. from rates published by the Federal Reserve Bank of New York.

Source: Global Trade Information Services, Inc., World Trade Atlas internet database, found at <http://www.gtis.com>.

which EU exports have risen steadily over the past 5 years. In 2001, almost 47 percent of all EU TDM imports were from non-EU members, whereas the remaining 53 was with EU members; for exports, the shares are 45 percent and 55 percent, respectively. In terms of product representation, imports of industrial molds accounted for almost 64 percent of all EU TDM imports, tools and dies, for almost 30 percent, and jigs and fixtures, for almost 7 percent. Exports of industrial molds accounted for 69 percent of all EU TDM exports, tools and dies, for almost 25 percent, and jigs and fixtures, for 6 percent.

Government Policies and Programs

TDM producers benefit from comprehensive EU Government programs as well as State assistance. However, the extent to which these programs, many aimed at small- and medium-sized firms, are used by EU TDM producers is unknown. The TDM industry appears to benefit most directly from EU-funded R&D in the EU Fifth Framework initiative (1998-2002)³⁷¹ under the Competitive and Sustainable Growth program, known as GROWTH.³⁷² Many TDM-related projects under this program are cooperative research contracts among a variety of partners, including research institutes and companies.

TDM producers may also benefit from training programs funded by the EU European Social Fund (ESF). During 1994-1999, two specific projects for training moldmakers, one in Spain and the other in Portugal, were funded by ESF. The ESF also provides funding for small- and medium-sized enterprises employing engineering staff. However, such funding, frequently in the form of a grant, may be limited to certain regions.³⁷³

The EU Commission Directorate-General for Enterprise has been assisting the TDM industry through benchmarking studies and efforts to restructure the industry. The Directorate's efforts are part of a larger set of initiatives in the area of subcontracting, including plastic moldings and stamped metal parts, both of which use tooling.³⁷⁴ In the late 1997-98, the Directorate, in conjunction with the European Association of Consumer Electronics Manufacturers benchmarked EU TDM producers against those from Japan and Taiwan. Key findings were that Taiwan lead times were significantly shorter than those in the EU, that Japanese TDM producers had high investment levels in advanced technologies and also short lead times, and that supplier and customer relationships were stronger in those locations. During 1999-2001, the Directorate initiated an effort to enhance cross-border cooperation and grouping among moldmakers in France, Portugal, and Spain. This effort included an assessment of competitiveness factors and active

³⁷¹ Compiled from types and number of projects listed in the EU's Cordis database of EU-funded research and technology development projects, found at <http://www.cordis.lu>.

³⁷² GROWTH predecessors were BRITE/EURAM 3 under the EU Fourth Framework initiative as part of the Industrial and Material Technologies Program (1994-98) and CRAFT under the EU Third Framework initiative for research and development.

³⁷³ For example, see Tooling Trust, "Training Initiatives," found at <http://www.toolingtrust.co.uk/training.htm>, retrieved Aug. 30, 2002.

³⁷⁴ EU Commission Directorate-General Enterprise, "Community Initiatives in the Field of Subcontracting," found at <http://www.europa.eu.int/comm/enterprise/entrepreneurship/supply/clusters.htm>, retrieved Sept. 13, 2002.

promotion of strategic partnerships and joint ventures between companies in the various countries.³⁷⁵ Final results of this effort have not yet been published.

Although not limited to the EU, the EUREKA network has also facilitated R&D projects related to TDMs among European TDM producers. EUREKA is a pan-European network for market-oriented, industrial R&D, including European countries outside of the EU.³⁷⁶ EUREKA has 33 European full member countries, the EU, and Israel, as well as several associate members that are Eastern European countries. EUREKA acts as a network, linking firms and organizations proposing R&D with government agencies in member countries that can provide financing. Funding types include loans, risk-sharing loans, grants, and subsidies, with funding levels ranging up to 100 percent of the project, depending upon the member country. An example of a recent EUREKA program is one announced in April 2002 by the UK Gauge & Tool Maker's Association entitled "emould@work." The 2-year EU funded project will aim to develop "innovative new software for online moldmaking management."³⁷⁷ The project consortium includes software vendors, other TDM associations, and moldmakers in three EU countries—the UK, Spain, and Portugal.

EU TDM producers also benefit from aid provided at the national or local level. According to one industry source, certain EU countries benefit from relatively high levels of EU funding, whereas TDM producers in countries such as Germany, France, and Italy benefit from local government financial support that is not subject to EU scrutiny.³⁷⁸ The UK reportedly provides very little support at the national level and local government support is nil. The extent of State aid provided by EU members is not known. However, a broad survey of EU State aid to manufacturing indicates that most is focused on R&D, support to small- and medium-sized enterprises, and regional aid to economically depressed or remote regions.³⁷⁹ Most State aid to the manufacturing sector is in the form of grants, soft loans (loans with easy repayment terms, such as very-low interest rates or long repayment periods), and tax exemptions.

The EU has common external tariffs on imports but member states have varying VATs that are imposed on imports. EU tariff rates on TDMs range from free to 5 percent ad valorem, with tariff rates on dies at 2.7 percent ad valorem and the majority of tariffs on molds at 1.7 percent ad valorem. Within the EU, VATs range from 10 to 25 percent, with VATs for major TDM producing countries as follows: Germany and Spain at 6 percent, Portugal at 17 percent, and Italy and Austria at 20 percent.

³⁷⁵ EU Commission Directorate-General Enterprise, "Community New On-Going Projects in the Field of Subcontracting," found at <http://www.europa.eu.int/comm/enterprise/entrepreneurship/supply/ascamm.htm>, retrieved Sept. 13, 2002.

³⁷⁶ See the EUREKA network Internet site at <http://www.eureka.be>.

³⁷⁷ Gauge & Tool Maker's Association (GTMA), "Eureka Project for Mouldmaking Lifts Offs," press release, undated but listed as April 2002, found at http://www.gtma.co.uk/media_press-releases-eureka-apr02.htm, retrieved Aug. 30, 2002.

³⁷⁸ Mike Page, "Editor's Message," The Manufacturing Talk Newsletter, Feb. 18, 2001, found at <http://www.manufacturingtalk.com/news/doc/doc503.html>, retrieved Aug. 30, 2002.

³⁷⁹ Commission of the European Communities, *Ninth Survey on State Aid in the European Union*, COM (2001) 403 final, July 18, 2001, found at http://europa.eu.int/comm/competition/state_aid/others/, retrieved Aug. 30, 2002, pp. 32, and 48-50. The survey covers 995-99.