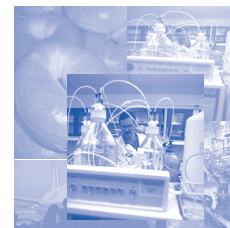


Chemicals, rubber and plastics



The chemicals, rubber and plastics manufacturing sector covers the manufacture of basic organic and inorganic chemicals, pharmaceutical products and pesticides and rubber tyres and plastic tubes.

The main raw materials used within this manufacturing sector include oils, minerals, metals and certain agricultural products (such as natural rubber and fats). Many of the key ingredients for chemical, rubber and plastic goods are derived from fractions of hydrocarbons from the oil industry which are subsequently cracked by petro-chemical enterprises. In this way, the chemicals, rubber and plastics sector has been particularly susceptible to sharply higher material and processing costs due to the uncertainty surrounding oil and gas markets in 2005/06 (see Subchapter 13.1).

The main legislative challenge for the chemicals, rubber and plastics sector is the adoption of the European Commission's proposed REACH (Registration, Evaluation and

Authorisation of Chemical substances) system ⁽¹⁾. This environmental and social policy initiative aims to improve the protection of human health and the environment through the better and earlier identification of the properties of chemical substances. Following a long period of negotiation, the European Council reached a common position on 27 June 2006. A second reading, at which final agreement may be reached, is currently planned before the end of 2006. The chemicals, rubber and plastics sector also has to consider other environmental and social legislation, for example, that relating to pesticides and biocides (in July 2006, the European Commission issued a new proposal for a regulation on plant protection products under the thematic strategy ⁽²⁾ on the sustainable use of pesticides), waste and water, climate change and air pollution, and allocations of CO₂ emissions during the period 2008–2012 under the Emissions Trading Scheme.

⁽¹⁾ COM(2003) 644.

⁽²⁾ COM(2006) 372.

The manufacture of chemicals, rubber and plastics are covered by NACE Subsections DG and DH; the first of these two subsections also includes the manufacture of man-made fibres.

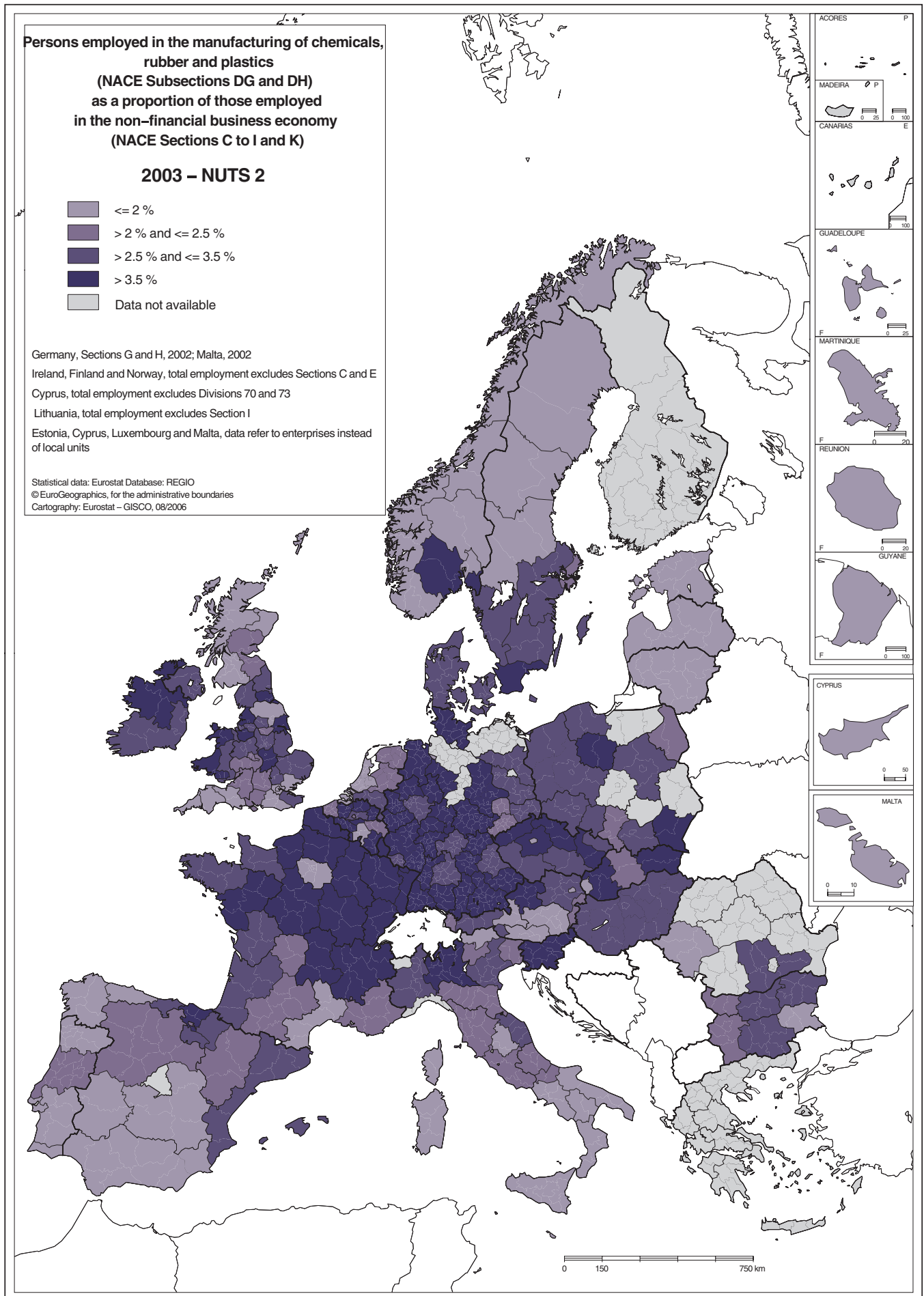
NACE

- 24: manufacture of chemicals and chemical products;
- 24.1: manufacture of basic chemicals;
- 24.2: manufacture of pesticides and other agro-chemical products;
- 24.3: manufacture of paints, varnishes and similar coatings, printing ink and mastics;
- 24.4: manufacture of pharmaceuticals, medicinal chemicals and botanical products;
- 24.5: manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations;
- 24.6: manufacture of other chemical products;
- 24.7: manufacture of man-made fibres;
- 25: manufacture of rubber and plastic products;
- 25.1: manufacture of rubber products;
- 25.2: manufacture of plastic products.

Table 5.1
Top ten chemical enterprise (groups) in the EU-25, 2005

		World ranking	Chemical sales (EUR million)	Chemical sales as a proportion of total sales (%)
BASF	DE	2	35 077	82
Royal Dutch / Shell	UK / NL	3	28 102	11
Total	FR	5	22 319	16
Bayer	DE	8	16 585	61
BP	UK	9	16 563	8
Degussa	DE	14	11 748	100
Ineos Group	UK	17	9 957	100
Akzo Nobel	NL	18	9 442	73
Air Liquide	FR	20	9 145	88
ICI	UK	23	8 498	100

Source: Chemical and engineering news, 24th July 2006, 84(30), p14, <http://pubs.acs.org/cen>



Many of the largest global chemical companies have their headquarters in the EU-25 (see Table 5.1) and according to CEFIC (the European Chemistry Industry Council) the EU-25 accounted for about one third of global chemical sales in 2004 (see Figure 5.1). It is planned that a pan-EU response to the various challenges outlined above will be channelled through the European Technology Platform for Sustainable Chemistry (SusChem) that has been established and supported by the EU's 7th Framework Programme for Research and Technological Development (FP7) which is due to begin in January 2007. The SusChem Action Plan is being discussed at the time of writing, and is likely to cover research programmes on industrial biotechnology for eco-efficiency, materials technology for the discovery of new materials with tailored properties, and reaction and process design. According to CEFIC, R&D expenditure by the sector (excluding, it should be noted, pharmaceuticals) within the EU-15 has fallen from 2.4 % of sales in 1998 to 1.8 % in 2004, behind the corresponding rates of 1.9 % in the United States and 2.6 % in Japan.

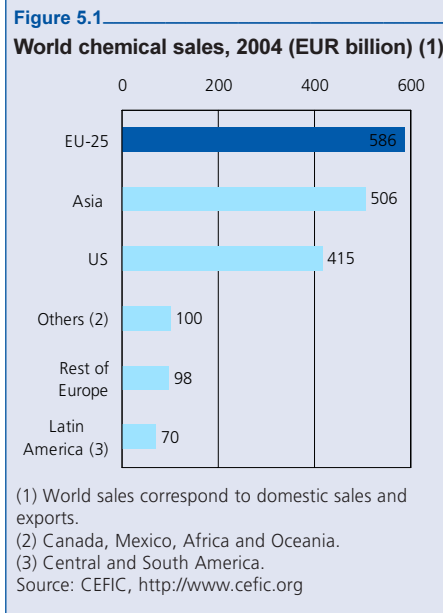
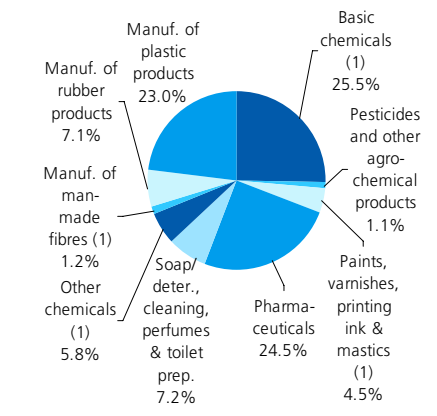


Figure 5.2
Manufacture of chemicals and chemical products; rubber and plastic products (NACE Subsections DG and DH)
Breakdown of sectoral value added, EU-25, 2003 (%)



(1) Rounded estimate based on non-confidential data. Source: Eurostat (SBS)

STRUCTURAL PROFILE

The chemicals, rubber and plastics manufacturing sector (NACE Subsections DG and DH) in the EU-25 generated EUR 241.0 billion of value added in 2003, representing 14.2 % of industrial (NACE Sections C to E) value added (see Table 5.2). The sector employed 3.6 million people, about one in ten of the industrial workforce.

The value added generated by the activities of chemical, chemical products and man-made fibres manufacturing (NACE Subsection DG) accounted for the vast majority (70.0 %) of the sectoral total. Indeed, the activities of basic chemical manufacturing (NACE Group 24.1) and pharmaceutical manufacturing (NACE Group 24.4) together accounted for one half (50.0 %) of the value added generated within

the chemicals, rubber and plastics manufacturing sector as a whole. Within the activities of rubber and plastic products manufacturing (NACE Subsection DH), the principal activity was plastics manufacturing (NACE Group 25.2) which generated a little under one quarter (23.0 %) of the value added generated by the whole of the chemicals, rubber and plastics manufacturing sector.

Among the EU-25 Member States, Germany was by far the leading producer of chemicals, rubbers and plastics, accounting for one quarter (25.2 %) of the value added generated for the EU-25 as a whole in 2003 (see Table 5.3). The contribution of value added generated by the chemicals, rubber and plastics manufacturing sector to industrial value added was particularly high in Belgium (22.8 %) and

Luxembourg (21.4 %). Nonetheless, it seems likely that Ireland was the most specialised Member State in these activities, based on the limited data available; the chemicals, rubber and plastics sector accounted for 42.5 % of Irish manufacturing (NACE Section D only) value added⁽³⁾, considerably more than the shares for the EU-25 as a whole (15.8 %), Belgium (25.3 %) or Luxembourg (23.6 %).

⁽³⁾ The relatively high proportion of Irish manufacturing value added that is accounted for by the chemicals, plastics and rubber sector may reflect foreign ownership of enterprises, outsourcing of activities, and accounting practices of multinational enterprises. Note that this observation applies throughout this chapter, where Ireland consistently reports very high levels of value added and related indicators (apparent labour productivity, wage adjusted labour productivity, the gross operating surplus, and the gross operating rate).

Table 5.2
Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Structural profile, EU-25, 2003

	Value added (EUR million)	Share of industrial value added (%)	Number of persons employed (thousands)	Share of industrial employment (%)
Chemicals and chemical products; rubber and plastic products (1)	241 000	14.2	3 560	10.1
Basic chemicals; pesticides and other agro-chemical products (2)	64 000	3.8	614	1.7
Pharmaceuticals, medicinal chemicals and botanical products	59 246	3.5	576	1.6
Miscellaneous chemical products (1)	42 000	2.5	640	1.8
Man-made fibres (2)	3 000	0.2	53	0.2
Rubber products	17 058	1.0	359	1.0
Plastic products	55 534	3.3	1 310	3.7

(1) Rounded estimates based on non-confidential data.
(2) Value added and related share, rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 5.3

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Value added and employment: ranking of the top 5 Member States, 2003

Rank	Highest value added (EUR million) (1)	Share in EU-25 value added (%) (1)	Highest number of persons employed (thousands) (2)	Share in EU-25 employment (%) (2)	Highest share of national industrial value added (%) (3)	Highest share of national industrial employment (%) (4)
1	Germany (60 786.4)	25.2	Germany (867.7)	24.4	Belgium (22.8)	Luxembourg (18.9)
2	France (36 577.5)	15.2	France (533.6)	15.0	Luxembourg (21.4)	Belgium (14.9)
3	United Kingdom (32 446.1)	13.5	United Kingdom (456.0)	12.8	Slovenia (19.1)	France (12.8)
4	Italy (25 278.6)	10.5	Italy (414.4)	11.6	Netherlands (16.0)	United Kingdom (12.2)
5	Ireland (16 414.7)	6.8	Spain (263.7)	7.4	France (15.6)	Netherlands (12.1)

(1) Malta and Sweden, 2002; Greece, not available.

(2) Sweden, provisional; Malta, 2002; Greece, not available.

(3) Malta and Sweden, 2002; Greece and Ireland, not available.

(4) Sweden, provisional; Malta, 2002; Greece and Ireland, not available.

Source: Eurostat (SBS)

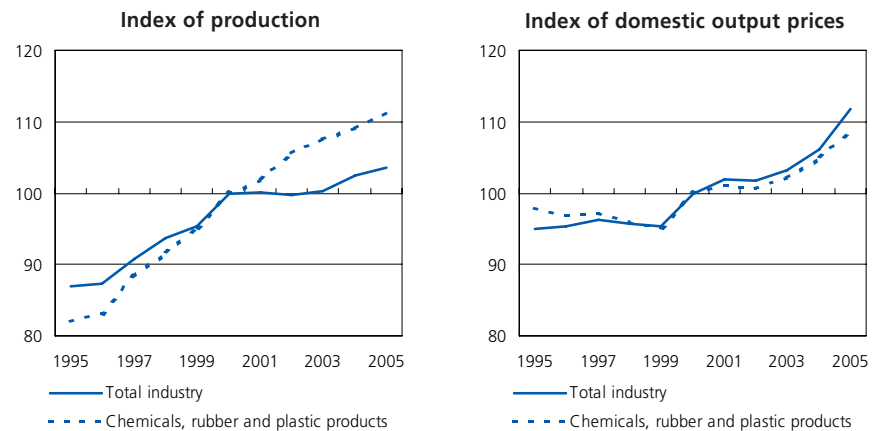
The map on page 94 shows the contribution of the chemicals, rubber and plastics manufacturing sector to employment within the non-financial business economy (NACE Sections C to I and K) of each region. Most regions in Germany and several regions in France, Belgium and the United Kingdom, as well as Luxembourg and Slovenia (which are considered as one region at the level of detail shown in the map) were among the most specialised in this sector in terms of employment.

During the period 1995 to 2005 there was a steady and continuous rise in the production index of chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH), with an average rate of increase of 3.1 % per annum. For most of this period, the rate of growth in the production index of chemicals, rubber and plastics manufacturing outpaced that of industry as a whole, especially during the period between 2001 and 2003 when industry as a whole went through a period of stagnation. Indeed, it was only in 2004 that the output growth for industry as a whole was greater than that of chemicals, rubber and plastics manufacturing (for the first time in more than a decade).

At the NACE group level of detail within the chemicals, rubber and plastics manufacturing sector, there were contrasting developments in production indices. The fastest rate of output expansion in the EU-25 between 1995 and 2005 was the 5.6 % per annum average growth recorded for pharmaceuticals (NACE Group 24.4). There was also strong growth, averaging 4.2 % per annum for the production index of basic chemical manufacturing (NACE Group 24.1). In contrast, there was an annual average decline of 1.5 % per annum for the output of pesticides and other agro-chemical products (NACE Group 24.2) over the period 1995 to 2005, although most of this decline occurred after 2001. The fastest rate of contraction in output was an average reduction

Figure 5.3

Manufacture of chemicals and chemical products; rubber and plastic products (NACE Subsections DG and DH)
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

of 3.0 % per annum for man-made fibres (NACE Group 24.7). Most of this decline was confined to the period between 2000 and 2005 (when an average reduction of 6.0 % per annum was registered).

Annual changes in the domestic output price index for chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH) followed a very similar pattern to the industrial average during the period 1998 to 2005, albeit with a sharper acceleration in the industrial price index in 2004 and 2005. It was only in the period between 1995 and 1998, however, that there was a considerable divergence in trends, as the domestic output price index for the manufacture of chemicals, rubber and plastics declined while the industrial average was stable. These differences at the two ends of the selected reference period explain why the rate of increase (1.1 % per year on average) for the output price index of chemicals, rubber and plastics manufacturing between 1995 and 2005 was lower than the industrial average (1.6 % per year).

Almost exactly two thirds (66.5 %) of the value added generated by the EU-25's chemicals, rubber and plastics sector came from large enterprises (employing more than 250 persons); this was a much higher proportion than the industrial (NACE Sections C to E) average of 57.6 %. In contrast, micro and small enterprises (employing between 1 and 49 persons) accounted for a very low share (11.5 %) in comparison with an industrial average of 21.6 %. Among the Member States, the situation in Latvia was in stark contrast to that for the EU-25 as a whole, as the proportion of the value added generated by large enterprises accounted for about one third (32.6 %) of the total for the chemicals, rubber and plastics sector, a considerably lower proportion than the national, industrial average (49.2 %) for large enterprises.

Table 5.4

**Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Labour force characteristics, 2005**

	Male		Full-time		Breakdown by age (% share of total)		
	Proportion of those employed (%)	Index (industry=100)	Proportion of those employed (%)	Index (industry=100)	< 30 years	30-49 years	50+ years
EU-25	67.9	95.2	93.5	101.2	20.1	59.0	21.0
BE	71.9	95.0	86.4	97.0	20.9	61.6	17.6
CZ	59.7	92.7	98.1	100.6	22.3	55.2	22.5
DK	60.1	86.3	91.9	102.2	19.1	56.7	24.2
DE	68.7	94.7	91.5	103.4	17.6	58.6	23.8
EE	55.8	100.1	100.0	102.5	21.1	61.4	:
EL	67.7	91.2	99.4	101.3	17.4	62.3	20.3
ES	72.0	95.7	96.7	101.5	23.6	57.6	18.9
FR	64.9	90.8	95.3	101.4	19.2	61.0	19.8
IE	61.9	87.8	95.5	100.9	30.9	55.7	13.4
IT	70.0	97.9	94.7	101.4	19.7	63.4	16.8
CY	53.0	76.6	97.4	103.9	26.7	39.4	33.9
LV	48.0	81.8	97.3	100.9	21.7	51.9	26.4
LT	72.9	136.9	100.0	102.2	:	59.0	:
LU	87.0	106.6	96.6	103.0	12.8	68.1	19.0
HU	59.1	94.7	98.8	101.6	20.3	52.0	27.7
MT	66.0	85.5	90.3	94.5	:	:	:
NL	79.1	102.2	77.1	105.5	16.0	63.5	20.6
AT	68.1	91.1	91.6	101.8	22.7	58.8	18.5
PL	64.5	93.5	96.5	100.3	24.0	59.8	16.2
PT	64.2	108.4	99.3	102.2	30.2	51.8	18.1
SI	57.0	89.2	96.4	100.4	22.9	58.5	18.5
SK	64.9	101.7	98.8	99.9	18.0	57.1	24.9
FI	67.9	95.0	97.5	102.7	20.1	57.3	22.7
SE	63.2	84.2	90.7	100.6	15.8	56.0	28.2
UK	70.6	94.3	92.7	101.5	20.5	55.7	23.8

Source: Eurostat (LFS)

LABOUR FORCE CHARACTERISTICS

The proportion of men working in the EU-25's chemicals, rubber and plastics manufacturing sector (NACE Subsections DG and DH) was slightly lower (67.9 %) than the industrial (NACE Sections C to E) average (71.3 %) in 2005. Within the sector, the proportion of men working in chemicals, chemical products and man-made fibres manufacturing (NACE Subsection DG) was notably lower (64.7 %) than the corresponding share working in rubber and plastic products manufacturing (NACE Subsection DH, 72.2 %) in 2005.

The proportion of men working in the chemicals, rubber and plastics manufacturing sectors in Cyprus (53.0 %) and Latvia (48.0 %) were particularly low, both in comparison to other Member States and in comparison to their own total industry averages (see Table 5.4). In contrast, the proportion of men working in the chemicals, rubber and plastics manufacturing sector in Lithuania (72.9 %) was much higher than the national, industrial average (53.3 %).

The age profile of the workforce in the chemicals, rubber and plastics sector was broadly similar to the profile across industry as a whole for the EU-25. There was also a comparable rate of full-time employment in the sector, 93.5 % compared with 92.4 % for industry as a whole.

COSTS, PRODUCTIVITY AND PROFITABILITY

Average personnel costs in the EU-25's chemicals, rubber and plastics sector were EUR 39 900 per employee in 2003, some 22.4 % higher than the industrial (NACE Sections C to E) average. However, within the sector, average personnel costs in chemicals, chemical products and man-made fibres manufacturing were particularly high (EUR 48 300 per employee) in comparison to rubber and plastics manufacturing (EUR 30 300 per employee).

Apparent labour productivity in the chemicals, rubber and plastics sector was a little over one third higher (36.7 %) than the industrial average at EUR 67 800 of added value per

person employed in 2003. Within the sector, the apparent labour productivity of those working in the EU-25's manufacture of basic chemicals (NACE Group 24.1, EUR 105 000) and the manufacture of pharmaceuticals (NACE Group 24.4, EUR 102 900) was particularly high. In contrast, the apparent labour productivity of plastics products manufacturing (NACE Group 25.2) and rubber products manufacturing (NACE Group 25.1) were below the industrial average.

The gross operating rate (a measure of productivity) for the EU-25's chemicals, rubber and plastics manufacturing sector was 12.3 % in 2003 (see Figure 5.4), higher than the industrial average (10.3 %). Within the sector, however, the gross operating rate of rubber and plastic products manufacturing (10.4 %) was much closer to the industrial average than that of chemicals, chemical products and man-made fibres manufacturing (13.0 %).

Table 5.5

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Cost, productivity and profitability indicators, ranking of the top 5 Member States compared to EU-25 averages, 2003

Rank	Investment in tangible goods relative to total operating costs (%) (1)	Purchases of goods and services as a share of total operating costs (%) (2)	Personnel costs as a share of total operating costs (%) (2)	Apparent labour productivity (EUR thousand) (3)	Average personnel costs (EUR thousand) (3)	Wage adjusted labour productivity (%) (3)	Gross operating rate (%) (3)
EU-25	5.0	81.0	19.0	67.8	39.9	170.0	12.3
1	Malta (15.3)	Ireland (90.8)	Malta (35.1)	Ireland (491.8)	Belgium (62.0)	Ireland (1 112.9)	Ireland (48.6)
2	Hungary (14.7)	Lithuania (90.2)	Denmark (27.8)	Belgium (118.1)	Netherlands (51.1)	Latvia (249.8)	Latvia (20.9)
3	Latvia (11.0)	Estonia (87.9)	Cyprus (24.3)	Netherlands (101.4)	Denmark (50.3)	Hungary (230.4)	Slovenia (19.0)
4	Slovenia (10.5)	Slovakia (87.7)	Germany (23.9)	Denmark (87.2)	Germany (50.1)	Poland (227.5)	Hungary (17.7)
5	Czech Republic (9.9)	Netherlands (87.4)	Sweden (23.0)	Luxembourg (79.5)	Luxembourg (49.3)	Czech Republic (218.9)	Denmark (17.5)

(1) Latvia, Malta and Sweden, 2002; Belgium and Greece, not available; EU-25 is an EU average based on available data for 2002 and 2003.

(2) Malta and Sweden, 2002; Greece not available; EU-25 is an EU average based on available data for 2002 and 2003.

(3) Malta and Sweden, 2002; Greece, not available; EU-25, rounded estimate based on non-confidential data.

Source: Eurostat (SBS)

EXTERNAL TRADE

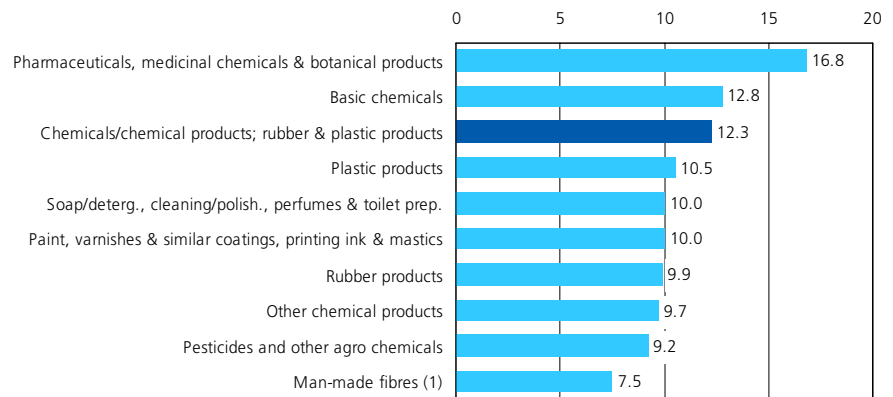
The EU-25's trade surplus in chemical, rubber and plastic products (CPA Subsections DG and DH) reached EUR 67.8 billion in 2005. The widening trade surplus in these products (up 62.8 % overall since 2000) reflects the fact that exports have been growing at a faster pace than imports. The value of exports was EUR 180.7 billion in 2005 and the value of imports EUR 112.8 billion (see Table 5.6). The main trade partners in chemical, rubber and plastic products were the United States and Switzerland; they represented both the principal market destinations for exports (27.9 % and 9.8 % respectively) and the principal origin of imports (29.3 % and 19.6 % respectively).

Among the Member States, Germany was the largest exporter of chemical, rubber and plastic goods, valued at EUR 119.4 billion in 2005 (this represented 21.7 % of the EU-25 total for intra- and extra-EU-trade). Belgium, France, the United Kingdom and the Netherlands were the other main exporters (together accounting for 46.4 % of total exports of these goods).

Germany recorded a significant trade surplus in these products in 2005 (EUR 31.3 billion), with much of this coming from the extra-EU-25

Figure 5.4

Chemicals and chemical products; rubber and plastic products
(NACE Subsections DG and DH)
Gross operating rate, EU-25, 2003 (%)



(1) 2002.

Source: Eurostat (SBS)

market (EUR 21.1 billion). The largest trade surplus in these goods, however, was recorded in Ireland (EUR 32.5 billion in 2005) with much of this surplus centred on the intra-EU-25 market (EUR 20.1 billion). According to PharmaChemical Ireland ⁽⁴⁾, nine of the top ten

⁽⁴⁾ PharmaChemical Ireland, <http://www.ibec.ie/Sectors/PCMF/webipcmf.nsf/wHome?OpenForm>.

global pharmaceutical manufacturers have operations in the country. The importance of chemical, rubber and plastic goods to the Irish economy is underlined by the fact that they represented 49.2 % of all industrial exports in 2005. These goods were also a significant contributor to the industrial exports of Belgium (33.1 % of the total in 2005), when compared with the EU-25 average of 18.2 %.

Table 5.6

Chemicals, chemical products and man-made fibres; rubber and plastic products (CPA Subsections DG and DH)
External trade, EU-25, 2005

	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Chemicals, chemical products and man-made fibres; rubber and plastic products	180 681	18.2	112 837	10.5	67 844	160.1
Basic chemicals; pesticides and other agro-chemical products	54 610	5.5	41 036	3.8	13 574	133.1
Pharmaceuticals, medicinal chemicals and botanical products	61 716	6.2	34 660	3.2	27 056	178.1
Miscellaneous chemical products	36 167	3.6	15 952	1.5	20 215	226.7
Man-made fibres	1 755	0.2	1 885	0.2	-130	93.1
Rubber products	7 138	0.7	6 881	0.6	257	103.7
Plastic products	16 137	1.6	11 792	1.1	4 345	136.8

Source: Eurostat (Comext)

5.1: BASIC INDUSTRIAL CHEMICALS (INCLUDING PETROCHEMICALS), PESTICIDES AND AGROCHEMICALS

The manufacture of basic chemicals (NACE Group 24.1) covers the manufacture of petrochemicals, industrial gases, dyes, pigments and fertilizers, as well as primary forms of plastics and synthetic rubber. This subchapter also includes information on the manufacture of plant growth regulators, disinfectants and products to fight pests and diseases (NACE Group 24.2). These two NACE groups are collectively referred to as basic and agro-chemical products.

Table 5.7

Western European petrochemical production and capacity (thousand tonnes) (1)

	Production, 2005	Capacity, 2005	Share of world production, 2004 (%)
Ethylene	21 600	23 969	28.4
Propylene	15 406	17 834	32.4
Benzene	8 480	9 784	29.5

(1) EU-15, plus Norway and Switzerland.

Source: International Petrochemical Information Forum, Association of Petrochemicals Producers in Europe (APPE), <http://www.petrochemistry.net>

Petrochemicals are derived from oil or natural gas and can be classified in three product categories; these are primary petrochemicals (see Table 5.7) such as olefins (for example, ethylene and propylene), aromatics (for example, benzene) and methanol, petrochemical intermediates (for example, vinyl chloride and styrene), and petrochemical products (for example, plastics, fertilizers and agro-chemicals and synthetic rubber). In this way, petrochemicals are a key input for other chemicals activities and for many downstream sectors (such as the metals, automotive and agricultural sectors), either directly or as transformed intermediate goods.

There was further consolidation within the EU-25 basic chemicals sector in 2005 (for example, the restructuring of Arkema, Bassell and Boréal) and integration with refinery enterprises, within a business environment of greater competition (from the Middle East and China in particular) and rising costs.

Recent European Community legislation targeted at petrochemical products includes European Parliament and Council Regulation (EC) No 396/2005 which set minimum residue levels of pesticides and plant protection products in human and animal food that should have been observed since 5 April 2005, and Articles 8 and 26 of European Parliament and Council Regulation (EC) No 2003/2003 which came into force in June 2005 requiring the traceability of fertilizer origin and safety measures and controls for straight ammonium nitrate fertilizers of high nitrogen content. Environmental concerns are leading to research and development in chemical processing improvements such as new reactor and separation technologies like membrane technology and the development of bio-chemicals such as sugar-based biobutanol and bio-processes.

STRUCTURAL PROFILE

The basic and agro-chemicals manufacturing sector (NACE Groups 24.1 and 24.2) in the EU-25 generated EUR 64.0 billion of added value in 2003, which equated to 3.8 % of the industrial (NACE Sections C to E) total (see Table 5.8). The sector employed 614 000 persons within the EU-25 in 2003, equating to a 1.7 % share of the industrial workforce, less than half the share recorded for value added. The vast majority of the value added (95.7 %) and employment (95.2 %) of the sector came from the basic chemicals manufacturing subsector (NACE Group 24.1).

Germany was the principal producer of both basic and agro-chemical products (a combined 29.3 % share of EU-25 value added in 2003). However, Ireland (accounting for 19.9 % of EU-25 value added), Belgium, and the Netherlands were particularly specialised in basic chemicals manufacturing⁽⁵⁾. There was little specialisation in the manufacture of agro-chemicals among Member States.

⁽⁵⁾ Sweden, 2002; Greece, Cyprus, Luxembourg and Malta, not available.

Table 5.8

Manufacture of basic chemicals; manufacture of pesticides and other agro-chemical products (NACE Groups 24.1 and 24.2) Structural profile, EU-25, 2003

	Value added (EUR million)	Share of industrial value added (%)	Number of persons employed (thousands)	Share of industrial employment (%)
Basic chemicals; pesticides and other agro-chemical products (1)	64 000	3.8	614	1.7
Basic chemicals (1)	61 500	3.6	584	1.7
Industrial gases	:	:	45	0.1
Dyes and pigments	:	:	44	0.1
Other inorganic basic chemicals	4 549	0.3	62	0.2
Other organic basic chemicals	29 970	1.8	184	0.5
Fertilizers and nitrogen compounds	2 672	0.2	51	0.2
Plastics in primary forms	16 153	1.0	190	0.5
Synthetic rubber in primary forms	704	0.0	8	0.0
Pesticides and other agro-chemical products	2 767	0.2	30	0.1

(1) Value added and related share, rounded estimates based on non-confidential data.

Source: Eurostat (SBS)

There was strong growth, an average rate of 4.2 % per annum, in the EU-25's production index for basic chemicals (NACE Group 24.1) between 1995 and 2005, although there was some stability between 2002 and 2004 (see Figure 5.5). This was a faster average rate of annual growth than that for chemicals, rubber and plastics (NACE Subsections DG and DH) as a whole (3.1 %). Over the period 1995 to 2005, the production index for industrial gases (NACE Class 24.11) averaged 2.4 % per annum. The production index for plastics in a primary form (NACE Class 24.16) increased sharply in the period between 1995 and 2000 (an average of 5.8 % per year), before falling back and then rebounding back to 2000 levels in 2005. In contrast, the EU-25's production index for agro-chemical products (NACE Group 24.2) declined considerably, particularly from a peak output level in 1999, with an average decline of 4.4 % per annum since this date.

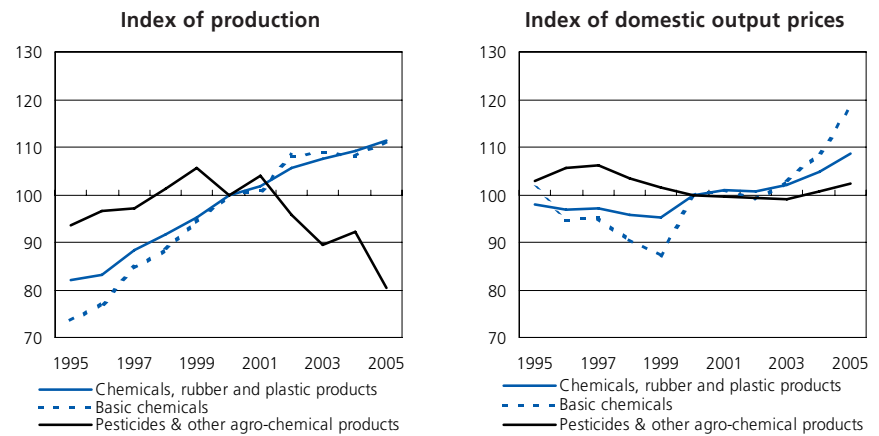
The development of EU-25 domestic output prices for basic chemicals closely followed that of oil prices. There were particularly strong output price increases in 1995 (16.2 %), 2000 (14.5 %), 2004 (6.2 %) and 2005 (8.2 %), which were all years of steeply rising oil prices.

COSTS, PRODUCTIVITY AND PROFITABILITY

Within the EU-25's basic and agro-chemicals manufacturing sector, the apparent labour productivity of basic chemicals manufacturing (EUR 105 000 per person employed) was somewhat higher than that for agro-chemicals (EUR 93 800) in 2003, but both subsectors were among the top eight most productive activities at the NACE group level within the non-financial business economy (subject to data availability), with productivity levels that were around double the industrial average (EUR 49 600 per person employed). In almost all Member States for which information is available ⁽⁶⁾, apparent labour productivity in basic chemicals manufacturing was substantially above national, industrial averages in 2003, the exceptions being Latvia and Slovakia where they were 20-25 % lower.

⁽⁶⁾ Sweden, 2002; Greece, Cyprus, Luxembourg and Malta, not available.

Figure 5.5 **Manufacture of basic chemicals; manufacture of pesticides and other agro-chemical products (NACE Groups 24.1 and 24.2)**
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

EU-25 personnel costs for basic chemicals averaged EUR 52 500 per employee in 2003, while the corresponding ratio for agro-chemicals was EUR 56 100, both above the industrial average of EUR 32 600.

EXTERNAL TRADE

There was an EU-25 trade surplus of EUR 13.6 billion in basic and agro-chemicals (CPA Groups 24.1 and 24.2) in 2005 (see Table 5.9). This surplus comprised exports to non-member countries to the value of EUR 54.6 billion (representing 34.7 % of all chemicals and chemical product exports) and imports from non-member countries to the value of EUR 41.0 billion (representing 43.6 % of all chemicals and chemical product imports).

EU-25 exports of other organic basic chemicals (CPA Class 24.14) were valued at EUR 29.1 billion in 2005, over half (53.3 %) of the value of all basic and agro-chemical products. The value of EU-25 imports of other organic basic chemicals rose sharply in 2005 to EUR 22.3 billion, reflecting rising prices for oil and gas, and resulted in the trade surplus narrowing to EUR 6.9 billion in 2005. In contrast, the trade surplus for plastics in their primary form (CPA Class 24.16) continued to widen and was valued at EUR 7.5 billion in

2005. In this respect, the relatively higher added value of polymers and the relatively low share of production costs accounted for by oil should be noted. The widening trade surplus for plastics in their primary form was based on accelerating export values to EUR 15.4 billion in 2005.

Among the Member States, Belgium and Ireland were the principal exporters of other organic basic chemicals, accounting for 21.4 % and 19.4 % of EU-25 exports (extra and intra-EU-25). Indeed, the share of such exports in industrial exports was more than six times the EU-25 average in Ireland. Almost three quarters (71.0 %) of the EU-25's exports of plastics in their primary form (both intra- and extra-EU exports) came from Germany (22.4 %), Belgium (22.1 %), the Netherlands (14.7 %) and France (11.8 %).

Table 5.9 **Basic chemicals; pesticides and other agro-chemical products (CPA Groups 24.1 and 24.2)**
External trade, EU-25, 2005

	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Basic chemicals; pesticides and other agro-chemical products	54 610	5.5	41 036	3.8	13 574	133.1
Basic chemicals	52 334	5.3	40 101	3.7	12 234	130.5
Pesticides and other agro-chemical products	2 276	0.2	936	0.1	1 340	243.2

Source: Eurostat (Comext)

5.2: PHARMACEUTICALS

The manufacture of pharmaceuticals includes the manufacture of basic pharmaceutical products (NACE Class 24.41) and pharmaceutical preparations (NACE Class 24.42), such as medicaments, vaccines, homeopathic preparations, dental fillings, bandages and dressings.

Pharmaceutical products can be separated into those that are sold on the basis of a medicinal prescription or those that are non-prescribed and can be given over the counter as self-medication products. These two types of pharmaceutical product can either be branded or generic. When the marketing period granted by patent laws and the supplementary protection certificate expire, generics (which are copies of the original products) can be produced and sold, usually at a cheaper price.

The pharmaceuticals sector is highly regulated, with European Community legislation falling into three broad categories; these concern the guarantee of public health protection to a high level, the completion of the internal market, and the simplification of the medicines authorisation system. Among recent developments, the European Commission (7) supported in March 2006 the Common Position of the Council regarding the amended proposal on improved research, development and authorisation of medicinal products for paediatric use. In May 2006, a Regulation (8) of the European Parliament and of the Council allowing compulsory licensing of patented medicines for export to countries with public health problems was adopted. In a further move, a ruling by the European Court of Justice in May 2006 (9) may restrict the availability of so-called supplementary protection certificates for some drugs.

According to the European Federation of Pharmaceutical Industries (EFPIA), turning a newly synthesised active substance into a marketable medicinal product takes an average of 12-13 years but only three in ten of these products will produce revenues that more than cover their R&D costs (see Figure 5.6 for EFPIA figures on R&D expenditure). Recent developments have, among others, led to further consolidation within the EU-25's pharmaceutical sector, such as the July 2006 takeover of Schering AG by Bayer AG.

(7) COM(2006) 118 final.
 (8) EC No 816/2006.
 (9) Case C-431/04 in respect of Massachusetts Institute of Technology.

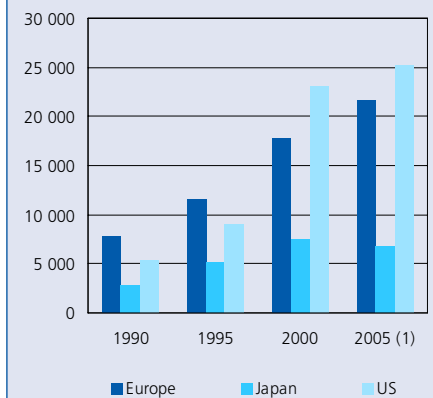
STRUCTURAL PROFILE

The pharmaceuticals manufacturing sector (NACE Group 24.4) employed 575 600 people throughout the EU-25 and generated EUR 59.2 billion of added value, almost one quarter (24.6 %) of the added value created by chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). More than four fifths (88.5 %) of the value added of the pharmaceuticals sector came from the pharmaceutical preparations manufacturing subsector (NACE Class 24.42), the remainder coming from the manufacture of basic pharmaceutical products (NACE Class 24.41).

In value added terms France (19.4 %), Germany (18.2 %) and the United Kingdom (13.6 %) were the largest producers of pharmaceutical products in the EU-25. Nevertheless, Slovenia, Sweden (2002), Belgium and Denmark were the most specialised (10) pharmaceutical producers (note that data for Ireland is not available) with contributions to national, industrial value added more than double the EU-25 average (3.5 %).

(10) Lithuania, Malta and Sweden, 2002; Greece, Ireland, Cyprus and Luxembourg, not available.

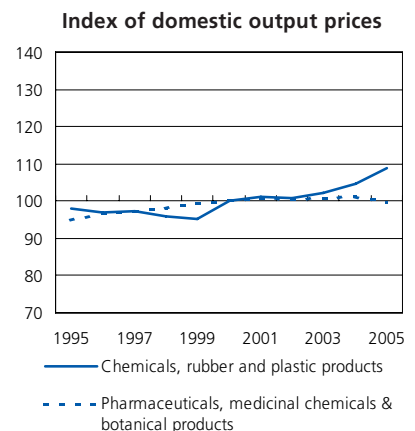
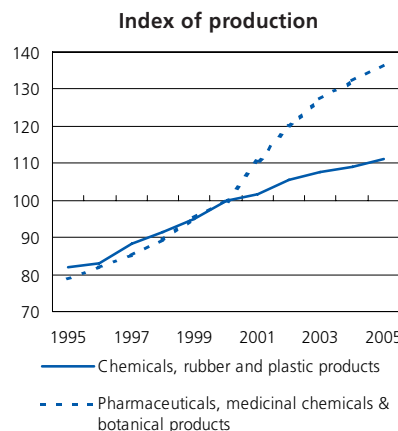
Figure 5.6
 Pharmaceuticals R&D expenditure (EUR million, at current exchange rates)



(1) Europe and US, estimates; Japan, 2004.
 Source: EFPIA member associations, <http://www.efpia.org>; JPMA; PhRMA.

There was a continuous and steady rise in the EU-25's production index for pharmaceutical products between 1995 and 2005 (at an average rate of 5.6 % per annum). Apart from a couple of years (1997 and 2000) during this period, the rate of increase in pharmaceuticals manufacturing output outpaced the average for chemicals, rubber and plastics manufacturing. In contrast, perhaps due to the increased competition from generic drugs, prices for pharmaceuticals manufacturing output remained flat between 2000 and 2005, with the index for chemicals, rubber and plastics manufacturing accelerating between 2003 and 2005 (see Figure 5.7).

Figure 5.7
 Manufacture of pharmaceuticals, medicinal chemicals and botanical products (NACE Group 24.4)
 Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

COSTS, PRODUCTIVITY AND PROFITABILITY

The apparent labour productivity of the EU-25's pharmaceutical manufacturing sector reached EUR 102 900 per person employed in 2003, putting it among the top eight most productive sectors (at the NACE group level) within the non-financial business economy (subject to data availability). The highest level of apparent labour productivity ⁽¹¹⁾ was in Ireland at EUR 337 800 per person employed. For most Member States the apparent labour productivity of the pharmaceuticals manufacturing sector was substantially higher than the national, industrial average (for example, three times higher in Hungary and four times the industrial average in Slovenia), but in Finland and Slovakia it was similar to the industrial average.

⁽¹¹⁾ Lithuania, Malta and Sweden, 2002; Greece, Cyprus and Luxembourg, not available.

Personnel costs per employee within the EU-25 pharmaceutical manufacturing sector averaged EUR 51 900 in 2003, which was 59.2 % above the industrial average. The derived wage adjusted labour productivity ratio for the pharmaceutical manufacturing sector was 198.4 % in 2003, almost one third (30.5 %) higher than the industrial average.

One of the highest profitability ratios (as measured by the gross operating rate) within the EU-25's industrial economy was recorded for the pharmaceutical manufacturing sector in 2003, at 16.8 %. The highest gross operating rates in this sector were recorded in Ireland, Sweden (2002), Hungary and Slovenia, all over 30 %. Gross operating rates for the pharmaceuticals manufacturing sector were higher than national, industrial averages in most Member States, with the exceptions of Lithuania (2002), Malta (2002), the Netherlands and Slovakia ⁽¹²⁾ where they were between 15 % and 50 % lower.

⁽¹²⁾ Lithuania, Malta and Sweden, 2002; Greece, Cyprus and Luxembourg, not available.

EXTERNAL TRADE

The value of exports of pharmaceutical products (CPA Group 24.4) rose sharply in 2005 (up 9.3 % on the level of 2004) to EUR 61.7 billion (see Table 5.10). These exports accounted for just over one third (34.2 %) of the value of exports of chemicals, rubber and plastic products in 2005 and 6.2 % of industrial exports. With only a moderate rise in the value of pharmaceutical imports in 2005 (3.5 % higher than in 2004), there was a further widening of the EU-25's trade surplus for these products to EUR 27.1 billion; overall, the trade surplus in pharmaceutical products grew 61.5 % between 2000 and 2005. The United States was by far the largest importer of EU-25 pharmaceutical products (accounting for 35.9 % of the market), followed by Switzerland (12.1 %).

Germany and Belgium were the principal exporters of pharmaceutical products, accounting for 19.8 % and 18.2 % respectively of the exports (intra- and extra-EU trade) of EU-25 Member States. France (11.6 %), the United Kingdom (11.5 %), and Ireland (10.2 %) were the only other Member States to account for a share greater than 10 %.

Table 5.10

Pharmaceuticals, medicinal chemicals and botanical products (CPA Group 24.4) External trade, EU-25, 2005

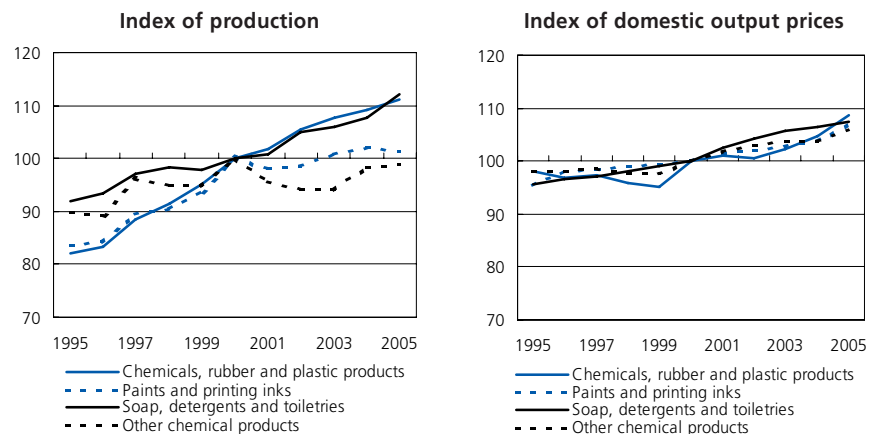
	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Pharmaceuticals, medicinal chemicals and botanical products	61 716	6.2	34 660	3.2	27 056	178.1
Basic pharmaceutical products	8 538	0.9	10 203	0.9	-1 665	83.7
Pharmaceutical preparations	52 805	5.3	24 333	2.3	28 472	217.0

Source: Eurostat (Comext)

5.3: MISCELLANEOUS CHEMICAL PRODUCTS

This subchapter covers three activities that are presented separately. The manufacture of paints, varnishes, enamels, lacquers, solvents, thinners, varnish removers, as well as printing inks (NACE Group 24.3) is the first; hereafter, referred to as paints and printing inks. The manufacture of washing and cleaning products, as well as perfumes, toiletries, cosmetics and related products (NACE Group 24.5) forms the next group; hereafter, referred to as soaps, detergents and toiletries. Finally, NACE Group 24.6 covers other chemical products, a residual grouping that includes the manufacture of photographic materials, explosives, glues and essential oils, as well as intermediate inputs for other manufacturing processes.

Figure 5.8
Miscellaneous chemical products (NACE Groups 24.3, 24.5 and 24.6)
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

Table 5.11
Miscellaneous chemical products (NACE Groups 24.3, 24.5 and 24.6)
Structural profile, EU-25, 2003

	Value added (EUR million)	Share of industrial value added (%)	Number of persons employed (thousands)	Share of industrial employment (%)
Miscellaneous chemical products (1)	42 000	2.5	640	1.8
Paints and printing inks (1)	10 800	0.6	172	0.5
Soaps, detergents and toiletries	17 331	1.0	267	0.8
Other chemical products (1)	14 100	0.8	209	0.6

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 5.12
Miscellaneous chemical products (CPA Groups 24.3, 24.5 and 24.6)
External trade, EU-25, 2005

	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Miscellaneous chemical products	36 167	3.6	15 952	1.5	20 215	226.7
Paints and printing inks	4 958	0.5	1 282	0.1	3 675	386.6
Soaps, detergents and toiletries	12 206	1.2	3 291	0.3	8 915	370.9
Other chemical products	19 004	1.9	11 379	1.1	7 625	167.0

Source: Eurostat (Comext)

The miscellaneous chemical products manufacturing sector (NACE Groups 24.3, 24.5 and 24.6) employed 640 000 people throughout the EU-25 and generated EUR 42.0 billion of added value, 17.5 % of the added value generated by the whole of the chemicals, rubber and plastics manufacturing sector (NACE Subsections DG and DH). Within the miscellaneous chemical products manufacturing sector, almost one third of the value added created in 2003 came from other chemical products manufacturing (NACE

Group 24.6) and about one quarter from paints and printing inks manufacturing (NACE Group 24.3). The largest proportion (over 40.0 %), however, came from soaps, detergents and toiletries manufacturing (NACE Group 24.5).

Table 5.13

Production value of selected paint and printing ink products (CPA Group 24.3), EU-25, 2004 (EUR million)

	Prodcom code	
Paints and varnishes; based on acrylic or vinyl polymers dispersed or dissolved in an aqueous medium	24.30.11.50	5 306
Glaziers' putty, grafting putty, resin cements, caulking compounds and other mastics	24.30.22.53	1 216
Organic composite solvents & thinners used in conjunction with coatings & inks (excl. those based on butyl acetate)	24.30.22.79	884
Black printing inks	24.30.24.50	610
Printing inks (excluding black)	24.30.24.70	3 625

Source: Eurostat (PRODCOM)

MANUFACTURE OF PAINTS AND PRINTING INKS

The paint and printing inks manufacturing subsector (NACE Group 24.3) covers the manufacture of four main categories of product: architectural coatings (interior and exterior house paints, primers and fillers etc.), coatings for industrial and consumer products, special coatings for specific applications (for example, re-painting of machines and cars, and road marking), and printing inks for different printing processes. Despite the breadth of products manufactured (see Table 5.13), they all tend to use pigments and (sometimes) dyes to make colour, and use solvents which evaporate during or after processing. In this way they tend to face similar health, safety and environmental issues.

The paint and printing inks manufacturing subsector employed 172 000 people throughout the EU-25 in 2003 and generated EUR 10.8 billion of added value, which represented 4.5 % of the value added created by chemicals, rubber and plastics (NACE Subsections DG and DH) manufacturing as a whole. A little under one third (31.0 %) of the value added generated by the EU-25's paint and printing inks manufacturing subsector came from Germany, with other significant contributions coming from the United Kingdom (14.8 %), Italy (13.7 %) and France (10.8 %). Estonia was the Member State that was most specialised in the manufacture of paints and printing inks with the added value generated accounting for 2.6 % of national, industrial value added, about twice the proportion of the EU-25 average (1.3 %).

The index of production for paints and printing inks for the EU-25 followed two distinct patterns over the period between 1995 and 2005 (see Figure 5.8). In the period until 2000, there was strong growth in output (at an average rate of 3.7 % per annum), while a period of relative stability in production followed through until 2005 (with annual growth of 0.3 % per annum). Domestic output prices for paints and printing ink products in the EU-25 rose every year between 1995 and 2005, at a relatively modest pace (on average, 1.2 % per annum).

The apparent labour productivity of those working in the EU-25's paints and printing inks manufacturing subsector was EUR 63 000 per person in 2003, while average personnel costs were EUR 42 000 per employee. The wage adjusted labour productivity ratio (the ratio of apparent labour productivity to average personnel costs) was 151 % for the EU-25, below the 170 % average for the whole of chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). The highest wage adjusted labour productivity ratios among the Member States for paint and printing inks manufacturing were recorded in the Baltic Member States (between 244 % in Lithuania and 346 % in Estonia).

The EU-25 exported EUR 5.0 billion of paints and printing inks (CPA Group 24.3) in 2005, principally to Russia (14.9 %), the United States (7.9 %), Turkey (6.5 %) and Switzerland (5.8 %). The growth in exports in 2005 (6.9 %) was very similar to that registered a year before (7.1 %). Germany accounted for a little less than one third (30.5 %) of all exports (intra- and extra-EU trade) made by EU-25 Member States in 2005, and was, by far, the leading exporter (no other Member State accounting for more than a 10 % share). Although there was also strong growth (8.5 % higher in 2005) in the value of imports of paints and printing inks to the EU-25, the trade surplus grew to EUR 3.7 billion in 2005.

MANUFACTURE OF SOAPS, DETERGENTS AND TOILETRIES

The soaps, detergents and toiletries manufacturing subsector (NACE Group 24.5) covers the manufacture of two main product categories (see Table 5.14); firstly, the manufacture of soaps and synthetic detergents (toilet, household and industrial soaps and washing products) and secondly, the manufacture of personal care products (for example, skin care, toiletries and cosmetics).

Table 5.14

Production value of selected soaps, detergents and toiletries (CPA Group 24.5), EU-25, 2004 (EUR million)

	Prodcom code	
Soap and organic surface-active products in bars	24.51.31.20	1 161
Toilet waters	24.52.11.70	3 953
Hair preparations (excluding shampoos, permanent waving and hair straightening preparations, lacquers)	24.52.17.00	2 792
Dentifrices (including toothpaste, denture cleaners)	24.52.18.50	1 128
Personal deodorants and anti-perspirants	24.52.19.50	1 288
Perfumed bath salts and other bath preparations	24.52.19.70	1 293

Source: Eurostat (PRODCOM)

The Council's Cosmetics Directive ⁽¹³⁾ of July 1976 has been the bedrock for laws relating to cosmetic products, but has been subject to amendments over the years. Recent changes, consultations and decisions have revolved around public health issues (draft guidelines ⁽¹⁴⁾ on reporting requirements regarding adverse reactions to products, the labelling of claims and the efficacy regarding sunscreen products, and the safety of hair dyes) as well as animal testing (the recently established European Partnership for Alternative Approaches to Animal Testing (EPAA) agreeing an action programme to refine, reduce and replace animal use in testing the safety of consumer products).

The soaps, detergents and toiletries manufacturing subsector employed 266 600 people throughout the EU-25 in 2003 and generated EUR 17.3 billion of added value, which represented 7.2 % of the total created within chemicals, rubber and plastics manufacturing as a whole (NACE Subsections DG and DH). Perfumes and toiletries manufacturing (NACE Class 24.52) accounted for the majority of employment (55.3 %) and added value (55.0 %) within the subsector, although this was only the case in a few Member States ⁽¹⁵⁾, notably, France, Latvia (2002), Poland and the United Kingdom. France was not only the main manufacturer of soaps, detergents and toiletries, accounting for a little more than a quarter (26.2 %) of the added value generated by this subsector within the EU-25, but was also the most specialised Member State.

There was steady growth in the EU-25 production index for soaps, detergents and toiletries over the period between 1995 and 2005 (with average growth of 2.0 % per annum), except for a small decline in 1999. For most of this period, output growth for soaps, detergents and toiletries was less than that for chemicals, rubber and plastics as a whole (where an average of 3.1 % per annum was registered), although this was not the case in 2002, 2004 and 2005 (see Figure 5.8).

⁽¹³⁾ Council Directive 76/768/EEC.

⁽¹⁴⁾ Practical implementation of Article 7a(1)(h) 2nd paragraph of Council Directive 76/768/EEC.

⁽¹⁵⁾ Latvia, Malta, Slovenia and Sweden, 2002; Czech Republic, Greece, Ireland, Luxembourg and Finland, not available.

EU-25 apparent labour productivity among those working in the soaps, detergents and toiletries subsector was EUR 65 000 per person in 2003, while average personnel costs were EUR 39 500 per employee and the wage adjusted labour productivity ratio was 164.8 %. These ratios were similar to the averages for chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). The highest wage adjusted labour productivity ratios were in several of the Member States that joined the EU in 2004, in particular the Czech Republic, Hungary, Poland and Slovakia (with rates between 205 % and 281 %).

The EU-25 trade surplus for soaps, detergents and toiletries (CPA Group 24.5) grew strongly (up 6.3 %) to reach EUR 8.9 billion in 2005, as EU-25 exports rose to the value of EUR 12.2 billion. Almost three quarters (74.9 %) of the EU-25's exports of soaps, detergents and toiletries were accounted for by perfumes and toiletries (CPA Class 24.52), for which the United States (17.6 %) and Russia (11.5 %) were the main markets. France was the leading exporter of perfumes and toilet preparations (CPA Class 24.52) in 2005, accounting for 35.7 % of the intra- and extra-EU exports of the EU-25 Member States, while Germany had the highest share of exports (24.2 %) for soap and detergents, cleaning and polishing preparations (CPA Class 24.51).

MANUFACTURE OF OTHER CHEMICAL PRODUCTS

The other chemical products manufacturing subsector (NACE Group 24.6) covers the manufacture of a range of specialty chemicals, including compressed gases (principally for the engineering industry), glues and adhesives, essential oils and explosives (including liquid gas fuels and matches). The added value generated by other chemical products manufacturing subsector was EUR 14.1 billion in 2003, representing 5.9 % of the value added for chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). Germany was the largest producer, accounting for almost one quarter (24.9 %) of the EU-25's added value. However, Belgium was the most specialised in the production of other chemical products, as this activity contributed 2.2 % to national, industrial value added in 2003, compared with an EU-25 average of 0.8 %.

During the period from 1995 to 2005, the output of other chemical products in the EU-25 increased in stages; there were relatively sharp rises in 1997 (7.7 %), 2000 (5.3 %) and 2004 (4.3 %) which were preceded and followed by years of stability or some retraction in production (see Figure 5.8). Over the period as a whole, the output of other chemical products manufacturing increased on average by 1.0 % per annum, a much slower rate than that recorded for chemicals, rubber and plastics manufacturing (an average of 3.1 %). There were some contrasting developments, as the production of essential oils (NACE Class 24.63) saw large increases in output up to 2000 (on average rising by 4.5 % per annum) followed by less strong declines until 2005 (on average by 3.3 % per annum), while for explosives (NACE Class 24.61) the opposite was true, with a slight reduction in output up until 2000, followed by moderate increases until 2005.

The apparent labour productivity ratio of the other chemical products subsector was EUR 67 600 per person employed in the EU-25 in 2003, an almost identical figure to that for chemicals, rubber and plastics manufacturing as a whole. Nevertheless, higher average personnel costs of EUR 45 000 per employee, meant that the wage adjusted labour productivity ratio (150 %) for other chemicals was below the average for the whole of chemicals, rubber and plastics manufacturing (170 %).

The value of EU-25 exports of other chemical products (CPA Group 24.6) reached EUR 19.0 billion in 2005, continuing a strong upward trend apparent since 2001. With little change in the value of imports of other chemical products (EUR 11.4 billion), there was a rapid widening in the EU-25's trade surplus for these products, which rose, on average, by 18.0 % per annum between 2000 and 2005. Most of the widening in the trade surplus can be attributed to the miscellaneous category of other chemical products n.e.c. (CPA Class 24.66) and essential oils (CPA Class 24.63), which together accounted for a little over four fifths (81.8 %) of the value of exports of other chemical products in 2005.

5.4: MAN-MADE FIBRES

This subchapter relates to the manufacture of artificial and synthetic fibres (NACE Group 24.7) in the form of tow, fibres, yarn, or strips. It excludes the manufacture of sewing thread (NACE Class 17.16) and man-made fibres derived from minerals (carbon, ceramic, glass or metal).

The man-made fibres covered within this subchapter fall into two broad groups; these are synthetic fibres (polyester, nylons and acrylic fibres) and cellulosic fibres (such as acetates and viscose) which are made from natural sources. Man-made fibres are intermediate goods that are used mainly in clothes, interior furnishings and industrial applications. The man-made fibres activity is dominated by a small number of large enterprises that tend to concentrate on speciality fibres.

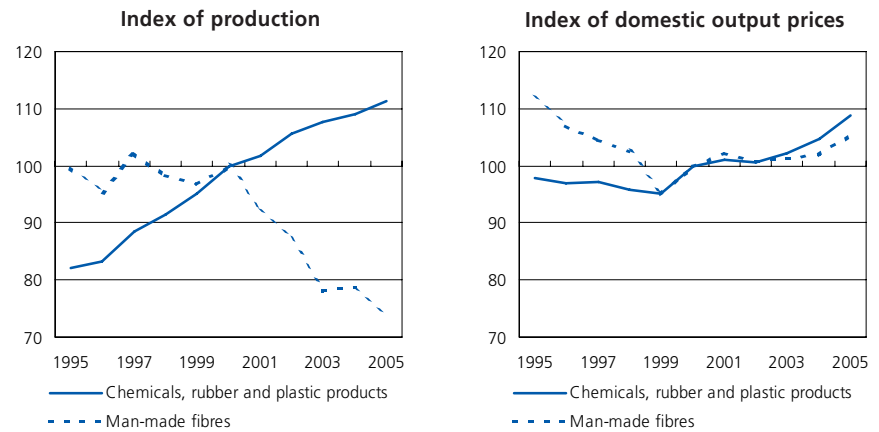
STRUCTURAL PROFILE

The man-made fibres manufacturing sector (NACE Group 24.7) in the EU-25 employed 52 600 people in 2003 and generated EUR 3.0 billion of added value, a 1.2 % share of the added value created within the whole of the chemicals, rubber and plastics (NACE Subsections DG and DH) sector. Germany was the principal producer ⁽¹⁶⁾ of man-made fibres, accounting for a little over one third (36.0 %) of EU-25's value added.

Since 2000, there has been a sharp fall in the EU-25 production index for man-made fibres (an average decline of 6.0 % per annum through until 2005). This development was in contrast with the growth in the production index for chemicals, rubber and plastics manufacturing (see Figure 5.9). The EU-25 domestic output price index for man-made fibres declined much more strongly than that for chemicals, rubber and plastics as a whole between 1995 and 1999, and the partial and uneven rebound through until 2005 was also less apparent. The output price index for man-made fibres in 2005 remained 6.2 % below its relative peak level of 1995.

⁽¹⁶⁾ Malta, the Netherlands and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, Slovenia, Finland and Sweden, not available.

Figure 5.9
Manufacture of man-made fibres (NACE Group 24.7)
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

COSTS, PRODUCTIVITY AND PROFITABILITY

Average personnel costs within the EU-25's man-made fibres manufacturing sector (NACE Group 24.7) were EUR 37 700 per employee in 2003, one of the lowest levels within the activities covered by chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH), although still considerably more (15.6 %) than the industrial average. The apparent labour productivity of the man-made fibres manufacturing sector was EUR 52 500 per person employed in 2002. The highest rate ⁽¹⁷⁾ of apparent labour productivity in 2003 was in the United Kingdom at EUR 139 800 per person employed, more than twice the national, industrial average. The gross operating rate, a measure of profitability, of the man-made fibres manufacturing sector was also highest (28.9 %) in the United Kingdom in 2003, substantially above the EU-25 average (7.5 % in 2002).

⁽¹⁷⁾ Malta, the Netherlands and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, Slovenia, Finland and Sweden, not available.

EXTERNAL TRADE

There was a much reduced EU-25 trade deficit for man-made fibres (CPA Group 24.7) in 2005, although the deficit remained the only one among the nine CPA groups that comprise chemicals, rubbers and plastics (CPA Subsections DG and DH). A second successive surge in exports of man-made fibres (41 % rises in both 2004 and then 2005) to a level of EUR 1.8 billion in 2005 led to the trade deficit being cut to EUR 129.8 million. In 2004, this surge in exports was led by a three-fold increase in exports from the Netherlands, while in 2005 it was led by a doubling of exports from Germany. This resulted in Germany becoming the principal EU-25 exporter (intra- and extra-EU exports) of man-made fibres in 2005, ahead of Italy and the Netherlands.

Table 5.15

Manufacture of man-made fibres (NACE Group 24.7)**Cost, productivity and profitability indicators, ranking of the top 5 Member States compared to EU-25 averages, 2003**

Rank	Investment in tangible goods relative to total operating costs (%) (1)	Purchases of goods and services as a share of total operating costs (%) (2)	Personnel costs as a share of total operating costs (%) (2)	Apparent labour productivity (EUR thousand) (3)	Average personnel costs (EUR thousand) (4)	Wage adjusted labour productivity (%) (3)	Gross operating rate (%) (3)
EU-25	2.6	80.8	19.2	52.5	37.7	143.4	7.5
1	Austria (6.6)	Portugal (89.4)	Netherlands (30.3)	United Kingdom (139.8)	Netherlands (62.3)	United Kingdom (300.4)	United Kingdom (28.9)
2	Hungary (5.0)	Poland (89.0)	Austria (27.1)	Netherlands (106.8)	Austria (54.8)	Poland (221.5)	Netherlands (19.5)
3	United Kingdom (3.4)	Slovakia (88.8)	Germany (20.5)	Austria (92.1)	Germany (49.5)	Portugal (177.5)	Austria (16.1)
4	Portugal (3.0)	Italy (85.1)	United Kingdom (20.4)	Germany (68.7)	United Kingdom (46.5)	Netherlands (171.4)	Poland (10.2)
5	Poland (2.6)	France (84.5)	Hungary (20.1)	Italy (43.9)	Italy (37.7)	Austria (168.1)	Portugal (7.8)

(1) Malta and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Slovenia, Finland and Sweden, not available; EU-25 is an EU average based on available data for 2002 and 2003.

(2) Malta, the Netherlands and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, Slovenia, Finland and Sweden, not available; EU-25 is an EU average based on available data for 2002 and 2003.

(3) EU-25, Malta, the Netherlands and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, Slovenia, Finland and Sweden, not available.

(4) Malta, the Netherlands and Austria, 2002; Belgium, the Czech Republic, Denmark, Greece, Ireland, Latvia, Lithuania, Luxembourg, Slovenia, Finland and Sweden, not available.

Source: Eurostat (SBS)

5.5: RUBBER

The rubber sector (NACE Group 25.1) has three distinct parts: the manufacture of rubber tyres and tubes; the retreading and rebuilding of rubber tyres; and the manufacture of other rubber products.

Rubber is produced in both a natural form (from the hevea tree) and synthetic form (combining the gases butadiene and styrene). The EU has no natural rubber, but produced an estimated 2.7 million tonnes of synthetic rubber in 2005 (a 22 % share of global production, according to the International Rubber Study Group ⁽¹⁸⁾). The applications of rubber are diverse but the main downstream markets are in the transport equipment manufacturing sector (accounting for about 65 % of production according to the European Tyre and Rubber Manufacturers Association ⁽¹⁹⁾, through uses for tyres, windscreen wipers, and engine mountings among others), as well as for mining and pharmaceutical manufacturing.

⁽¹⁸⁾ IRSG, <http://www.rubberstudy.com/statistics-geninfo.aspx>.

⁽¹⁹⁾ ETRMA, <http://www.etrma.org/public/activitiesgrg.asp>.

As well as broader policy developments and evolving legislation regarding what to do with used tyres, a Directive ⁽²⁰⁾ of the European Parliament and of the Council was adopted in November 2005 regarding a reduction of Polycyclic Aromatic Hydrocarbons (PAH) in tyres by 1 January 2010. This further amendment of Council Directive 76/769/EEC followed findings by the Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE) that confirmed the adverse health effects of PAHs. By the beginning of 2010, therefore, all tyres should have tread containing new PAH-low extender oils that do not compromise on a high level of wet grip performance.

STRUCTURAL PROFILE

The rubber products manufacturing sector employed 359 400 people across the EU-25 in 2003 and generated EUR 17.1 billion of added value, which corresponded to 7.1 % of the added value generated by activities of chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). The added value of the rubber tyres and tubes manufacturing subsector (NACE Class 25.11) accounted for almost half (46.9 %) of the rubber products manufacturing sector's value added in 2003, with other rubber products (NACE Class 25.13) accounting for the majority of output (51.1 %), dwarfing the 2.0 % contribution made by the retreading and rebuilding of rubber tyres (NACE Class 25.12).

⁽²⁰⁾ Directive 2005/69/EC.

A little over four fifths (80.8 %) of the EU-25's value added generated by the rubber products manufacturing sector was concentrated in the five largest Member States, with Germany (25.4 % of the EU-25 total) and France (20.3 %) being the largest producers. However, Luxembourg was the Member State where the value added from rubber products manufacturing made the largest proportional contribution to industrial (NACE Sections C to E) value added (11.5 % of the total) in 2003, significantly more than the average recorded across the EU-25 (just 1.0 %). Malta, Slovakia and the Czech Republic were the next most specialised Member States within this sector (see Table 5.16).

There was a similar development in the output of the EU-25's rubber products manufacturing activity to that for chemicals, rubber and plastics manufacturing as a whole between 1995 and 2000 (see Figure 5.10). However, a subsequent decline in the production index for rubber products manufacturing occurred in 2001 and 2002, while the output of chemicals, rubber and plastics as a whole continued to rise. Growth in rubber products manufacturing output resumed in 2003 and continued in 2004 and 2005.

Table 5.16

Manufacture of rubber products (NACE Group 25.1)
Value added and employment: ranking of the top 5 Member States, 2003

Rank	Highest value added (EUR million) (1)	Share in EU-25 value added (%) (1)	Highest number of persons employed (thousands) (2)	Share in EU-25 employment (%) (2)	Highest share of national industrial value added (%) (3)	Highest share of national industrial employment (%) (4)
1	Germany (4 333.3)	25.4	Germany (78.5)	21.8	Luxembourg (11.5)	Luxembourg (10.0)
2	France (3 467.1)	20.3	France (70.6)	19.6	Malta (3.9)	Malta (2.7)
3	United Kingdom (2 251.2)	13.2	Italy (47.2)	13.1	Slovakia (2.0)	France (1.7)
4	Italy (2 132.5)	12.5	United Kingdom (33.6)	9.3	Czech Republic (2.0)	Slovakia (1.5)
5	Spain (1 597.9)	9.4	Spain (33.2)	9.2	Slovenia (1.8)	Czech Republic (1.3)

(1) Malta and Sweden, 2002; Greece, not available.

(2) Sweden, provisional; Malta, 2002; Greece, not available.

(3) Malta and Sweden, 2002; Greece and Ireland, not available.

(4) Sweden, provisional; Malta, 2002; Greece and Ireland, not available.

Source: Eurostat (SBS)

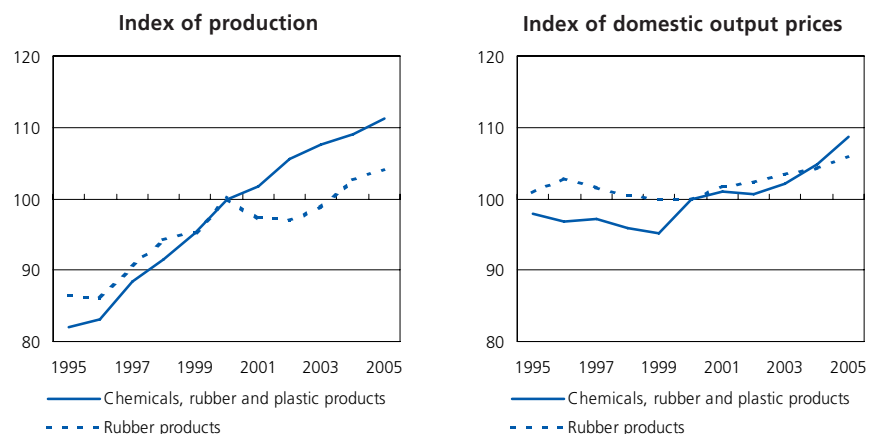
After a period of stability in the domestic output price index for EU-25 rubber products manufacturing for most years between 1995 and 2000, there was a subsequent, steady increase (with prices rising on average by 1.1 % per annum through until 2005). The development of the domestic output price index reflected developments in the price of natural rubber and petroleum costs for synthetic rubber (such as butadiene rubber).

COSTS, PRODUCTIVITY AND PROFITABILITY

Each person employed in the EU-25's rubber products manufacturing sector generated an average of EUR 47 500 of value added in 2003, which was some EUR 2 100 per person less than the average recorded for total industry. Personnel costs in the rubber products manufacturing sector averaged EUR 33 500 per employee in 2003, and were similar to the EU-25 industrial average, although substantially lower than the chemicals, rubber and plastics manufacturing average (EUR 39 900 per employee). The wage adjusted labour productivity ratio for the rubber products manufacturing sector was 141.6 % in 2003 for the EU-25, much lower than the average (170 %) for chemicals, rubber and plastics manufacturing. Nevertheless, in the Czech Republic, Latvia, Portugal and Slovenia the apparent labour productivity and wage adjusted labour productivity ratios for rubber products manufacturing were substantially higher (between 20 % and 70 %) than national, industrial averages.

Figure 5.10

Manufacture of rubber products (NACE Group 25.1)
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

The profitability of the EU-25's rubber products manufacturing sector, as measured by the gross operating rate, was almost in line with the industrial average in 2003 (9.9 % compared with 10.3 %). The highest gross operating rates for the rubber products manufacturing sector were recorded in Malta (2002), Finland and Portugal in 2003, at levels between 75 % and 200 % higher than national, industrial averages⁽²⁷⁾.

EXTERNAL TRADE

Exports of rubber products (CPA Group 25.1) from the EU-25 were valued at EUR 7.1 billion in 2005, a 4.0 % share of the value of exports from the chemical, rubber and plastics sector as a whole (CPA Subsections DG and DH). Imports of rubber products to the EU-25 were valued at EUR 6.9 billion in 2005 (see Table 5.18). Since 2000, this sector has generally provided a small trade surplus (the exception being in 2003). The

make-up of this surplus, however, reflects two distinct trends; from their relatively balanced trade positions in 2000, there has been a steady rise in the trade surplus of other rubber products (CPA Class 25.13) through to 2005 (reaching EUR 810 million) and a widening trade deficit (reaching EUR 601 million in 2005) for rubber tyres and tubes (CPA Class 25.11); there is almost no external trade in retreaded and rebuilt tyres (CPA Class 25.12).

The main exporters of rubber products in 2005 were Germany (23.7 % of intra- and extra-EU exports by EU-25 Member States) and France (14.8 %), and these two Member States had the two largest trade surpluses in these goods (EUR 1.1 billion each). The respective trade surpluses for rubber products of the Czech Republic, Poland and Slovakia have been widening rapidly since 2000.

⁽²⁷⁾ Malta and Sweden, 2002; Greece, not available.

Table 5.17

Production value of selected rubber products (CPA Group 25.1), EU-25, 2004 (EUR million)

	Prodcom code(s)	
New pneumatic rubber tyres for motor cars (incl. for racing cars)	25.11.11.00	8 728
New pneumatic rubber tyres for motorcycles and scooters with rims	25.11.12.35 and 25.11.12.37	349
New pneumatic rubber tyres for bicycles	25.11.12.60	38
New pneumatic rubber tyres for buses or lorries	25.11.13.55 and 25.11.13.57	4 409
New pneumatic rubber tyres for agricultural or forestry vehicles	25.11.14.04	756
Retreaded tyres of rubber (1)	25.12.10.30, 25.12.10.50 and 25.12.10.90	901
Compounded rubber unvulcanised (incl. with carbon black or silica and rubber solutions, dispersions)	25.13.20.13, 25.13.20.15 and 25.13.20.19	2 439
Forms and articles of unvulcanised rubber (incl. rods; tubes; profile shapes; discs and rings) (excl. camel-back; strips for retreading tyres)	25.13.20.30	545
Plates, sheets and strip of vulcanized rubber	25.13.20.70	731
Extruded solid rubber rods and profiles and rubber rods and profiles of cellular vulcanised rubber	25.13.20.83 and 25.13.20.87	1 305
Rubber tubing not reinforced	25.13.30.30	679
Rubber hose reinforced or combined with other materials	25.13.30.55, 25.13.30.57 and 25.13.30.59	1 527
Rubber hose assemblies	25.13.30.70	561
Rubber belts	25.13.40.30, 25.13.40.50, 25.13.40.75 and 25.13.40.79	1 585
Hygienic or pharmaceutical articles of rubber (incl. sheath contraceptives, teats; nipple shields and similar articles for babies)	25.13.71.50, 25.13.71.70 and 25.13.71.90	695
Floor coverings and mats of vulcanised rubber; non-cellular	25.13.72.00	399
Seals; of vulcanised rubber (2)	25.13.73.23	1 934
Rubber-to-metal bonded articles for tractors and motor vehicles	25.13.73.45	1 964
Moulded rubber articles for tractors and motor vehicles	25.13.73.47	1 756

(1) 25.12.10.50, estimated.

(2) Estimated.

Source: Eurostat (PRODCOM)

Table 5.18

Rubber products (CPA Group 25.1)
External trade, EU-25, 2005

	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Rubber products	7 138	0.7	6 881	0.6	257	103.7
New and used rubber tyres and tubes	3 402	0.3	4 003	0.4	-601	85.0
Retreaded pneumatic tyres, of rubber	56	0.0	8	0.0	48	684.4
Other rubber products	3 680	0.4	2 870	0.3	810	128.2

Source: Eurostat (Comext)

5.6: PLASTICS

This subchapter covers the manufacture of plastic products (NACE Group 25.2), including plastic sheets, pipes and tubes; plastic packaging goods (such as bags, containers and bottles); plastic products for the construction sector (such as doors, frames and baths); and other plastic products (such as insulating and lighting fittings). Note that the manufacture of plastic games, toys, footwear, furniture and linoleum are not considered as part of this sector.

Polyvinylchloride (PVC), high density polyethylene (HDPE), low density polyethylene (LDPE) and polypropylene (PP) are four of the main primary forms of plastics (included as part of Subchapter 5.1). These primary forms of plastic are converted into a myriad of products for other sectors of the economy, principally by a number of small and medium-sized enterprises. According to the Association of Plastics Manufacturers ⁽²²⁾, over one third (37 %) of plastics were used as packaging in 2003 in Western Europe ⁽²³⁾, by far the single largest end-use, ahead of building and construction (19 %), electrical and electronic applications (9%), and other household/domestic applications (20 %).

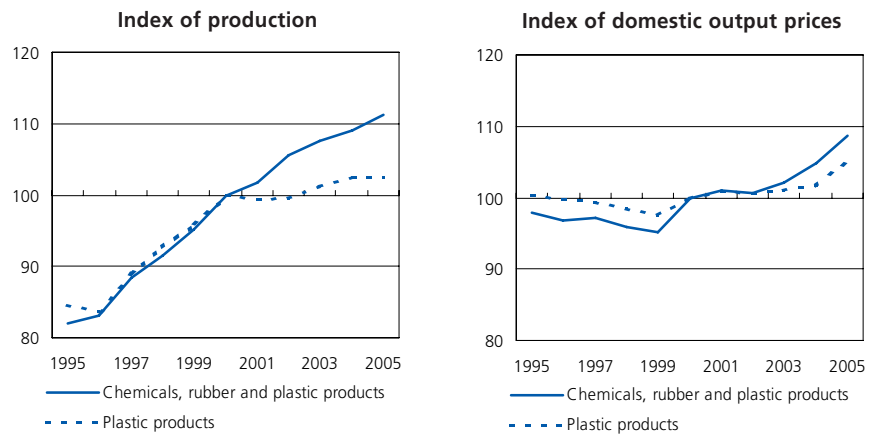
STRUCTURAL PROFILE

The plastics manufacturing sector (NACE Group 25.2) employed 1.3 million persons across the EU-25 in 2003, corresponding to about one in three people (36.8 %) within the chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH) workforce. The added value generated by the plastics manufacturing sector was EUR 55.5 billion in 2003, corresponding to a little less than one quarter (23.0 %) of the value added of chemicals, rubber and plastics manufacturing activities in the EU-25.

⁽²²⁾ APME, <http://www.plasticseurope.org>.

⁽²³⁾ EU-15, Switzerland and Norway.

Figure 5.11
Manufacture of plastic products (NACE Group 25.2)
Evolution of main indicators, EU-25 (2000=100)



Source: Eurostat (STS)

The largest activity within the plastics manufacturing sector in 2003 was that of other plastics manufacturing (NACE Class 25.24), which generated a little over two fifths (41.6 %) of the value added of the sector. A further quarter (24.3 %) of the value added of the plastics manufacturing sector came from the activity of plastic plates, sheets, tubes and profiles manufacturing (NACE Class 25.21), with the activities of plastic packing goods manufacturing and builders' ware of plastic manufacturing providing the remainder.

The added value generated by the plastics manufacturing sector in Germany represented more than one quarter (27.7 %) of the added value of the EU-25's plastics manufacturing sector in 2003, the highest share among Member States ⁽²⁴⁾ and significantly more than the next highest contribution from the United Kingdom (15.5 %).

⁽²⁴⁾ Malta and Sweden, 2002; Greece, unavailable.

The EU-25's plastics manufacturing sector contributed 3.3 % to industrial (NACE Sections C to E) value added in 2003. Using this share as a benchmark for relative specialisation, Luxembourg, Denmark and Slovenia were the Member States most specialised in the manufacture of plastics (see Table 5.19).

There was a very similar development in the output of the EU-25's plastics manufacturing activity to that for chemicals, rubber and plastics manufacturing between 1996 and 2000 (see Figure 5.11). However, the output of chemical, rubber and plastics manufacturing continued to increase steadily after 2000, whereas plastics manufacturing output at first stabilised and then started to grow relatively slowly.

Table 5.19

Manufacture of plastic products (NACE Group 25.2)
Value added and employment: ranking of the top 5 Member States, 2003

Rank	Highest value added (EUR million) (1)	Share in EU-25 value added (%) (1)	Highest number of persons employed (thousands) (2)	Share in EU-25 employment (%) (2)	Highest share of national industrial value added (%) (3)	Highest share of national industrial employment (%) (4)
1	Germany (15 357.4)	27.7	Germany (302.2)	23.1	Luxembourg (6.2)	Luxembourg (5.2)
2	United Kingdom (8 591.1)	15.5	United Kingdom (187.3)	14.3	Denmark (3.9)	United Kingdom (5.0)
3	France (7 755.8)	14.0	France (173.7)	13.3	Slovenia (3.6)	Denmark (4.6)
4	Italy (7 506.7)	13.5	Italy (164.2)	12.5	United Kingdom (3.4)	France (4.2)
5	Spain (3 854.5)	6.9	Poland (99.0)	7.6	Germany (3.4)	Germany (3.9)

(1) Malta and Sweden, 2002; Greece, not available.

(2) Sweden, provisional; Malta, 2002; Greece, not available.

(3) Malta and Sweden, 2002; Greece and Ireland, not available.

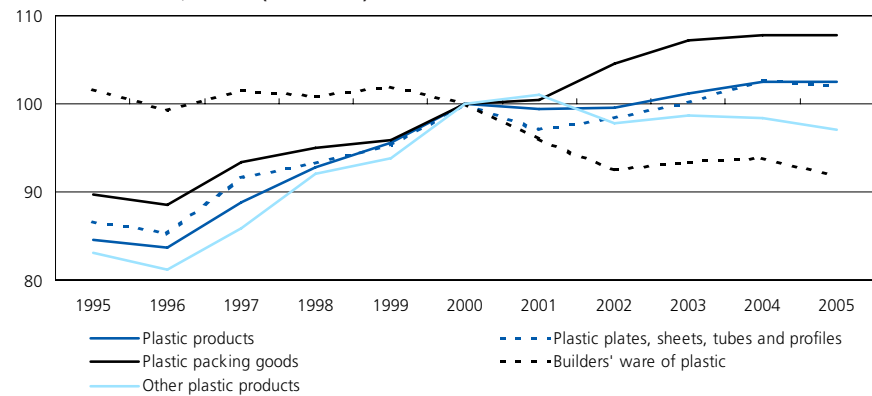
(4) Sweden, provisional; Malta, 2002; Greece and Ireland, not available.

Source: Eurostat (SBS)

Within the plastics manufacturing sector, there were some highly contrasting developments in the production indices of the various activities. Between 1995 and 2000, the main exception to the pattern of steady upward growth was the stability in the output of builders' ware of plastic (NACE Class 25.23). There were stronger differences in the development of output between the various plastic products after 2000 (see Figure 5.12). The output of builders' ware of plastic declined strongly in 2001 and 2002, and although there was a small upturn in the next couple of years, it declined again in 2005. In contrast, the steady growth in plastic packing goods (NACE Class 25.22) continued through until 2003, to be followed by a couple of years of unchanged output levels.

The development of the domestic output price index for plastic products was also very similar to that of chemicals, rubber and plastic products as a whole in the period 1995 to 1999, but the subsequent upturn in prices in 2000 was much weaker for plastic products, a trend which was re-enforced by relatively modest price increases between 2003 and 2005.

Figure 5.12
Manufacture of plastic products (NACE Group 25.2)
Production index, EU-25 (2000=100)



Source: Eurostat (STS)

Table 5.20
Production value of selected plastic products (CPA Group 25.2), EU-25, 2004 (EUR million)

	Prodcom code(s)	
Monofilament with any cross-sectional dimension > 1 mm	25.21.10.50, 25.21.10.70 and 25.21.10.90	4 361
Artificial guts (sausage skins) of hardened protein or cellulosic materials	25.21.21.30	658
Rigid tubes; pipes and hoses	25.21.21.55, 25.21.21.57 and 25.21.21.70	3 615
Plastic sacks and bags (incl. cones) (excl. of polymers of ethylene)	25.22.12.00	1 639
Plastic boxes; cases; crates and similar articles for the conveyance or packing of goods (1)	25.22.13.00	5 048
Plastic carboys; bottles; flasks and similar articles for the conveyance or packing of goods; of a capacity > 2 litres	25.22.14.70	1 394
Plastic spools; cops; bobbins and similar supports	25.22.15.23	1 340
Plastic caps and capsules for bottles	25.22.15.25	1 032
Plastic floor, wall or ceiling coverings (2)	25.23.11.55, 25.23.11.59 and 25.23.11.90	1 695
Plastic baths; shower-baths, wash-basins, lavatory seats and covers, bidets, lavatory pans, flushing cisterns etc.	25.23.12.50, 25.23.12.70 and 25.23.12.90	2 872
Plastic reservoirs; tanks; vats; intermediate bulk and similar containers; of a capacity > 300 litres	25.23.13.00	1 153
Builder's fittings and mountings intended for permanent installation of plastics	25.23.15.50	1 904
Plastic articles of apparel and clothing accessories (incl. gloves; raincoats; aprons; belts and babies' bibs) (excl. headgear)	25.24.10.00	487
Office or school supplies of plastic (incl. paperweights; paper-knives; blotting pads; pen-rests; and book marks)	25.24.27.00	1 286
Other articles made from sheet	25.24.28.50	1 408
Plastic parts for machinery and mechanical appliances excl. internal combustion piston engines, gas turbines (1)	25.24.90.10	2 099
Plastic parts for electrical machinery and equipment; sound recorders and reproducers; television image and sound recorders and reproducers (1)	25.24.90.93	1 417

(1) Estimated.

(2) 25.23.11.59, estimated.

Source: Eurostat (PRODCOM)

COSTS, PRODUCTIVITY AND PROFITABILITY

Each person employed in the EU-25's plastics manufacturing sector generated an average of EUR 42 400 of value added in 2003, some EUR 7 200 below the industrial (NACE Sections C to E) average. Average personnel costs were EUR 29 400 per employee in 2003, the lowest level among the nine NACE groups that comprise the activities of chemicals, rubber and plastics manufacturing. The added value per person employed in the plastics manufacturing sector covered average personnel costs by 144.4 % in 2003, which was below the industrial average (152 %).

The apparent labour productivity of those working in the plastics manufacturing sector was highest ⁽²⁵⁾ in Luxembourg in 2003, with an average added value per person of EUR 84 300, which was almost double the EU-25 average. Luxembourg was also one of the few Member States, along with Estonia, Lithuania and Portugal, where the apparent labour productivity of the plastics sector was between 10 % and 25 % higher than the national, industrial average.

As an indicator of profitability, the gross operating rate of the plastics manufacturing sector in the EU-25 was 10.5 % in 2003, a similar figure to the industrial average (10.3 %). In Germany, Luxembourg, Hungary, Malta (2002) and Slovenia, the gross operating rate of this sector was at least 20 % higher than respective national, industrial averages, which contrasted with the situation in the Estonia, Poland and the United Kingdom where the gross operating rate was between 10 % and 20 % lower.

⁽²⁵⁾ Malta and Sweden, 2002; Greece, unavailable.

EXTERNAL TRADE

The EU-25's trade surplus in plastic products (CPA Group 25.2) widened to EUR 4.3 billion in 2005, continuing a trend of a widening trade surplus that was apparent since 2000. Most of the surplus came from plastic plates, sheets, tubes and profiles (CPA Class 25.21), where exports outweighed imports by EUR 3.6 billion in 2005 (see Table 5.21). The widening surplus for plastic products was driven by a higher growth in exports (to EUR 16.1 billion) than imports, a characteristic that was common to three of the four CPA classes that make-up this group of products, the exception being packaging products of plastics (CPA Class 25.22), for which the small trade deficit widened. The value of the exports of plastic plates, sheets, tubes and profiles represented 42.5 % of plastic products' exports in 2005, with exports of other plastic products (CPA Class 25.24) accounting for another 34.6 %.

Germany was the principal EU-25 exporter of plastic products, accounting for 27.4 % of the total intra- and extra-EU exports in 2005. Germany also had the largest trade surplus in plastic products among the Member States, which widened to EUR 8.8 billion in 2005. The only other Member States with significant trade surpluses in plastic products in 2005 were Italy (EUR 4.1 billion) and Belgium (EUR 1.3 billion).

Table 5.21
Plastic products (CPA Group 25.2)
External trade, EU-25, 2005

	Extra-EU exports (EUR million)	Share of EU industrial exports (%)	Extra-EU imports (EUR million)	Share of EU industrial imports (%)	Trade balance (EUR million)	Cover ratio (%)
Plastic products	16 137	1.6	11 792	1.1	4 345	136.8
Plastic plates, sheets, tubes and profiles	6 851	0.7	3 297	0.3	3 554	207.8
Packaging products of plastics	2 201	0.2	2 472	0.2	-271	89.1
Builders' ware of plastics	1 400	0.1	689	0.1	711	203.2
Other plastic products	5 581	0.6	5 333	0.5	248	104.6

Source: Eurostat (Comext)

Table 5.22

Manufacture of chemicals and chemical products (NACE Division 24)
Main indicators, 2003 (1)

	EU-25	BE	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT
Turnover (EUR million) (2)	602 000	33 703	3 899	7 863	141 446	242	:	39 341	113 683	29 435	69 590	175	125	394	550	3 908	58
Production (EUR million)	:	31 869	3 719	7 904	124 032	202	:	35 594	101 835	28 927	64 405	151	110	398	369	3 693	58
Value added at factor cost (EUR million) (2)	169 000	9 585	1 024	3 231	41 096	52	:	9 835	25 355	15 957	15 639	58	51	67	98	1 364	20
Gross operating surplus (EUR million) (2)	78 400	4 864	605	1 527	12 312	32	:	4 284	9 580	14 794	6 386	25	29	27	44	851	8
Purchases of goods and services (EUR million)	:	25 503	2 946	5 005	99 843	190	:	30 551	88 234	13 750	53 602	120	77	339	463	2 634	39
Gross investment in tangible goods (EUR million) (3)	:	1 609	367	380	6 144	8	:	1 667	3 658	774	2 842	10	13	44	21	557	8
Number of persons employed (thousands) (2)	1 890	70	44	30	487	3	:	139	289	24	203	2	4	6	1	35	1
Personnel costs (EUR million) (2)	90 400	4 722	419	1 705	28 783	21	:	5 551	15 775	1 163	9 254	32	21	40	54	513	12
App. labour productivity (EUR thous./pers. emp.) (2)	89.3	136.3	23.4	108.7	84.4	19.1	:	70.6	87.7	674.8	77.0	32.2	11.4	11.4	67.4	39.5	23.4
Average personnel costs (EUR thous./employee) (2)	48.3	67.7	9.9	57.4	59.2	7.6	:	40.4	54.6	49.3	47.5	18.1	4.8	6.8	37.3	15.0	15.0
Wage adjusted labour productivity (%) (2)	185.0	201.2	237.2	189.3	142.4	252.1	:	174.5	160.6	1 369.2	162.1	178.4	236.5	167.1	180.7	264.1	155.7
Gross operating rate (%) (2)	13.0	14.4	15.5	19.4	8.7	13.1	:	10.9	8.4	50.3	9.2	14.6	23.4	6.8	7.9	21.8	13.7
Investment per person employed (EUR thousand) (3)	:	23.5	8.4	12.8	12.6	2.8	:	12.0	12.6	32.7	14.0	5.4	2.7	7.5	14.6	16.1	9.1
	NL	AT	PL	PT	SI	SK	FI	SE	UK	BG	HR	RO	TR	IS	LI	NO	CH
Turnover (EUR million) (4)	40 509	7 626	9 447	4 091	2 085	1 050	5 780	13 539	71 105	813	:	1 889	:	:	:	4 779	:
Production (EUR million) (4)	36 824	6 923	8 621	3 760	2 004	998	5 240	13 946	62 509	771	:	1 774	:	:	:	4 676	:
Value added at factor cost (EUR million) (5)	8 294	2 511	2 608	1 039	840	185	1 651	5 711	21 604	196	:	391	:	:	:	1 599	:
Gross operating surplus (EUR million) (5)	4 406	1 167	1 587	473	467	69	824	3 445	10 104	111	:	166	:	:	:	762	:
Purchases of goods and services (EUR million) (4)	31 790	5 409	7 157	3 096	1 274	852	4 193	7 866	49 227	623	:	1 537	:	:	:	3 404	:
Gross investment in tangible goods (EUR million) (4)	2 073	523	558	188	230	46	268	816	3 018	69	:	252	:	:	:	267	:
Number of persons employed (thousands) (4)	68	26	101	22	14	16	19	42	235	26	:	62	:	:	:	13	:
Personnel costs (EUR million) (5)	3 888	1 345	1 020	566	372	116	857	2 266	11 500	86	:	226	:	:	:	837	:
App. labour productivity (EUR thous./pers. emp.) (5)	122.8	95.7	25.9	47.8	60.1	11.7	84.9	131.4	91.9	7.5	:	6.4	:	:	:	118.7	:
Average personnel costs (EUR thous./employee) (5)	57.3	51.6	10.5	26.3	26.8	7.4	44.1	52.5	49.2	3.3	:	3.7	:	:	:	62.2	:
Wage adjusted labour productivity (%) (5)	214.3	185.3	247.0	181.8	224.4	159.5	192.5	250.1	186.8	223.1	:	172.3	:	:	:	191.0	:
Gross operating rate (%) (5)	10.9	15.3	16.8	11.6	22.4	6.6	14.3	27.0	14.2	13.6	:	8.8	:	:	:	15.9	:
Investment per person employed (EUR thousand) (4)	30.7	19.9	5.5	8.7	16.4	2.9	13.8	19.3	12.8	2.6	:	4.1	:	:	:	19.8	:

(1) Malta, 2002. (2) EU-25, rounded estimate based on non-confidential data. (3) Belgium and Latvia, 2002. (4) Sweden, provisional. (5) Sweden, 2002.
Source: Eurostat (SBS)

Table 5.23

Manufacture of rubber and plastic products (NACE Division 25)
Main indicators, 2003 (1)

	EU-25	BE	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT
Turnover (EUR million)	228 358	7 439	4 486	3 187	57 575	200	:	17 770	38 314	1 292	35 356	78	110	356	1 464	2 572	90
Production (EUR million)	:	6 892	4 245	3 134	52 372	187	:	16 494	35 637	1 236	34 438	71	109	363	1 250	2 082	92
Value added at factor cost (EUR million)	72 592	1 964	1 180	1 325	19 691	48	:	5 452	11 223	458	9 639	33	31	74	483	637	57
Gross operating surplus (EUR million)	23 712	692	631	409	5 264	21	:	1 819	2 621	151	3 748	12	20	43	159	295	30
Purchases of goods and services (EUR million)	:	5 442	3 436	1 815	37 747	156	:	12 617	26 403	831	26 087	47	83	317	995	1 957	33
Gross investment in tangible goods (EUR million) (2)	:	305	365	229	2 364	13	:	890	1 563	48	1 840	9	16	21	35	242	9
Number of persons employed (thousands)	1 670	27	70	23	381	4	:	124	244	10	211	1	3	8	6	40	2
Personnel costs (EUR million)	48 880	1 272	549	916	14 426	27	:	3 634	8 602	307	5 891	21	11	32	306	342	26
App. labour productivity (EUR thous./pers. emp.)	43.5	71.4	16.8	58.8	51.7	13.0	:	43.9	45.9	47.1	45.6	25.9	9.2	9.6	82.5	15.9	31.0
Average personnel costs (EUR thous./employee)	30.3	47.2	8.2	40.9	38.3	7.3	:	29.9	35.3	31.8	30.6	16.8	3.3	4.1	52.3	8.7	14.5
Wage adjusted labour productivity (%)	143.7	151.3	205.4	143.7	135.2	177.9	:	146.5	130.2	148.3	149.1	153.7	274.2	231.3	157.7	181.9	213.5
Gross operating rate (%)	10.4	9.3	14.1	12.8	9.1	10.6	:	10.2	6.8	11.7	10.6	14.7	18.1	12.0	10.8	11.5	33.3
Investment per person employed (EUR thousand) (2)	:	11.2	5.2	10.1	6.2	3.6	:	7.2	6.4	5.0	8.7	7.0	4.6	2.8	6.0	6.0	4.9
	NL	AT	PL	PT	SI	SK	FI	SE	UK	BG	HR	RO	TR	IS	LI	NO	CH
Turnover (EUR million) (3)	6 344	4 474	6 474	2 211	1 161	1 152	2 438	3 529	28 603	318	:	1 115	:	:	:	943	:
Production (EUR million) (3)	5 840	3 956	5 998	2 097	1 014	1 070	2 370	3 329	27 242	307	:	962	:	:	:	867	:
Value added at factor cost (EUR million) (4)	1 978	1 599	1 768	717	337	264	977	1 231	10 842	72	:	253	:	:	:	321	:
Gross operating surplus (EUR million) (4)	658	544	1 034	327	150	133	399	325	3 965	39	:	146	:	:	:	77	:
Purchases of goods and services (EUR million) (3)	4 372	2 958	4 927	1 527	827	905	1 528	2 139	17 687	269	:	906	:	:	:	629	:
Gross investment in tangible goods (EUR million) (3)	296	220	436	157	49	77	140	200	1 247	37	:	145	:	:	:	50	:
Number of persons employed (thousands) (3)	34	28	124	25	13	19	16	24	221	20	:	42	:	:	:	6	:
Personnel costs (EUR million) (4)	1 320	1 055	735	391	186	132	586	906	6 877	34	:	107	:	:	:	244	:
App. labour productivity (EUR thous./pers. emp.) (4)	58.6	57.9	14.3	29.3	25.8	14.0	61.0	49.0	49.1	3.7	:	6.0	:	:	:	56.5	:
Average personnel costs (EUR thous./employee) (4)	38.8	38.6	6.8	16.1	15.1	7.0	36.9	36.9	31.9	1.8	:	2.6	:	:	:	43.1	:
Wage adjusted labour productivity (%) (4)	151.2	149.9	208.9	181.8	171.0	200.0	165.4	133.0	154.0	200.3	:	233.5	:	:	:	131.1	:
Gross operating rate (%) (4)	10.4	12.2	16.0	14.8	13.0	11.5	16.4	9.0	13.9	12.1	:	13.1	:	:	:	8.1	:
Investment per person employed (EUR thousand) (3)	8.8	8.0	3.5	6.4	3.8	4.1	8.7	8.2	5.6	1.9	:	3.4	:	:	:	8.8	:

(1) Malta, 2002. (2) Belgium, 2002. (3) Sweden, provisional. (4) Sweden, 2002.
Source: Eurostat (SBS)

