Chemicals, rubber and plastics

The chemicals, rubber and plastics manufacturing sector transforms raw materials, notably oils and minerals, into a wide variety of substances. Arguably, the fractions of hydrocarbons that are derived from oil are the most widely used ingredient for chemical, rubber and plastic goods. The European enterprises within this sector, that account for about 30 % of global chemical sales (see Figure 5.1) and include a large proportion of the world's largest enterprises (groups) (see Table 5.1), operate within a highly regulated framework that extends from the supply of the raw materials, through their processing to the treatment of waste.

Since the previous edition of this publication, the main legislative development for the chemicals, rubber and plastics sector has been the adoption of the new regulation for chemicals (REACH - Registration, Evaluation and Authorisation of CHemical substances) in December 2006 [1], which aims to improve the protection of human health and the environment while maintaining competitiveness, and enhancing the innovative capability of the EU chemicals sector, through the better and earlier identification of the properties of chemical substances. REACH entered into force on the 1st June 2007. All enterprises which manufacture or import more than one tonne of a chemical substance per year will be required to register it in a central database administered by the new EU Chemicals Agency based in Helsinki. The European Commission also proposed [2] in June 2007 that current laws on the classification, labelling and packaging of chemical substances be aligned with the United Nations' Globally Harmonised System (GHS), complementing the new REACH regulation.

Regarding the issue of competitiveness, the European Commission formally decided in June 2007 to set up the High Level Group on the Competitiveness of the Chemicals Industry in the European Union [3] that will look to strengthen the position of the European chemicals sector through policy recommendations based on statistical and economic analyses.

[1] Regulation 1907/2006 and Directive 2006/121/EC.

[2] COM(2007) 355.

[3] 2007/418/EC.

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-27, 2006

		World ranking	Chemical sales (EUR million) (1)	Chemical sales as a proportion of total sales (%)
BASF	DE	1	39 436	75
Royal Dutch / Shell	UK / NL	3	28 915	11
Ineos Group	UK	5	26 574	100
Total	FR	8	19 124	12
Bayer	DE	10	15 870	55
Degussa	DE	15	10 925	100
Basell	NL	16	10 501	100
Akzo Nobel	NL	17	10 024	73
Air Liquide	FR	19	9 634	88
DSM	NL	24	8 385	100

(1) Data in US dollars converted to EUR, using the average exchange rate of EUR 1 = 1.2556 USD for 2006.
Source: Chemical and engineering news, 23th July 2007, 85(30), p13-16, http://pubs.acs.org/cen

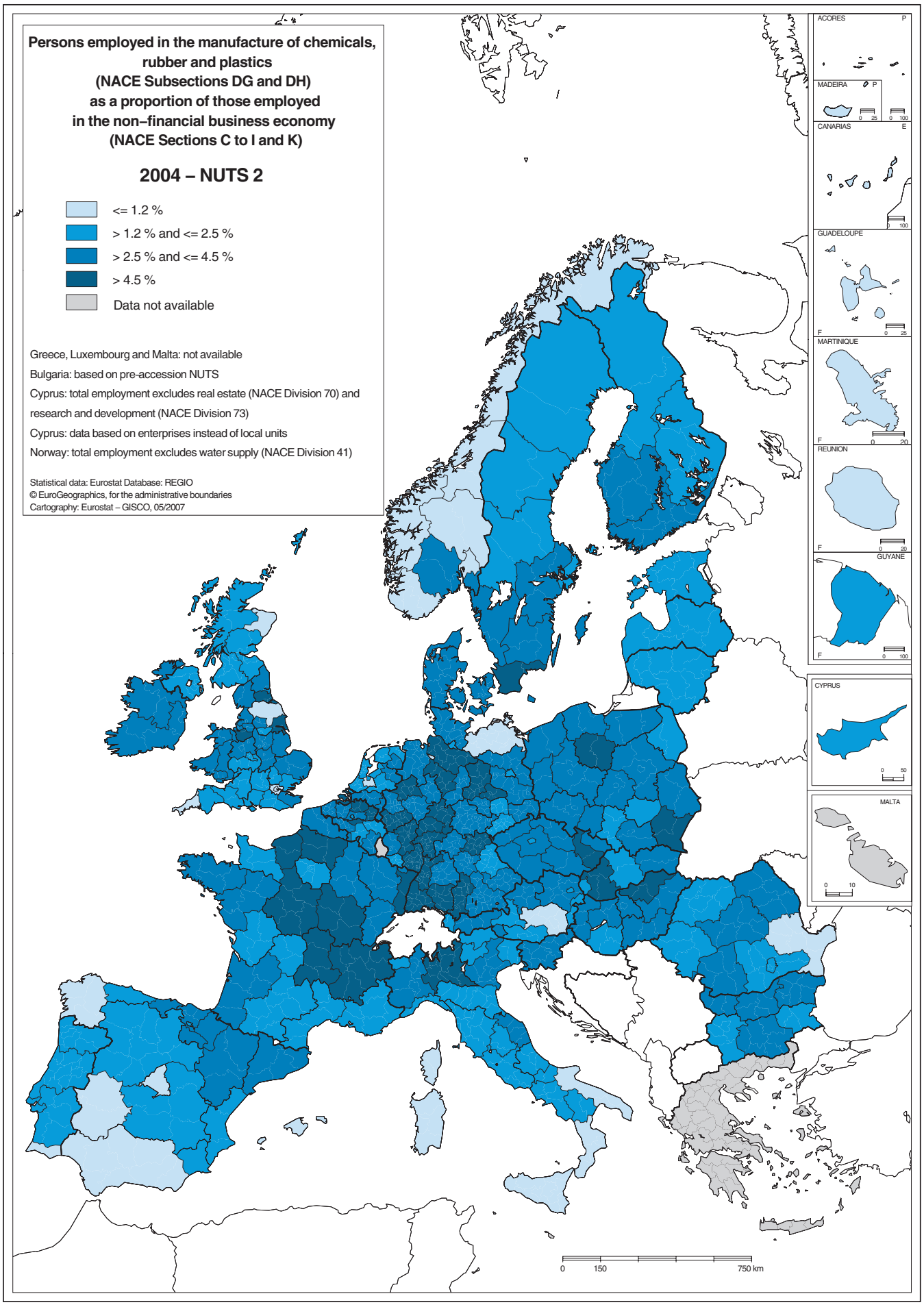
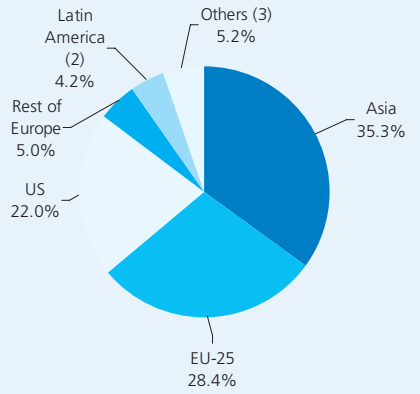

Persons employed in the manufacture of chemicals, rubber and plastics
(NACE Subsections DG and DH)
as a proportion of those employed
in the non–financial business economy
(NACE Sections C to I and K)
2004 – NUTS 2
<= 1.2 %
> 1.2 % and <= 2.5 %
> 2.5 % and <= 4.5 %
> 4.5 %
Data not available
Greece, Luxembourg and Malta: not available
Bulgaria: based on pre-accession NUTS
Cyprus: total employment excludes real estate (NACE Division 70) and research and development (NACE Division 73)
Cyprus: data based on enterprises instead of local units
Norway: total employment excludes water supply (NACE Division 41)
Statistical data: Eurostat Database: REGIO
© EuroGeographics, for the administrative boundaries
Cartography: Eurostat – GISCO, 05/2007
ACORES
MADEIRA
CANARIAS
GUADELOUPE
MARTINIQUE
REUNION
GUYANE
CYPRUS
MALTA
0 150 750 km

Figure 5.1
World chemical sales, 2005 (EUR billion) (1)



(1) World sales correspond to domestic sales and exports.
(2) Central and South America.
(3) Canada, Mexico, Africa and Oceania.
Source: CEFIC, http://www.cefic.org

STRUCTURAL PROFILE

The chemicals, rubber and plastics manufacturing sector (NACE Subsections DG and DH) of the EU-27 had approximately 100 000 enterprises which generated EUR 250.0 billion of value added in 2004, accounting for 4.9 % of the value added created within the EU-27's non-financial business economy (NACE Sections C to I and K). The sector employed 3.7 million persons in 2004, representing 3.0 % of the non-financial business economy workforce.

A little over two thirds of the value added of the sector came from the manufacture of chemicals and chemical products (NACE Subsection DG) – see Table 5.2 for a breakdown by NACE group. Indeed, almost one half (49.5 %) of the value added of the sector came from the manufacture of basic industrial chemicals, pesticides and agrochemicals (NACE Groups 24.1 and 24.2) – see Subchapter 5.1 – and from the manufacture of pharmaceuticals (NACE Group 24.4) – see Subchapter 5.2. Within the activities of rubber and plastic products manufacturing (NACE Subsection DH), the principal activity was plastics manufacturing (NACE Group 25.2, Subchapter 5.6) which generated a little under one quarter (24.0 %) of the value added generated by the whole of the chemicals, rubber and plastics manufacturing sector. The workforce in the chemicals, rubber and plastics manufacturing sector was more evenly split between the two subsectors, with 38 % employed in the manufacture of rubber and plastic products.

Germany was by far the leading producer of chemicals, rubbers and plastics among the Member States, accounting for one quarter (25.2 %) of the value added generated for the EU 27 as a whole in 2004 and employing the largest share (22.9 %) of its workforce. However, in relative terms, the contribution of the value added generated by the chemicals, rubber and plastics manufacturing sector to the value added of the non-financial business economy was higher in Slovenia (9.2 %) and Belgium (8.4 %) than it was in Germany (5.9 %) – see Table 5.3. 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 36.6 % of Irish manufacturing (NACE Section D) value added [4] in 2004, considerably more than the shares for Belgium (25.2 %) for example. In the chemicals and chemical products subsector in 2004 Belgium contributed 5.7 % of EU-27 value added and Ireland 7.4 %, in both cases the highest share of the EU-27 total by these

[4] 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-27, 2004 (1)

	No. of enterprises		Turnover		Value added		Employment	
	(thousands)	(% of total)	(EUR million)	(% of total)	(EUR million)	(% of total)	(thousands)	(% of total)
Chemicals, rubber and plastic products	100.0	100.0	870 000	100.0	250 000	100.0	3 700.0	100.0
Chemicals and chemical products	32.0	32.0	630 000	72.4	170 000	68.0	2 000	54.1
Basic chemicals; pesticides and other agro-chemical products	8.6	8.6	277 000	31.8	64 200	25.7	650.0	17.6
Pharmaceuticals, medicinal chemicals and botanical products	4.4	4.4	180 171	20.7	59 541	23.8	589.8	15.9
Miscellaneous chemical products	19.0	19.0	160 000	18.4	44 000	17.6	650.0	17.6
Man-made fibres	0.4	0.4	11 500	1.3	2 930	1.2	53.0	1.4
Rubber and plastic products	65.3	65.3	243 462	28.0	75 510	30.2	1 748	47.2
Rubber products	7.9	7.9	58 000	6.7	18 000	7.2	370.0	10.0
Plastic products	57.4	57.4	185 000	21.3	60 000	24.0	1 400.0	37.8

(1) 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)
Structural profile: ranking of top five Member States, 2004

			Share of non-financial business economy			
Rank	Value added (EUR million) (1)	Employment (thousands) (1)	No. of enterprises (2)	Turnover (2)	Value added (2)	Employment (2)
1	Germany (62 978)	Germany (846.4)	Slovakia (1.5 %)	Belgium (6.1 %)	Slovenia (9.2 %)	Slovenia (4.6 %)
2	France (36 660)	France (564.6)	Slovenia (1.5 %)	Slovenia (6.1 %)	Belgium (8.4 %)	Germany (4.1 %)
3	United Kingdom (34 668)	United Kingdom (444.4)	Romania (0.9 %)	Germany (5.5 %)	Germany (5.9 %)	Belgium (4.0 %)
4	Italy (24 567)	Italy (408.3)	Lithuania (0.9 %)	France (5.4 %)	Hungary (5.8 %)	France (4.0 %)
5	Spain (15 917)	Spain (260.0)	Bulgaria (0.8 %)	Netherlands (5.4 %)	Luxembourg (5.1 %)	Luxembourg (3.7 %)

(1) Greece and Malta, not available; Luxembourg and Portugal, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg and Portugal, 2003.
Source: Eurostat (SBS)

Member States in any industrial NACE subsection, while the 5.4 % share of the Netherlands was its second highest share. In the rubber and plastic products manufacturing subsector France generated 15.3 % of the EU-27 total, its second highest share among the industrial NACE subsections.

The regional specialisation of the chemicals, rubber and plastics manufacturing sector in employment terms is shown in the map on page 100. The most specialised region (at the NUTS 2 level of detail shown in the map) were Rheinhessen-Pfalz in Germany followed by Alsace and Auvergne in France, with regions in France and Germany occupying fourteen of the top twenty places [5].

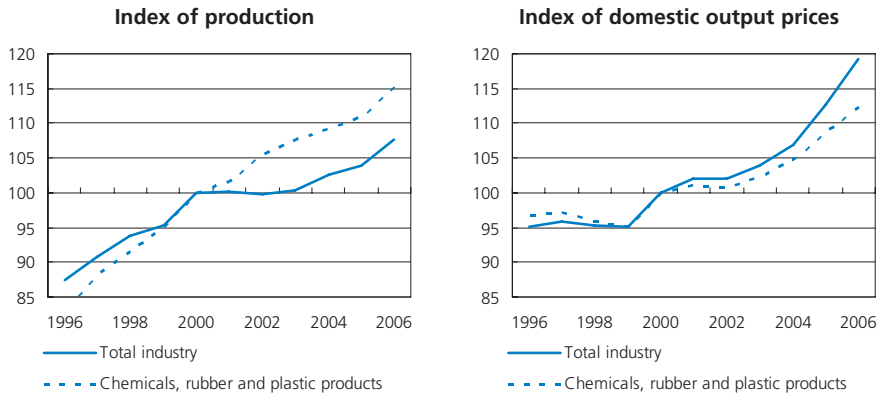
There was a steady and continuous rise in the EU-27 production index of chemicals, rubber and plastics manufacturing during the ten years through until 2006 (see Figure 5.2). The rate of growth (an average 3.3 % per annum) outpaced the industrial (NACE Sections C to E) average (an average 2.1 % per annum) during this period, especially between 2001 and 2003 when industrial output as a whole went through a period of stagnation. Indeed, during this ten year period only in 2004 was the output growth for industry as a whole greater than for chemicals, rubber and plastics manufacturing.

Within the sector, the strongest expansions in output concerned the EU-27 manufacture of pharmaceuticals, which rose by an average 6.1 % per annum during the ten years up to 2006, and the manufacture of basic chemicals, which rose by an average 3.7 % per annum. In contrast, there were notable contractions in the EU-27 production indices of pesticides and other agro-chemical products (NACE Group 24.2) and man-made fibres (NACE Group 24.7) during the same period (both falling 2.4 % per annum on average), although most of the declines came in the period between 2001 and 2005. Output of rubber and plastics (NACE Subsection DG) went down slightly by 0.7 % in 2001 compared with the previous year. The output of these activities then followed a positive and accelerating development through until 2006, with annual growth rates ranging between 0.2 % in 2002 and 4.1 % in 2006.

[5] Note that data is confidential for the regions of Koblenz and Weser-Ems in Germany, although the proportion of their non-financial business economy employment coming from chemical, rubber and plastics activities was among the highest in terms of regional specialisation.

Figure 5.2

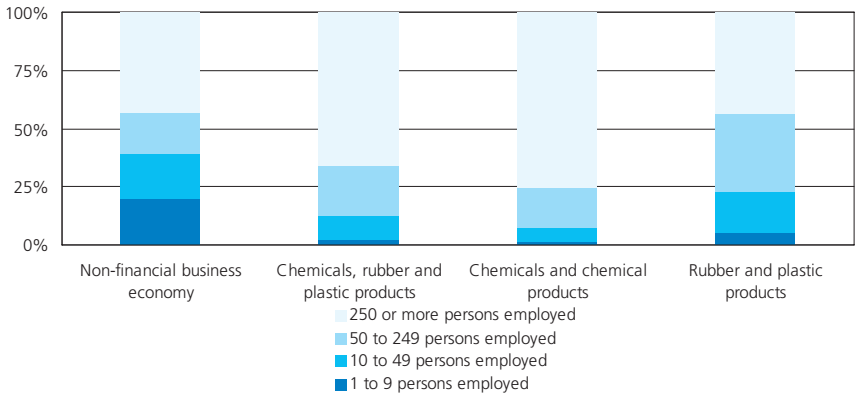
Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

Figure 5.3

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Share of value added by enterprise size class, EU-27, 2004



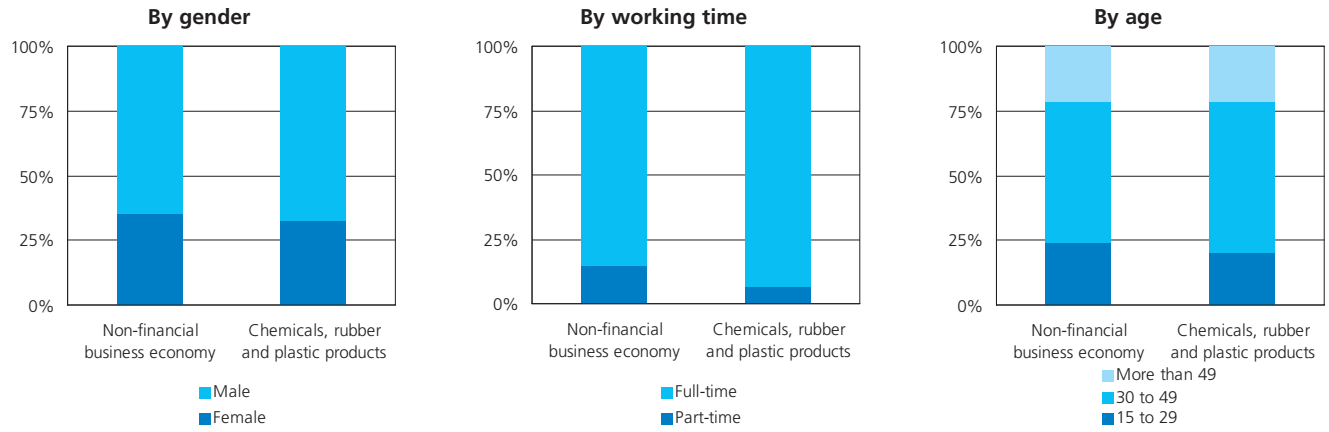
Source: Eurostat (SBS)

The development of the domestic output price index for chemicals, rubber and plastics manufacturing followed a similar pattern to the price index for industry as a whole; after a period of relative stagnation between 1996 and 1999, there was a strong rise in 2000 to levels that were broadly maintained for a couple of years before accelerating higher. The particularly strong price rises for industry as a whole in 2005 and 2006 (an average 5.6 % per annum over these two years), help explain why the average rate of increase in the domestic price index for industry over the ten years as a whole (2.3 % per annum) was above the rate (1.5 % per annum) for chemicals, rubber and plastics manufacturing.

Employment in the manufacture of chemicals and chemical products declined steadily in the EU-27 during the ten year period through until 2006 at a rate (an average 1.5 % per annum) that was similar to the industrial average. In contrast, there was employment growth within the manufacture of rubber and plastic products (an average 0.7 % per annum), although this was restricted to the period before 2000 since when levels have remained relatively steady. Rubber and plastics manufacturing was the only industrial NACE subsection in which there was an overall increase in employment during this period.

Figure 5.4

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Labour force characteristics, EU-27, 2006

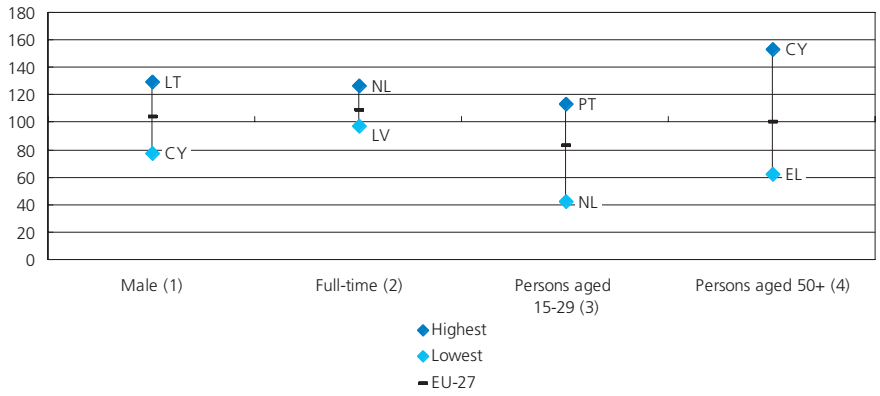


Source: Eurostat (LFS)

The manufacture of chemicals, rubber and plastics in the EU-27 was not only concentrated in the larger Member States, it was also focussed within large enterprises (those employing 250 or more persons), as SMEs (employing less than 250 persons) accounted for only one third (33.6 %) of the value added generated in 2004 (see Figure 5.3). This was a much lower share than the average for SMEs across the non-financial business economy (57.0 %) and the fourth lowest proportion among the chapters of this publication (only higher than communications and media, energy, and transport equipment manufacturing). Within the manufacture of chemicals and chemical products subsector, the dominance of large enterprises was even more apparent, accounting for a little over three quarters (75.9 %) of the value added generated. The importance of large enterprises was particularly marked in Ireland, where they accounted for over four fifths (85.1 %) of all value added in chemicals, rubber and plastics manufacturing, and this share was also over 70 % in Belgium, Germany, Denmark, Hungary and Slovenia. In contrast, a majority of value added in the sector was generated by SMEs in Italy (55.5 %), but more particularly in Portugal (62.9 %, 2003) and Latvia (67.3 %, 2003).

Figure 5.5

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH)
Labour force characteristics relative to national averages, 2006
(non-financial business economy=100)



(1) Estonia, Luxembourg and Malta, not available.
(2) Estonia, Ireland and Luxembourg, not available.
(3) Estonia, Cyprus, Latvia, Lithuania, Luxembourg and Malta, not available.
(4) Estonia, Latvia, Lithuania, Luxembourg and Malta, not available.
Source: Eurostat (LFS)

EMPLOYMENT CHARACTERISTICS

As shown in Figure 5.4, the most notable characteristic of the workforce in the chemicals, rubber and plastics manufacturing sector (NACE Subsections DG and DH) that set it apart from the non-financial business economy was the higher proportion of full-time workers (93.4 % compared to 85.6 % in 2006). This characteristic was common to both the chemicals and chemical products subsector (92.9 %) and the rubber and plastics products subsector (94.0 %). The proportion of male workers (67.5 %) in the chemicals, rubber and plastics workforce was similar to the proportion across the non-financial business economy (65.0 %), although the proportion of male workers in the rubber and plastics products subsector's workforce (72.1 %) was notably higher than in the chemicals and chemical products subsector (64.3 %). Among the Member States, there was quite a mixed picture (see Figure 5.5); the proportion of male workers was low in comparison to other Member States and in comparison to the average of the national non-financial business economy workforce in Cyprus (50.2 %), Denmark (54.0 %), Slovenia (55.8 %) and the Czech Republic (56.2 %), in contrast to the relatively high proportions in Lithuania (76.3 %) and the Netherlands (79.6 %).

The age profile of the workforce in the chemicals, rubber and plastics sector was characterised by a relatively low proportion aged under 30 (20.1 %), 20 % lower than the average of the non-financial business economy (24.2 %) and a correspondingly higher proportion aged between 30 and 49 (58.2 % compared to 54.2 %). Comparing the age structure of the two NACE subsections in this sector, the difference in young workers was pronounced, with the share under 30 years old in the chemicals and chemical products subsector (17.6 %) being much lower than the share (23.5 %) in the rubber and plastic products subsector.

Table 5.4

Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (NACE Subsections DG and DH) Productivity and profitability, EU-27, 2004 (1)

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
Chemicals, rubber and plastic products	66.5	39.0	171.0	12.0
Chemicals and chemical products	90.0	47.0	186.0	12.7
Basic chemicals; pesticides and other agro-chemical products	100.0	48.0	206.0	12.1
Pharmaceuticals, medicinal chemicals and botanical products	100.9	52.7	191.7	15.9
Miscellaneous chemical products	67.0	41.5	160.0	10.4
Man-made fibres	55.0	37.0	149.0	8.4
Rubber and plastic products	43.2	29.8	144.9	10.3
Rubber products	47.6	33.0	145.0	9.9
Plastic products	42.0	29.0	145.0	10.4

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

COSTS, PRODUCTIVITY AND PROFITABILITY

The share of gross tangible investment in the total expenditure (personnel costs plus purchases of goods and services plus intangible investment) of the chemicals, rubber and plastics sector of the EU-27 was 4.3 % in 2004. The corresponding share for the chemicals and chemical products subsector was 4.0 % and for the rubber and plastics subsector it was 4.9 % (the same proportion as across the non-financial business economy as a whole). The share of personnel costs for the chemicals, rubber and plastics sector (17.5 %), however, was slightly higher than the average for the non-financial business economy as a whole (16.4 %). However, there was a notable difference between the relative share of personnel costs in the chemical and chemical products subsector (15.7 %) and the share in the rubber and plastic products subsector (21.8 %). Among the Member States, the share of investment in the total expenditure in the chemicals, rubber and plastics sector was relatively high compared to the respective non-financial business economy averages in Hungary (11.8 % compared to 6.7 %) and in Lithuania (12.0 % compared to 7.0 %).

The apparent labour productivity of the chemicals, rubber and plastics manufacturing sector of the EU-27 was EUR 66 500 per person employed in 2004, almost two thirds (62.6 %) higher than the level across the non-financial business economy as a whole, see Table 5.4. The apparent labour productivity of those working in the manufacture of basic chemicals (NACE Groups 24.1 and 24.2) and the manufacture of pharmaceuticals (NACE Group 24.4) in the EU-27 was particularly high (EUR 100 000 per person employed and EUR 100 900 per person employed respectively). In contrast, the apparent labour productivity of plastics products manufacturing (NACE Group 25.2) and rubber products manufacturing (NACE Group 25.1) were much closer to the average level of the non-financial business economy (EUR 40 900). Average personnel costs across the sector (EUR 39 000 per employee) was relatively high (41.3 % above the non-financial business economy average), second highest among the sectoral chapter aggregates of this publication after the manufacture of transport equipment (chapter 10), with the level in the chemical and chemical products subsector (EUR 47 000 per employee) being the highest of all industrial NACE subsections in 2004. However, the value added per person employed created within the EU-27's chemicals, rubber and plastics sector covered average personnel costs by 171.0 % in 2004, this level of wage adjusted labour productivity being notably higher than the average across the non-financial business economy (148.0 %). Nevertheless, within the sector, the wage adjusted labour productivity of the rubber and plastics subsector (144.9 %) was a little below the non-financial business economy average, and contrasted with the chemical and chemical products subsector where the ratio of 186.0 % was the third highest of all industrial NACE subsections in 2004. The wage adjusted labour productivity of the chemicals, rubber and plastics sector was similar to or higher than the level of the non-financial business economy in all Member States [6] (much higher in the Netherlands, Slovenia, Sweden and the Czech Republic) with the exception of Slovakia, where it was notably lower (12.7 % less).

The gross operating rate of the EU-27's chemicals, rubber and plastics manufacturing sector was 12.0 % in 2004, moderately higher than the non-financial business economy average (11.0 %). However, the rate of rubber and plastic products manufacturing (10.3 %) was below the non-financial business economy average whilst that of chemicals and chemical products (12.7 %) was higher.

[6] Luxembourg and Portugal, 2003; Ireland, Greece, Cyprus and Malta, not available.

Table 5.5

Chemicals, chemical products and man-made fibres; rubber and plastic products (CPA Subsections DG and DH)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of industrial exports)	(EUR million)	(% share of industrial imports)	Trade balance (EUR million)	Cover ratio (%)
Chemicals, chemical products and man-made fibres; rubber and plastic products	194 761	18.0	128 952	10.3	65 809	151.0
Basic chemicals; pesticides and other agro-chemical products	59 803	5.5	47 345	3.8	12 458	126.3
Pharmaceuticals, medicinal chemicals and botanical products	69 751	6.4	39 916	3.2	29 835	174.7
Miscellaneous chemical products	39 081	3.6	18 617	1.5	20 464	209.9
Man-made fibres	1 447	0.1	1 984	0.2	-537	72.9
Rubber products	7 400	0.7	7 653	0.6	-252	96.7
Plastic products	17 279	1.6	13 437	1.1	3 842	128.6

Source: Eurostat (Comext)

EXTERNAL TRADE

Almost two thirds (67.4 %) of the total trade in the chemical, rubber and plastic products (CPA Subsections DG and DH) conducted by the EU-27 Member States was to other Member States, an almost identical share to that for industrial goods (CPA Sections C to E) as a whole.

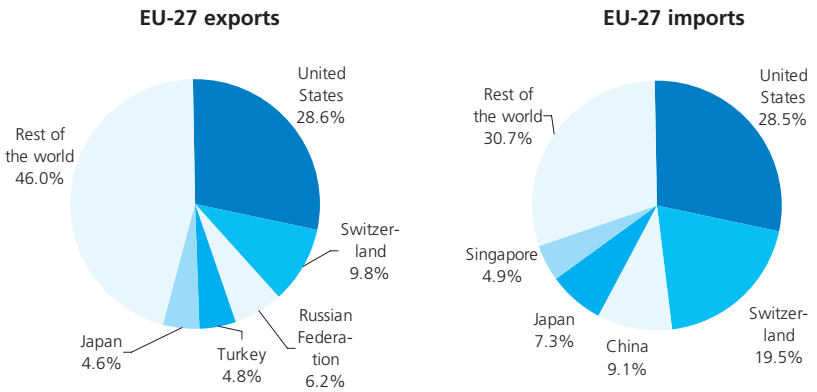
The EU-27 had a substantial trade surplus in chemical, rubber and plastic products with non-member countries; it widened to EUR 65.8 billion in 2006 (see Table 5.5), the third highest surplus among the industrial chapters of this publication (Chapters 2 to 13). The continued widening of the trade surplus, which grew by nearly two thirds (63.9 %) between 2001 and 2006, reflects the continued strength of export growth. EU-27 exports of chemical, rubber and plastic products were valued at EUR 194.8 billion in 2006, representing nearly a fifth (18.0 %) of all industrial exports. Almost two thirds (65.4 %) of the EU-27 exports in 2006 of chemical, rubber and plastic products concerned pharmaceuticals, medicinal chemicals and botanical products (CPA Group 24.4) and basic chemicals; pesticides and other agro-chemical products (CPA Groups 24.1 and 24.2), which were valued at EUR 69.8 billion and EUR 59.8 billion respectively. Imports of chemical, rubber and plastic products also grew strongly in 2006 (up 12.3 %) to EUR 129.0 billion, representing a tenth (10.3 %) of all industrial imports to the EU-27.

As shown in Figure 5.6, the United States and Switzerland were the principal trade partners with the EU-27 concerning chemical, rubber and plastic products; they represented both the principal export markets for these products (28.6 % and 9.8 % of EU-27 exports respectively) and the principal origins of imports (28.5 % and 19.5 % respectively).

Germany was the largest exporter of chemical, rubber and plastic goods among the Member States; the value of German exports (intra- and extra-EU) was EUR 127.2 billion in 2006, a little over a fifth (21.3 %) of all chemical, rubber and plastic products exports by the EU-27 Member States. Belgium, France, the United Kingdom and the Netherlands were the other main exporters among the Member States, together accounting for little less than a half (46.1 %) of all chemical, rubber and plastic products exports by the EU-27 Member States. Germany also recorded a significant trade surplus (EUR 29.9 billion) in these products in 2006, the majority (some EUR 24.1 billion) of which came from trade with non-member countries, in other words extra-EU-27 trade. The Member State with the largest trade surplus in these goods in 2006, however, was Ireland (EUR 32.9 billion), with the majority of this surplus centred on the intra-EU-27 market (EUR 20.0 billion). The importance of chemical, rubber and plastic goods to the Irish economy is underlined by the fact that they represented almost half of the value (49.7 %) of all industrial exports (extra- and intra-EU) in 2006, considerably more than the average proportion (17.9 %) across the EU-27 Member States. Chemical, rubber and plastic goods were also a significant contributor to the industrial exports of Belgium (32.0 % of the total).

Figure 5.6

Chemicals, chemical products and man-made fibres; rubber and plastic products (CPA Subsections DG and DH)
Main destination of EU-27 exports and main origin of EU-27 imports, 2006



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.

Petroleum and natural gas are used by petrochemical enterprises to produce a range of products; these concern basic petrochemicals such aromatics (for example naphthalene and xlyenes), methanol, and olefins (for example, butadiene and acetylene), intermediate products (for example ethyl benzene and phenol) and petrochemical products (for example, plastics, solvents, additives and agro-chemicals). Petrochemicals are then used by many other downstream sectors of the economy as a raw material for use in a myriad of consumer products (for example, healthcare products, plastics packaging and synthetic rubber tyres).

European Community legislation in this area is focussed around issues of protecting the environment, protecting public health and competitiveness. Regarding environmental and public health concerns, there have been recent developments concerning the release of pollutants: a new European Parliament and Council groundwater directive [7] from December 2006 aims to set underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. Similarly, the European Commission adopted a proposal for a surface water directive [8] on 17 July 2006 to ensure „good chemical surface water status". The proposal requires progressive reductions in emissions, losses and discharges of all priority substances, and the phase-out or cessation of emissions, losses and discharges of priority hazardous substances within 20 years. A proposal for a European Parliament and Council directive to achieve a sustainable use of pesticides [9] was made in July 2006, putting forward coherent measures to address the threats posed by the use of pesticides to human health and the environment.

[7] 2006/118/EC.
[8] COM(2006) 397.
[9] COM(2006) 373.

STRUCTURAL PROFILE

There were 8 600 enterprises in the basic industrial chemicals and agro-chemicals sector (NACE Groups 24.1 and 24.2) which generated EUR 64.2 billion of value added in 2004 (see Table 5.6), almost one quarter (25.7 %) of the chemicals, rubber and plastics (NACE Subsections DG and DH) total. The sector also employed 650 000 persons in the EU-27 in 2004, representing a smaller share (17.6 %) of the workforce in chemicals, rubber and plastics manufacturing in the EU-27. The vast majority of the value added (96.5 %) and employment (96.6 %) of the sector came from the basic chemicals manufacturing subsector (NACE Group 24.1), with other organic basic chemicals (NACE class 24.14) and plastics in primary form (NACE class 24.16) being by far the largest component activities.

As with chemical, rubber and plastics manufacturing as a whole, Germany was also the main producer of basic industrial chemicals and agro-chemical products among the Member States, accounting for 29.3 % of the value added generated by this sector in the EU-27. However, Ireland (accounting for 15.3 % of EU-27 value added), Belgium and the Netherlands were particularly specialised in basic chemicals manufacturing [10] and France and Slovenia in the manufacture of agro-chemicals.

[10] Greece, Cyprus, Luxembourg and Malta, not available.

Table 5.6

Manufacture of basic chemicals; manufacture of pesticides and other agro-chemical products (NACE Groups 24.1 and 24.2) Structural profile, EU-27, 2004 (1)

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Basic chemicals; pesticides and other agro-chemical products	8.6	277 000	64 200	650.0
Basic chemicals	8.0	266 702	61 927	627.9
Industrial gases	0.6	:	:	:
Dyes and pigments	:	:	:	:
Other inorganic basic chemicals	1.2	19 700	4 990	78.0
Other organic basic chemicals	1.8	106 000	26 000	157.0
Fertilizers and nitrogen compounds	:	15 700	3 180	:
Plastics in primary forms	2.6	95 300	18 700	200.0
Synthetic rubber in primary forms	:	:	:	50.0
Pesticides and other agro-chemical products	0.6	9 900	2 320	27.0

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

Table 5.7

Production of selected products - basic chemicals; pesticides and other agro-chemical products (CPA Groups 24.1 and 24.2), EU-27, 2006 (1)

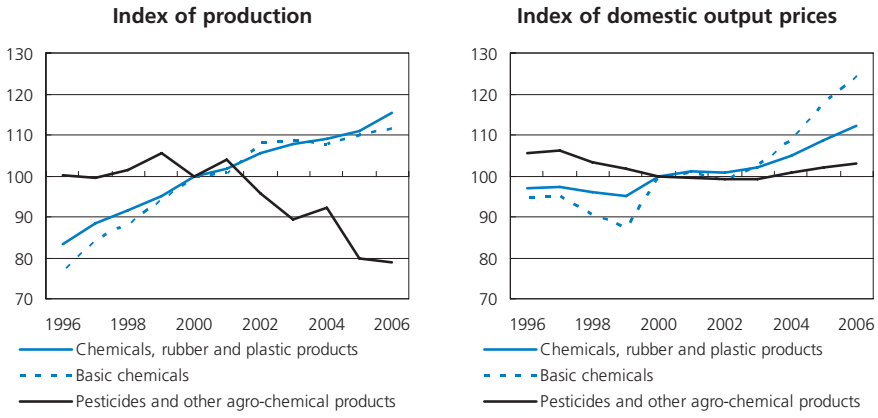
	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Polypropylene; in primary forms	24.16.51.30	11 253	11 105 109	kg
Unsaturated acyclic hydrocarbons; ethylene	24.14.11.30	8 398	13 428 356	kg
Polyurethanes; in primary forms	24.16.56.70	7 025	3 756 722	kg
Unsaturated acyclic hydrocarbons; propene (propylene)	24.14.11.40	6 957	10 581 610	kg
Polyethylene having a specific gravity of <= 0.94; in primary forms	24.16.10.50	5 562	6 548 319	kg
Polyethylene having a specific gravity < 0.94; in primary forms (excluding linear)	24.16.10.39	5 145	4 680 898	kg
Polyvinyl chloride; not mixed with any other substances; in primary forms	24.16.30.10	5 135	6 966 477	kg
Polyamide -6, -11, -12, -6.6, -6.9, -6.10 or -6.12; in primary forms	24.16.54.50	4 060	1 924 104	kg
Acrylic polymers; in primary forms (excluding polymethyl methacrylate)	24.16.53.90	3 799	2 587 861	kg
Styrene	24.14.12.50	3 562	4 277 408	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

According to short-term business statistics the output of basic chemicals (NACE Group 24.1) grew strongly between 1996 and 2006 at a rate (an average 3.7 % per annum) that was a little stronger than the rate for chemicals, rubber and plastics as a whole (3.3 %). However, in contrast to the steady growth in the production index of chemical, rubber and plastics throughout the ten years through until 2006, most of the growth in the output of basic chemicals was limited to the period before 2002 (see Figure 5.7), after which there followed a levelling off in output until 2004 and then only moderate growth (the rate of output growth between 2002 and 2006 being limited to an average 0.8 % per annum). Within basic industrial chemicals manufacturing, the development of the production indices of other organic basic chemicals (NACE Class 24.14) and plastics in primary form (NACE Class 24.16) most resembled the development of basic chemicals as a whole. Among the other NACE classes, there was an overall decline in the output of fertilizers and nitrogen compounds (NACE Class 24.15), strong growth in the output of inorganic basic chemicals (NACE Class 24.13) since 2000 and strong annual fluctuations within an overall upward development in the output of synthetic rubber in primary forms (NACE Class 24.17). In contrast to the upward trend in the production index of basic chemicals over the long-term, the production of pesticides and other agro-chemical products went down on average by 2.4 % per annum between 1996 and 2006. In more detail, over the period considered the index of production for these activities contracted every year except 1996, 1998, 1999, 2001 and 2004. Among those years when a reduction in the output of pesticides and other agro-chemical products was recorded, the largest declines occurred in 2005 when output fell by as much as 13.5 %.

Figure 5.7

Manufacture of basic chemicals; manufacture of pesticides and other agro-chemical products (NACE Groups 24.1 and 24.2)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

The development of the domestic output price for basic chemicals in the EU-27 closely followed that of oil prices. There were particularly strong output price increases in 2000 (14.5 %), 2004 (6.2 %), 2005 (8.2 %) and 2006 (5.7 %), which were all years where annual average oil prices increased strongly. Turning to domestic prices for pesticides and other agro-chemical products, they decreased each year from 1998 up to 2003, by between 0.2 % (in 2003) and 2.7 % (in 1998). Subsequently, output prices increased by 1.6 % in 2004, 1.5 % in 2005 and 0.8 % in 2006.

Table 5.8

Manufacture of basic chemicals; manufacture of pesticides and other agro-chemical products (NACE Groups 24.1 and 24.2)
Productivity and profitability, EU-27, 2004

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
Basic chemicals; pesticides and other agro-chemical products (1)	100.0	48.0	206.0	12.1
Basic chemicals	98.6	47.5	207.6	12.1
Pesticides and other agro-chemical products (1)	90.0	50.0	169.0	9.8

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

Table 5.9

Basic chemicals; pesticides and other agro-chemical products (CPA Groups 24.1 and 24.2)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of chapter)	(EUR million)	(% share of chapter)	Trade balance (EUR million)	Cover ratio (%)
Basic chemicals; pesticides and other agro-chemical products	59 803	30.7	47 345	36.7	12 458	126.3
Basic chemicals	57 527	29.5	46 322	35.9	11 205	124.2
Industrial gases	96	:	154	:	-58	62.1
Dyes and pigments	2 858	:	2 829	:	29	101.0
Other inorganic basic chemicals	2 745	:	3 697	:	-952	74.2
Other organic basic chemicals	33 202	:	25 694	:	7 508	129.2
Fertilizers and nitrogen compounds	1 460	:	2 800	:	-1 340	52.1
Plastics in primary forms	16 004	:	9 784	:	6 220	163.6
Synthetic rubber in primary forms	1 164	:	1 365	:	-201	85.3
Pesticides and other agro-chemical products	2 277	1.2	1 024	0.8	1 253	222.4

Source: Eurostat (Comext)

COSTS, PRODUCTIVITY AND PROFITABILITY

Although average personnel costs within the basic chemicals and agro-chemicals manufacturing sector (EUR 48 000 per employee) were considerably higher (23.1 %) than the average within the broader activities of chemical, rubber and plastics manufacturing, and more particularly higher (73.9 %) than the average across the non-financial business economy, the share of personnel costs in total expenditure was much lower (12.1 % compared to 17.5 % for chemicals, rubber and plastics manufacturing, and 16.4 % for the non-financial business economy). Despite the relatively high personnel costs in the basic industrial chemicals and agro-chemicals sector, the wage adjusted labour productivity level (206.0 %) remained significantly higher than the level across chemical, rubber and plastics manufacturing (171 %) in 2004, reflecting particularly high levels of apparent labour productivity (see Table 5.8). The apparent labour productivity levels for basic industrial chemicals manufacturing (EUR 98 600 per person employed) and agro-chemicals (EUR 90 000 per person employed) in 2004, were the sixth and seventh highest respectively among the NACE group levels within industry (NACE Sections C to E) and respectively 2.4 and 2.2 times the non-financial business economy average (EUR 40 900 per person employed). In almost all Member States for which information is available [11], the apparent labour productivity of basic chemicals manufacturing was higher than the national, non-financial business economy averages in 2004, the exceptions being Latvia and Romania where they were 10-15 % lower, and Slovakia and the United Kingdom where they were very similar. Among the NACE Classes that make up this sector, the manufacture of other organic basic chemicals (NACE Class 24.14) recorded particularly high levels of apparent labour productivity (EUR 165 000 per person employed) and wage adjusted labour productivity (290.0 %).

EXTERNAL TRADE

The value of EU-27 exports of basic industrial chemicals and ago-chemicals (CPA Groups 24.1 and 24.2) grew to EUR 59.8 billion in 2006 (see Table 5.9), representing 30.7 % of all EU-27 exports in chemicals, rubber and plastics (CPA Subsections DG and DH). Although the value of EU-27 imports also grew strongly to EUR 47.3 billion, the trade surplus in basic industrial chemicals and agro-chemicals widened to EUR 12.5 billion in 2006. Within the broad range of products, the trade surplus for basic industrial chemicals (CPA Group 24.1, EUR 11.2 billion) was shaped by the trade surpluses of EUR 7.5 billion for other organic basic chemicals (CPA Class 24.14) and EUR 6.2 billion for plastics in primary form (CPA Class 24.16). Whereas the trade surplus for other organic basic chemicals remained EUR 3.0 billion lower than its recent peak level in 2002, the trade surplus for plastics in primary forms continued to widen, perhaps reflecting the relatively higher added value of polymers and the relatively low share of production costs accounted for by oil. The trade surplus for agro-chemicals (CPA Group 24.2) remained relatively unchanged at EUR 1.2 billion in 2006.

A little more than half (52.9 %) of the EU-27 Member States' total exports (intra- and extra-EU) of basic industrial chemicals and agro-chemicals came from Belgium (20.2 %), Germany (18.4 %) and the Netherlands (14.3 %) combined. The largest trade surplus in these goods was in Ireland (EUR 14.7 billion), ahead of the Netherlands (EUR 10.1 billion) and Belgium (EUR 7.4 billion). In contrast, there was a trade deficit of EUR 11.9 billion in basic industrial chemicals and agro-chemicals in Italy in 2006.

[11] Slovenia, 2003; Greece, Cyprus, Luxembourg and Malta, not available.

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 tend to be made from either chemicals or biotechnological processes, for either human consumption or veterinary use. Pharmaceutical products can be categorised as being branded (under patent protection) or generic (a copy of an original product whose patent has expired). New, marketable medicines usually result from years-worth of progressive research and development, and according to the European Federation of Pharmaceutical Industries (EFPIA) only three in ten new products will produce revenues that more than cover their R&D costs. The importance of R&D in this sector is underlined by the fact than on average [12] around 10 % of all manufacturing R&D expenditure was made by pharmaceutical enterprises in 2003.

The pharmaceuticals sector is highly regulated, with legislation in the area of public health protection being particularly important. The European Parliament and Council regulation on medicinal products for paediatric use [13] came into force on 26 January 2007 with the aim of improving accessibility to medicines for the paediatric population, ensuring their quality and improving the information available about them. In April 2007, the Council approved the proposed regulation on advanced therapies [14] for formal adoption later in the year. The regulation aims to bring all advanced therapies (gene therapy, somatic cell therapy and tissue engineering) within a single, integrated framework. In April 2007, the European Commission adopted a proposal [15] to amend the regulation on maximum residue limits which aims at simplifying existing provisions for establishing the maximum amount of residues of veterinary medicinal products legally accepted in foodstuffs. These new provisions are expected to stimulate innovation and improve availability of veterinary medicinal products.

[12] EU-27 average, 2003; excluding Belgium, Denmark, Ireland, Greece, Spain, Italy, Latvia, Luxembourg, Hungary, Malta, the Netherlands, Poland, Slovenia and Finland.
[13] 1901/2006/EC.
[14] COM(2005) 567.

STRUCTURAL PROFILE

In 2004 the pharmaceuticals manufacturing sector (NACE Group 24.4) had approximately 4 400 enterprises which generated EUR 59.5 billion of added value, almost one quarter (23.8 %) of the value added created by chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH) in the EU-27. The vast majority (90.2 %) of the value added generated by the pharmaceuticals sector of the EU-27 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) – see Table 5.11.

The proportion of the chemicals, rubber and plastics manufacturing workforce employed in the pharmaceuticals manufacturing sector (15.9 %) was much lower than the associated share of value added, implying a relatively high level of apparent labour productivity amongst the 589 800 persons employed in the sector throughout the EU-27.

[15] COM(2007) 194 final.

Table 5.10

Top ten pharmaceutical companies by R&D investment in the EU-27, 2005

		R&D investment (EUR million)
GlaxoSmithKline	UK	4 564
Sanofi-Aventis	FR	4 044
AstraZeneca	UK	2 865
Boehringer Ingelheim	DE	1 360
Schering	DE	989
Merck	DE	713
Novo Nordisk	DK	682
UCB	BE	511
ALTANA	DE	465
Schwarz Pharma	DE	259

Source: Eurostat (Science and Technology, R&D Industrial Investment Scoreboard)

The main generators of value added in pharmaceutical products in the EU-27 were Germany (19.6 % of the EU-27 total), France (18.2 %) and the United Kingdom (15.4 %) – see Table 5.12. However, Slovenia, Sweden, Belgium and Hungary were the most specialised pharmaceutical producers (note that data for Ireland are not available [16] with contributions to the value added of their respective national, non-financial business economies (NACE Sections C to I and K) being at least double the EU-27 average (1.2 %).

Among the nine NACE groups that comprise chemicals, rubber and plastics manufacturing activities, the rate of growth in the output of pharmaceuticals between 1996 and 2006 was by far the strongest, an average rate of 6.1 % per annum, and almost double the average rate of chemicals, rubber and plastics as a whole (3.3 % per annum). In contrast, perhaps due to the increased competition from generic drugs, prices for pharmaceuticals manufacturing output remained relatively flat throughout the period, even declining moderately in 2005 and 2006 when the domestic price index for chemicals, rubber and plastics manufacturing as whole rose strongly (see Figure 5.8).

[16] Estonia, 2003; Ireland, Greece, Cyprus, Lithuania, Luxembourg and Malta, not available.

Table 5.11

Manufacture of pharmaceuticals, medicinal chemicals and botanical products (NACE Group 24.4) Structural profile, EU-27, 2004

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Pharmaceuticals, medicinal chemicals and botanical products	4.4	180 171	59 541	589.8
Basic pharmaceutical products (1)	0.8	16 500	5 840	70.0
Pharmaceutical preparations (1)	3.5	164 000	53 700	520.0

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

Table 5.12

Manufacture of pharmaceuticals, medicinal chemicals and botanical products (NACE Group 24.4)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (2)	Value added specialisation ratio (EU-27=100) (3)	Employment specialisation ratio (EU-27=100) (4)
1	Germany (19.6)	Germany (20.8)	Slovenia (348.8)	Denmark (217.3)
2	France (18.2)	France (16.8)	Sweden (234.5)	Slovenia (204.6)
3	United Kingdom (15.4)	United Kingdom (12.4)	Belgium (225.5)	Belgium (178.2)
4	Italy (10.9)	Italy (12.0)	Hungary (201.9)	Sweden (172.7)
5	Sweden (6.8)	Spain (6.4)	Denmark (186.4)	France (147.1)

(1) Greece, Cyprus, Lithuania, Luxembourg and Malta, not available; Estonia and Ireland, 2003.
(2) Greece, Cyprus, Lithuania, Luxembourg and Malta, not available; Estonia, Ireland and Slovenia, 2003.
(3) Ireland, Greece, Cyprus, Lithuania, Luxembourg and Malta, not available; Estonia, 2003.
(4) Ireland, Greece, Cyprus, Lithuania, Luxembourg and Malta, not available; Estonia and Slovenia, 2003.
Source: Eurostat (SBS)

Table 5.13

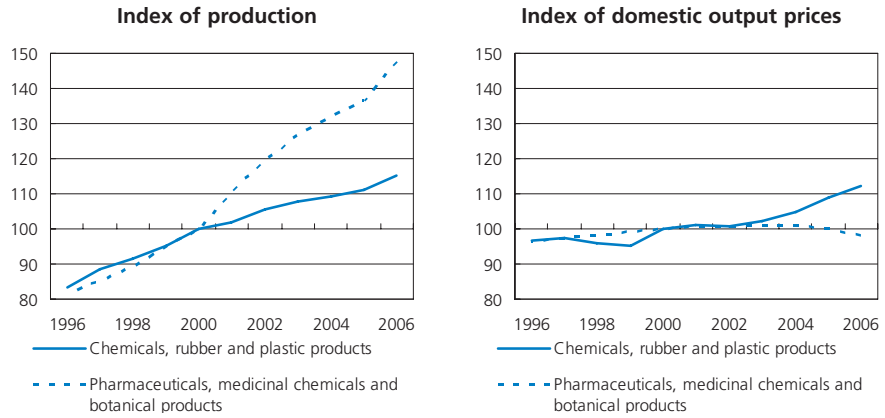
Production of selected products - pharmaceuticals, medicinal chemicals and botanical products (CPA Group 24.4), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)
Medicaments of other antibiotics, p.r.s.	24.42.11.80	5 953
Medicaments containing vitamins; provitamins; derivatives and intermixtures thereof; for therapeutic or prophylactic uses; put up in measured doses or for retail sale	24.42.13.60	2 978
Opacifying preparations for X-ray examinations; diagnostic reagents designed to be administered to the patient	24.42.23.40	2 426
Antisera and other blood fractions	24.42.21.20	2 264
Medicaments of alkaloids or derivatives thereof, p.r.s.	24.42.13.40	2 214
Chemical contraceptive preparations based on hormones or spermicides	24.42.22.00	1 660
Adhesive dressings or similar articles; impregnated or coated with pharmaceutical substances; or put up in forms for retail sale	24.42.24.10	1 230
Medicaments of alkaloids or derivatives thereof, n.p.r.s.	24.42.13.10	1 158
Substances of human or animal origin for therapeutic or prophylactic uses; heparin and its salts (excluding glands, organs, blood)	24.41.60.30	782

(1) Estimated.
Source: Eurostat (PRODCOM)

Figure 5.8

Manufacture of pharmaceuticals, medicinal chemicals and botanical products (NACE Group 24.4)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

COSTS, PRODUCTIVITY AND PROFITABILITY

The apparent labour productivity of those working in the pharmaceuticals manufacturing sector of the EU-27 was EUR 100 900 per person employed in 2004, the highest of the nine NACE groups that comprise the activities of chemicals, rubber and plastics manufacturing and the fifth highest within industry (NACE Sections C to E). Personnel costs within the sector were EUR 52 700 per employee in 2004, the highest level among the NACE groups within chemicals, rubber and plastics manufacturing (35.1 % higher than the average level). Combining the ratios of apparent labour productivity and average personnel costs, the EU-27's wage adjusted productivity ratio for pharmaceutical manufacturing was 191.7 % in 2004. This productivity level was higher than the average (171.0 %) for chemicals, rubber and plastics manufacturing, a characteristic that was repeated among the vast majority of the Member States for which information is available [17], the exceptions being in Spain, Slovakia and particularly in the Netherlands.

[17] Estonia, Portugal and Slovenia, 2003; Ireland, Greece, Cyprus, Lithuania, Luxembourg and Malta, not available.

The profitability of the pharmaceuticals manufacturing sector in the EU-27, as measured by the gross operating rate, was notably higher than for chemicals, rubber and plastics manufacturing as a whole, with a rate of 15.9 % in pharmaceuticals manufacturing compared to 12.0 %. The highest gross operating rates in this sector were recorded in Ireland (46.8 %, 2003), Sweden (41.7 %), Slovenia, Hungary and Belgium (all three a little over 30 %).

EXTERNAL TRADE

A higher proportion of pharmaceutical products (CPA Group 24.4) were exported by EU-27 Member States to non-member countries than the average for chemicals, rubber and plastic products (CPA Subsections DG and DH) as a whole (39.0 % compared to 32.6 % respectively), although intra-EU exports still dominated trade.

The value of EU-27 exports of pharmaceuticals in 2006 was EUR 69.8 billion, and the main markets for these exports were the United States (35.1 % of extra-EU exports) and Switzerland (13.1 %). Although the value of EU-27 imports of pharmaceutical products increased to a value of EUR 39.9 billion in 2006, the trade surplus widened to EUR 29.8 billion. As well as being the main market for exports of pharmaceutical products, the United States and Switzerland provided the overwhelming majority of pharmaceuticals products (a fairly evenly split total share of 78.8 %) that were imported from outside the EU 27.

Germany and Belgium were the principal exporters of pharmaceutical products, accounting for 20.2 % and 18.1 % respectively of the exports (intra- and extra-EU trade) of EU-27 Member States. However, Ireland had the largest trade surplus in pharmaceutical products (EUR 13.4 billion) among the Member States in 2006, the majority of which was based on a surplus with other Member States. In contrast, the majority of the significant trade surpluses recorded by some other Member States, such as Germany (EUR 7.7 billion), the United Kingdom (EUR 5.6 billion), Sweden (EUR 4.4 billion) and France (EUR 4.1 billion), were based on trade with non-member countries.

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.

There were 19 000 enterprises in the miscellaneous chemical products manufacturing sector (NACE Groups 24.3, 24.5 and 24.6) which employed 650 000 people throughout the EU-27 and generated EUR 44.0 billion of added value, 17.6 % 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, the soaps, detergents and toiletries manufacturing subsector (NACE Group 24.5) was the largest, accounting for a little over 40 % of value added. The second largest subsector, accounting for about one third of the value added of the sector, concerned other chemical products manufacturing (NACE Group 24.6). The paints and printing inks manufacturing subsector (NACE Group 24.3) was the smallest, generating about one quarter of the value added of the miscellaneous chemical products sector – see Table 5.14.

Table 5.14

Miscellaneous chemical products (NACE Groups 24.3, 24.5 and 24.6) Structural profile, EU-27, 2004 (1)

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Miscellaneous chemical products	19.0	160 000	44 000	650.0
Paints and printing inks	4.5	39 872	11 340	176.7
Soap, detergents and toiletries	8.2	70 975	17 888	273.7
Soap, detergents, cleaning and polishing preparations	4.4	32 500	8 370	120.0
Perfumes and toilet preparations	3.8	38 500	9 520	150.0
Other chemical products	7.0	51 000	15 000	210.0
Explosives	0.8	2 740	1 030	21.0
Glues and gelatines	0.7	5 780	1 660	23.2
Essential oils	0.6	:	:	:
Photographic chemical material	:	:	:	:
Prepared unrecorded media	0.4	1 320	212	4.8
Other chemical products n.e.c.	4.2	30 800	8 290	120.0

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

Table 5.15

Miscellaneous chemical products (NACE Groups 24.3, 24.5 and 24.6)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (2)	Value added specialisation ratio (EU-27=100) (3)	Employment specialisation ratio (EU-27=100) (4)
1	Germany (24.6)	Germany (22.9)	Belgium (156.5)	Belgium (156.7)
2	France (18.9)	France (16.6)	France (134.4)	France (145.1)
3	United Kingdom (16.5)	United Kingdom (13.5)	Poland (119.9)	Germany (138.4)
4	Italy (11.4)	Italy (11.1)	Germany (117.2)	Bulgaria (109.5)
5	Spain (8.2)	Spain (9.1)	Italy (102.4)	Poland (107.5)

(1) Ireland, Greece, Luxembourg, Malta, Slovenia, Slovakia and Finland, not available; Portugal, 2003.
(2) Ireland, Greece, Luxembourg, Malta, Portugal, Slovenia, Slovakia and Finland, not available.
(3) Ireland, Greece, Cyprus, Luxembourg, Malta, Slovenia, Slovakia and Finland, not available; Portugal, 2003.
(4) Ireland, Greece, Cyprus, Luxembourg, Malta, Portugal, Slovenia, Slovakia and Finland, not available.
Source: Eurostat (SBS)

Table 5.16

Production of selected products - paints, varnishes and similar coatings, printing ink and mastics (CPA Group 24.3), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Printing inks (excluding black)	24.30.24.70	3 585	1 069 048	kg
Glaziers' putty, grafting putty, resin cements, caulking compounds and other mastics	24.30.22.53	1 385	594 260	kg
Organic composite solvents and thinners used in conjunction with coatings and inks (excluding those based on butyl acetate)	24.30.22.79	1 099	1 043 424	kg
Vitrifiable enamels and glazes; engobes (slips) and similar preparations for ceramics; enamelling or glass	24.30.21.50	884	1 148 225	kg
Prepared pigments; opacifiers; colours and similar preparations for ceramics; enamelling or glass	24.30.21.30	812	226 637	kg
Paints and varnishes, based on polyesters dispersed/dissolved in a non-aqueous medium, weight of the solvent > 50 % of the weight of the solution including enamels and lacquers	24.30.12.25	755	232 277	kg
Prepared water pigments for finishing leather; paints and varnishes (including enamels; lacquers and distempers) (excluding of oil)	24.30.22.15	736	254 909	kg
Black printing inks	24.30.24.50	556	220 206	kg
Paints and varnishes, based on acrylic or vinyl polymers dispersed/dissolved in non-aqueous medium, weight of the solvent > 50 % of the solution weight including enamels and lacquers	24.30.12.30	555	326 830	kg
Pigments, including metallic powders and flakes, dispersed in non-aqueous media, in liquid or paste form, of a kind used in the manufacture of paints; colorants and other colouring matter, n.e.s. put up for retail sale	24.30.22.40	388	86 679	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

MANUFACTURE OF PAINTS AND PRINTING INKS

The activities of paint and printing inks manufacturing generated EUR 11.3 billion of value added in 2004, accounting for 4.5 % of the value added of chemicals, rubber and plastics manufacturing and employed 176 700 people throughout the EU-27, the equivalent of 4.8 % of the chemicals, rubber and plastics workforce.

Germany was the main producer of paints and printing inks in the EU-27, creating a little under one third (30.6 %) of the value added generated across the EU-27. It was also relatively specialised in this activity, although not as specialised as Estonia and Slovenia, where the value added generated by their respective paints and printing inks manufacturing sectors made about twice the contribution to their national non-financial business economies as was the average across the EU-27.

The production index of paints and printing inks followed closely the broader growth in output for chemicals, rubber and plastics in the period between 1996 and 2000 (an average 4.4 % per annum compared to 4.7 % per annum respectively). Although the output of chemicals, rubber and plastics continued to grow at a relatively steady but slower rate through until 2006, there was a distinct stagnation in the production index of paints and printing inks through until 2006, when the output of paints and printing inks surged 6.0 %.

As a proportion of total expenditure (gross operating and tangible investment expenditure), investment in the paints and printing inks manufacturing sector was particularly low (3.0 %) and personnel costs relatively high (19.6 %). With average personnel costs in the sector (EUR 41 600 per employee) being a little higher than the average across all of the activities of chemicals, rubber and plastics manufacturing and the apparent labour productivity (EUR 64 200 per employed) being slightly lower, the wage adjusted labour productivity of those working in the paints and printing inks manufacturing sector (154.3 %) was about 10 % lower than the average across all the activities covered by this chapter and closer to the average ratio across the non-financial business economy.

Around two thirds (65.6 %) of the exports of paints and printing products (CPA Group 24.3) by the EU-27 Member States was accounted for by intra-EU trade. The value of exports to non-member countries (in other words EU-27 exports) in 2006 was EUR 5.6 billion, and the key non-member country markets for paints and printing inks were Russia (accounting for 17.6 % of EU-27 exports), the United States (7.9 %) and Turkey (6.6 %). Germany accounted for a little less than one third (30.6 %) of all exports (intra- and extra-EU trade) made by EU-27 Member States in 2006, and was, by far, the leading exporter. Imports of paints and printing products from outside the EU-27 were valued at EUR 1.5 billion in 2006, resulting in a trade surplus of EUR 4.1 billion.

Table 5.17

Production of selected products - glycerol; soap and detergents, cleaning and polishing preparations; perfumes and toilet preparations (CPA Group 24.5), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Washing preparations and cleaning preparations, with or without soap, p.r.s. including auxiliary washing preparations excluding those for use as soap, surface-active preparations	24.51.32.50	7 952	7 279 269	kg
Toilet waters	24.52.11.70	4 048	181 370	litre
Hair preparations (excluding shampoos, permanent waving and hair straightening preparations, lacquers)	24.52.17.00	2 728	-	-
Non-ionic surface-active agents (excluding soap)	24.51.20.50	1 557	1 053 073	kg
Shampoos	24.52.16.30	1 549	-	-
Perfumed bath salts and other bath preparations	24.52.19.70	1 469	-	-
Anionic surface-active agents (excluding soap)	24.51.20.20	1 160	1 321 831	kg
Lip make-up preparations	24.52.12.50	1 000	-	-
Surface-active preparations; whether or not containing soap; n.p.r.s. (excluding those for use as soap)	24.51.32.60	795	596 298	kg
Cationic surface-active agents (excluding soap)	24.51.20.30	509	482 867	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

MANUFACTURE OF SOAPS, DETERGENTS AND TOILETRIES

Soaps, detergents and toiletries manufacturing generated EUR 17.9 billion of value added in 2004, accounting for 7.2 % of the value added created by the chemicals, rubber and plastics manufacturing activities (NACE Subsections DG and DH). 273 700 people worked in soap, detergents and toiletries manufacturing across the EU-27 in 2004, representing about one in every thirteen workers within the chemicals, rubber and plastics manufacturing workforce.

The activity of perfumes and toiletries manufacturing (NACE Class 24.52) was slightly larger than the activity of soap and detergents manufacturing (NACE Class 24.51), accounting for a small majority of both employment (54.8 %) and value added (53.2 %). This situation, however, is almost entirely due to the relative importance of perfumes and toiletries manufacturing in France; as in nearly every other Member State for which information is available [18], soap and detergents manufacturing was the larger of the two activities. France accounted for 38.7 % of the value added of perfumes and toiletries manufacturing across the EU-27, whereas it only accounted for 12.5 % of the value added created by soap and detergents manufacturing. Poland and France were the only two Member States that were relatively specialised in soaps, detergent and toiletries manufacturing in the EU-27, the contribution of value added to their non-financial business economies being about twice the average across the EU-27.

Average personnel costs in the soaps, detergents and toiletries sector of the EU-27 (EUR 39 000 per employee), as well as apparent labour productivity (EUR 65 400 per person employed) and the wage adjusted labour productivity ratio (167.5 %) were all quite similar to the average for chemicals, rubber and plastics manufacturing as a whole in 2004.

A relatively high proportion (40.3 %) of exports (intra and extra-EU) by EU-27 Member States in perfumes and toilet preparations (CPA Class 24.52) went to non-member countries, particularly compared to the share (25.1 %) for soap and detergents, cleaning and polishing preparations (CPA Class 24.51).

The EU-27 trade surplus in soaps, detergents and toiletries (CPA Group 24.5) widened to EUR 9.6 billion in 2006, a gain of EUR 3.1 billion since 2001. This trade surplus was underpinned by exports valued at EUR 13.3 billion. Almost three quarters (74.9 %) of these exports were accounted for by perfumes and toiletries, for which the United States (17.2 %) and Russia (13.2 %) were the main markets. France was the leading exporter of perfumes and toilet preparations, accounting for 34.7 % of exports (intra- and extra-EU) by EU-27 Member States, whilst Germany had the highest share (24.3 %) of exports for soap and detergents, cleaning and polishing preparations.

MANUFACTURE OF OTHER CHEMICAL PRODUCTS

Other chemical products manufacturing generated EUR 15.0 billion of value added in 2004 in the EU-27, representing 6.0 % of the value added created by the chemicals, rubber and plastics manufacturing as a whole. In the EU-27 210 000 people were employed, representing a similar proportion (5.7 %) of the chemicals, rubber and plastics manufacturing workforce. A majority of the value added generated (55.3 %) and the number of persons employed (57.1 %) came from the manufacture of other chemical products not elsewhere classified (NACE Class 24.66), such as writing inks, lubricating preparations, additives and anti-freezing preparations.

The largest other chemical products manufacturing Member State was Germany, generating almost one quarter (24.8 %) of the EU-27's added value in 2004. However, Belgium was the most specialised Member State, the contribution of value added from this activity to the non-financial business economy in Belgium being almost two and a half times the EU-27 average.

During the period from 1996 to 2006, the overall growth in the output of other chemicals manufacturing was driven by the strong growth in the output of other chemical products not elsewhere classified in the three years after 2003 (a combined rise of 19.1 %).

[18] Portugal, 2003; Latvia, Malta, Slovenia, 2002; Bulgaria, Czech Republic, Ireland, Greece, Luxembourg and Finland, not available.

Table 5.18

Miscellaneous chemical products (CPA Groups 24.3, 24.5 and 24.6)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of chapter)	(EUR million)	(% share of chapter)	Trade balance (EUR million)	Cover ratio (%)
Miscellaneous chemical products	39 081	20.1	18 617	14.4	20 464	209.9
Paints and printing inks	5 581	2.9	1 525	1.2	4 056	366.0
Soap, detergents and toiletries	13 292	6.8	3 723	2.9	9 568	357.0
Other chemical products	20 208	10.4	13 368	10.4	6 840	151.2

Source: Eurostat (Comext)

The apparent labour productivity of the other chemical products sector in the EU-27 was EUR 70 000 per person employed in 2004, a slightly higher (5.3 %) figure than that for the chemicals, rubber and plastics manufacturing as a whole. Nevertheless, much higher (17.9 %) average personnel costs of EUR 46 000 per employee, meant that the wage adjusted labour productivity ratio (154.0 %) for the other chemical products sector was below the average for chemicals, rubber and plastics manufacturing (171.0 %).

The EU-27 trade surplus for other chemical products (CPA Group 24.6) in 2006 was valued at EUR 6.8 billion, resulting from exports of EUR 20.2 billion and the much increased imports of EUR 13.4 billion. EU-27 imports came mostly from the United States (34.8 %), Japan (17.5 %), Switzerland (12.1 %) and China (9.9 %). The strong rise in the value of imports from outside the EU-27 mainly concerned prepared unrecorded media (CPA Class 24.65) and other chemicals not elsewhere specified (CPA Class 24.66).

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).

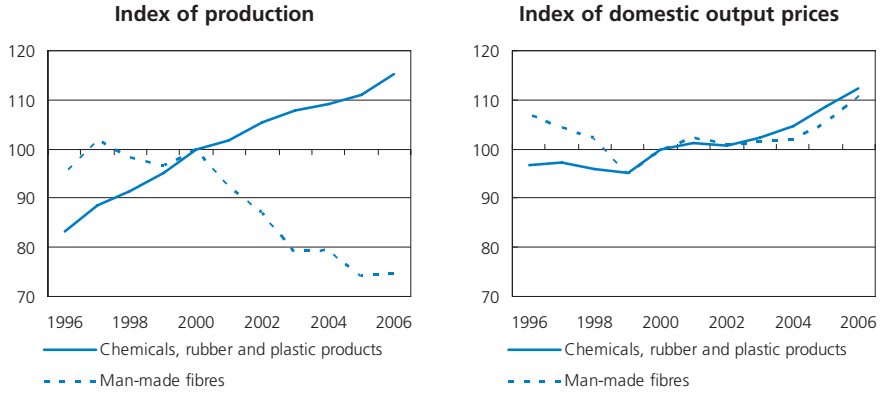
The man-made fibres covered within this subchapter can be characterised as being made from either natural polymers (such as viscose) or synthetic polymers (such as polyester and nylons), which have different types of production processes.

STRUCTURAL PROFILE

Among the activities of chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH), the man-made fibres manufacturing sector (NACE Group 24.7) was small both in terms of the value added generated and the numbers of people employed; the sector had some 360 enterprises which generated EUR 2.9 billion of added value in 2004 (1.2 % of the value added of chemicals, rubber and plastics manufacturing as a whole) and employed 53 000 people (1.4 % of the workforce). Germany was the principal producer [19] of man-made fibres, accounting for a little over one third (36.5 %) of the EU-27's value added.

Figure 5.9

Manufacture of man-made fibres (NACE Group 24.7)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

In contrast to the steady rise in the production index of chemicals, rubber and plastics manufacturing throughout the ten years until 2006, there was a marked decline in the output of man-made fibres in the period after 2000 (an average decline of 5.8 % per annum through until 2005), although the most recent rate of change, for 2006, show a moderate expansion (0.9 %) – see Figure 5.9. There was a relatively strong decline in the output price index for man-made fibres from 1996 through to a low in 1999 and the 1996 index level was not surpassed until 2006.

[19] Bulgaria, the Czech Republic, Denmark, Ireland, Greece, Cyprus, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Slovenia and Finland, not available.

COSTS, PRODUCTIVITY AND PROFITABILITY

Although average personnel costs in the man-made fibres manufacturing sector of the EU-27 were the lowest (at EUR 37 000 per employee) among the seven NACE groups that comprise the activities of chemicals, chemical products and man-made fibres manufacturing (NACE Subsection DG), they remained a third higher than the average level across the non-financial business economy (NACE Sections C to I and K) in 2004. The apparent labour productivity of the man-made fibres manufacturing sector (EUR 55 000 per person employed) was higher than the average for the non-financial business economy by a similar proportion, which led to almost identical wage adjusted productivity levels (149 % and 148 % respectively). Among the Member States [20], the highest wage adjusted productivity ratios for the sector in 2004 were for Poland (257.4 %) and the United Kingdom (231.9 %). The gross operating rate of the man-made fibres manufacturing sector (8.4 %) in 2004 was lower than each of the other eight NACE groups that comprise the activities of chemicals, rubber and plastics manufacturing and therefore also well below the average rate for the non-financial business economy (11.0 %).

[20] Bulgaria, the Czech Republic, Denmark, Estonia, Ireland, Greece, Cyprus, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Slovenia and Finland, not available.

EXTERNAL TRADE

Trade in man-made fibres (CPA Group 24.7) represented only a small part of the trade in chemicals, rubber and plastics (CPA Subsections DG and DH); EU-27 exports of man-made fibres were valued at EUR 1.4 billion in 2006, representing 0.7 % of the chemicals, rubber and plastic goods total. In these products the EU-27 had a small trade deficit (one of only two for the nine NACE groups that comprise chemicals, rubber and plastics) of EUR 537 million in 2006, as imports were valued at EUR 2.0 billion. Italy accounted for the largest proportion of EU-27 Member States' exports (intra- and extra-EU) of man-made fibres in 2006, ahead of Germany, the Netherlands and Belgium.

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.

Although no natural rubber is grown in the EU, synthetic rubber is produced. According to the International Rubber Study Group [21], the EU produced 2.7 million tonnes of synthetic rubber in 2006 (corresponding to 21.6 % of world production) but consumed 4.0 million tonnes of rubber (both synthetic and natural).

In addition to the REACH legislation, there have been other important policy developments of impact on rubber manufacturing in the EU. In March 2006, a Council decision [22] was taken to adopt the UNECE regulations 108 and 109 on retreaded tyres for motor and commercial vehicles that sets standards of safety and quality control for retreaded tyres as for new tyres. The growing emphasis on retreading or alternative uses of old tyres is important given the mid-July 2006 ban on putting shredded tyres into landfill.

[21] IRSG, http://www.rubberstudy.com/statistics-geninfo.aspx.
[22] 2006/443/EC.

STRUCTURAL PROFILE

There were 7 900 enterprises in the rubber products manufacturing sector (NACE Group 25.1) which employed 370 000 people across the EU-27 in 2004 and generated EUR 18.0 billion of added value, which corresponded to 7.2 % of the added value generated by activities of chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH). The added value of other rubber products (NACE Class 25.13) accounted for half (49.9 %) of the value added of the rubber products manufacturing sector in 2004, with the added value created by the rubber tyres and tubes manufacturing subsector (NACE Class 25.11) accounting for most of the rest. Indeed, the value added created by these two activities dwarfed the 2.2 % contribution made by the retreading and rebuilding of rubber tyres (NACE Class 25.12).

A little over three quarters (78.4 %) of the EU-27's value added generated by the rubber products manufacturing sector was concentrated in the five largest Member States, with Germany (25.7 % of the EU-27 total) and France (19.9 %) being the largest producers. However, Luxembourg was the Member State where the value added from rubber products manufacturing made the largest proportional contribution (2.8 % in 2003) to the value added of its non-financial business economy (NACE Sections C to I and K), almost eight times the average recorded across the EU-27 (just 0.4 %). Slovakia and the Czech Republic were the next most specialised Member States within this sector (see Table 5.20).

Table 5.19

Manufacture of rubber products (NACE Group 25.1)
Structural profile, EU-27, 2004 (1)

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Rubber products	7.9	58 000	18 000	370.0
Rubber tyres and tubes	:	30 000	8 600	135.0
Retreading and rebuilding of rubber tyres	1.5	1 420	401	13.2
Other rubber products	5.9	26 200	8 980	222.0

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

Table 5.20

Manufacture of rubber products (NACE Group 25.1)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	Germany (25.7)	Germany (20.8)	Luxembourg (780.5)	Luxembourg (627.6)
2	France (19.9)	France (18.7)	Slovakia (312.6)	Slovakia (254.4)
3	Italy (12.4)	Italy (12.4)	Czech Republic (258.8)	Slovenia (191.8)
4	United Kingdom (10.9)	Spain (8.6)	Slovenia (255.0)	Czech Republic (191.1)
5	Spain (9.6)	United Kingdom (8.4)	Romania (152.3)	France (163.9)

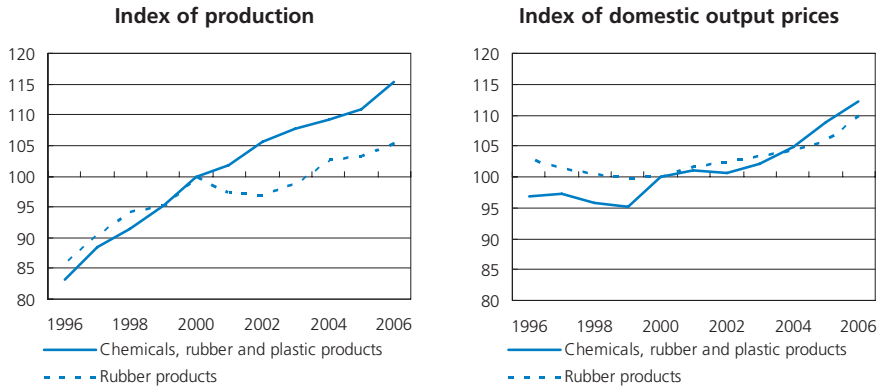
(1) Greece and Malta, not available; Luxembourg and Slovenia, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg and Slovenia, 2003.
Source: Eurostat (SBS)

The index of production for the rubber products sector followed an upward trend during the period 1996 to 2006, with annual average growth of 2.0 % per annum. However, 1996, 2001 and 2002 were marked by a contraction in the level of production for these activities, with the most significant reduction being recorded in 2001 (-2.7 %).

The domestic output price for rubber products manufacturing declined steadily through until 2000, after which there was a steady and longer rise (an average 1.6 % per annum) which was underlined by the strong rise in 2006 (see Figure 5.10). The development of the domestic output price index, in large part reflected developments in the price of natural rubber and petroleum costs for synthetic rubber.

Figure 5.10

Manufacture of rubber products (NACE Group 25.1)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

Table 5.21

Production of selected products - rubber products (CPA Group 25.1), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
New pneumatic rubber tyres for motor cars (including for racing cars)	25.11.11.00	10 431	311 457	units
New pneumatic rubber tyres for buses or lorries with a load index > 121	25.11.13.57	2 927	16 173	units
Seals; of vulcanised rubber	25.13.73.23	2 296	228 564	kg
Rubber-to-metal bonded articles for tractors and motor vehicles	25.13.73.45	1 902	248 342	kg
Moulded rubber articles for tractors and motor vehicles	25.13.73.47	1 870	880 192	kg
New pneumatic rubber tyres for buses or lorries with a load index <= 121	25.11.13.55	1 740	38 643	units
Compounded rubber unvulcanised (excluding with carbon black or silica and rubber solutions, dispersions)	25.13.20.19	1 498	766 552	kg
Rubber compounded with carbon black or silica; unvulcanized	25.13.20.13	1 227	619 318	kg
Rubber-to-metal bonded articles for other uses than for tractors and motor vehicles	25.13.73.49	1 133	128 384	kg
Extruded solid rubber rods and profiles	25.13.20.87	987	227 573	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

Table 5.22

Rubber products (CPA Group 25.1)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of chapter)	(EUR million)	(% share of chapter)	Trade balance (EUR million)	Cover ratio (%)
Rubber products	7 400	3.8	7 653	5.9	-252	96.7
New and used rubber tyres and tubes	3 496	1.8	4 411	3.4	-915	79.3
Retreaded pneumatic tyres, of rubber	67	0.0	12	0.0	55	573.0
Other rubber products	3 838	2.0	3 231	2.5	607	118.8

Source: Eurostat (Comext)

COSTS, PRODUCTIVITY AND PROFITABILITY

The value of investment expenditure as a share of total expenditure (gross operating and tangible investment expenditure) within the rubber products manufacturing sector was 4.1 % in 2004, a little below the share for chemicals, rubber and plastics manufacturing as a whole (4.3 %). Personnel costs in the rubber products manufacturing sector accounted for 22.1 % of total expenditure in 2004, a much higher proportion than the average across chemicals, plastics and rubber manufacturing as a whole (17.5 %), despite the fact that average personnel costs of EUR 33 000 per employee were 15.4 % less than the chemicals, plastics and rubber manufacturing average.

Each person employed in the EU-27's rubber products manufacturing sector generated an average of EUR 47 600 of value added in 2004, which more than covered the average personnel costs. The resulting wage adjusted labour productivity ratio of 145.0 % for the sector in 2004 was much less, however, than the ratio of 171.0 % for the chemicals, rubber and plastics manufacturing as a whole, although only marginally less than the average across the non-financial business economy (148.0 %). In Portugal, the Czech Republic and Finland, the wage adjusted labour productivity ratio of the rubber products sector was substantially above (between 40 % and 65 % higher) the ratios of their respective non-financial business economies.

The profitability of the EU-27's rubber products manufacturing sector, as measured by the gross operating rate, was below the average rate across its non-financial business economy in 2004 (9.9 % compared with 11.0 %) and more noticeably below the rate across its chemicals, rubber and plastics manufacturing activities as a whole (12.0 %). The highest gross operating rates for the rubber products manufacturing sector were recorded in Finland (27.3 %) and Portugal (25.4 %) in 2004 [(23)], at levels that were well over double the average rates across their respective national non-financial business economies.

[(23)] Luxembourg and Slovenia, 2003; Greece and Malta, not available.

EXTERNAL TRADE

Exports of rubber products (CPA Group 25.1) from the EU-27 were valued at EUR 7.4 billion in 2006, a 3.8 % share of the value of exports from the chemical, rubber and plastics sector as a whole (CPA Subsections DG and DH). With imports of rubber products from non-member countries valued at EUR 7.7 billion, the EU-27 ran a small trade deficit of EUR 252 million in 2006 (see Table 5.22). The make-up of this deficit, however, reflects two distinct trends; the trade deficit for rubber tyres and tubes (CPA Class 25.11) widened to EUR 915 million in 2006, while the trade surplus for other rubber products (CPA Class 25.13) increased to EUR 607 million. It should be noted that there is almost no external trade in retreaded and rebuilt tyres (CPA Class 25.12).

The main exporters of rubber products in 2006 were Germany with 23.0 % of EU-27 Member States exports (intra- and extra-EU) and France with 14.4 %, and these two Member States had the two largest trade surpluses in these goods (EUR 0.9 billion and EUR 1.1 billion respectively). After rapid increases, the trade surpluses for rubber products in the Czech Republic and Poland reached EUR 677 million and EUR 442 million in 2006.

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.

Among the distinct groups of plastics, the five main groups are polyvinylchloride (PVC), polystyrene (PS), polyethylene terephthalate (PET), polyethylene (PE) - including low density, linear low-density and high-density forms – and polypropylene (PP), which according to the European Market Research and Statistics Working Group represented about 74 % of all plastics demand in Europe [24] in 2005. Primary forms of plastics (included as part of Subchapter 5.1), are converted into a very broad range of products. According to the Association of Plastics Manufacturers [25], over one third (37 %) of plastics were used as packaging in 2005 in Europe [26], by far the single largest end-use, ahead of construction (21 %), and automotive applications (8 %).

Policy developments in recent years have tended to concentrate on environmental considerations. The imposition of definitive anti-dumping duties [27] on imports of certain types of PETs originating in India, Indonesia, Malaysia, the Republic of Korea, Thailand and Taiwan by the Council, serve as a reminder of the importance of trade policy developments.

[24] EU-25 plus Norway and Switzerland.
[25] APME, http://www.plasticseurope.org.
[26] EU-25 plus Norway and Switzerland.
[27] Council Regulations 192/2007/EC and 193/2007/EC.

Table 5.23

Manufacture of plastic products (NACE Group 25.2)
Structural profile, EU-27, 2004 (1)

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Plastic products	57.4	185 000	60 000	1 400.0
Plastic plates, sheets, tubes and profiles	8.3	50 000	14 000	280.0
Plastic packing goods	:	35 500	10 700	250.0
Builders' ware of plastic	11.0	28 700	9 110	240.0
Other plastic products	30.0	72 000	24 000	607.0

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

STRUCTURAL PROFILE

The plastics manufacturing sector (NACE Group 25.2) of the EU-27 employed 1.4 million persons in 2004, corresponding to about 38 % of the chemicals, rubber and plastics manufacturing (NACE Subsections DG and DH) workforce. The sector had approximately 57 400 enterprises which generated EUR 60.0 billion of value added in 2004, corresponding to a little less than one quarter (24.0 %) of the value added of chemicals, rubber and plastics manufacturing activities in the EU-27.

Other plastics manufacturing (NACE Class 25.24), covering the production of goods such as plastic tableware and kitchenware as well as electrical insulating, was the largest activity within the sector in 2004, generating two fifths of sectoral value added. A little under one quarter (23.3 %) of sectoral value added came from the activity of plastic plates, sheets, tubes and profiles manufacturing (NACE Class 25.21), with the activities of plastic packing goods manufacturing (NACE Class 25.22) and builders' ware of plastic manufacturing (NACE Class 25.23) providing the remainder.

Among the Member States [28], the plastics manufacturing sector in Germany generated the most value added in 2004, accounting for a little more than one quarter (26.7 %) of the EU-27 total. This was a significantly higher proportion that the next highest from the United Kingdom (15.6 %). There was not a particularly strong level of relative specialisation within the plastics manufacturing sector (see Table 5.24), the highest specialisation in value added terms being for Slovenia, where the sector contributed 1.8 % (2003) of non-financial business economy value added compared to an average 1.2 % across the EU-27.

Between 1996 and 2000 the production index of plastics manufacturing in the EU-27 rose in an almost identical way to the index for chemicals, rubber and plastics manufacturing. Thereafter the output of plastics manufacturing at first levelled out, then rose slowly through to 2004, stabilised again in 2005 and returned to strong growth in 2006, at a rate that slightly exceed that for the output of chemicals, rubber and plastics manufacturing as a whole (see Figure 5.11).

[28] Luxembourg and Slovenia, 2003; Greece and Malta, not available.

Table 5.24

Manufacture of plastic products (NACE Group 25.2)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	Germany (26.7)	Germany (22.1)	Slovenia (155.2)	Slovenia (153.7)
2	United Kingdom (15.6)	United Kingdom (13.3)	Luxembourg (129.7)	Czech Republic (136.4)
3	France (13.2)	France (12.3)	Czech Republic (129.7)	Germany (133.7)
4	Italy (12.1)	Italy (11.7)	Germany (127.4)	Poland (124.7)
5	Spain (6.6)	Poland (7.5)	Hungary (116.0)	Slovakia (119.4)

(1) Greece and Malta, not available; Luxembourg and Slovenia, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg and Slovenia, 2003.
Source: Eurostat (SBS)

Table 5.25

Production of selected products - plastic products (CPA Group 25.2), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Sacks and bags of polymers of ethylene (including cones)	25.22.11.00	6 646	3 133 977	kg
Plastic carboys; bottles; flasks and similar articles for the conveyance or packing of goods; of a capacity <= 2 litres	25.22.14.50	6 181	92 686 681	units
Cellular plates; sheets; film; foil and strip of polyurethanes	25.21.41.50	3 397	2 427 697	kg
Monofilament with any cross-sectional dimension > 1 mm; rods; sticks and profile shapes of polymers of vinyl chloride (including surface worked but not otherwise worked)	25.21.10.70	3 364	1 438 427	kg
Plastic parts for machinery and mechanical appliances excluding internal combustion piston engines, gas turbines	25.24.90.10	3 097	-	-
Plastic stoppers; lids; caps and other closures (excluding for bottles)	25.22.15.27	3 075	763 745	kg
Rigid tubes; pipes and hoses of polymers of vinyl chloride	25.21.21.57	2 813	2 038 466	kg
Cellular plates; sheet; film; foil and strip of polymers of styrene	25.21.41.20	2 581	1 054 453	kg
Plastic baths; shower-baths, sinks and wash-basins	25.23.12.50	1 665	18 520	units

(1) Estimated.
Source: Eurostat (PRODCOM)

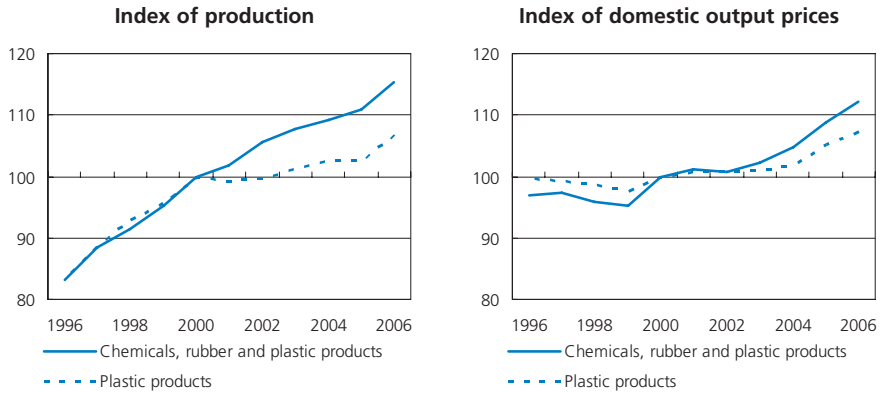
Within the plastics manufacturing sector, there were some highly contrasting developments in the production indices of the various activities, most notably after 2000. The production index of builders' ware of plastic declined strongly in 2001 and 2002, from which there had been only a partial recovery by 2006; the output of other plastics products remained little changed in the years after 2000; the output of plastic plates, sheets, tubes and profiles only surpassed 2000 levels in 2004; whilst the steady growth in the output of plastic packing goods continued through until 2006.

COSTS, PRODUCTIVITY AND PROFITABILITY

As a proportion of total expenditure, investment expenditure in the plastics manufacturing sector was 5.1 % in 2004, the highest proportion among the nine NACE groups that comprise the activities of chemicals, rubber and plastics manufacturing. The proportion of total expenditure (gross operating and tangible investment expenditure) taken by personnel costs in the plastics sector was also above the average of chemicals, rubber and plastics manufacturing as a whole (21.6 % compared to 17.5 %), despite the fact that average personnel costs in the sector (EUR 29 000) were an average EUR 10 000 per employee less than across chemicals, rubber and plastics manufacturing in 2004.

Figure 5.11

Manufacture of plastic products (NACE Group 25.2)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

Each person employed in the EU-27's plastics manufacturing sector generated an average of EUR 42 000 of value added in 2004, a little more than one third less (36.8 %) than the average across chemicals, rubber and plastics manufacturing as a whole, but very similar to the average across the non-financial business economy. Average personnel costs across the sector were also similar to the level across the non-financial business economy and as a result so was the wage adjusted labour productivity ratio (145.0 %), although it was much less than the 171.0 % across the chemicals, rubber and plastics manufacturing. The wage adjusted labour productivity ratio for the plastics sector was highest [29] in Romania (247.1 %) in 2004, a little ahead of Poland (224.9 %), Latvia (223.2 %) and Bulgaria (221.9 %). The wage adjusted labour productivity ratio for the plastics sector in Romania was also considerably higher than the average ratio for the national non-financial business economy (52.9 percentage points higher), this being the greatest difference among the Member States.

The gross operating rate of the plastics manufacturing sector in the EU-27 was 10.4 % in 2004, a slightly lower rate than for the non-financial business economy (11.0 %).

[29] Luxembourg and Slovenia, 2003; Greece and Malta, not available.

Table 5.26

Plastic products (CPA Group 25.2)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of chapter)	(EUR million)	(% share of chapter)	Trade balance (EUR million)	Cover ratio (%)
Plastic products	17 279	8.9	13 437	10.4	3 842	128.6
Plastic plates, sheets, tubes and profiles	7 533	3.9	3 859	3.0	3 674	195.2
Packaging products of plastics	2 381	1.2	2 661	2.1	-280	89.5
Builders' ware of plastics	1 551	0.8	819	0.6	732	189.4
Other plastic products	5 814	3.0	6 097	4.7	-283	95.4

Source: Eurostat (Comext)

EXTERNAL TRADE

The value of EU-27 exports of plastics products (CPA Group 25.2) was EUR 17.3 billion in 2006, while imports were valued at EUR 13.4 billion, enabling the EU-27 to register a trade surplus in these goods of EUR 3.8 billion (see Table 5.26). Among the four CPA classes that comprise plastic products, the largest trade surplus (EUR 3.7 billion) in 2006 was for plastic plates, sheets, tubes and profiles (CPA Class 25.21). Indeed, in 2006 the EU-27 recorded small trade deficits for packaging products of plastics (CPA Class 25.22) and other plastic products (CPA Class 25.24).

Germany was the principal exporter of plastic products among the Member States, accounting for 28.3 % of the EU-27 member States' (intra- and extra-EU) exports in 2006. Germany also had the largest trade surplus in plastic products, which widened to EUR 10.0 billion in 2006. The only other Member States with significant trade surpluses in plastic products in 2006 were Italy (EUR 4.5 billion) and Belgium (EUR 1.2 billion).

Table 5.27

Manufacture of chemicals and chemical products (NACE Division 24)
Main indicators, 2004

	EU-27 (1)	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands)	32.0	0.8	0.6	1.1	0.4	3.3	0.1	0.2	:	4.2	3.9	5.8	0.1	0.1	0.1
Turnover (EUR million)	630 000	34 115	834	4 757	7 717	145 933	308	29 399	:	41 598	116 889	71 834	193	127	463
Production (EUR million)	600 000	33 717	797	4 615	7 856	127 879	257	28 588	:	37 750	105 540	65 984	168	116	475
Value added (EUR million)	170 000	9 650	191	1 191	3 272	42 341	60	12 505	:	10 254	25 134	15 045	67	52	89
Gross operating surplus (EUR million)	80 000	4 948	107	752	1 627	14 632	36	11 287	:	4 570	9 376	5 825	31	29	46
Purchases of goods & services (EUR million)	460 000	25 790	663	3 645	4 910	103 196	249	17 048	:	32 541	92 273	56 714	128	78	378
Personnel costs (EUR million)	90 000	4 702	84	438	1 644	27 710	24	1 217	:	5 684	15 758	9 220	36	23	43
Investment in tangible goods (EUR million)	23 000	721	68	299	673	5 293	13	774	:	1 794	3 622	2 142	15	15	41
Employment (thousands)	2 000	69	25	42	30	460	3	24	:	137	324	199	2	4	5
Apparent labour prod. (EUR thousand)	90.0	140.3	7.7	28.3	110.4	92.1	21.1	517.9	:	75.0	77.7	75.5	35.6	12.3	17.0
Average personnel costs (EUR thousand)	47.0	69.0	3.5	10.7	55.6	60.5	8.5	50.5	:	42.2	48.7	48.2	19.1	5.5	8.3
Wage adjusted labour productivity (%)	186.0	203.3	221.0	263.9	198.7	152.3	247.7	1 025.1	:	177.7	159.4	156.8	186.0	224.9	205.2
Gross operating rate (%)	12.7	14.5	12.8	15.8	21.1	10.0	11.6	38.4	:	11.0	8.0	8.1	15.9	22.8	9.9
Investment / employment (EUR thousand)	12.1	10.5	2.7	7.1	22.7	11.5	4.7	32.1	:	13.1	11.2	10.8	7.8	3.4	7.8

	LU (2)	HU	MT	NL	AT	PL	PT (2)	RO	SI	SK	FI	SE	UK	NO
No. of enterprises (thousands)	0.0	0.7	:	0.9	0.4	2.4	0.8	1.2	0.2	0.2	0.3	0.9	3.7	0.3
Turnover (EUR million)	550	4 433	:	46 904	7 824	10 636	4 091	2 554	2 107	1 000	6 339	13 666	73 933	5 347
Production (EUR million)	369	4 141	:	43 349	7 043	9 777	3 760	1 991	2 043	976	5 987	14 121	65 891	5 160
Value added (EUR million)	98	1 434	:	9 128	2 476	3 084	1 039	431	834	183	1 922	5 978	23 338	1 803
Gross operating surplus (EUR million)	44	871	:	5 262	1 099	2 050	473	208	440	80	1 059	3 438	11 228	946
Purchases of goods & services (EUR million)	463	3 018	:	37 691	5 600	7 941	3 096	2 199	1 356	816	4 661	9 117	50 327	3 762
Personnel costs (EUR million)	54	564	:	3 866	1 377	1 035	566	223	394	104	863	2 540	12 111	858
Investment in tangible goods (EUR million)	21	651	:	1 344	461	634	188	311	236	52	337	586	3 240	322
Employment (thousands)	1	34	:	67	27	102	22	56	13	13	18	44	227	13
Apparent labour prod. (EUR thousand)	67.4	42.5	:	136.8	92.4	30.2	47.8	7.6	64.0	14.0	106.6	135.2	102.9	135.4
Average personnel costs (EUR thousand)	37.3	16.8	:	58.1	51.8	10.5	26.3	4.0	30.4	8.0	48.0	63.2	54.0	64.6
Wage adjusted labour productivity (%)	180.7	253.1	:	235.5	178.5	289.0	181.8	190.8	210.7	176.2	222.2	213.8	190.6	209.6
Gross operating rate (%)	7.9	19.6	:	11.2	14.0	19.3	11.6	8.1	20.9	8.0	16.7	25.2	15.2	17.7
Investment / employment (EUR thousand)	14.6	19.3	:	20.1	17.2	6.2	8.7	5.5	18.1	4.0	18.7	13.3	14.3	24.2

(1) Rounded estimates based on non-confidential data. (2) 2003.
Source: Eurostat (SBS)

Table 5.28

Manufacture of rubber and plastic products (NACE Division 25)
Main indicators, 2004

	EU-27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands)	65.3	0.8	1.3	3.1	0.7	6.9	0.2	0.3	:	5.8	5.3	12.6	0.1	0.2	0.4
Turnover (EUR million)	243 462	7 733	385	5 291	3 235	61 552	215	1 382	:	18 193	40 185	36 601	82	136	437
Production (EUR million)	226 397	7 025	368	4 994	3 169	55 938	206	1 308	:	17 111	37 502	34 963	76	131	406
Value added (EUR million)	75 510	2 043	76	1 281	1 344	20 637	52	543	:	5 664	11 526	9 522	35	34	80
Gross operating surplus (EUR million)	25 051	797	41	650	423	5 723	20	224	:	2 061	2 743	3 588	13	19	39
Purchases of goods & services (EUR million)	169 492	5 734	340	4 162	1 856	41 158	168	848	:	12 937	28 176	27 385	51	107	366
Personnel costs (EUR million)	50 459	1 246	35	633	921	14 914	32	319	:	3 603	8 783	5 934	22	15	41
Investment in tangible goods (EUR million)	11 220	213	45	452	240	2 467	13	62	:	985	1 670	1 427	6	18	71
Employment (thousands)	1 748	27	19	75	22	387	4	10	:	123	241	209	1	4	9
Apparent labour prod. (EUR thousand)	43.2	75.0	3.9	17.1	62.0	53.4	12.3	55.6	:	45.9	47.8	45.5	27.2	8.6	9.3
Average personnel costs (EUR thousand)	29.8	47.3	1.9	8.9	42.9	39.0	7.5	33.0	:	29.9	36.5	31.2	17.5	3.9	4.9
Wage adjusted labour productivity (%)	144.9	158.8	205.6	193.3	144.7	136.9	163.3	168.6	:	153.5	131.0	145.9	155.5	219.0	191.1
Gross operating rate (%)	10.3	10.3	10.7	12.3	13.1	9.3	9.4	16.2	:	11.3	6.8	9.8	15.2	14.2	8.8
Investment / employment (EUR thousand)	6.4	7.8	2.3	6.0	11.1	6.4	3.0	6.4	:	8.0	6.9	6.8	5.0	4.6	8.3

	LU (1)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
No. of enterprises (thousands)	0.0	2.5	:	1.3	0.6	8.9	1.1	2.2	1.2	0.4	0.7	1.7	7.0	0.4
Turnover (EUR million)	1 464	3 058	:	6 457	4 762	7 346	2 394	1 242	1 279	1 299	2 504	4 227	30 638	975
Production (EUR million)	1 250	2 234	:	5 975	4 250	6 882	2 302	1 160	1 162	1 196	2 507	3 966	29 072	894
Value added (EUR million)	483	656	:	1 951	1 678	1 946	762	289	403	264	1 026	1 456	11 330	312
Gross operating surplus (EUR million)	159	276	:	650	596	1 158	355	172	202	122	433	358	4 022	79
Purchases of goods & services (EUR million)	995	2 412	:	4 546	3 244	5 631	1 697	1 019	920	1 051	1 614	2 874	19 250	673
Personnel costs (EUR million)	306	380	:	1 301	1 083	787	407	117	201	142	592	1 098	7 308	233
Investment in tangible goods (EUR million)	35	199	:	283	235	577	202	212	44	94	158	241	1 161	33
Employment (thousands)	6	42	:	33	28	132	25	45	13	19	16	30	218	5
Apparent labour prod. (EUR thousand)	82.5	15.7	:	58.7	60.3	14.7	30.3	6.5	30.6	14.1	63.4	49.3	52.0	56.9
Average personnel costs (EUR thousand)	52.3	9.3	:	39.8	39.3	6.5	16.3	2.7	16.1	7.6	36.9	42.5	34.4	43.2
Wage adjusted labour productivity (%)	157.7	169.3	:	147.3	153.4	226.5	185.9	244.7	190.2	185.1	171.6	115.9	151.2	131.8
Gross operating rate (%)	10.8	9.0	:	10.1	12.5	15.8	14.8	13.9	15.8	9.4	17.3	8.5	13.1	8.1
Investment / employment (EUR thousand)	6.0	4.8	:	8.5	8.5	4.4	8.1	4.8	3.3	5.0	9.8	8.2	5.3	6.0

(1) 2003.
Source: Eurostat (SBS)