

# United Kingdom Minerals Yearbook 2002

Statistical data to 2001

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By J A Hillier, G R Chapman, D E Highley,  
R W Gatliff, T B Colman, R White and K A Linley

## Minerals in the national economy

Gross Domestic Product (GDP) measures the value of all goods and services produced in the UK economy for final consumption. Mining and quarrying, which includes the extraction of oil and gas, contributed £25 665 million, or 2.9 per cent, to GDP in 2001. The extraction of oil and gas accounted for £23 379 million, the mining of coal £598 million and other mining and quarrying £1 689 million. The total value, expressed as sales (as opposed to gross valued added), of minerals produced in the UK on an ex-works basis decreased slightly from £27 317 million in 2000 to £26 585 million in 2001. This was chiefly due to the fall in the price of oil to an average, in 2001, of £128/tonne, although this was largely offset by a rise in the price of natural gas. The total value of oil and gas production fell by 6.3 per cent from 2000 to 2001 in terms of constant (1995) prices. The total value of construction and industrial minerals was slightly higher in 2001 at £2 500 which represents a very small increase over the preceding year in terms of constant (1995) prices. The relative importance of the different sectors of the minerals industry in 2001, in terms of value, were as follows:

<b>UK: Value of mineral production</b>		£ million		
	<b>1999</b>	<b>2000</b>	<b>2001</b>	
Oil and natural gas liquids	10 984	17 392	14 732	
Natural gas	5 031	6 606	8 325	
Coal	1 076	916	1 028	
Aggregates	1 488	1 515	1 645	
Other construction minerals	123	120	138	
Industrial minerals	762	768	717	
Metalliferous minerals	<1	<0.2	<0.2	
<b>Total</b>	<b>19 464</b>	<b>27 317</b>	<b>26 585</b>	

Production of oil fell by 8.3 million tonnes to 117.8 million tonnes and is estimated to have fallen to 116 million tonnes in 2002. Cumulative production of oil, including natural gas liquids, from onshore and offshore discoveries was 2 687 million tonnes to the end of December 2001. Total remaining proven, probable and possible reserves at end-December 2001 were 1 430 million tonnes, a decrease of 60 million tonnes on 2000. Natural gas production fell by 2.7 million tonnes to 105.8 million tonnes (oil equivalent). Estimated production in 2002 is 103 million tonnes. Cumulative production of gas from onshore and offshore discoveries was 1 624 billion m<sup>3</sup> at the end of 2001. Total remaining proven and probable reserves at end-December 2001 were 1 510 billion m<sup>3</sup>, an increase of 10 billion on the 2000 total.

Coal production rose slightly by 0.7 million tonnes to 31.9 million tonnes in 2001 and the amount used in electricity generation rose to 31.7 million tonnes (39.1 per cent of total electricity generation). This reflected a continued strong demand for coal caused by relatively high gas prices. No further deep mines were closed during 2001. For the first time, the tonnage of imports exceeded that of production.

### UK: Primary fuel consumption for total energy and use in electricity generation

Million tonnes of oil equivalent

	<b>Total energy</b>		<b>Electricity generation</b>	
	<b>2000</b>	<b>2001</b>	<b>2000</b>	<b>2001</b>
Coal	39.3	43.0	28.7	31.7
Petroleum	76.6	76.4	1.6	1.4
Natural gas	97.1	96.3	27.9	26.8
Nuclear	19.6	20.8	19.6	20.8
Hydroelectricity	0.5	0.4	0.4	0.4
Net electricity imports	1.2	0.9	—	—
<b>Total</b>	<b>234.4</b>	<b>237.8</b>	<b>78.2</b>	<b>81.0</b>

Production of primary aggregate minerals increased slightly in 2001 according to the official statistics. Production of marine-dredged sand and gravel fell slightly and contributed 20.3 per cent of total production in 2001. Production of both china clay and ball clay fell in 2001 but these minerals continued to be the nation's most valuable mineral exports after oil and natural gas.

The Aggregates Levy of £1.60/tonne applied to sand and gravel, and crushed rock used for aggregate purposes was introduced on 1<sup>st</sup> April 2002. The Levy is intended to reflect the environmental costs of aggregates quarrying in line with the Government's statement of intent on environmental taxation. In addition, it is intended to encourage the demand for, and supply of, alternative materials, such as selected mineral wastes, industrial by-products and recycled materials, thereby reducing overall demand for natural aggregates.

The full effects of the Levy have yet to be fully evaluated. However, some aggregate producers are reporting cash flow problems and an increase in by-product waste stockpiles of lower quality materials at quarries, which are proving difficult to sell. HM Customs and Excise have undertaken a formal consultation of UK quarry operators on the issue of waste aggregates to establish the extent and nature of the problem. It is also reported that the aggregates industry in Northern Ireland is facing severe competition from imports from the Republic of Ireland.

## BRITISH GEOLOGICAL SURVEY

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The London Information Office also maintains a reference collection of BGS publications including maps for consultation.

The Survey publishes an annual catalogue of its maps and other publications; this catalogue is available from any of the BGS Sales Desks.

*The British Geological Survey carries out the geological survey of Great Britain and Northern Ireland (the latter as an agency service for the government of Northern Ireland), and of the surrounding continental shelf, as well as its basic research projects. It also undertakes programmes of British technical aid in geology in developing countries as arranged by the Department for International Development and other agencies.*

*The British Geological Survey is a component body of the Natural Environment Research Council.*

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The compilers would also like to thank their colleagues in the British Geological Survey, in particular P Lappage, J P Stevenson and J I Rayner.

### *Bibliographical reference*

**British Geological Survey.** 2003. *United Kingdom Minerals Yearbook 2002*. (Keyworth, Nottingham: British Geological Survey.)

### *Cover photograph*

A limestone face at RMC's Dove Holes quarry in Derbyshire. Dove Holes is the company's largest UK quarry producing over 3 million tonnes per annum.

(Photograph by kind permission of RMC Aggregates (UK) Ltd)

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## Preface

In response to the views of a number of users of the *Yearbook* who were individually interviewed in 2001 we have revised its format this year with the aim of making it easier to use. The chief difference is that the commodity pages are now arranged alphabetically and that the text, tables and diagrams for each commodity are all contained in the same section to facilitate rapid navigation through the book. A new interactive database has also been designed to hold UK minerals statistics and it is planned that this will be available for on-line access in the future.

The Aggregate Minerals Survey for 2001 for England and Wales was completed at the end of 2002 by BGS on behalf of the Office of the Deputy Prime Minister (ODPM) and the Welsh Assembly Government. Large tonnages of aggregates will be required to fulfil the Government's target for new housing in the south-east of England. We have, accordingly, included in this edition of the *Yearbook* additional tables on comparisons of regional aggregate survey results, reserves of aggregates, permissions for mineral workings, and the use of recycled and secondary materials. A significant milestone was reached in 2001: it was the first year in which coal imports exceeded coal production, even though UK output rose by nearly 3 per cent above the 2000 total.

The *United Kingdom Minerals Yearbook* is also available in downloadable form on the BGS website [www.mineralsUK.com](http://www.mineralsUK.com) *Minerals: Britain and the World*. The website is hosted on the BGS website [www.bgs.ac.uk](http://www.bgs.ac.uk), and is sponsored by the Department of Trade and Industry (DTI) and the Office of the Deputy Prime Minister (ODPM). As well as this book, it contains a wide range of information on mineral resources, legislation, mineral exploration, mining and production and trade, and includes a number of free download reports.

I wish to record our thanks to colleagues in the Government statistical service who have collaborated so readily in providing the basic data included in this volume. In addition I would like to thank the many organisations, trade associations, companies and individuals who have generously supplied additional information. The support of the ODPM and the DTI is also gratefully acknowledged.

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*Executive Director*

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March 2003

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## Explanatory notes

**Coverage:** Except where otherwise stated all the statistics shown relate to the United Kingdom of Great Britain and Northern Ireland.

The Channel Islands and the Isle of Man are also included in the 'United Kingdom' overseas trade statistics, but are excluded from the production statistics. The UK part of the Continental Shelf is included in both the overseas trade and the production statistics.

All figures for the latest year shown are provisional and subject to revision.

**Rounding of figures:** In tables where figures have been rounded to the nearest final digit, there may be a slight discrepancy between the sums of the constituent items and the total as shown.

**Units:** The statistics in this volume are expressed in metric units. The following factors are given for converting from or into non-metric units:

<i>Troy ounce</i>	<i>Kilogram</i>
1	= 0.0311035
32.1507	= 1
<i>Pound</i>	<i>Kilogram</i>
1	= 0.453592
2.20462	= 1
<i>Hundredweight</i>	<i>Kilogram</i>
1	= 50.8023
0.019684	= 1
<i>Long ton</i>	<i>Tonne</i>
1	= 1.01605
0.984206	= 1

<i>Square yard</i>	<i>Square metre</i>
1	= 0.836127
1.19599	= 1
<i>Cubic yard</i>	<i>Cubic metre</i>
1	= 0.764555
1.30795	= 1
<i>UK gallon</i>	<i>Litre</i>
1	= 4.54596
0.2199755	= 1

**Symbols:** The following symbols are used throughout:

...	Figures not available
0	Quantity less than half the unit shown
—	Nil
nes	Not elsewhere specified
BGS	British Geological Survey

**Apparent consumption:** BGS estimates of apparent consumption of metals are based on the formula: production (primary and secondary) plus imports minus exports. All the main traded forms of the metal are taken into account, for example, ores, concentrates, intermediate products, unwrought metal and alloys, oxides, etc. Figures are given in terms of metal content. No information is available for stock changes. Such estimates of apparent consumption are made for metals for which there are no reported consumption statistics: in this edition data are given for chromium, cobalt, manganese, molybdenum, titanium, vanadium and zirconium.

**Trade:** Trade figures from INTRASTAT, the new system for measuring intra-EC trade became available from 1993. This was introduced following the abolition of Customs controls as a result of the Single Market and trade figures are now compiled from data provided directly from companies instead of Customs documents. Extra-EC trade continues to be collected from Customs declarations as before. The transition from one system to another has produced some anomalous figures in terms of the size of the trade in and unit value of certain commodities. These factors should be taken into consideration when evaluating trends. Figures given in this edition are the combined intra and extra-EC trade data.

Values of commodities are cif for imports and fob for exports.

The terms 'scrap', 'unwrought' and 'wrought' metal include alloys unless these are separately shown.

## Sources of information

In compiling this volume the British Geological Survey has largely relied upon data originally collected by other bodies. A list of the Departments and organisations concerned is given below, together with the titles of principal publications that have been used. In many cases the BGS has also been provided with supplementary or unpublished information. Interested readers are strongly advised to consult the original sources themselves wherever possible and in this connection may wish to refer not only to the publications as listed here, but also earlier issues in the same series, some of which were published under different titles.

Information about the production of minerals in the United Kingdom is given from 1853 to 1881 in a series of Geological Survey Memoirs entitled *Mineral Statistics*, by Robert Hunt, Keeper of Mining Records; earlier information for certain metalliferous minerals is also available. Since 1873 all collieries and metalliferous mines have been required by statute to complete annual returns of production, and since 1895 the same has applied to quarries. These returns were made to the Home Office, which, in 1882, was made responsible for the publication of *Mineral Statistics*. In 1920 responsibility for collection of returns was transferred to the Mines Department (Board of Trade) and statistics were subsequently published in the Annual Reports of the Secretary of Mines. The Mines Department was incorporated into the Ministry of Fuel and Power in 1942 and statistics from 1938 to 1972 were published in their Statistical Digests (subsequently the Digests of Energy Statistics of the Department of Trade and Industry). In 1973 responsibility for the collection of returns relating to most minerals other than fuels was transferred to the Business Statistics Office (formerly part of the Department of Trade and Industry, now Office for National Statistics). The Department of Trade and Industry, and previously the Department of Energy, now collects statistics relating to fuel minerals (coal, natural gas and crude petroleum). Returns of common sand and gravel were collected by the Department of the Environment up to 1974. Details of mineral production in Northern Ireland since 1922 have been obtained by the Northern Ireland Government.

1853–1881 *Mineral Statistics*, by Robert Hunt, Keeper of Mining Records; Memoirs of the Geological Survey  
1882–1896 *Mineral Statistics*; Home Office  
1897–1919 *Mines and Quarries*: General Report with Statistics; Home Office  
1920 *Mines and Quarries*: General Report with Statistics; Mines Department, Board of Trade  
1921–1938 *Annual Report of the Secretary of Mines*; Mines Department, Board of Trade (Great Britain only from 1922)  
1938–1972 *Statistical Digest*; Ministry of Fuel and Power (Great Britain only)  
1973–2002 *Digest of United Kingdom Energy Statistics*; Department of Trade and Industry, formerly published by Department of Energy  
1973–1993 *Minerals (PA1007)*; Central Statistical Office  
1994–2001 *Mineral Extraction in Great Britain (PA 1007)*; Office for National Statistics  
1922–1949 *Annual Report of the Mining and Quarrying industries in Northern Ireland*; Ministry of Commerce (Northern Ireland)  
1950–1981 *Mineral Production in Northern Ireland*; Department of Commerce (Northern Ireland)  
1982–1995 *Mineral Production in Northern Ireland*; Department of Economic Development (Northern Ireland)

1996–1998 *Annual Minerals Statement*;  
Department of Economic Development (Northern Ireland)

1999–2001 *Annual Minerals Statement*;  
Department of Enterprise, Trade and Investment (Northern Ireland)

Department of Trade and Industry  
*Digest of United Kingdom Energy Statistics (annual)*  
*Monthly Statistics of Building Materials and Components*  
*DTI website for energy and construction information*

Office for National Statistics  
*Annual Abstract of Statistics*  
*Monthly Digest of Statistics*  
*Mineral Extraction in Great Britain (annual)*  
*United Kingdom National Accounts*

H.M. Customs and Excise  
*Overseas Trade Statistics (monthly, quarterly and annual)*  
*Guide to the Classification for Overseas Trade Statistics*

Crown Estate Commissioners, The Crown Mineral Agent

Department of Enterprise, Trade & Investment (Northern Ireland)  
*Annual Minerals Statement*

Department of Trade and Industry (Isle of Man)

Advisory and Finance Committee (Guernsey)

Valuation Office Agency  
*Property Market Report*

UK Iron and Steel Statistics Bureau  
*Annual Statistics*

World Bureau of Metal Statistics  
*World Metal Statistics (monthly)*

International Fertilizer Industry Association

The Kaolin and Ball Clay Association

Quarry Products Association (QPA)

The Coal Authority

United Nations Conference on Trade and Development

## British Geological Survey

The Minerals Programme, funded by the Department of Trade and Industry, continues to provide an information and advice service to government and industry on minerals-related matters. A project to investigate the metalliferous mineral prospectivity of the Northern Highlands of Scotland was completed during the year. This compiled existing mineral occurrence, geological, geochemical and geophysical data within a GIS environment. Additional information used in the study included new geochemical data for a suite of elements not previously determined when the original samples were collected in the 1970s, such as As, Bi and Sb. The datasets were analysed and processed using the Arc-SDM™ (Spatial Data Modeler) extension to the ArcView GIS program. A number of areas were identified as having potential for epithermal- and mesothermal-style gold mineralisation, though no follow-up surveys have been carried out. Additional work was recommended in other areas where mineralisation has previously been identified, such as Unst in Shetland for PGE and Gairloch for VMS Cu-Zn. A report and CD, with digital information, including prospectivity analyses for gold mineralisation, is available.

The British Geological Survey's geochemical mapping work (G-BASE project) has continued with sample collection in central East Anglia and the Tamar drainage catchment in SW England. The Tamar work was part of a pilot project partly funded by the Environment Agency. Some 80% of the British mainland has now been sampled and at the current rate of sampling the work should be completed by 2015. The Humber-Trent Geochemical atlas is in preparation for publication in 2003. All sample analyses from the East Midlands area have now been completed and the data are awaiting quality checking and normalisation before being released.

The Minerals Programme website [www.mineralsUK.com](http://www.mineralsUK.com), dedicated to minerals issues in Britain and the world, operates with the support of DTI and the ODPM. It contains this book and a wide range of free download reports.





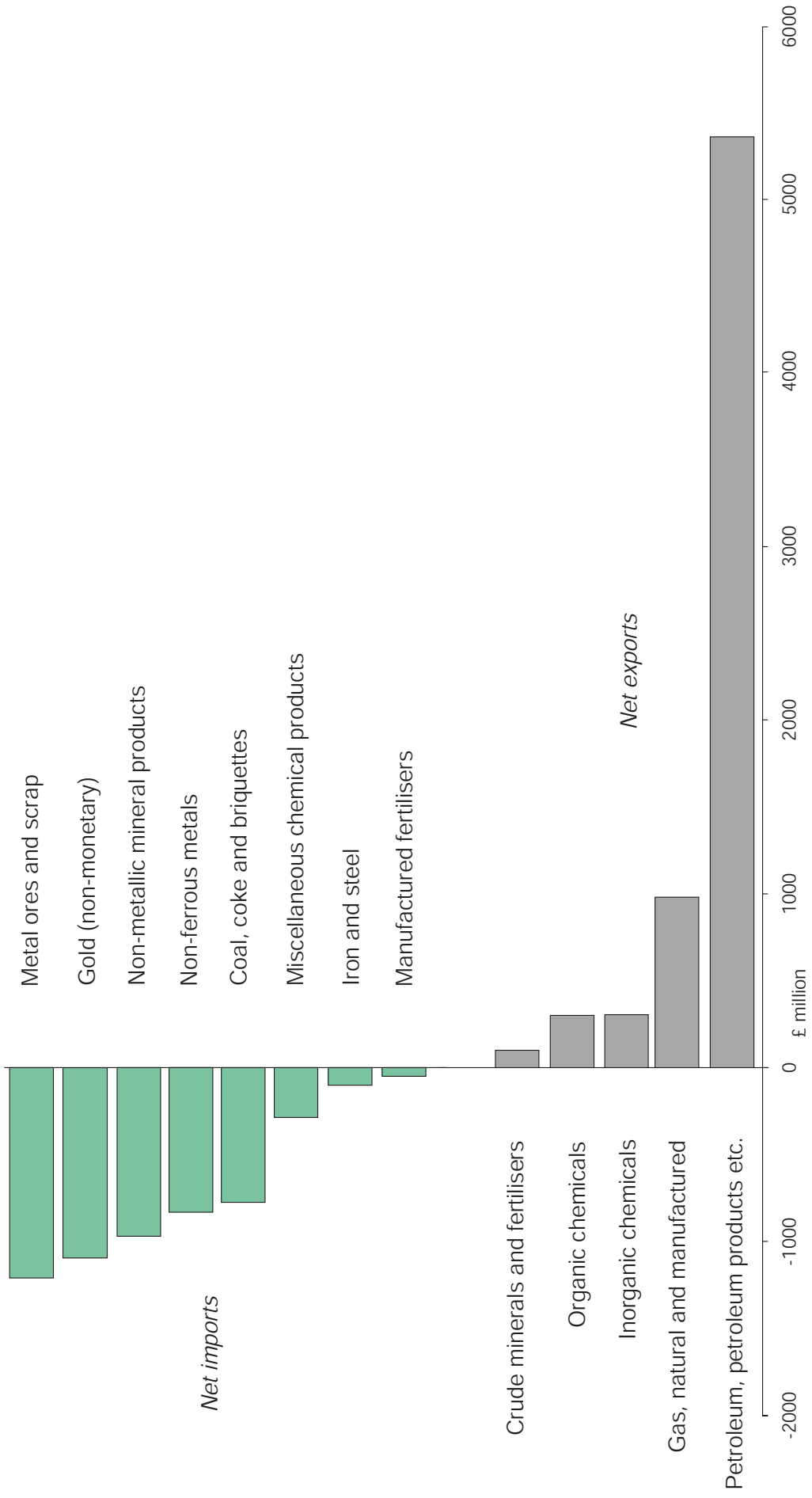
## Trade in minerals and mineral-based products compared with total trade 1995–2001

£ million

SITC section		1995	1996	1997	1998	1999	2000	2001
	<b>Imports (c i f)</b>							
0, 1	Food, beverages, tobacco	15 982.9	17 473.3	16 916.0	16 983.5	17 210.3	16 936.7	18 138.7
2, 4	Basic materials	6 943.6	6 981.7	6 812.5	6 208.1	5 967.4	6 899.6	7 037.4
	of which: Minerals	1 860.0	1 981.6	1 988.7	1 903.4	1 805.1	2 378.7	2 595.1
3	Fuels and related materials	5 890.6	7 019.6	6 521.5	4 711.8	5 273.3	9 700.4	10 202.4
	of which: Mineral-based	5 474.6	6 628.5	6 115.3	4 337.5	4 877.8	9 327.8	10 023.2
	Manufactured goods:							
5, 6	Semi-manufactures	45 891.5	47 550.6	46 609.1	46 627.2	47 264.5	51 733.3	54 950.5
	of which: Mineral-based	20 378.4	20 701.8	20 157.2	19 575.6	19 812.3	22 366.8	22 683.5
7, 8	Finished manufactures	92 057.7	103 243.5	109 760.7	114 551.2	120 877.8	135 711.7	136 538.3
9	Other (a)	3 445.0	3 896.0	3 013.1	5 203.7	3 717.9	3 936.6	3 912.1
	of which: Mineral-based	2 042.9	2 358.2	1 468.3	3 533.1	2 068.2	2 248.4	2 791.1
	<b>Total</b>	<b>170 211.2</b>	<b>186 164.7</b>	<b>189 632.8</b>	<b>194 285.5</b>	<b>200 311.2</b>	<b>224 918.3</b>	<b>230 779.4</b>
	All traded goods							
	of which: Mineral-based	29 755.9	31 670.1	29 729.4	29 349.5	28 563.3	36 321.7	38 093.0
	As % of all traded goods	17.5	17.0	15.7	15.1	14.3	16.2	16.5
	<b>Exports (f o b)</b>							
0, 1	Food, beverages, tobacco	11 237.1	11 355.8	11 124.7	10 277.9	10 023.7	9 916.5	9 695.0
2, 4	Basic materials	2 949.8	2 806.3	2 780.1	2 527.4	2 301.3	2 586.9	2 582.5
	of which: Minerals	1 260.0	1 163.5	1 143.5	1 042.6	964.4	1 207.2	1 267.2
3	Fuels and related materials	9 406.4	11 063.6	10 419.8	6 957.8	9 343.7	15 996.6	15 554.8
	of which: Mineral-based	9 404.6	11 062.7	10 418.9	6 954.0	9 335.3	15 991.5	15 552.1
	Manufactured goods:							
5, 6	Semi-manufactures	43 579.4	45 594.8	44 787.1	43 570.3	43 658.4	47 781.0	50 514.3
	of which: Mineral-based	19 506.9	19 720.5	18 988.2	17 515.9	17 932.7	20 700.9	21 247.6
7, 8	Finished manufactures	84 832.5	95 034.4	101 341.9	99 693.0	100 047.7	109 906.4	110 573.0
9	Other (a)	2 347.0	2 467.3	2 478.6	2 762.2	2 681.3	2 901.6	2 251.0
	of which: Mineral-based	637.5	646.4	638.4	949.9	1 252.5	1 301.5	1 301.9
	<b>Total</b>	<b>154 352.2</b>	<b>168 322.3</b>	<b>172 932.2</b>	<b>165 788.7</b>	<b>168 056.1</b>	<b>189 089.0</b>	<b>191 170.6</b>
	All traded goods							
	of which: Mineral-based	30 809.0	32 593.1	31 189.0	26 462.3	29 484.9	39 201.2	39 368.9
	As % of all traded goods	20.0	19.4	18.0	16.0	17.5	20.7	20.6

(a) Including non-monetary gold.

United Kingdom balance of trade in minerals and mineral-based products (1999–2001 average)



## Balance of trade in minerals and mineral-based products 1997–2001

£ million (a)

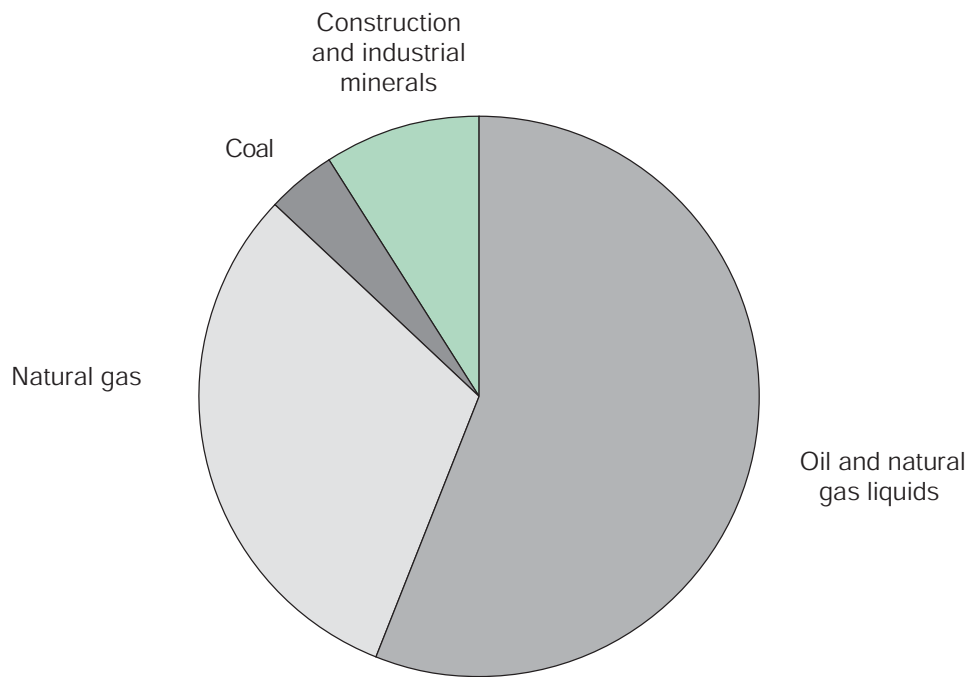
SITC (R3) divisions	1997	1998	1999	2000	2001
27 Crude minerals and fertilisers:					
imports	368.4	413.4	329.4	384.2	361.9
exports	500.4	484.4	452.6	462.1	450.8
	+132.0	+71.0	+123.2	+77.9	+88.9
28 Metal ores and scrap:					
imports	1 620.4	1 490.0	1 475.6	1 994.5	2 233.2
exports	643.1	558.2	511.8	745.1	816.5
	-977.3	-931.8	-963.8	-1 249.4	-1 416.7
32 Coal, coke and briquettes:					
imports	736.4	713.6	624.5	722.3	1 222.3
exports	88.2	75.1	66.4	75.8	65.0
	-648.2	-638.5	-558.1	-646.5	-1 157.3
33 Petroleum, petroleum products and related materials:					
imports	5 207.2	3 528.7	4 163.0	8 335.7	8 496.6
exports	9 643.8	6 462.7	8 537.1	14 543.8	13 991.1
	+4 436.6	+2 934.0	+4 374.1	+6 208.1	+5 494.5
34 Gas, natural and manufactured:					
imports	171.7	95.2	90.3	269.9	304.3
exports	686.8	416.1	731.9	1 371.9	1 495.9
	+515.1	+320.9	+641.6	+1 102.0	+1 191.6
51 Organic chemicals:					
imports	4 554.9	4 647.5	4 907.9	5 435.9	5 655.8
exports	5 035.3	4 862.0	5 378.5	5 552.2	5 962.5
	+480.4	+214.5	+470.6	+116.3	+306.7
52 Inorganic chemicals:					
imports	1 126.5	1 018.1	1 065.8	1 068.2	1 235.6
exports	1 158.0	1 141.9	1 142.2	1 491.1	1 637.9
	+31.5	+123.8	+76.4	+422.9	+402.3
56 Manufactured fertilisers:					
imports	171.5	132.3	141.4	131.4	138.7
exports	96.3	107.6	85.4	93.5	85.0
	-75.2	-24.7	-56.0	-37.9	-53.7
53–59 (part) Miscellaneous chemical products:					
imports	3 019.8	2 776.8	2 651.1	2 949.4	2 896.3
exports	2 546.7	2 493.4	2 471.3	2 548.0	2 615.7
	-473.1	-283.4	-179.8	-401.4	-280.6
66 Non-metallic mineral products:					
imports	4 737.2	4 529.4	5 853.5	6 554.2	6 408.5
exports	4 546.3	3 875.0	4 669.2	5 539.4	5 703.3
	-190.9	-654.4	-1 184.3	-1 014.8	-705.2
67 Iron and steel:					
imports	2 635.6	2 472.0	1 977.9	2 233.5	2 280.5
exports	2 722.9	2 476.8	1 930.3	2 191.0	2 065.0
	+87.3	+4.8	-47.6	-42.5	-215.5
68 Non-ferrous metals:					
imports	3 737.3	3 836.7	3 079.0	3 864.3	3 931.4
exports	2 775.5	2 443.3	2 153.8	3 178.8	3 053.5
	-961.8	-1 393.4	-925.2	-685.5	-877.9
69 Manufactures of metal:					
imports (b)	174.3	162.8	135.6	129.9	136.7
exports (b)	107.2	116.0	102.1	107.0	124.9
	-67.1	-46.8	-33.5	-22.9	-11.8
96 Coin other than gold:					
imports	6.6	2.1	3.0	1.1	1.7
exports	37.9	6.5	9.3	16.7	14.4
	+31.3	+4.4	+6.3	+15.6	+12.7
97 Gold (non-monetary):					
imports	1 461.7	3 531.0	2 065.2	2 247.3	2 789.4
exports	600.5	943.4	1 243.1	1 284.8	1 287.6
	-861.2	-2 587.6	-822.1	-962.5	-1 501.8
<b>Total</b>					
<b>imports</b>	<b>29 729.4</b>	<b>29 349.5</b>	<b>28 563.3</b>	<b>36 321.7</b>	<b>38 093.0</b>
<b>exports</b>	<b>31 189.0</b>	<b>26 462.3</b>	<b>29 484.9</b>	<b>39 201.2</b>	<b>39 368.9</b>
	<b>+1 459.6</b>	<b>-2 887.2</b>	<b>+921.6</b>	<b>+2 879.5</b>	<b>+1 275.9</b>
Gold (monetary):					
imports	1 558.9	3 195.6	1 804.8	2 448.0	688.5
exports	7 057.1	2 699.5	1 989.8	1 264.9	1 164.8
	+5 498.2	-496.1	+185.0	-1 183.1	+476.3
<b>Grand total</b>					
<b>imports</b>	<b>31 288.4</b>	<b>32 545.1</b>	<b>30 368.1</b>	<b>38 769.7</b>	<b>38 781.5</b>
<b>exports</b>	<b>38 246.1</b>	<b>29 161.8</b>	<b>31 474.8</b>	<b>40 466.1</b>	<b>40 533.6</b>
	<b>+6 957.7</b>	<b>-3 383.3</b>	<b>+1 106.7</b>	<b>+1 696.4</b>	<b>+1 752.1</b>

(a) Imports are valued c i f and exports are valued f o b.

(b) Consists of semi-manufactures and articles of beryllium, cobalt, cadmium, magnesium, molybdenum, tantalum, titanium, tungsten, zirconium and other base metals not elsewhere included.

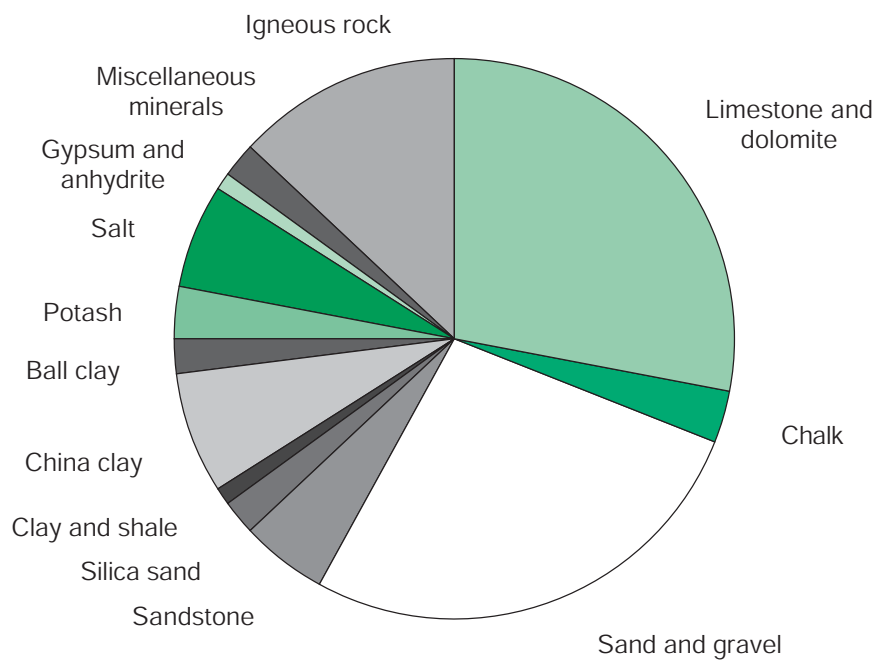
**Value of United Kingdom minerals production 2001**

**(total value £26 585 million)**



**Value of United Kingdom construction and industrial minerals production 2001**

**(total value £2 500 million)**



## Approximate value (a) of minerals produced in the United Kingdom 1994–2001

	£ million							
Mineral	1994	1995(b)	1996	1997	1998	1999	2000	2001
Coal	1 668	1 862	1 768	1 636	1 242	1 076	916	1 028
Natural gas	4 171	4 587	5 295	5 254	5 313	5 031	6 606	8 325
Natural gas liquids	654	739	748	700	551	727	1 117	963
Crude petroleum	9 162	9 875	11 849	10 327	7 487	10 257	16 275	13 769
Iron ore	0	0	0	0	0	0	0	0
Tin	6	7	8	8	1	—	—	—
Other non-ferrous metals	0	0	1	0	0	0	0	0
Sand and gravel	489	491	473	533	549	597	619	677
Limestone and dolomite	596	618	577	627	703	670	662	702
Igneous rock	248	244	247	253	276	312	320	328
Sandstone	91	94	90	94	115	95	98	119
Chalk	44	45	47	53	59	56	46	69
Common clay and shale	26	24	19	18	20	22	19	19
China clay	220	230	243	280	237	242	234	187
Ball clay	40	43	43	44	45	45	50	47
Fuller's earth	12	12	14	12	9	7	7	5
Salt	62	188	185	232	174	146	153	152
Silica sand	40	58	57	58	62	54	51	54
Potash	83	84	93	86	91	74	91	80
Fluorspar	7	6	8	8	7	5	4	5
Gypsum and anhydrite	18	20	22	16	14	13	13	15
Miscellaneous minerals	28	29	32	33	32	35	36	41
<b>Total</b>	<b>17 665</b>	<b>19 256</b>	<b>21 819</b>	<b>20 272</b>	<b>16 987</b>	<b>19 464</b>	<b>27 317</b>	<b>26 585</b>
<b>At 1995 constant prices</b>								
Coal	1 711	1 862	1 713	1 540	1 135	957	804	880
Oil and gas	14 346	15 201	17 337	15 330	12 203	14 248	21 070	19 741
Metals	6	7	9	8	1	0	0	0
Construction and industrial minerals	2 055	2 186	2 083	2 210	2 187	2 111	2 110	2 140
<b>Total</b>	<b>18 118</b>	<b>19 256</b>	<b>21 142</b>	<b>19 089</b>	<b>15 527</b>	<b>17 317</b>	<b>23 983</b>	<b>22 761</b>

(a) Calculated on an ex-works basis.

Source: British Geological Survey.

(b) The values of production presented in this table are estimates made by the BGS using a variety of data sources. Since 1995 selected data from the Prodcum inquiry (an EU statistical inquiry on the volume and value of products for sale) have been used for construction and industrial minerals. This has resulted for certain minerals, particularly salt, in an apparent increase in the value of production that reflects primarily the source of the information rather than a real increase in the value of production.

## Approximate value of minerals produced in each part of the United Kingdom 1994–2001

	£ million							
	1994	1995	1996	1997	1998	1999	2000	2001
England	3 197	3 603	3 586	3 517	3 046	2 876	2 908	2 997
Wales	319	287	278	264	255	256	243	239
Scotland	406	449	442	502	492	492	473	533
Northern Ireland	49	56	64	56	59	60	64	75
Offshore	13 694	14 861	17 449	15 933	13 135	15 780	23 629	22 741
<b>Total</b>	<b>17 665</b>	<b>19 256</b>	<b>21 819</b>	<b>20 272</b>	<b>16 987</b>	<b>19 464</b>	<b>27 317</b>	<b>26 585</b>

Source: British Geological Survey.

## United Kingdom mining and quarrying: Gross value added (a) 1994–2001

£ million

	1994	1995	1996	1997	1998	1999	2000	2001
<b>Production</b>								
Mining and quarrying								
Mining and quarrying of energy producing materials								
Mining of coal	1 048	1 223	1 045	987	825	644	613	598
Extraction of mineral oil and natural gas	12 493	13 704	17 124	15 435	13 203	15 044	22 883	23 379
Other mining and quarrying	1 247	1 443	1 599	1 693	1 650	1 715	1 813	1 689
Total mining and quarrying	14 788	16 369	19 768	18 116	15 677	17 402	25 308	25 665
<b>All industries</b>	608 740	639 908	679 620	720 692	762 363	796 273	838 065	874 227
of which: minerals related (%)	2.4	2.6	2.9	2.5	2.1	2.2	3.0	2.9

(a) At current basic prices.

Source: Office for National Statistics.

## United Kingdom employment in the minerals industry, 2001

Number

Mineral	Great Britain (a)			Total	Northern Ireland
	Mines		Quarries		
	Underground	Surface			
Ball clay	—	—	312	312	—
Calcspars	—	—	8	8	—
Chalk	—	—	557	557	(c) ...
Chert and flint	—	—	3	3	—
China clay	—	—	482	482	—
Clay and shale	—	—	1 073	1 073	(c) ...
Coal (b)	(e) 9 535	...	3 332	12 867	—
Dolomite	—	—	999	999	—
Fireclay	2	—	32	34	(c) ...
Fuller's earth	—	—	8	8	—
Gypsum and anhydrite	123	22	33	178	—
Honestone	3	1	—	4	—
Igneous rock	—	—	3 065	3 065	368
Limestone	37	33	4 769	4 839	173
Oil and gas	—	—	—	(d)	—
Ore minerals	16	19	15	50	—
Peat	—	—	253	253	—
Potash	512	216	—	728	—
Salt	31	20	3	54	(c) ...
Sand and gravel	—	—	7 742	7 742	427
Sandstone	—	—	1 593	1 593	347
Silica sand	6	6	826	838	—
Silica stone	—	—	2	2	—
Slate	6	39	502	547	—
Soapstone and talc	—	—	2	2	—
Others	—	—	—	—	286
<b>Total</b>	<b>10 271</b>	<b>356</b>	<b>25 611</b>	<b>36 238</b>	<b>1 601</b>

(a) Where more than one mineral is extracted at a mine or quarry all employment is attributed to the chief mineral.

(b) At March 2002.

(c) Included with 'Others'.

(d) Estimated workforce employed offshore, including personnel on offshore installations, mobile drilling rigs, service vessels, support barges and survey teams, 15 700 as at February 2001.

(e) Including surface workers at mines.

Sources: Office for National Statistics, Department of Enterprise Trade and Investment (Northern Ireland).

# United Kingdom production of minerals 1996–2002

Thousand tonnes

Mineral	1996	1997	1998	1999	2000	2001	2002 (Estimated)
<b>Coal:</b>							
Deep-mined	32 223	30 281	25 731	20 888	17 188	17 347	<b>16 386</b>
Opencast	16 315	16 700	14 315	15 275	13 412	14 166	<b>13 139</b>
Other (a)	1 659	1 514	1 131	914	598	417	<b>500</b>
<b>Natural gas and oil:</b>							
<b>Methane (oil equivalent)</b>							
Colliery	49	45	41	41	42	35	...
Onshore	353	360	315	297	640	518	<b>103 042</b>
Offshore	83 742	85 444	89 790	98 727	107 817	105 234	
<b>Crude oil</b>							
Onshore	5 240	4 949	5 161	4 269	3 234	2 944	<b>107 400</b>
Offshore	116 500	115 395	119 049	124 886	114 830	106 552	
<b>Condensates and other (c)</b>							
Onshore	206	224	239	200	146	139	<b>8 514</b>
Offshore	7 604	7 338	7 824	8 314	7 918	8 153	
Iron ore	1.2	1.2	1.2	(i) 1.0	1.0	0.5	<b>0.5</b>
<b>Non-ferrous ores (metal content):</b>							
Tin	2.1	2.4	0.4	—	—	—	—
Lead	(i) 1.8	(i) 1.6	(i) 1.6	1.0	(i) 1.0	(i) 0.8	<b>0.7</b>
Zinc (d)	...	—	—	—	—	—	—
Gold (kg)	...	...	...	...	...	...	...
<b>Chalk (e)</b>	9 239	9 550	9 934	9 667	9 213	8 205	<b>8 000</b>
<b>Common clay and shale (e)</b>	11 804	11 322	12 230	11 355	10 838	10 426	<b>10 500</b>
<b>Igneous rock (k) (l)</b>	50 705	48 656	45 945	53 155	54 113	51 501	<b>50 000</b>
<b>Limestone (excluding dolomite)</b>	86 564	87 752	89 274	86 933	84 348	88 238	<b>99 000</b>
<b>Dolomite (excluding limestone)</b>	16 555	17 282	15 632	13 698	13 069	14 314	
<b>Sand and gravel:</b>							
<b>Land</b>	75 743	79 500	78 316	80 302	79 950	80 793	<b>97 000</b>
<b>Marine (j)</b>	18 204	18 883	19 999	20 651	21 671	20 604	
<b>Sandstone</b>	17 522	18 499	20 129	15 485	14 900	19 967	<b>19 000</b>
<b>Slate (h)</b>	408	347	425	361	479	551	<b>500</b>
<b>Ball clay (sales)</b>	880	916	964	931	1 069	999	<b>930</b>
<b>Barytes</b>	93	(i) 74	64	59	54	(i) 66	<b>59</b>
<b>Calcspars</b>	...	13	15	...	...	12	<b>10</b>
<b>Chert and flint (f)</b>	...	...	...	6	...	2	...
<b>China clay (sales) (n)</b>	2 281	2 360	2 392	2 304	2 376	2 204	<b>2 100</b>
<b>China stone</b>	8	8	3	2	4	3	<b>3</b>
<b>Fireclay (e)</b>	536	338	577	545	595	459	<b>500</b>
<b>Fluorspar (i)</b>	65	64	65	40	36	50	<b>53</b>
<b>Fuller's earth (sales) (g) (n)</b>	143	135	94	75	66	52	<b>44</b>
<b>Gypsum (natural) (i)</b>	2 000	2 000	2 000	1 800	1 500	1 700	<b>1 700</b>
<b>Lignite</b>	...	...	—	—	—	—	—
<b>Peat (000 m<sup>3</sup>)</b>	1 885	1 619	1 076	1 653	1 626	1 814	...
<b>Potash (b)</b>	1 030	941	1 014	825	966	882	<b>900</b>
<b>Rock salt (i)</b>	2 200	1 800	700	1 500	1 700	1 900	<b>1 900</b>
<b>Salt from brine (i)</b>	1 300	1 300	1 200	1 200	1 200	1 200	<b>1 200</b>
<b>Salt in brine (m)</b>	3 512	3 561	(i) 3 500	(i) 3 000	(i) 3 000	(i) 3 000	<b>3 000</b>
<b>Silica sand</b>	4 861	4 704	4 662	4 092	4 095	3 848	<b>4 000</b>
<b>Talc</b>	5	6	5	6	5	5	<b>5</b>

(a) Slurry etc. recovered from dumps, ponds, rivers etc.

(b) Marketable product (KCl).

(c) Including ethane, propane and butane, in addition to condensates.

(d) Content of mixed concentrate.

(e) Excluding a small production in Northern Ireland.

(f) Great Britain only.

(g) BGS estimates based on data from producing companies.

(h) Slate figures include waste used for constructional fill and powder and granules used in industry.

(i) BGS estimate.

(j) Including marine-dredged landings at foreign ports (exports); see p.92.

(k) Excluding a small production of granite in Northern Ireland.

(l) In addition, the following amounts of igneous rock were produced in Guernsey (thousand tonnes): 1996: 198; 1997: 115; 1998: 119; 1999: 139; 2000: 130; 2001: 130, and Jersey: 1996: 355; 1997: 370; 1998: 390; 1999: 370; 2000: 310; 2001: 365.

(m) Used for purposes other than salt making.

(n) Dry weight.

Sources: Office for National Statistics, Department of Trade and Industry, Dept. of Enterprise, Trade & Investment (Northern Ireland), Crown Estate Commissioners (marine sand and gravel produced for export), Advisory and Finance Committee (Guernsey), and company data.

# England production of minerals 1995–2001

Thousand tonnes

Mineral	1995	1996	1997	1998	1999	2000	2001
Coal:							
Deep-mined (e)	32 300	30 000	27 300	23 100	19 200	15 800	15 900
Opencast (e)	9 000	8 500	8 400	6 700	6 300	4 800	4 800
Other (a)	...	...	...	...	...	...	...
Natural gas and oil:							
Methane (oil equivalent)							
Colliery	...	...	...	...	...	...	...
Onshore	...	...	...	...	...	...	...
Offshore	...	...	...	...	...	...	...
Crude oil							
Onshore	...	...	...	...	...	...	...
Offshore	...	...	...	...	...	...	...
Condensates and other (c)	...	...	...	...	...	...	...
Iron ore	1.1	1.2	1.2	1.2	(e) 1.0	1.0	0.5
Non-ferrous ores (metal content):							
Tin	2.0	2.1	2.4	0.4	—	—	—
Lead	(e) 1.6	(e) 1.8	(e) 1.6	(e) 1.6	1.0	(e) 1.0	(e) 0.8
Zinc (m)	...	...	—	—	—	—	—
Chalk	9 949	9 239	9 550	9 934	9 667	9 213	8 205
Common clay and shale	12 498	(b) 10 828	(b) 10 514	(b) 11 351	(b) 10 352	(b) 9 577	(b) 9 221
Igneous rock	24 651	21 526	20 335	17 228	20 803	20 435	22 647
Limestone (j)	85 379	75 633	79 342	79 780	75 820	74 954	79 902
Dolomite (k)	...	...	14 280	13 723	11 485	11 120	...
Sand and gravel:							
Land	65 480	59 067	63 010	61 241	62 954	63 196	...
Marine (g)	16 840	16 611	17 285	18 741	19 412	20 391	...
Sandstone	9 719	7 627	7 646	7 792	7 241	7 401	7 201
Slate (i)	...	...	...	...	...	...	...
Anhydrite	...	...	...	...	...	...	...
Ball clay (sales)	893	880	916	964	931	1 069	999
Barytes	...	...	...	...	...	...	...
Calcspars	...	...	13	15	...	...	12
Chert and flint	...	...	...	...	6	...	2
China clay (sales) (l)	2 586	2 281	2 360	2 392	2 304	2 376	2 204
China stone	9	8	8	3	2	4	3
Fireclay	612	471	...	575	545	547	419
Fluorspar (e)	55	65	64	65	40	36	50
Fuller's earth (sales) (h) (l)	132	143	135	94	75	66	52
Gypsum (natural) (e)	2 000	2 000	2 000	2 000	1 800	1 500	1 700
Peat (000 m <sup>3</sup> )	1 579	1 315	1 229	936	1 224	1 259	1 460
Potash (d)	933	1 030	941	1 014	825	966	882
Potter's clay	12	...	...	...	...	...	...
Rock salt	...	...	...	...	...	...	...
Salt from brine (e)	1 300	1 300	1 300	1 300	1 200	1 200	1 200
Salt in brine (f)	3 548	3 512	3 561	(e) 3 500	(e) 3 000	(e) 3 000	(e) 3 000
Silica sand	3 770	4 270	4 103	4 064	3 504	3 599	3 343
Silica stone and ganister	...	...	...	...	...	...	...

(a) Slurry etc. recovered from dumps, ponds, rivers etc.

(b) Including potter's clay.

(c) Including ethane, propane and butane, in addition to condensates.

(d) Marketable product (KCl).

(e) BGS estimate.

(f) Used for purposes other than salt making.

(g) Including marine-dredged landings at foreign ports (exports); see p.92.

(h) BGS estimates based on data from producing companies.

(i) Slate figures include waste used for constructional fill and powder and granules used in industry.

(j) Including dolomite for constructional uses.

(k) Dolomite and magnesian limestone used for constructional and agricultural purposes as well as for refractory, chemical and other purposes specifically dependent on the high magnesium content.

(l) Dry weight.

(m) Content of mixed concentrate.

Sources: Office for National Statistics, Department of Trade and Industry, Crown Estate Commissioners (marine sand and gravel produced for export) and company data.



## Wales production of minerals 1995–2001

Thousand tonnes

Mineral	1995	1996	1997	1998	1999	2000	2001
Coal:							
Deep-mined (e)	1 100	1 000	900	800	600	700	700
Opencast (e)	2 100	2 300	1 800	1 400	1 500	1 500	1 200
Other (a)	...	...	...	...	...	...	...
Natural gas and oil:							
Methane (oil equivalent)							
Colliery	...	...	...	...	...	...	...
Onshore	...	—	—	—	—	—	—
Offshore	...	...	...	...	...	...	...
Crude oil							
Onshore	...	—	—	—	—	—	—
Offshore	...	...	...	...	...	...	...
Condensates and other (b)	...	...	...	...	...	...	...
Non-ferrous ores (metal content):							
Gold	...	...	...	...	—	—	—
Common clay and shale	565	389	280	259	346	351	365
Igneous rock	3 259	2 272	2 172	2 110	2 730	2 743	2 372
Limestone (d)	19 249	18 863	17 752	17 136	17 220	15 543	14 238
Dolomite (f)	...	...	...	...	...	...	...
Sand and gravel:							
Land	1 661	1 519	1 452	1 701	1 800	1 658	...
Marine	1 599	1 593	1 598	1 258	1 240	1 280	...
Sandstone	2 898	2 781	3 098	3 214	2 973	2 941	3 094
Slate (c)	...	...	...	...	...	...	...
Fireclay	6	—	76	—	—	—	—
Silica sand	29	27	24	...	...	...	...

## Scotland production of minerals 1995–2001

Thousand tonnes

Mineral	1995	1996	1997	1998	1999	2000	2001
Coal:							
Deep-mined (e)	1 800	1 300	2 100	1 800	1 100	700	700
Opencast (e)	5 200	5 500	6 500	6 200	7 500	7 100	8 200
Other (a)	...	...	...	...	...	...	...
Natural gas and oil:							
Methane (oil equivalent)							
Colliery	...	...	...	...	...	...	...
Onshore	...	...	...	...	...	...	...
Offshore	...	...	...	...	...	...	...
Crude oil							
Onshore	...	—	—	—	—	—	—
Offshore	...	...	...	...	...	...	...
Condensates and other (b)	...	...	...	...	...	...	...
Common clay and shale	855	588	528	620	657	910	839
Igneous rock	21 731	19 933	19 863	20 500	21 761	21 455	20 034
Limestone (d)	1 540	1 607	1 624	1 535	1 507	1 722	1 733
Dolomite (f)	...	...	...	...	...	...	...
Sand and gravel (land-won)	10 889	9 904	9 900	10 074	10 031	10 022	10 753
Sandstone	2 400	2 172	1 712	2 539	1 657	1 715	1 603
Slate (c)	...	...	...	...	...	...	...
Barytes	...	...	...	...	...	...	...
Fireclay	89	65	...	2	—	48	40
Honestone	...	...	...	...	...	...	—
Peat (000 m3)	701	570	390	139	429	367	355
Silica sand	544	564	576	...	...	...	...
Talc	4	5	6	5	6	5	5

(a) Slurry etc. recovered from dumps, ponds, rivers etc.

(b) Including ethane, propane and butane, in addition to condensates.

(c) Slate figures include waste used for constructional fill and powder and granules used in industry.

(d) Including dolomite for constructional uses.

(e) BGS estimate.

(f) Dolomite and magnesian limestone used for constructional and agricultural purposes as well as for refractory, chemical and other purposes specifically dependent on the high magnesium content.

Sources: Office for National Statistics, Department of Trade and Industry and company data.

## Northern Ireland mineral production by county 2001

Thousand tonnes

County	Limestone	Sand & Gravel	Basalt & Igneous rock (a)	Sandstone	Others (b)	Total
Down	—	110	—	6 699	—	6 809
Antrim	196	911	4 248	—	27	5 383
Armagh	470	220	405	1 352	30	2 476
Fermanagh	3 336	42	20	—	0	3 399
Londonderry	136	2 080	1 525	—	18	3 759
Tyrone	608	2 831	250	19	678	4 386
<b>Total</b>	<b>4 746</b>	<b>6 194</b>	<b>6 448</b>	<b>8 070</b>	<b>753</b>	<b>26 211</b>

(a) Excluding granite.

Source: Department of Enterprise, Trade and Investment.

(b) Including rock salt, chalk, fireclay, granite, clay and shale, and bauxite.

## Minerals produced in Northern Ireland, the Isle of Man, Guernsey and Jersey 1997–2001

Thousand tonnes

	1997 (c)	1998 (c)	1999 (d)	2000 (d)	2001 (d)
<b>Northern Ireland</b>					
Limestone	3 500	3 892	4 219	3 538	4 746
Sand and gravel	5 138	5 300	5 517	5 073	6 194
Basalt and igneous rock (a)	6 286	6 107	7 861	9 480	6 448
Sandstone	6 042	6 584	3 615	2 844	8 070
Others (b)	625	473	1 579	3 098	753
<b>Total</b>	<b>21 591</b>	<b>22 356</b>	<b>22 791</b>	<b>24 033</b>	<b>26 211</b>
<b>Isle of Man</b>					
Limestone	110	100	119	136	131
Sand and gravel	240	251	280	258	365
Igneous rock	71	74	93	85	115
Slate	4	17	49	56	52
<b>Total</b>	<b>426</b>	<b>442</b>	<b>541</b>	<b>535</b>	<b>664</b>
<b>Guernsey</b>					
Igneous rock	115	119	139	130	(e) 130
<b>Jersey</b>					
Igneous rock (e)	370	390	370	310	365
Sand and gravel	81	80	74	63	89

(a) Excluding granite.

(e) BGS estimates.

(b) Including rock salt, chalk, fireclay, granite, clay and shale, chert and flint, bauxite and lignite.

Sources: Dept. of Enterprise, Trade & Investment (Northern Ireland), Department of Trade and Industry (Isle of Man), Advisory and Finance Committee (Guernsey).

(c) Year ended 30 November for Isle of Man.

(d) Year ended 12 November for Isle of Man

## Area of land permitted for mineral working in England in 1994 and 2000

Hectares

Mineral type	Surface working		Underground mining		Areas of pithead	
	Area in 1994	Area in 2000	Area in 1994	Area in 2000	Area in 1994	Area in 2000
Ball clay (a)	—	1 066	—	—	—	—
Chalk	2 926	2 339	—	—	—	—
China clay	2 201	4 262	—	—	—	—
Clay/shale	9 107	8 430	1 339	466	7	3
Coal (opencast)	7 568	3 390	—	—	—	—
Coal (under GPDO)	—	—	184 643	163 675	1 445	775
Coal (specific planning permission)	—	—	49 545	50 400	360	362
Gypsum/anhydrite	718	368	38 215	14 894	117	125
Igneous rock	1 973	2 676	—	—	—	—
Ironstone	13 029	16 087	1 911	8 465	74	103
Limestone/dolomite	11 401	11 418	748	798	5	5
Oil/gas/coalbed methane (b)	185	166	—	—	—	—
Peat	5 661	5 263	—	—	—	—
Salt (incl. brine pump)	—	—	2 300	2 769	20	11
Sand & gravel (construction)	29 828	27 007	—	—	—	—
Sand (industrial/silica)	1 945	1 847	—	—	—	—
Sandstone	3 305	4 183	—	—	—	—
Slate	511	470	—	(c) 1	—	(c) 0
Vein minerals	2 614	23 827	376 360	29 781	30	47
Other minerals	1 053	845	5 565	13 938	34	32
<b>Totals (d)</b>	<b>94 025</b>	<b>113 644</b>	<b>660 626</b>	<b>285 187</b>	<b>2 092</b>	<b>1 463</b>
<b>Estimated Totals (e)</b>	<b>118 296</b>	<b>113 644</b>	<b>660 626</b>	<b>285 187</b>	<b>2 092</b>	<b>1 463</b>

(a) Ball clay included as a separate mineral for the first time in 2000, previously under 'clay/shale'.  
 (b) Coalbed methane added in to this category for the first time in 2000. In 1994, oil/gas were split into 'exploration/appraisal' and 'production' categories, but were combined in 2000.

(c) Slate was only a separate mineral category in 2000.  
 (d) Based on published 1994 data.  
 (e) Estimate, taking into account older permissions for which accurate information was not available in 1994.

Source: *Survey of Land for Mineral Workings in England 2000*, Department for Transport, Local Government and the Regions.

## Mineral bearing land royalty values

Pence per tonne

Commodity/Region	2000 (a)		2001 (b)		2002 (c)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
<b>Sand and gravel</b>						
South East	240	100	300	120	315	120
Eastern	220	110	220	110	220	110
South West	135	80	150	80	185	80
East Midlands	125	65	125	65	125	65
West Midlands	180	80	180	80	180	80
Yorks. & Humberside	100	50	100	50	100	50
North East	80	40	80	40	80	40
North West	100	65	100	65	125	45
Merseyside	40	35	40	35	...	...
Gtr. Manchester & Cheshire	100	...	125	80	...	...
Wales	150	30	60	30	80	50
Scotland	75	40	80	40	80	40
<b>Hard rock</b>						
South East	70	55	85	55	90	60
Eastern	75	60	100	60	100	65
South West	35	25	35	25	55	20
East Midlands	60	27.5	60	27.5	60	27.5
West Midlands	42	26	42	30	40	30
Yorks. & Humberside	30	22.5	30	22.5	45	22.5
North East	27.5	25	30	25	30	25
North West	38	30	38	30	40	30
Merseyside	38	31	38	31	...	...
Gtr. Manchester & Cheshire	40	32	40	32	...	...
Wales	50	15	50	15	50	15
Scotland	30	20	30	20	35	25

(a) At 1 October 2000.  
 (b) At 1 October 2001.  
 (c) At 1 October 2002.

Source: *Property Market Report*, Valuation Office Agency.

**Number of mineral workings in the United Kingdom, by commodity (a) (b)**

Commodity	Region										Total					
	North East England	Yorkshire & Humberside	North West England	East Midlands	West Midlands	East of England	Greater London	South East England	South West England	England Total		Wales	Scotland	Isle of Man	Northern Ireland	Channel Islands
Anhydrite	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Ball clay	—	—	—	—	—	—	—	—	20	20	—	—	—	—	—	20
Barytes	—	—	1	3	—	—	—	—	—	4	—	—	—	—	—	5
Bauxite	—	—	—	7	—	—	—	—	—	7	—	—	—	1	—	1
Calcite	—	—	—	4	—	15	—	—	5	62	—	—	—	4	—	7
Chalk	—	14	—	—	—	—	—	24	17	17	—	—	—	—	—	66
China clay	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	17
China stone	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	1
Coal, underground	2	9	—	5	1	—	—	—	1	18	7	—	—	—	—	25
Coal, opencast	13	8	1	15	5	—	—	—	1	27	7	20	—	—	—	54
Common clay & shale	9	36	17	15	27	14	—	31	14	163	5	7	—	2	—	177
Fireclay	—	4	1	2	2	—	—	2	—	9	—	4	—	—	—	13
Flint	—	—	—	—	—	2	—	—	—	4	—	—	—	—	—	4
Fluorspar	—	1	—	7	—	1	—	1	—	8	—	—	—	—	—	8
Fuller's earth	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2
Gypsum	—	—	1	3	1	—	—	1	—	6	—	2	—	—	—	6
Honestone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Igneous & metamorphic rock	10	—	3	6	7	—	—	—	24	50	14	96	2	46	3	211
Iron ore - hematite	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	1
Iron ore - ironstone	—	1	—	—	1	—	—	1	—	3	—	—	—	—	—	3
Limestone	19	44	23	57	9	3	—	13	93	261	52	13	3	19	—	348
Natural gas	—	10	1	2	1	—	—	3	1	18	—	—	—	—	—	18
Oil	—	1	1	21	—	—	—	20	3	45	—	—	—	—	—	45
Peat	1	5	13	—	—	5	—	—	51	75	3	35	—	—	—	113
Potash	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Salt	2	—	4	—	—	—	—	—	—	7	—	—	—	1	—	8
Sand & gravel	22	43	38	60	70	147	15	137	52	584	26	119	4	78	1	812
Sandstone	21	56	45	27	15	6	—	8	21	199	29	42	—	35	—	305
Serpentine	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	2
Silica sand	1	2	7	2	3	13	—	6	1	35	2	10	—	—	—	47
Slate	—	—	11	—	—	—	—	—	15	26	13	—	4	—	—	43
Talc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tufa	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	1
<b>Total</b>	<b>100</b>	<b>236</b>	<b>168</b>	<b>226</b>	<b>137</b>	<b>206</b>	<b>15</b>	<b>247</b>	<b>321</b>	<b>1 656</b>	<b>159</b>	<b>351</b>	<b>13</b>	<b>186</b>	<b>4</b>	<b>2 369</b>

Source: British Geological Survey

(a) As at April 2003.  
 (b) Double counting may occur because some workings produce more than one mineral.

# Abrasives, natural

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Carats					£ thousand				
<b>Abrasives</b>										
<i>Imports</i>										
Natural abrasives–										
Industrial diamonds	28 967 856	28 797 763	8 406 120	16 208 556	7 344 542	23 714	81 619	11 461	17 853	12 334
Tonnes										
Dust and powder of precious and semi-precious stones	14	17	14	20	17	13 676	15 152	13 035	15 712	14 980
Pumice	7 441	16 061	40 873	19 210	17 165	1 683	1 670	1 436	2 073	2 377
Other	2 916	2 238	1 592	2 070	3 597	711	603	571	657	744
Carats										
<i>Exports</i>										
Natural abrasives–										
Industrial diamonds	25 772 889	35 394 187	29 978 880	27 030 867	11 861 312	29 090	29 220	23 127	27 900	19 047
Tonnes										
Dust and powder of precious and semi-precious stones	15	11	13	43	20	15 508	14 018	11 626	14 395	13 821
Pumice	343	759	282	379	1 397	332	849	459	719	666
Other	958	1 133	1 738	2 466	1 477	885	1 042	1 159	1 045	853

## Aggregates

Sales of construction aggregates (sand and gravel, and crushed rock) in Great Britain were reported as 222 million tonnes in 2001, according to the official Annual Minerals Raised Inquiry (AMRI) carried out by the Office for National Statistics. This was a small increase on 219.5 million tonnes in 2000. The Quarry Products Association estimate that aggregate sales have declined to 213 million tonnes in 2002, comprising 129 million tonnes of crushed rock and 84 million tonnes of sand and gravel.

The Aggregates Levy of £1.60/tonne applied to sand and gravel, and crushed rock used for aggregates was introduced on 1<sup>st</sup> April 2002. The full effects of the levy have yet to be determined but some aggregate producers have reported an increase in waste stockpiles of lower quality materials at quarries and also cash flow problems. HM Customs and Excise have undertaken a formal consultation of UK quarry operators on the issue of waste aggregates to establish the extent and nature of the problem. The revenue from the levy will be used to cut employers' national insurance contributions as well as finance an Aggregates Levy Sustainability Fund.

The Aggregate Minerals Survey for 2001 for England and Wales was completed at the end of 2002 by the British Geological Survey on behalf of the Office of the Deputy Prime Minister (ODPM) and the Welsh Assembly Government. (*Collation of the results of the 2001 Aggregate Minerals Survey for England and Wales. British Geological Survey Commissioned Report CR/03/53N*). Aggregate Minerals (AM) surveys, based at four-yearly intervals since 1973, provide an in-depth and up-to-date understanding of national and regional sales, inter-regional flows, transportation, consumption, and permitted reserves of primary aggregates. In addition, the AM2001 survey also presents sales and reserves data for selected environmental designations. AM surveys are used to inform Government on the production, movement and consumption of aggregates in order to review and update planning policy guidance. AM2001 will also provide baseline information to help monitor the future assessment and effectiveness of the Aggregates Levy.

A historical comparison of the data presented by both the AMRI and AM surveys indicates that AM surveys generally show somewhat larger totals for primary aggregates sales. This may be due, in part, to a slightly more comprehensive coverage of aggregate sites in the AM surveys. For England and Wales in 2001 the respective totals were; AMRI 189.9 million tonnes against 192.9 million tonnes for AM2001. However, the total for Wales in AMRI (20.7 Mt) is somewhat greater than for AM2001 (19.9 Mt). AM2001 showed that primary aggregate sales in England and Wales comprised 33 per cent land-won and 8 per cent marine-dredged sand and gravel, with crushed rock making up the remaining 59 per cent. Total apparent consumption of primary aggregates was 196.4 million tonnes, of which 182.3 million tonnes were consumed in England and 14.1 million tonnes in Wales. A further one million tonnes of unallocated sales are believed to have been almost entirely used in England. England is a net importer of primary aggregates (8.8 Mt) and Wales a net exporter (5 Mt). Of this, some 4 million tonnes (2 per cent of total consumption) were imported into England and Wales from Scotland and Europe. The major proportion was imported into the South East Region from Scotland. Total permitted reserves of primary aggregates in active and inactive sites (including sites worked in the past but still containing reserves, and sites that have yet to be opened) for aggregate and non-aggregate purposes were 6 961 million tonnes at the end of 2001, of which 6 178 million tonnes were crushed rock and 783 million tonnes sand and gravel. A detailed breakdown of reserves by Region is provided on p.19.

Separate surveys of alternative aggregate materials, such as selected mineral wastes, construction and demolition wastes and industrial by-products, have also been undertaken by the Symonds Group for 2001 also on behalf of the ODPM and the Welsh Assembly Government. This will, for the first time, enable a complete picture of the production and use of all aggregates to be built up for a single year. (*Survey of arisings and use of construction and demolition waste in England and Wales in 2001. ODPM. Survey of arisings and use of secondary materials as aggregates in England and Wales in 2001. ODPM.*)

The estimated total arisings of hard construction and demolition and excavation waste in England and Wales in 2001 were about 94 million tonnes (+/- 15% at a confidence level of 90%), of which 38 million tonnes were used as aggregate (+/- 15% at a confidence level of 90%). The remainder was used as soil, for landfill engineering or restoration, to backfill quarry voids, or spread on exempt registered sites and disposed of at landfill sites. The estimated total arisings of secondary materials, mainly comprising china clay waste, colliery spoil, power station ash and iron and steel slag, in England and Wales in 2001 were about 52 million tonnes, of which some 10.7 million tonnes were used as aggregate and 3.6 million tonnes for non-aggregate uses.

The ODPM has published replacement National and Regional Guidelines for aggregates provision in England for the period 2001-2016. Final figures were not available at the time of going to press.

There was comparatively little takeover/merger activity in the aggregates industry during 2002. Aggregate Industries acquired a number of quarrying businesses. These include GFX Hartigan Ltd, with two sand and gravel operations near Milton Keynes, Border Stone Ltd with operations near Welshpool and a 50 per cent share in Sewells Reservoir Construction Ltd whose core business is the extraction of sand and gravel during the construction of agricultural reservoirs. RMC Aggregates (Eastern Counties) Ltd have acquired the family-owned business of F B Gibbons Ltd, which operates a large sand and gravel pit at Baston, near Peterborough.

According to research by BDS Marketing & Research Ltd, Tarmac remains the largest aggregate producer in Great Britain in 2001 with an estimated market share of 21 per cent. This is slightly lower than in 2000. Hanson Aggregates, the second largest aggregates producer with an estimated 16 per cent, is slightly down on estimates for 2000. RMC are the third largest, although the second largest producer with respect to sand and gravel. Aggregate Industries has continued to increase its market share and is in fourth place with 10.5 per cent, and Lafarge Aggregates is in fifth place with 9 per cent. The rest of the top ten quarry companies comprise Foster Yeoman; Lafarge Cement; Castle Cement; Brett, and Ennstone. BDS estimate that the top ten companies have over 80 per cent of the total market.

Marine dredging results for 2001 from the Crown Estate Commissioners show that 22.76 million tonnes of sand and gravel were extracted from licensed areas of the seabed off England and Wales. This is a small decrease on 2000 when 23.06 million tonnes were dredged. In 2001, the total area of the seabed licensed was 1 413 km<sup>2</sup>, a reduction of 6 per cent whilst the area actually dredged declined by 3 per cent to 173 km<sup>2</sup>.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Aggregates</b>										
<i>Production</i>										
Sand and gravel (b)	98 383 000	98 315 000	100 953 000	101 622 000	101 397 000					
Crushed rock (a)	133 787 000	131 716 000	132 598 000	130 307 000	133 759 000					
Total	232 170 000	230 031 000	233 551 000	231 929 000	235 156 000					
<i>Imports</i>										
Natural aggregates–										
Crushed rock (c)	331 227	348 613	458 980	347 048	409 174	7 407	6 515	7 125	7 771	7 253
Sand and gravel	171 154	473 474	221 292	168 358	362 076	4 237	5 122	5 877	6 688	9 417
Total	502 381	822 087	680 272	515 406	771 250	11 644	11 637	13 002	14 459	16 670
<i>Exports</i>										
Natural aggregates–										
Crushed rock	2 441 221	2 812 368	2 982 440	2 402 611	3 367 217	11 411	16 720	11 300	9 782	15 089
Sand and gravel (d)	8 777 496	8 422 940	8 906 868	9 931 641	9 871 523	31 718	23 049	30 734	31 264	32 389
Total	11 218 717	11 235 308	11 889 308	12 334 252	13 238 740	43 129	39 769	42 034	41 046	47 478

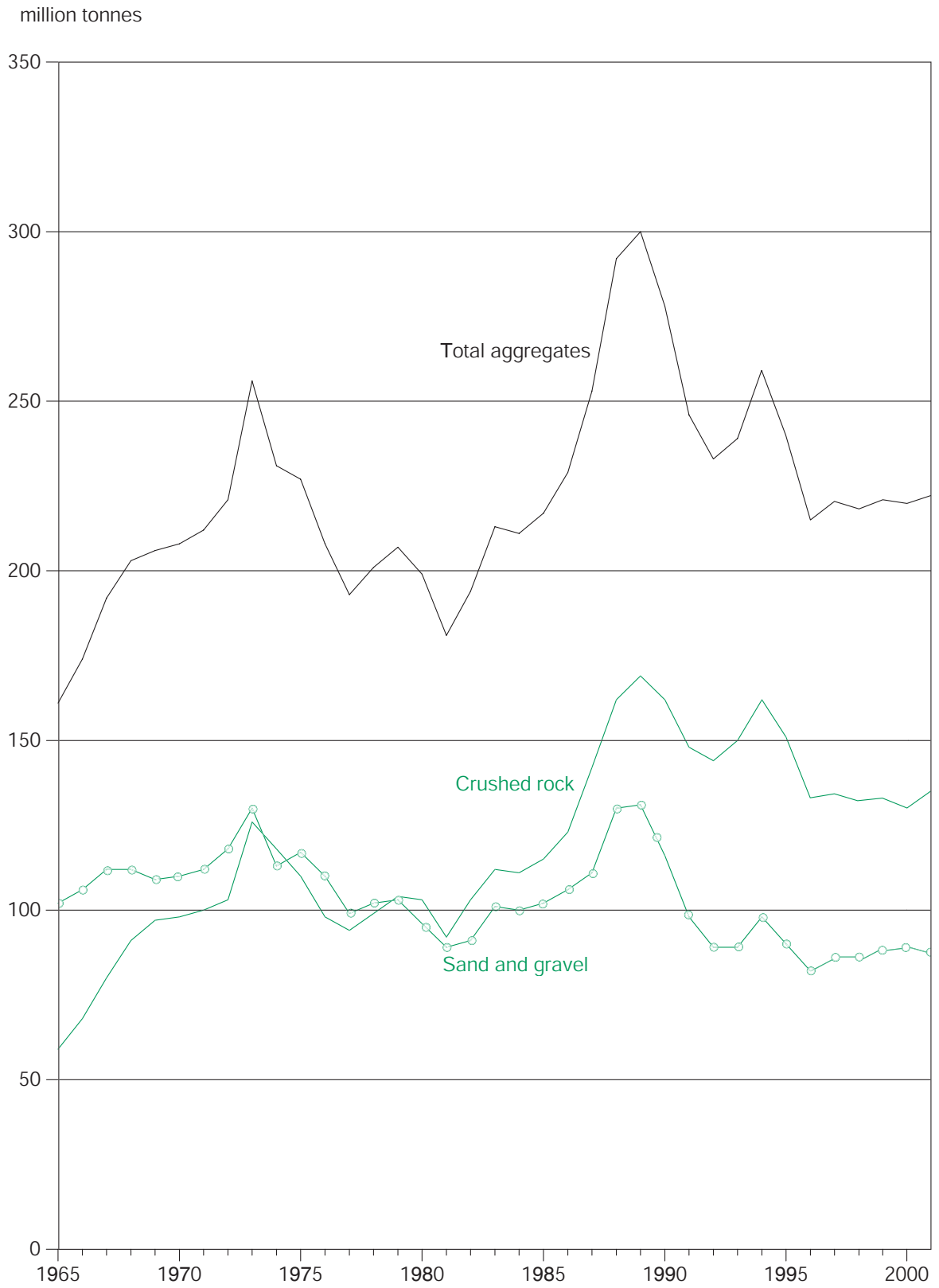
(a) Great Britain only.

(b) Including production from marine dredging.

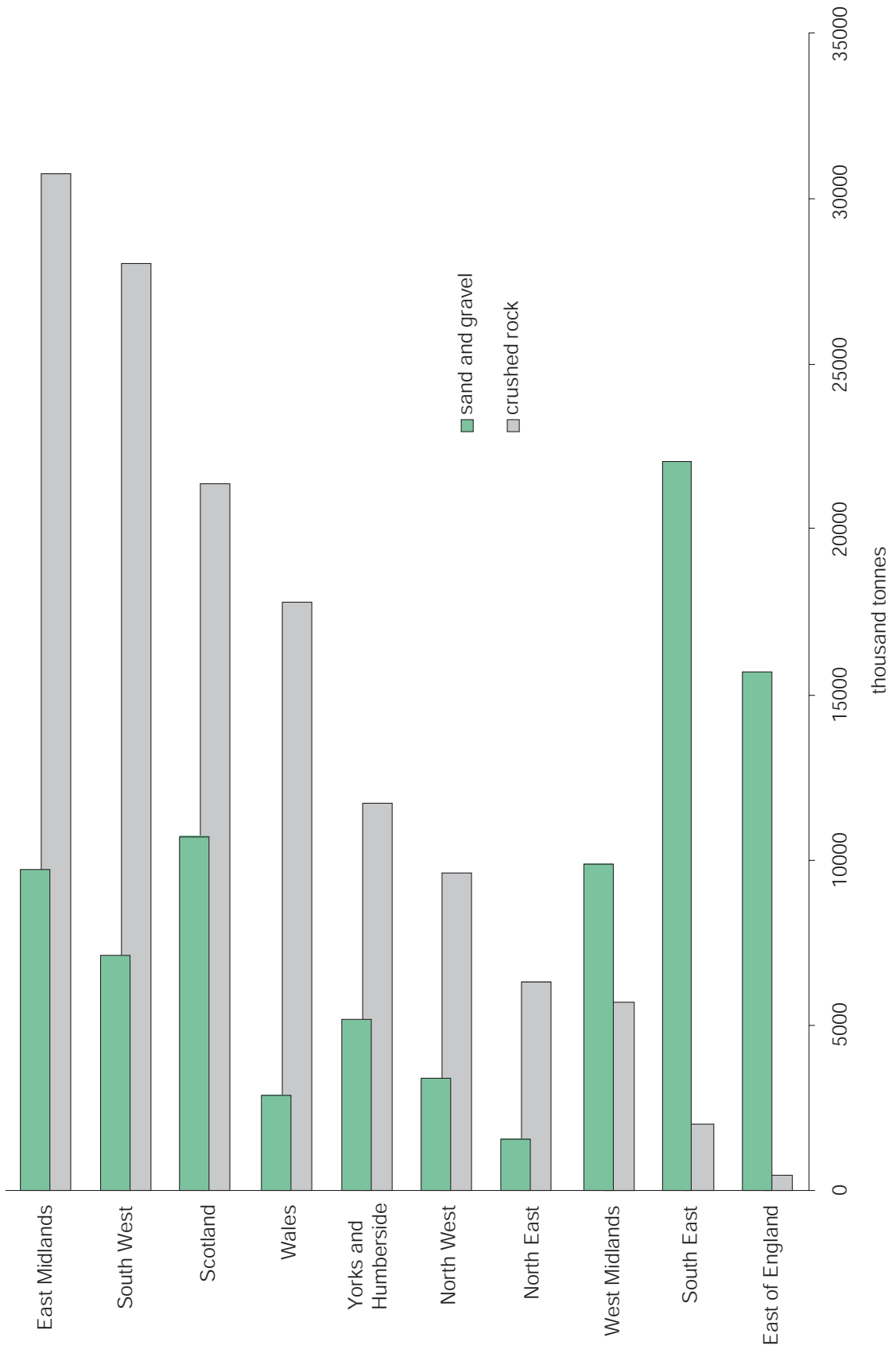
(c) For a number of years, a significant amount of crushed rock imports are believed to have been wrongly classified as 'granite, unworked'. In 2001, BGS estimate that crushed rock imports should be approximately 2 200 000 tonnes.

(d) Principally marine-dredged sand and gravel. Source: HM Customs and Excise. However, the Crown Estate Commissioners give the following figures for marine-dredged sand and gravel landed at foreign ports (tonnes): 1997: 6 878 892; 1998: 7 046 645; 1999: 7 226 549; 2000: 7 314 813; 2001: 6 992 731.

# Great Britain production of natural aggregates 1965–2001



Great Britain production of crushed rock aggregate and sand and gravel by region 2001





## England and Wales summary of consumption of primary aggregates, by Region 2001 (a)

Thousand tonnes

Region	Land-won sand and gravel	Marine sand and gravel	Total sand and gravel	Crushed rock	Total primary aggregate
South West	5 604	659	6 263	19 140	25 404
South East	12 488	7 036	19 524	14 603	34 127
London	2 021	5 090	7 110	2 453	9 563
East of England	13 404	153	13 557	5 680	19 237
East Midlands	8 703	—	8 703	14 448	23 151
West Midlands	9 564	1	9 564	10 475	20 039
North West	3 656	425	4 081	18 058	22 139
Yorkshire and Humberside	5 337	277	5 614	12 793	18 407
North East	1 826	982	2 808	7 392	10 201
<b>England</b>	<b>62 602</b>	<b>14 622</b>	<b>77 225</b>	<b>105 042</b>	<b>182 267</b>
South Wales	283	915	1 198	8 284	9 482
North Wales	909	68	977	3 663	4 640
<b>Wales</b>	<b>1 191</b>	<b>983</b>	<b>2 175</b>	<b>11 947</b>	<b>14 122</b>
<b>England and Wales</b>	<b>63 794</b>	<b>15 606</b>	<b>79 399</b>	<b>116 990</b>	<b>(b) 196 389</b>

(a) For aggregate use only.

(b) The figure for total consumption slightly under estimates true consumption because for some regions unallocated sales have an unknown destination. Total unallocated sales were (thousand tonnes): sand and gravel: 643; crushed rock: 377.

Source: *Collation of the Results of the 2001 Aggregate Minerals Survey for England and Wales*. British Geological Survey.

## Permitted reserves of primary aggregate minerals in England and Wales for active and inactive sites at 31st December 2001 (a)

Thousand tonnes

Region	Sand and gravel					Crushed rock					Grand total
	Active	Inactive: worked in past	Inactive: yet to be worked	Total	Dormant (b)	Active	Inactive: worked in past	Inactive: yet to be worked	Total	Dormant (b)	
South West	39 028	5 248	6 000	50 276	1 515	920 399	459 965	5 300	1 385 664	92 818	1 435 940
South East	123 162	12 446	5 936	141 545	6 220	55 984	15 819	1 000	72 803	10 000	214 348
London	3 185	—	—	3 185	—	—	—	—	—	—	3 185
East of England	153 258	19 769	11 768	184 795	5 436	13 068	1 783	500	15 351	—	200 146
East Midlands	79 179	10 538	9 030	98 747	8 415	1 979 616	184 173	2 000	2 165 789	171 463	2 264 536
West Midlands	114 734	9 685	19 390	143 809	6 705	252 106	54 631	2 749	309 486	14 050	453 295
North West	55 348	1 113	1 315	57 776	—	337 090	8 869	256	346 215	—	403 991
Yorkshire and Humberside	45 100	5 780	—	50 880	—	438 197	32 315	1	470 513	22 955	521 393
North East	13 201	7 926	250	21 377	570	206 705	52 166	—	258 870	3 751	280 247
<b>England</b>	<b>626 196</b>	<b>72 505</b>	<b>53 689</b>	<b>752 390</b>	<b>28 861</b>	<b>4 203 165</b>	<b>809 720</b>	<b>11 806</b>	<b>5 024 691</b>	<b>315 036</b>	<b>5 777 081</b>
South Wales	6 806	845	—	7 651	—	465 724	181 553	400	647 677	38 210	655 328
North Wales	20 376	1 544	1 200	23 120	325	222 139	283 057	—	505 196	228 907	528 316
<b>Wales</b>	<b>27 182</b>	<b>2 389</b>	<b>1 200</b>	<b>30 771</b>	<b>325</b>	<b>687 863</b>	<b>464 610</b>	<b>400</b>	<b>1 152 873</b>	<b>267 117</b>	<b>1 183 644</b>
<b>England &amp; Wales</b>	<b>653 378</b>	<b>74 894</b>	<b>54 889</b>	<b>783 161</b>	<b>29 186</b>	<b>4 891 027</b>	<b>1 274 330</b>	<b>12 206</b>	<b>6 177 564</b>	<b>582 153</b>	<b>6 960 725</b>

(a) For aggregate and non-aggregate use.

(b) Reserves in 'Dormant' sites are included in 'Inactive sites worked in the past'.

Source: *Collation of the Results of the 2001 Aggregate Minerals Survey for England and Wales*. British Geological Survey.

## England and Wales summary sales of primary aggregates, by Region 2001

Thousand tonnes

Region	Land-won sand and gravel		Marine sand and gravel		Total sand and gravel		Crushed rock		Total primary aggregate	
	AMRI 2001	AM 2001	AMRI 2001	AM 2001	AMRI 2001	AM 2001	AMRI 2001	AM 2001	AMRI 2001	AM 2001
North East	1 071	1 177	495	985	1 566	2 162	6 338	6 596	7 904	8 758
North West	3 165	3 097	237	447	3 402	3 544	9 601	10 034	13 003	13 578
Yorkshire and Humberside	5 016	4 936	155	275	5 171	5 211	11 718	12 701	16 889	17 913
West Midlands	9 894	9 932	—	—	9 894	9 932	5 688	5 497	15 582	15 429
East Midlands	9 716	10 046	—	—	9 716	10 046	30 780	31 254	40 496	41 300
East of England	13 978	15 025	1 716	1 387	15 694	16 412	452	655	16 146	17 066
South East	11 874	12 450	6 729	7 219	18 603	19 669	1 984	2 398	20 587	22 067
London	878	837	2 523	3 725	3 401	4 562	—	—	3 401	4 562
South West	6 586	5 184	540	607	7 126	5 791	28 067	26 518	35 193	32 309
<b>England</b>	<b>62 177</b>	<b>62 684</b>	<b>12 395</b>	<b>14 644</b>	<b>74 572</b>	<b>77 328</b>	<b>94 630</b>	<b>95 653</b>	<b>169 202</b>	<b>172 981</b>
South Wales	209	115	1 172	1 174	1 381	1 289	10 612	10 021	11 993	11 310
North Wales	1 461	1 342	44	44	1 505	1 387	7 153	7 198	8 658	8 585
<b>Wales</b>	<b>1 670</b>	<b>1 458</b>	<b>1 216</b>	<b>1 218</b>	<b>2 886</b>	<b>2 676</b>	<b>17 765</b>	<b>17 219</b>	<b>20 651</b>	<b>19 895</b>
<b>England and Wales</b>	<b>63 847</b>	<b>64 141</b>	<b>13 611</b>	<b>15 862</b>	<b>77 458</b>	<b>80 004</b>	<b>112 395</b>	<b>112 872</b>	<b>189 853</b>	<b>192 876</b>

Sources: *Annual Minerals Raised Inquiry*, Office for National Statistics, *Aggregate Minerals Survey*, British Geological Survey

## England and Wales summary of estimated arisings and use of recycled and secondary materials, 2001

Thousand tonnes

	Used as aggregate		Used as non-aggregate		Total arisings (a)	
	England	Wales	England	Wales	England	Wales
<b>Recycled material</b>						
Construction & demolition waste (b)	36 470	1 550			88 890	5 020
<b>Secondary material</b>						
Blast furnace slag	700	350	1 270	640	2 010	990
Basic oxygen furnace steel slag	660	320	10	10	670	330
Electric arc furnace steel slag	280				280	
China clay waste	2 280				22 600	
Colliery spoil	780	30			7 260	250
Power station pulverised fuel ash	1 500	160	750	80	4 410	460
Power station furnace bottom ash	880	90			890	90
Spent railway track ballast	1 190	50			1 250	50
Slate waste	260	320			2 330	4 000
Waste glass	80		610	40	2 080	120
Municipal solid waste incinerator bottom ash	380				620	
Scrap tyres	90		160	10	380	20
Fired ceramic waste	90	10			90	10
Spent foundry sand	180				880	20
<b>Total</b>	<b>45 820</b>	<b>2 880</b>	<b>2 800</b>	<b>780</b>	<b>134 640</b>	<b>11 360</b>

(a) A significant proportion of total arisings are not utilised.

(b) The arisings of construction and demolition waste include excavation waste as well as the hard material most suitable for recycling into aggregates.

Source: *Survey of arisings and use of construction and demolition waste in England and Wales in 2001* and *Survey of arisings and use of secondary materials as aggregates in England and Wales in 2001*, Office of the Deputy Prime Minister.

## Great Britain estimated consumption of natural aggregates 1955–2001

Year	Million tonnes							Total crushed rock and sand and gravel
	Crushed rock aggregate (c)				Sand and gravel (b)			
	Limestone (a)	Igneous rock	Sandstone	Total	Sand	Gravel	Total	
1955	11	13	3	27	...	...	61	88
1956	13	13	3	29	...	...	63	92
1957	13	13	4	30	...	...	60	90
1958	14	13	4	31	...	...	63	94
1959	17	14	3	34	33	35	68	102
1960	18	15	4	37	38	38	76	113
1961	20	16	4	40	42	43	85	125
1962	21	16	4	41	42	43	85	126
1963	23	17	4	44	44	45	89	133
1964	29	20	5	54	52	54	106	160
1965	34	20	5	59	50	52	102	161
1966	40	22	6	68	50	56	106	174
1967	48	25	7	80	52	60	112	192
1968	53	27	11	91	54	58	112	203
1969	55	28	14	97	52	57	109	206
1970	59	28	11	98	53	57	110	208
1971	62	29	9	100	53	59	112	212
1972	61	32	10	103	55	63	118	221
1973	74	38	14	126	62	68	130	256
1974	72	34	12	118	53	60	113	231
1975	67	32	10	110	54	63	117	227
1976	60	28	10	98	51	59	110	208
1977	59	26	9	94	46	53	99	193
1978	61	28	10	99	48	55	102	201
1979	65	29	10	104	49	54	103	207
1980	65	28	10	103	45	52	96	199
1981	57	25	10	92	41	48	89	182
1982	62	30	11	103	42	49	91	194
1983	70	31	11	112	46	55	101	213
1984	69	30	12	111	46	54	100	211
1985	72	32	11	115	47	55	102	217
1986	78	34	11	123	51	55	106	229
1987	89	39	14	142	53	58	111	253
1988	102	44	16	162	63	67	130	292
1989	106	46	16	169	64	67	131	300
1990	98	49	14	162	58	58	116	278
1991	90	46	13	148	49	49	98	246
1992	85	48	11	144	45	44	89	233
1993	89	49	12	150	45	44	89	239
1994	99	50	13	162	50	48	98	259
1995	87	49	15	151	47	43	90	240
1996	77	43	12	133	43	39	82	215
1997	80	42	12	134	45	42	86	220
1998	79	40	13	132	44	42	86	218
1999	76	45	11	133	45	43	88	221
2000	(d) 74	44	(d) 12	130	45	44	89	220
2001	(d) 78	45	(d) 11	134	45	43	88	222

(a) Including dolomite.

(d) BGS estimate.

(b) Total production, excluding marine-dredged material for export; see table on p.93.

Source: Office for National Statistics.

(c) The following amounts of crushed rock aggregate, believed to be mainly igneous rock, were exported (million tonnes): 1997: 2; 1998: 3; 1999: 3; 2000: 2; 2001: 3. These figures have not been taken into account when calculating consumption.

## Great Britain consumption of natural aggregates related to construction work (intensity of use of aggregates) 1955–2001

Year	Value of new construction work (a)	Estimated consumption of aggregate			Total value of all construction work (a)	Estimated consumption of aggregate		
		Crushed rock	Sand and gravel (b)	Total		Crushed rock	Sand and gravel (b)	Total
		£ million	Tonnes per £1000			Tonnes per £1000	£ million	Tonnes per £1000
1955	13 792	2.0	4.4	6.4	23 691	1.1	2.6	3.7
1956	15 048	1.9	4.2	6.1	25 547	1.1	2.5	3.6
1957	15 321	2.0	3.9	5.9	26 580	1.1	2.3	3.4
1958	16 295	1.9	3.9	5.8	27 219	1.1	2.3	3.5
1959	17 445	2.0	3.9	5.9	29 703	1.1	2.3	3.4
1960	19 139	1.9	4.0	5.9	32 087	1.2	2.4	3.5
1961	20 983	1.9	4.1	6.0	34 328	1.2	2.5	3.6
1962	21 626	1.9	3.9	5.8	35 272	1.2	2.4	3.6
1963	21 962	2.0	4.1	6.1	36 061	1.2	2.5	3.7
1964	25 793	2.1	4.1	6.2	40 204	1.3	2.6	4.0
1965	27 459	2.2	3.7	5.9	42 242	1.4	2.4	3.8
1966	27 821	2.4	3.8	6.3	42 938	1.6	2.5	4.1
1967	30 197	2.7	3.7	6.4	45 787	1.8	2.5	4.2
1968	31 160	2.9	3.6	6.5	46 819	1.9	2.4	4.3
1969	30 789	3.2	3.5	6.7	46 069	2.1	2.4	4.5
1970	29 764	3.3	3.7	7.0	44 923	2.2	2.5	4.6
1971	30 415	3.3	3.7	7.0	45 691	2.2	2.5	4.6
1972	30 235	3.4	3.9	7.3	46 985	2.2	2.5	4.7
1973	30 111	4.2	4.3	8.5	47 650	2.6	2.7	5.4
1974	25 474	4.6	4.4	9.1	42 561	2.8	2.7	5.4
1975	24 338	4.5	4.8	9.3	39 949	2.8	2.9	5.7
1976	24 716	4.0	4.5	8.4	39 417	2.5	2.8	5.3
1977	23 969	3.9	4.1	8.1	39 172	2.4	2.5	4.9
1978	24 884	4.0	4.1	8.1	42 436	2.3	2.4	4.7
1979	23 134	4.5	4.5	9.0	43 291	2.4	2.4	4.8
1980	20 156	5.1	4.8	9.9	41 307	2.5	2.3	4.8
1981	18 011	5.1	4.9	10.1	37 275	2.5	2.4	4.9
1982	19 045	5.4	4.8	10.2	38 506	2.7	2.4	5.0
1983	20 368	5.5	5.0	10.5	41 795	2.7	2.4	5.1
1984	20 910	5.3	4.8	10.1	43 504	2.6	2.3	4.9
1985	20 739	5.6	4.9	10.5	44 034	2.6	2.3	4.9
1986	21 652	5.7	4.9	10.6	45 525	2.7	2.3	5.0
1987	24 541	5.8	4.5	10.3	50 629	2.8	2.2	5.0
1988	27 305	5.9	4.8	10.7	55 438	2.9	2.3	5.3
1989	28 224	6.0	4.6	10.6	58 137	2.9	2.3	5.2
1990	28 535	5.7	4.1	9.7	58 375	2.8	2.0	4.8
1991	27 483	5.4	3.6	9.0	54 133	2.7	1.8	4.5
1992	27 038	5.3	3.3	8.6	51 927	2.8	1.7	4.5
1993	26 696	5.6	3.3	9.0	50 980	2.9	1.8	4.7
1994	27 299	5.9	3.6	9.5	52 692	3.1	1.9	4.9
1995	26 672	5.7	3.4	9.0	52 643	2.9	1.7	4.6
1996	27 232	4.9	3.0	7.9	53 863	2.5	1.5	4.0
1997	28 451	4.7	3.0	7.7	55 468	2.4	1.6	4.0
1998	29 445	4.5	2.9	7.4	56 370	2.3	1.5	3.9
1999	30 685	4.3	2.9	7.2	57 190	2.3	1.5	3.9
2000	31 249	4.2	2.9	7.0	58 050	2.2	1.5	3.8
2001	32 105	4.2	2.7	6.9	60 101	2.2	1.5	3.7

(a) Valued at constant 1995 prices.

Source: Department of Trade and Industry.

Source: British Geological Survey.

(b) Land-won and marine-dredged material.

# Aluminium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Aluminium</b>										
<i>Production</i>										
Unwrought–										
Primary	247 675	258 397	269 700	305 099	340 778					
Secondary	242 700	274 800	285 300	241 300	248 600					
<i>Consumption</i>										
Unwrought–										
Primary	583 000	579 000	496 758	575 520	433 302					
Secondary	130 581	144 632	151 649	180 085	215 424					
Ferro-aluminium (a)	3 350	3 140	3 050	2 910	2 760					
<i>Imports</i>										
Scrap	107 567	138 125	141 971	123 185	112 240	75 967	71 090	64 066	74 984	74 761
Ash and residues	2 004	710	630	184	408	497	196	177	64	38
Unwrought	310 882	310 767	307 607	120 138	135 094	333 467	272 637	256 868	133 644	130 562
Unwrought alloys	132 373	184 942	136 950	158 217	211 245	140 300	192 619	139 630	161 513	250 707
<i>Exports</i>										
Scrap	104 231	122 591	104 823	141 207	204 605	80 929	78 748	72 537	103 509	143 137
Ash and residues	1 333	1 950	1 170	908	971	520	839	541	298	364
Unwrought	129 429	32 067	12 415	89 761	16 855	125 134	30 118	9 392	90 564	19 196
Unwrought alloys	241 147	193 134	225 110	261 274	243 780	277 747	203 145	206 299	283 519	271 247

(a) Consumption in the iron and steel industry; ferro-alloy weight.

## Aluminium compounds

The closure was announced in September of the alumina plant owned by Alcan Chemicals Europe at Burntisland, Fife. The plant, which started operating in 1918, produced non-metallurgical alumina from bauxite imported chiefly from Ghana. It appears to have been the victim of a general over-capacity in Europe and its relatively small size (100 000 tonnes/year).

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Aluminium compounds</b>										
<i>Production</i>										
Oxide (alumina)	100 000	96 000	90 000	88 500	83 900					
<i>Imports</i>										
Oxide (alumina)	505 974	381 804	541 344	568 317	713 808	86 593	76 034	89 133	107 650	125 521
Hydroxide	77 572	79 427	102 100	73 170	63 687	12 771	12 181	12 406	9 515	9 281
Fused oxide (a)	70 335	39 103	28 790	45 349	43 271	19 235	17 307	13 092	17 335	19 947
Fluorides	5 976	5 238	2 317	7 645	5 460	3 289	2 659	1 150	3 104	2 461
<i>Exports</i>										
Oxide (alumina)	(b) 27 653	18 640	(b) 17 197	(b) 12 581	11 795	(b) 7 934	10 819	(b) 9 070	(b) 6 042	6 347
Hydroxide	...	34 778	...	(c) 30 600	42 451	...	7 873	...	...	15 843
Fused oxide (a)	16 858	19 154	13 758	8 723	6 683	12 108	12 425	10 049	9 013	9 183
Fluorides	0	503	89	61	28	10	163	188	106	62

(a) Artificial corundum.

(b) Including some bauxite.

(c) BGS estimates, based on known imports into certain countries.

# Antimony

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Antimony</b>										
<i>Consumption (Sb content)</i>										
Metal	480	480	480	480	587					
Scrap (a)	1 593	1 633	1 605	1 512	1 480					
<i>Imports</i>										
Ash and residues	5	—	—	—	—	1	—	—	—	—
Metal	2 808	950	133	461	345	3 904	5 449	258	782	417
Oxides	1 883	2 105	1 707	2 082	4 103	3 308	2 768	2 309	2 556	5 270
<i>Exports</i>										
Ash and residues	14	102	72	20	0	0	64	43	5	0
Metal	116	100	88	...	...	440	590	373	482	543
Oxides	(b) 5 600	5 139	(b) 4 000	(b) 4 400	1 297	...	8 821	...	...	1 751

(a) Including some antimony in ore.

(b) BGS estimates, based on known imports into certain countries.

# Arsenic

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Arsenic</b>										
<i>Imports</i>										
Elemental	122	81	108	109	87	256	277	332	602	838
<i>Exports</i>										
Elemental	3	22	45	11	5	89	113	37	37	56

# Asbestos

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Asbestos</b>										
<i>Imports</i>										
Fibre	3 113	723	330	246	246	1 224	264	117	244	386
Waste	1 708	1 117	458	0	101	552	299	126	0	327
Fabricated asbestos	478	686	465	431	136	2 061	2 031	1 935	1 365	1 257
Friction material with a basis of asbestos etc.	3 858	5 681	6 130	5 831	6 623	16 613	19 775	21 531	22 485	29 369
Articles of asbestos cement etc.	55 109	42 236	40 324	57 126	51 314	17 251	13 668	13 756	13 488	16 131
<i>Exports</i>										
Fibre	15	41	49	2	1	17	14	7	12	3
Waste	1	4	—	—	—	3	91	—	—	—
Fabricated asbestos	7 507	4 375	1 039	1 313	943	11 926	10 907	7 824	8 119	5 445
Friction material with a basis of asbestos etc.	5 427	6 893	5 002	5 108	5 217	29 855	42 233	30 973	33 097	34 915
Articles of asbestos cement etc.	43 909	57 247	69 557	62 456	40 326	17 150	14 222	15 727	15 266	12 322

# Asphalt, natural

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Asphalt, natural</b>										
<i>Imports</i>	187 379	17 128	38 111	286 364	268 207	8 213	2 255	4 437	22 430	22 788
<i>Exports</i>	58 389	49 135	...	148 037	170 150	4 716	4 959	5 290	14 626	16 394

# Ball clay

Sales of ball clay, of which 82 per cent comprised exports, were a record 1 068 655 tonnes in 2000. The Bovey Basin in south Devon continued to be the main source of supply, accounting for some 58 per cent of total sales, with 20 per cent from the Petrockstowe Basin in north Devon and 22 per cent from the Wareham Basin in Dorset. Total sales declined to 998 850 tonnes in 2001, of which 827 214 tonnes (83 per cent) were exports, including 622 620 tonnes to countries of the EU. Sales are believed to have declined again in 2002 and are tentatively placed at 930 000 tonnes.

The two UK producers of ball clay are WBB Minerals, the world's leading producer of high-quality ball clays, and IMERYS Minerals Ltd. WBB is a wholly-owned subsidiary of SCR Sibelco SA, a privately-owned Belgian mineral company, and operates solely in Devon. IMERYS has workings in all three basins.

A report on *The economic importance of UK ball clay* was completed in early 2002 by a team headed by SRK Consulting and comprising DTZ Piedad Consulting, the British Geological Survey and CERAM Research Ltd. The study, which was funded by the DTI and the Kaolin and Ball Clay Association, provided an in-depth analysis of the primary contribution that the ball clay industry makes to the national and local economies, together with its secondary contribution to downstream industries in the UK and the EU. Other issues, including alternative sources and substitutes for ball clay, and sustainability issues, were also considered.

Sales of UK ball clay, including income from the provision of associated services, generated direct revenues of £56 million in 2000 of which £46 million was attributed to exports sales. Of total sales in 2000, 40.3 per cent was for sanitaryware, 26.2 per cent for floor tiles, 8.1 per cent for wall tile, and 9.3 per cent for tableware. Refractories, bricks, enamels and non-ceramic applications accounted for the remaining 16.1 per cent.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Ball clay</b>										
<i>Production (sales) (a)</i>	915 680	963 513	931 365	1 068 655	998 850					
<i>Imports</i>	5 358	6 012	10 160	7 763	7 502	868	1 151	1 790	1 216	991
<i>Exports (a)</i>	702 230	761 697	742 383	878 260	827 214					

(a) Source: The Kaolin and Ball Clay Association.

# Barytes

Sales of barytes in 2001 were 66 000 tonnes and are estimated to have decreased to about 59 000 tonnes in 2002. Output is dominated by M-I Great Britain Ltd from its Foss mine, near Aberfeldy in Scotland. By-product recovery of barytes from processing fluorspar ore at Glebe Mines' Cavendish Mill in the Peak District is the second most important source. Minor quantities of barytes were produced by Waiting Minerals at their open pit Silverband operation in Cumbria. The Closehouse open pit in Durham owned by Closehouse Minerals Ltd has however been closed and the site restored. Britain is a net importer of barytes, which is used mainly as a weighting agent in drilling fluids in oil and gas exploration. Preliminary imports for 2002 were 74 766 tonnes valued at £3.1 million. The UK has not been a significant exporter of barytes. However, provisional data for 2002 report exports of 29 527 tonnes valued at £2.6 million. The data are believed to be in error.

M-I Great Britain Ltd is considering the submission of a revised planning application to develop the Duntanlich mine. The proposed mine, which would have an output of up to 200 000 t/y, remains critical to the company's long term objective of maintaining barytes supplies to its grinding facilities in Aberdeen and Great Yarmouth from indigenous sources. A planning application for the mine in the Farragon Hills, 7 km west of Pitlochry, was refused by the Secretary of State for Scotland in March 1995. The company subsequently lodged an appeal against that decision with the Court of Session in Scotland but this was dismissed in May 1996.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Barium</b>										
<i>Production</i>										
Barium minerals– Barytes	(b) 74 000	64 000	59 000	54 000	(b) 66 000					
<i>Imports</i>										
Barium minerals (a)	139 065	98 506	65 703	57 362	77 273	5 964	4 409	2 963	2 877	3 624
<i>Exports</i>										
Barium minerals (a)	9 475	6 590	8 196	(c) 28 503	(c) 58 969	1 864	1 363	1 627	2 853	3 886

(a) Mainly barytes with some witherite.

(b) BGS estimate.

(c) Figure believed to be too high.

## Bauxite

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Bauxite</b>										
<i>Imports</i> (a)										
	322 215	278 737	217 514	222 319	271 404	10 002	10 673	8 835	8 201	12 805
<i>Exports</i> (a)										
	(b) 27 653	1 743	(b) 17 197	(b) 12 581	2 593	(b) 7 934	494	(b) 9 070	(b) 6 042	912

(a) Excluding refractory grade bauxite.

(b) Including alumina.

## Bentonite

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Bentonite</b>										
<i>Imports</i>										
	162 819	(a) 331 453	246 341	255 942	235 517	11 520	13 737	13 021	14 129	14 731
<i>Exports</i>										
	96 781	108 868	76 459	75 472	72 983	21 070	25 196	17 784	15 774	16 314

(a) Figure under investigation.

## Beryllium

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Beryllium</b>										
<i>Imports</i>										
Metal	30	45	29	10	12	962	1 460	1 769	709	523
Oxides and hydroxides	7	—	6	12	10	3	—	521	988	881
<i>Exports</i>										
Metal	7	27	13	34	58	288	593	264	689	311



# Bismuth

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Bismuth</b>										
<i>Imports</i>										
Metal	1 256	1 382	1 265	1 379	1 515	5 230	6 168	5 741	5 277	7 706
<i>Exports</i>										
Metal	2 038	1 973	2 381	2 987	1 269	7 699	8 080	5 914	7 352	5 799

# Boron

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Boron</b>										
<i>Imports</i>										
Boron minerals (a)	22 001	25 665	16 573	16 450	16 880	2 599	3 195	2 013	1 947	2 630
<i>Exports</i>										
Boron minerals (a)	1 165	145	320	304	96	241	93	149	62	31

(a) Including crude natural borates and concentrates, and crude natural boric acid.

# Bricks

Total deliveries of clay bricks have been around the 2 800 million bricks a year level for several years. However, deliveries have declined somewhat since 2000 and were 2 666 million bricks in 2001, although they increased slightly in 2002 to 2 689 million bricks.

The brick industry, through the Brick Development Association (BDA) and the British Ceramic Confederation, has published its own sustainability strategy in response to the challenge to industry sectors contained in the Government's Sustainable Development Strategy 1999. *The Sustainable Strategy for the Brick Industry* contains an analysis of the industry's contribution to sustainability, its commitment to continuous improvement and a suite of key performance indicators, which will be used to measure its performance. The strategy and related documents are available on the BDA's website.

Ambion Brick Ltd and Chelwood Brick Ltd merged in January 2002 to form a new company, which trades under the name 'thebrickbusiness'. The new company operates eleven plants with a capacity of some 400 million bricks and produces a range of over 150 wire cut, stocks and handmade bricks. It has a market share of approximately 14 per cent and is the third largest clay brick producer in the UK behind the market leaders, Ibstock Building Products and Hanson Brick. Ibstock is part of the CRH Irish building materials group. Ambion had five plants producing 170 million bricks a year with a strong market presence in the production of soft-mud bricks. Chelwood had six plants making 225 million bricks a year but with an emphasis on wire cut products.

Hanson Brick, the UK's second largest brick manufacturer, has acquired the soft-mud brick operation of Red Bank Manufacturing at Measham in Leicestershire. The company operates a quarry working brick clay from Triassic mudstones also at Measham.

Hanson Brick Ltd submitted a planning application in January 2002 to build a new brick factory at Broadmead Road, Wootton Broadmead near Stewartby in Bedfordshire. The existing works at Stewartby manufactures Fletton Bricks and currently produces about 112 million bricks a year. A large proportion of these bricks supply the repair and maintenance market, as opposed to the new build market. Hanson is currently the only manufacturer of this type of brick and whilst Fletton Bricks are an essential element of both Hanson's product range and the UK's building infrastructure, the downward trend over the past few decades in the use of brick in the new build market has had the effect of significantly reducing production at Stewartby. The company operates two more factories capable of producing bricks for the Fletton market. These are King's Dyke and Saxon, near Whittlesey, Peterborough. Fletton market demand is met from all three factories, but the company foresees a time when demand for this type of brick may show further decline and there will no longer be a requirement to produce Fletton Bricks at Stewartby. In contrast, current market trends for soft-mud products indicate an increased demand for this particular type of brick. The soft-mud process produces bricks of soft, slightly irregular outline often showing surface creases and sanded on all

surfaces. The aesthetic properties of these bricks have resulted in a resurgence in their popularity, and a marked increase in market share.

Hanson believe that a new works developed at Stewartby to maintain soft-mud products will enable the company to meet future market requirements. There is currently insufficient capacity within the company's production capabilities to meet the growing demand for soft-mud products. With its central location and good transport links to the market, plus substantial reserves of brick clay, the application site at Broadmead is considered to be a good location for the development of a new soft-mud brick works. Providing a new state-of-the-art brick works at Broadmead would provide the means to improve emissions compared to those from the existing works at Stewartby and also raise overall environmental standards by providing a more efficient and cost effective manufacturing process.

### Great Britain production of bricks, blocks and tiles 1992–2001

Material	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Millions										
Bricks:										
Clay	2 776	2 396	2 845	3 025	2 849	(c) 2 828	(c) 2 830	(c) 2 759	(c) 2 694	(c) 2 595
Sandlime	44	50	55	40	31	...	...	...	...	...
Concrete	181	192	214	191	166	169	171	180	170	159
<b>Total</b>	<b>3 000</b>	<b>2 639</b>	<b>3 114</b>	<b>3 256</b>	<b>3 046</b>	<b>2 997</b>	<b>3 000</b>	<b>2 939</b>	<b>2 864</b>	<b>2 754</b>
Brick Production Region										
North East	185	165	198	190	150	160	154	133	130	136
Yorkshire and Humber	307	260	286	278	234	218	194	211	195	186
East Midlands	346	333	423	415	447	473	518	522	508	495
East of England	366	264	246	365	370	325	248	331	334	321
South East	523	396	502	540	523	535	565	409	394	385
South West	158	130	180	171	168	152	146	145	148	132
West Midlands	505	535	639	649	576	558	598	573	572	558
North West	286	268	313	313	295	295	303	320	292	299
<b>England</b>	<b>2 676</b>	<b>2 351</b>	<b>2 787</b>	<b>2 921</b>	<b>2 763</b>	<b>2 718</b>	<b>2 727</b>	<b>2 643</b>	<b>2 573</b>	<b>2 513</b>
<b>Wales</b>	<b>101</b>	<b>104</b>	<b>116</b>	<b>121</b>	<b>106</b>	<b>104</b>	<b>102</b>	<b>123</b>	<b>109</b>	<b>106</b>
<b>Scotland</b>	<b>223</b>	<b>183</b>	<b>211</b>	<b>214</b>	<b>177</b>	<b>176</b>	<b>172</b>	<b>174</b>	<b>181</b>	<b>136</b>
<b>Great Britain</b>	<b>3 000</b>	<b>2 639</b>	<b>3 114</b>	<b>3 256</b>	<b>3 046</b>	<b>2 997</b>	<b>3 000</b>	<b>2 939</b>	<b>2 864</b>	<b>2 754</b>
Million square metres										
Concrete building blocks:										
Dense aggregate	29.7	30.1	37.0	36.9	35.0	37.3	39.4	38.4	37.6	36.6
Lightweight aggregate	17.5	19.2	22.0	18.1	16.3	17.8	19.1	20.8	23.0	22.7
Aerated concrete	21.0	24.9	28.5	23.2	24.6	27.5	26.1	28.5	29.6	28.6
<b>Total</b>	<b>68.2</b>	<b>74.3</b>	<b>87.5</b>	<b>78.3</b>	<b>75.9</b>	<b>82.5</b>	<b>84.7</b>	<b>87.8</b>	<b>90.2</b>	<b>87.9</b>
Roofing tiles:										
Clay (a)(b)	1.5	...	...	...	...	...	...	...	...	...
Concrete	21.5	24.6	28.1	26.1	24.7	25.0	25.0	26.0	26.8	24.8
<b>Total</b>	<b>23.0</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

(a) United Kingdom.

(b) Sales.

(c) Including sandlime bricks.

Sources: Department of Trade and Industry, Office for National Statistics.

## Bromine

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Bromine</b>										
Production	35 600	35 900	24 800	33 200	...					
Imports	5 213	8 002	6 928	5 987	5 387	3 463	3 411	3 703	3 413	2 887
Exports	5 025	7 011	5 335	10 850	11 304	3 242	5 267	5 144	7 410	8 385

# Building and dimension stone

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Building and dimension stone</b>										
<i>Production (b)</i>										
Sandstone	256 000	287 000	455 000	239 000	...					
Igneous rock	189 000	138 000	184 000	...	479 000					
Limestone	(a) 218 000	(a) 295 000	(a) 301 000	...	...					
Dolomite	(a) 10 000	10 000	14 000	15 000	34 000					
Total	(a) 673 000	(a) 730 000	(a) 954 000	...	...					
<i>Imports</i>										
<i>Unworked–</i>										
Marble and other calcareous stone	13 995	9 571	8 473	29 015	9 985	7 891	7 094	7 976	7 709	7 727
Granite (c)	883 546	736 462	1 045 451	865 710	1 781 220	27 374	26 546	23 980	36 452	28 908
Sandstone	1 515	2 091	10 705	13 800	17 202	407	289	1 932	3 113	2 577
Other stone	2 056	109 746	148 015	5 228	9 857	1 081	2 743	2 607	1 181	1 498
<i>Worked–</i>										
Marble and other calcareous stone	22 951	53 489	53 639	32 425	64 637	22 134	27 575	21 566	23 668	28 291
Granite	23 809	24 541	25 961	34 928	37 533	19 002	20 097	19 214	24 215	26 334
Other stone	4 659	8 984	12 018	17 839	21 256	5 030	9 712	8 688	10 538	10 947
Paving stones and flagstones	17 104	15 361	20 874	41 589	47 501	3 001	3 062	6 573	8 562	8 161
<i>Exports</i>										
<i>Unworked–</i>										
Marble and other calcareous stone	4 580	7 332	6 084	8 668	4 140	392	535	425	501	770
Granite	3 961	1 111	983	1 594	1 558	201	370	133	331	370
Sandstone	263	734	4 445	5 974	4 998	182	102	467	522	1 038
Other stone	620	355	...	809	281	214	188	...	513	134
<i>Worked–</i>										
Marble and other calcareous stone	915	601	622	839	526	1 377	1 420	1 366	1 407	1 456
Granite	115	101	85	713	53	170	211	82	360	99
Other stone	2 079	1 633	1 475	1 401	3 596	2 721	1 931	1 531	1 306	1 914
Paving stones and flagstones	3 139	3 730	4 328	3 168	5 029	1 323	1 221	1 104	937	780

(a) BGS estimate.  
(b) Great Britain only.

(c) Figures believed to be too high. May include aggregate.

# Cadmium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Cadmium</b>										
<i>Production (a)</i>										
	455	440	547	503	425					
<i>Consumption</i>										
	631	626	641	585	584					
<i>Imports</i>										
Metal	854	632	462	790	942	873	640	379	448	1 273
Pigments	10	35	29	52	26	62	245	243	372	155
<i>Exports</i>										
Metal	18	28	215	19	87	85	231	121	129	495
Pigments	722	615	655	748	691	6 034	4 809	4 555	5 389	4 849

(a) Refined.

# Calcspar

## United Kingdom summary 1997–2001

					Tonnes
Commodity	1997	1998	1999	2000	2001
<b>Calcspar (Calcite)</b>					
<i>Production</i>	13 000	15 000	...	...	12 000

# Cement

Deliveries of cement into Great Britain from GB production were an estimated 11.1 million tonnes in 2002 compared with 10.7 million tonnes in 2001.

Castle Cement Ltd received planning approval, following a public inquiry, to extend its quarrying operations at Ketton in Rutland to yield approximately 27 million tonnes of limestone and 3.5 million tonnes of clay.

Clinker production at the Weardale Cement works ended in August 2002 and the plant is being decommissioned. The clinker capacity of the plant was some 0.67 Mt/y.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Cement</b>										
<i>Production</i>										
Cement clinker	12 141 000	12 372 000	11 816 000	11 456 000	10 573 000					
Finished cement	12 638 000	12 409 000	12 697 000	12 452 000	11 854 000					
Fibre cement products (a)	163 500	160 900	156 200	...	...					
	Thousand cubic metres									
Ready-mixed concrete	22 327 000	22 983 000	23 550 000	23 043 000	23 008 000					
	Tonnes									
<i>Consumption (home deliveries) (b)</i>										
Finished cement	11 954 000	11 854 000	11 736 000	11 854 000	11 350 000					
Fibre cement products (a)	162 800	164 100	157 800	...	...					
<i>Imports</i>										
Portland cement clinker	346 319	319 036	445 468	350 975	387 306	19 885	16 565	22 244	18 124	14 254
Aluminous cement	14 671	14 891	28 517	12 515	12 675	4 019	4 442	8 871	3 779	3 821
Portland cement	986 558	1 260 716	1 153 210	1 428 008	1 179 521	39 800	47 350	52 443	56 017	51 173
Other cement	35 098	25 520	28 438	8 913	39 736	2 380	1 966	1 660	2 191	2 718
<i>Exports</i>										
Portland cement clinker	340 717	564 214	455 830	256 077	169 344	11 790	13 849	12 827	8 266	6 573
Aluminous cement	23 069	29 964	23 985	40 165	50 085	7 678	10 369	9 305	11 687	14 578
Portland cement	514 942	681 151	596 794	528 417	229 572	26 930	31 884	29 958	21 001	14 793
Other cement	31 968	23 374	14 711	16 099	31 356	3 951	4 232	3 692	4 021	9 186

(a) Great Britain only.

(b) Excluding imports.

# Chalk (see Limestone)

# China clay

China clay sales (internationally known as kaolin) were 2 204 156 dry tonnes in 2001, of which exports accounted for 1 928 230 tonnes (87 per cent), mostly destined for Europe. Sales declined in 2002 to an estimated 2.1 Mt. Production is based on the St Austell and Dartmoor granites in the South-west of England, the former accounting for the major proportion of total output. Production from the Bodmin Moor Granite ceased in 2001 with the closure of the Stannon Pit. The extraction and processing of china clay involves the production of very large quantities of waste. Total sales of china clay waste in 2001 according to the AM2001 survey were some 2.1 Mt almost all of which was consumed in the South West, although small quantities were shipped to London and the South East. However, exports of china clay waste may expand significantly with the proposed development of the port facilities at Par and associated infrastructure. The proposals aim for a capacity of 0.75 Mt/y. China clay waste is exempt from the Aggregates Levy.

IMERYS Minerals Ltd, a wholly-owned subsidiary of the French minerals company, IMERYS, is the largest china clay producer with operations based on the St Austell Granite in Cornwall and the south-western margin of the Dartmoor Granite in Devon. Goonvean Ltd, a privately-owned company, operates five quarries in the St Austell Granite and WBB Minerals operates two sites on the Dartmoor Granite.

IMERYS is the world's largest producer of kaolin with operations in a number of counties, including the USA and Brazil. In 2001 the company announced that it would be transferring some of its 'engineered' paper-coating production to its operations in Brazil. The transfer represents a loss of about 150 000 t/y in UK production of china clay and about 290 jobs, mainly located in Cornwall. IMERYS have also announced that it is to convert its Lee Moor site in Devon from a hydraulic mining operation to a dry mining technique, which will result in reduced mining costs and more flexible and selective extraction.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>China clay</b>										
<i>Production</i> (sales) (a) (b)	2 359 676	2 391 595	2 303 602	2 376 057	2 204 156					
<i>Imports</i>	88 946	47 272	28 502	42 537	95 337	6 183	5 143	3 752	6 275	8 140
<i>Exports</i> (a) (b)	2 052 914	2 093 460	2 018 969	2 074 548	1 928 230					

(a) Dry weight.

(b) Source: The Kaolin and Ball Clay Association.

## China stone

### United Kingdom summary 1997–2001

Tonnes

Commodity	1997	1998	1999	2000	2001
<b>China stone—see Feldspar</b>					
<i>Production</i>	8 108	3 278	2 448	3 645	2 995

## Chromium

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Chromium</b>										
<i>Apparent consumption</i> (a)	104 000	89 000	76 000	96 000	83 000					
<i>Consumption in Iron and Steel Industry</i> (b)	66 110	61 880	58 170	55 090	49 580					
<i>Imports</i>										
Ores and concentrates	157 914	120 967	83 608	163 647	135 369	9 858	7 109	4 397	7 814	6 186
Ferro-chrome—										
Under 4% carbon	17 082	30 023	16 801	16 545	12 501	14 404	18 514	11 139	10 567	8 034
4%–6% carbon	470	1 365	494	—	1 744	311	604	152	—	629
Over 6% carbon	101 363	82 810	97 615	90 499	84 749	38 440	28 817	26 181	27 792	22 868
Ferro-silico-chrome	0	78	5 482	7 415	5 136	0	50	1 488	2 365	1 488
Oxides and hydroxides	...	6 396	...	(d) 5 100	8 201	...	9 930	...	...	10 511
Metal	1 554	1 787	1 573	1 519	1 601	5 672	8 244	6 372	6 522	7 316
<i>Exports</i>										
Ores and concentrates	886	707	871	503	170	212	209	186	117	55
Ferro-chrome—										
Under 4% carbon	1 354	869	359	137	553	1 247	749	421	232	718
4%–6% carbon	360	531	221	265	86	240	291	104	113	78
Over 6% carbon	883	190	467	455	515	642	149	368	327	357
Ferro-silico-chrome	44	264	—	19	52	10	98	—	19	41
Oxides and hydroxides (c)	13 900	10 400	12 600	18 300	17 900					
Metal	5 732	5 803	5 549	8 821	4 609	19 330	22 183	19 444	21 299	18 019

(a) BGS estimates; see p.v.

(b) Chromium content of ferro-alloys.

(c) BGS estimates, based on known imports into certain countries.

(d) BGS estimates, based on known exports from certain countries.

# Clays (also see Bricks)

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Clays (not elsewhere specified)</b>										
<i>Production</i>										
Common clay and shale (a)	11 322 000	12 230 000	11 355 000	10 838 000	10 426 000					
<i>Imports</i>										
Unspecified clays	49 990	82 006	44 704	38 122	38 873	15 286	15 972	15 335	12 380	13 614

(a) Great Britain only. There is a small, undisclosed production in Northern Ireland.

## Great Britain production of common clay and shale by end-use and area of origin 2001

Area of origin	Thousand tonnes						Total
	Bricks, pipes and tiles	Cement	Lightweight aggregate	Constructional use	Other uses		
Durham	144	...	—	...	...	...	215
Northumberland	29	—	—	—	—	—	29
Tyne and Wear	62	—	—	—	—	—	62
<b>North East</b>	<b>235</b>	...	—	...	...	...	<b>306</b>
Humberside	...	176	—	—	26	...	...
North Yorkshire	11	—	32	...	...	...	...
South Yorkshire	175	—	—	—	—	...	175
West Yorkshire	496	—	—	—	—	...	496
<b>Yorkshire and Humberside</b>	...	<b>176</b>	<b>32</b>	...	...	...	<b>958</b>
Derbyshire	314	...	—	—	—	...	...
Leicestershire	...	...	—	—	—	...	912
Nottinghamshire	...	...	—	—	—	...	...
<b>East Midlands</b>	<b>1 412</b>	<b>690</b>	—	—	—	...	<b>2 101</b>
Cambridgeshire	...	—	—	—	—	...	...
Suffolk	2	—	—	—	—	...	2
Essex	...	287	—	—	—	...	...
Hertfordshire	23	—	—	10	—	...	33
Bedfordshire	...	—	—	—	—	...	...
<b>East of England</b>	...	<b>287</b>	—	<b>10</b>	—	...	...
Buckinghamshire	9	—	—	—	—	...	9
Berkshire	—	—	—	—	11	...	11
East Sussex	158	—	—	—	—	...	158
Hampshire	30	—	—	—	2	...	32
Kent	124	—	—	22	20	...	166
Surrey	232	—	—	—	—	...	232
West Sussex	523	—	—	5	—	...	528
<b>South East</b>	<b>1 076</b>	—	—	<b>27</b>	<b>33</b>	...	<b>1 137</b>
Avon	...	—	—	—	—	...	...
Cornwall	—	—	—	3	...	...	...
Devon	165	—	—	—	—	...	165
Dorset	14	—	—	—	—	...	14
Gloucestershire	...	—	—	1	...	...	72
Wiltshire	—	90	—	—	—	...	90
<b>South West</b>	<b>344</b>	<b>90</b>	—	<b>4</b>	...	...	...
Hereford and Worcester	...	—	—	—	—	...	...
Shropshire	...	—	—	—	—	...	...
Staffordshire	758	221	—	12	94	...	1 086
Warwickshire	...	267	—	—	—	...	...
West Midlands	...	—	—	—	—	...	...
<b>West Midlands</b>	<b>1 748</b>	<b>488</b>	—	<b>12</b>	<b>94</b>	...	<b>2 342</b>
Cumbria	30	—	—	—	86	...	116
Cheshire	...	—	—	—	—	...	...
Greater Manchester	...	—	—	—	3	...	...
Lancashire	236	—	—	13	—	...	249
Merseyside	...	—	—	—	—	...	...
<b>North West</b>	<b>410</b>	—	—	<b>13</b>	<b>89</b>	...	<b>512</b>
<b>England</b>	<b>7 055</b>	...	<b>33</b>	...	...	...	<b>9 221</b>

*continued*

## Great Britain production of common clay and shale by end-use and area of origin 2001 *continued*

Thousand tonnes

Area of origin	Bricks, pipes and tiles	Cement	Lightweight aggregate	Constructional use	Other uses	Total
Clwyd	...	...	—	7	—	...
Gwynedd	...	—	—	3	—	...
Powys	80	—	—	34	—	114
<b>Wales</b>	...	...	—	<b>44</b>	—	<b>365</b>
Central	116	—	—	—	—	116
Dumfries and Galloway	—	—	—	110	—	110
Fife	87	—	—	—	—	87
Lothian	...	...	—	...	—	291
Strathclyde	...	—	—	...	—	236
<b>Scotland</b>	...	...	—	...	—	<b>839</b>
<b>Great Britain</b>	<b>7 574</b>	<b>1 884</b>	<b>33</b>	<b>625</b>	<b>(a) 310</b>	<b>10 426</b>

(a) BGS estimate.

Source: Office for National Statistics.

## Great Britain production of common clay and shale by end-use 1990–2001

Thousand tonnes

Year	Bricks, pipes and tiles	Cement	Lightweight aggregate	Constructional use	Other uses	Total
1990	10 563	3 070	...	...	249	15 864
1991	9 042	2 626	...	...	...	13 038
1992	7 914	2 365	...	872	...	12 155
1993	6 914	2 366	...	1 398	...	10 891
1994	8 318	2 581	98	1 219	248	12 464
1995	9 316	2 616	—	1 914	85	13 930
1996	8 162	2 169	—	1 196	(a) 277	11 804
1997	7 560	2 339	—	1 104	(a) 319	11 322
1998	8 214	2 384	—	1 089	(a) 543	12 230
1999	8 270	2 148	—	540	...	11 355
2000	7 880	1 939	1	...	...	10 838
2001	7 574	1 884	33	625	(a) 310	10 426

(a) BGS estimate.

Source: Office for National Statistics.

## Coal (also see Primary fuels)

Coal production rose to 31.9 million tonnes in 2001, an increase of 0.7 million tonnes compared with the previous year, and stocks were increased by 2.5 million tonnes. Of the total production, underground mines contributed 17.3 million tonnes (54 per cent) and opencast mines contributed 14.2 million tonnes (44 per cent). Increases were 0.2 million tonnes in underground production and 0.8 million tonnes in opencast production. The BGS estimates that of total output approximately 30 million tonnes was bituminous coal (almost entirely steam coal) and 2 million tonnes was anthracite from the South Wales Coalfield. The total value of coal production is estimated to have risen from £916 million in 2000 to £ 1 028 million in 2001. Employment in UK collieries and opencast sites rose from 11 471 at end-March 2001 to 12 867 at end-March 2002, of which 9 535 were employed at underground mines. Total coal production in 2002 is estimated to have been lower than in 2001, at approximately 30.0 million tonnes.

Coal consumption rose by 5.7 million tonnes to 64.5 million tonnes in 2001, due chiefly to a rise in the price of gas, leading generators to increase coal-fired generation rather than gas-fired. However, the increase was met almost entirely by a large rise in imports (see below). Electricity generators used 51.0 million tonnes, or 79 per cent of total consumption. Consumption in coke ovens and blast furnaces accounted for 12 per cent and industrial, domestic and other use for 9 per cent of the total. Total stocks of coal at end-2001 were 16.2 million tonnes, a rise of 2.9 million tonnes, of which 2.3 million tonnes consisted of stock increases at major power producers. In 2002 coal consumption is reported by the DTI to have fallen by 6 million tonnes to 58.5 million tonnes.

A notable milestone was passed in 2001 when imports exceeded production for the first time. Coal imports rose in 2001 to 35.5 million tonnes, and were valued at £1 158 million. The bulk of 2001 imports were of bituminous coal, steam coal comprising 76 per cent of the total, coking coal 22 per cent and anthracite 2 per cent. The sources of supply are summarised in the table below. As in 2000, the chief sources of steam coal imports were South Africa and Colombia and the chief sources of coking coal were Australia, USA and Canada. Net imports rose from 38 per cent of consumption in 2000 to 54 per cent in 2001 and, considered on a rolling basis, coal remains the country's largest mineral net import by value.

## UK supply of coal 2001

Thousand tonnes

	Bituminous		Anthracite	Total
	Steam coal	Coking coal		
<b>Production</b>				
Mine production	(a) 29 000	312	(a) 2 000	(b) 31 513
Other sources	...	—	...	417
Stock increase	...	-366	...	-2 563
<b>Total production</b>				<b>29 367</b>
<b>Imports</b>				
South Africa	10 139	29	91	10 259
Australia	2 283	4 777	16	7 076
Colombia	6 722	—	—	6 722
Russia	3 894	—	1	3 895
USA	857	1 735	18	2 610
Poland	1 183	—	52	1 235
Canada	—	1 182	—	1 182
China P.R.	295	—	410	705
Netherlands	150	—	7	157
Others	1 518	—	183	1 701
<b>Total imports</b>	<b>27 041</b>	<b>7 723</b>	<b>778</b>	<b>35 542</b>
<b>Total exports</b>	<b>-302</b>	<b>-4</b>	<b>-244</b>	<b>-550</b>
Statistical difference (c)				176
<b>Total supply</b>				<b>64 535</b>

(a) BGS estimate

Source: DTI

(b) Reported

(c) Total supply less total demand

No deep mine closures occurred in 2001 but this was more than balanced by events in 2002. In February 2002, UK Coal announced that the Prince of Wales mine, near Wakefield, said to be the oldest working deep mine in the country, would close in the autumn. The reason for closure of the mine, operating since 1860, was said to be geological problems that made remaining reserves non-viable. The small Wrytree and Castle drift mines, operated by Blenkinsopp Collieries Ltd closed in mid-2002 and have been sealed. Deep mining in Scotland appears to have been brought to an end by the inrush of 17 million gallons of water that occurred at the Longannet mine, in Fife, on 25<sup>th</sup> March. The owners, Scottish Coal, had recently invested £55 million in the mine and this was supplemented by £41 million in assistance from the DTI. Finally, in July 2002 UK Coal announced that the Selby deep mine complex would be closed by March 2004. The complex, consisting of Riccall/Whitemoor, Stillingfleet and Wistow mines, together with the Gascoigne Wood handling facility, was developed in the 1980s at a cost of £1.3 billion. Production from the complex was expected to be 5.2 million tonnes in 2002, or about one third of total deep-mine production in the UK. The company has concluded that, following a loss of £90 million over the last three years, the mining complex does not have a viable future, a conclusion supported by an independent review commissioned by the DTI. UK Coal plans to maintain production from Selby at the present rate until final closure in March 2004. Coalpower Ltd re-opened Hatfield deep mine in January 2002 and also announced plans to build on site a 400 MW power plant that will use Integrated Gasification Combined Cycle (IGCC) technology.

At the end of 2002 UK Coal plc operated 12 deep mines in the UK. These were *Riccall/Whitemoor*, *Stillingfleet Combine* and *Wistow* in the Selby Coalfield, *Clipstone*, *Harworth*, *Kellingley*, *Maltby*, *Rossington*, *Thoresby* and *Welbeck* in the East Pennines Coalfield, *Daw Mill* in the Warwickshire Coalfield and *Ellington* in the North-east Coalfield. At the *Thorne* mine, in the East Pennines field, which had been on care and maintenance, pumping was stopped and the mine capped. In addition to its deep mines, UK Coal and its associates are the largest owners of opencast sites in England. The other remaining deep mines producing at end-2001 were *Hatfield* (East Pennine Coalfield), owned by Coalpower Ltd., *Tower* (South Wales) Goitre Tower Anthracite Ltd and *Betws* (South Wales) Betws Anthracite Ltd. There were also 9 smaller underground (chiefly drift) mines in operation at that time, eight fewer than the number recorded twelve months earlier. Certain operations use both shaft and drift access. The Coal Authority estimated that, in March 2002, 328 million tonnes of available coal was licensed at operating underground mines, with 27 million tonnes in 'conditional' sites. The Authority's experience is that recovery in underground mining usually extracts just above 50 per cent of the total volume of available coal.

Opencast licences for producing sites at end-2002 totaled 49, of which 24 were in England, 19 in Scotland and 6 in Wales. This is a decrease of three over the number recorded at end-2001. UK Coal plc had fifteen licences for producing sites in England, Scottish Coal Ltd had ten licences in Scotland and Celtic Energy Ltd licensed four producing sites in Wales. Thirteen other licensees were also producing in this sector. The Coal Authority estimated that in March 2002 48 million tonnes of available coal was licensed at operating opencast sites with an additional 188 million tonnes in 'conditional' sites and pointed out that opencast mining often achieves near-100 per cent recovery.

The Coal Authority (<http://www.coal.gov.uk>) reported that there was an increase in the number of coal mining licence applications in 2001-02 to 63 from 55 in the previous year and a further notable increase in coal methane licence applications to 22 from 11 in the previous year. Coal methane is known generically as coalbed methane (CBM) but the majority of UK

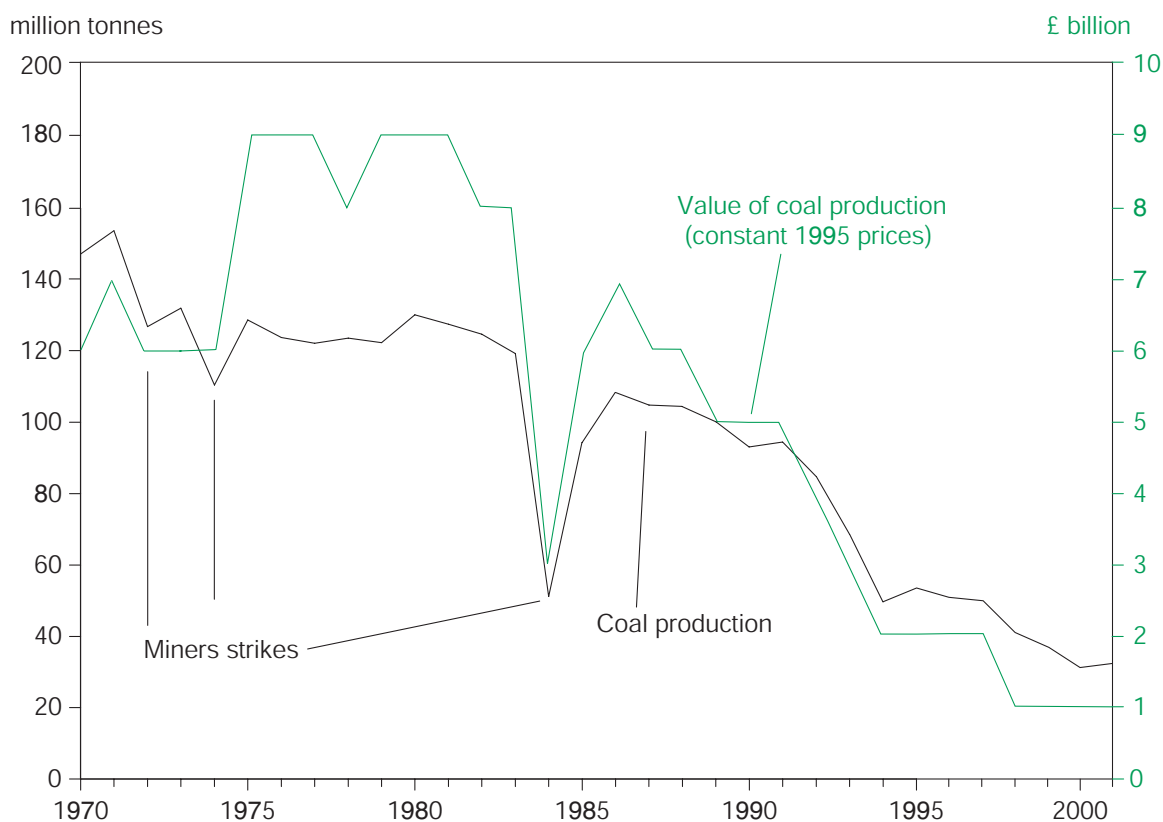


applications have referred to coal mine methane (CMM) in old workings (also known as abandoned mine methane – AMM). The Authority reports that seven CMM sites are now operational at abandoned mines and two are operating at working mines – Tower in South Wales and Harworth in Nottinghamshire. All but one of the CMM operations were commissioned between 1999 and 2002 and the majority are generating electricity on site. It is expected that the announced exclusion of CMM from the Climate Change Levy should stimulate the development of additional sites. At present only sites capable of supplying gas for generation of between 6 MW and 9 MW capacity are feasible for commercial development due to access and plant capital development costs. Methane in unworked seams, known as virgin coalbed methane (VCBM), has been the subject of commercial production only in the USA and Australia. Test drilling in this resource has been undertaken in Scotland and Wales but only modest gas flows are expected. The evaluation of techniques for underground coal gasification (UCG) is being undertaken by the DTI. A recent EU trial sponsored in part by DTI has demonstrated the feasibility of UCG at depths typical of European coal. The DTI has concluded that the UCG process has potential for UK coal reserves, particularly when considered against the massive offshore coal resource, which may be amenable to UCG.

In mid 2002, the European Commission approved further assistance to British mines under the Government's Coal Operating Aid scheme. Payments were approved to Coalpower Ltd's Hatfield (£1.157 million), H J Banks's sites in Yorkshire and Derbyshire (£0.832 million), H J Banks's sites in Northumberland (£0.739 million) and Law Mining's sites in Ayrshire (£1.327 million). These payments bring the total amount of assistance paid under the scheme since its inception in April 2000 to more than £140 million. Following the expiry of the European Coal and Steel Community (ECSC) regulations on 23<sup>rd</sup> July 2002 the EC's new coal State aid regulation (2002-2010) has provided the UK with the flexibility to pay investment aid to mines that have a viable future. This 'Investment Aid Scheme', has been the subject of a consultation exercise, the results of which are currently being considered by the Department of Trade and Industry. The DTI also commissioned an independent study, by IMC Group Consulting Ltd, of the remaining reserves at existing deep mines to identify where investment support might be directed ([www.dti.gov.uk/energy/coal/mine\\_reviews](http://www.dti.gov.uk/energy/coal/mine_reviews)).

A Memorandum of Understanding signed between the Coal Authority and the British Geological Survey (BGS) provides a framework for research into the legacy of past mining, research into the future of coal resources, improving public access to information and sharing data and information in the future.

### United Kingdom production and value of coal 1970–2001



## Great Britain production of deep-mined and opencast coal 1974–2001

Thousand tonnes

Year	Deep-mined			Opencast			Deep-mined and opencast		
	Anthracite	Bituminous	Total	Anthracite	Bituminous	Total	Anthracite	Bituminous	Total
1974	1 284	98 709	99 993	1 353	7 878	9 231	2 637	106 587	109 224
1975	1 407	116 005	117 412	1 127	9 287	10 414	2 534	125 292	127 826
1976	1 249	109 016	110 265	1 114	10 830	11 944	2 363	119 846	122 209
1977	1 209	105 914	107 123	1 320	12 231	13 551	2 529	118 145	120 674
1978	1 453	106 075	107 528	1 499	12 668	14 167	2 952	118 743	121 695
1979	1 693	106 082	107 775	1 337	11 525	12 862	3 030	117 607	120 637
1980	1 607	110 823	112 430	1 295	14 484	15 779	2 902	125 307	128 209
1981	1 566	108 907	110 473	1 343	13 485	14 828	2 909	122 392	125 301
1982	1 406	104 755	106 161	1 478	13 788	15 266	2 884	118 543	121 427
1983	1 249	100 493	101 742	767	13 939	14 706	2 016	114 432	116 448
1984	256	34 987	35 243	961	13 345	14 306	1 217	48 332	49 549
1985	838	74 451	75 289	1 304	14 265	15 569	2 142	88 716	90 858
1986	984	89 382	90 366	1 001	13 274	14 275	1 985	102 656	104 641
1987	917	85 040	85 957	1 174	14 612	15 786	2 091	99 652	101 743
1988	770	82 992	83 762	1 028	16 871	17 899	1 798	99 863	101 661
1989	453	79 175	79 628	1 607	17 050	18 657	2 060	96 225	98 285
1990	573	72 326	72 899	1 372	16 762	18 134	1 945	89 088	91 033
1991	189	73 168	73 357	1 675	16 961	18 636	1 864	90 129	91 993
1992	177	65 623	65 800	1 863	16 324	18 187	2 040	81 947	83 987
1993	115	50 342	50 457	1 289	15 717	17 006	1 404	66 059	67 463
1994	...	...	31 854	...	...	16 804	...	...	48 658
1995	...	...	35 150	...	...	16 369	...	...	51 519
1996	...	...	32 223	...	...	16 315	...	...	48 538
1997	...	...	30 281	...	...	16 700	(a) 2 500	(a) 44 500	46 981
1998	...	...	25 731	...	...	14 315	(a) 2 000	(a) 38 000	40 046
1999	...	...	20 888	...	...	15 275	(a) 2 000	(a) 34 200	36 163
2000	...	...	17 188	...	...	13 412	(a) 2 000	(a) 28 600	30 600
2001	...	...	17 347	...	...	14 166	(a) 2 000	(a) 29 500	31 513

(a) BGS estimate.

Source: Department of Trade and Industry.

## United Kingdom regional deep-mined coal production 1997–2002 (a)

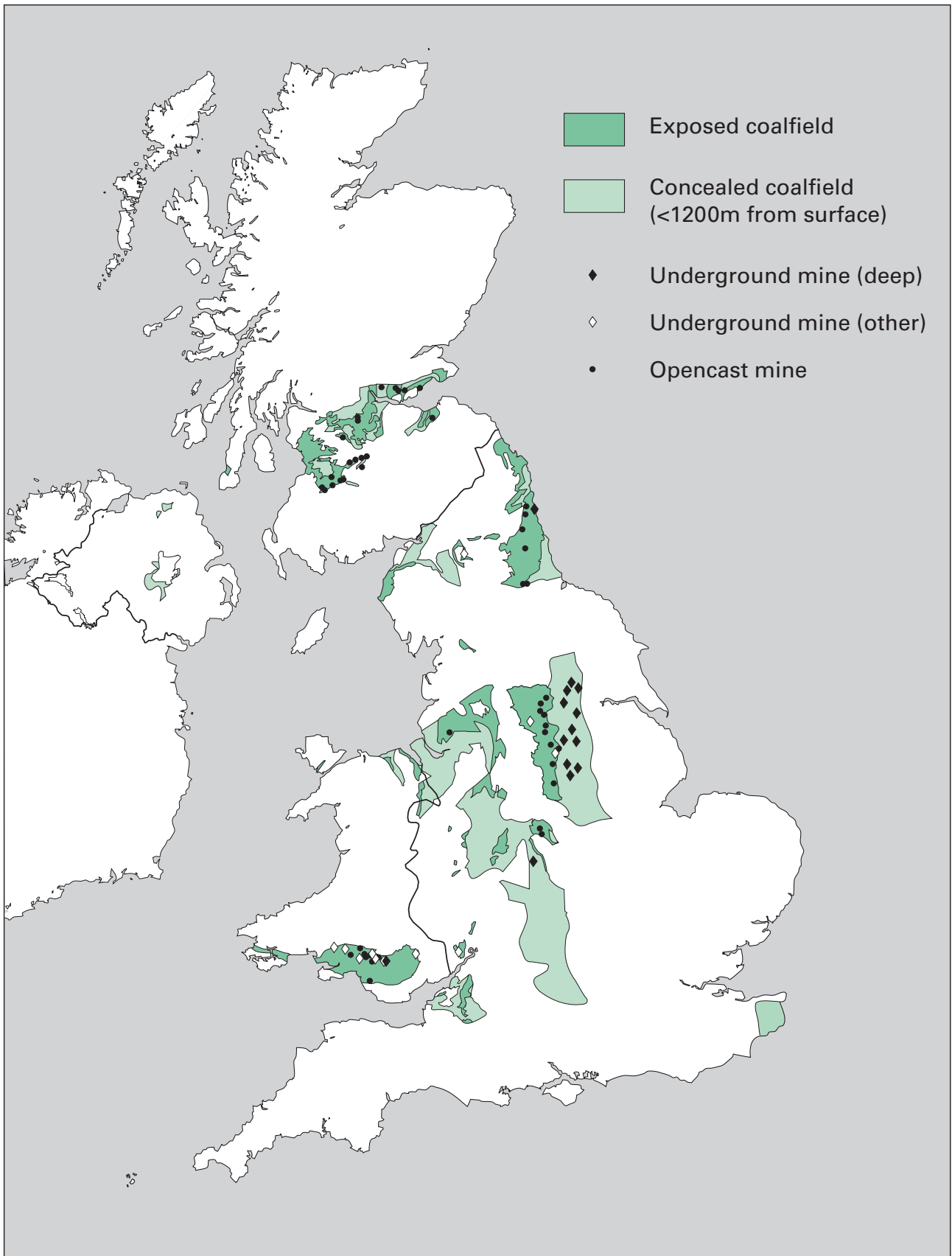
Thousand tonnes

County/Unitary Authority	1997/98	1998/99	1999/00	2000/01	2001/02
Doncaster	1 137	1 006	2 728	991	675
Kirklees	39	39	41	34	31
Sheffield	15	20	27	23	22
Rotherham	1 493	1 334	1 194	931	1 499
Wakefield	1 636	1 564	1 342	1 354	1 177
Leicestershire	331	—	—	—	—
Warwickshire	1 780	1 494	1 150	1 951	1 582
Derbyshire	0	—	—	—	—
Nottinghamshire	7 083	6 257	4 192	4 272	4 650
Durham	24	23	6	—	—
Northumberland	1 046	1 211	924	394	840
North Yorkshire	10 028	7 888	6 349	5 991	6 174
Lancashire	1	1	0	—	1
Cumbria	1	1	1	1	0
Staffordshire	805	557	—	—	—
Gloucestershire	0	0	0	0	0
<b>England</b>	<b>25 420</b>	<b>21 397</b>	<b>17 954</b>	<b>15 942</b>	<b>16 652</b>
Blaenau Gwent	1	1	2	1	0
Caerphilly	2	0	—	—	—
Merthyr Tydfil	13	6	1	—	—
Rhondda, Cynon Taff	543	506	460	569	567
Carmarthenshire	82	102	80	40	51
Neath Port Talbot	96	76	43	39	50
Torfaen	18	19	18	17	6
<b>Wales</b>	<b>756</b>	<b>710</b>	<b>604</b>	<b>666</b>	<b>674</b>
Clackmannanshire	1 892	1 600	996	728	756
West Lothian	25	10	—	—	—
<b>Scotland</b>	<b>1 917</b>	<b>1 611</b>	<b>996</b>	<b>728</b>	<b>756</b>
<b>United Kingdom</b>	<b>28 093</b>	<b>23 717</b>	<b>19 553</b>	<b>17 336</b>	<b>18 082</b>

(a) Financial years to March.

Source: The Coal Authority.

United Kingdom onshore coal fields and mines 2002 (a)



(a) At January 2003. Due to the close siting of some opencast mines, a map symbol may represent more than one mine.  
Source: BGS and The Coal Authority

## United Kingdom regional opencast coal production 1997–2002 (a)

Thousand tonnes

County/Unitary Authority	1997/98	1998/99	1999/00	2000/01	2001/02
Barnsley	295	241	177	67	261
Rotherham	398	457	519	446	525
Wakefield	77	15	215	50	—
Leicestershire	60	128	183	535	606
Warwickshire	72	8	23	36	—
Derbyshire	2 475	1 510	861	600	706
Durham	564	404	403	233	184
Gateshead	—	—	—	—	73
Newcastle upon Tyne	71	16	—	—	—
Northumberland	2 630	2 223	1 805	1 802	1 697
Leeds	288	800	908	752	728
Sunderland	242	313	243	61	—
Shropshire	79	25	34	7	—
St Helens	15	19	54	50	41
Cumbria	238	49	173	111	70
Staffordshire	477	420	372	—	—
Walsall	—	143	123	6	—
Wigan	155	186	71	—	—
Stoke on Trent	—	—	—	13	—
<b>England</b>	<b>8 138</b>	<b>6 956</b>	<b>6 163</b>	<b>4 768</b>	<b>4 890</b>
Blaenau Gwent	—	—	—	—	10
Merthyr Tydfil	390	375	—	—	—
Carmarthenshire	273	21	—	—	0
Neath Port Talbot	474	725	925	1 133	955
Powys	617	375	186	268	214
Flintshire	—	12	—	—	—
Bridgend	—	—	429	—	—
<b>Wales</b>	<b>1 753</b>	<b>1 507</b>	<b>1 540</b>	<b>1 401</b>	<b>1 178</b>
Clackmannanshire	136	122	391	165	211
East Lothian	171	287	524	43	—
Falkirk	105	7	—	—	—
Midlothian	299	197	253	139	341
Perth & Kinross	31	9	—	—	—
West Lothian	94	74	11	—	—
East Ayrshire	2 143	2 369	2 883	3 469	4 528
Fife	731	579	605	804	763
North Lanarkshire	614	559	716	756	651
South Lanarkshire	2 002	2 232	1 841	1 701	1 674
<b>Scotland</b>	<b>6 326</b>	<b>6 434</b>	<b>7 224</b>	<b>7 078</b>	<b>8 170</b>
<b>United Kingdom</b>	<b>16 217</b>	<b>14 897</b>	<b>14 927</b>	<b>13 247</b>	<b>14 238</b>

(a) Financial years to March.

Source: The Coal Authority.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Coal</b>										
<i>Production</i>	48 495 000	41 177 000	37 077 000	31 198 000	31 930 000					
<i>Consumption</i>	63 080 000	63 152 000	55 724 000	58 860 000	64 535 000					
<i>Imports</i>										
Anthracite	1 247 553	501 809	602 346	1 057 911	2 757 188	69 417	28 274	30 330	39 693	101 548
Bituminous	18 581 823	20 742 610	20 167 409	22 397 393	32 772 976	590 842	612 276	547 249	629 432	1 078 272
<b>Total</b>	<b>19 829 376</b>	<b>21 244 419</b>	<b>20 769 755</b>	<b>23 455 304</b>	<b>35 530 164</b>	<b>660 259</b>	<b>640 550</b>	<b>577 579</b>	<b>669 125</b>	<b>1 179 820</b>
Briquettes of coal	25 119	10 962	8 298	16 221	10 908	3 715	1 404	688	1 597	1 274
Lignite (including agglomerated)	4 557	2 593	949	976	3 362	265	764	56	49	204
<i>Exports</i>										
Anthracite	393 772	282 025	335 907	304 387	272 985	24 361	17 988	19 469	15 868	14 961
Bituminous	666 119	688 621	439 022	616 291	309 560	28 447	25 485	20 492	24 226	19 075
<b>Total</b>	<b>1 059 891</b>	<b>970 646</b>	<b>774 929</b>	<b>920 678</b>	<b>582 545</b>	<b>52 808</b>	<b>43 473</b>	<b>39 961</b>	<b>40 094</b>	<b>34 036</b>
Briquettes of coal	97 803	56 840	52 636	76 679	76 419	9 330	5 015	4 054	5 501	6 314
Lignite (including agglomerated)	1 254	3 493	4 740	2 475	2 938	192	356	383	248	308

# Cobalt

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Cobalt</b>										
<i>Consumption in Iron and Steel Industry (a)</i>										
	20	20	20	20	20					
<i>Apparent consumption (a) (b)</i>	1 700	1 500	2 600	1 600	1 500					
<i>Imports</i>										
Scrap	748	591	578	515	756	9 264	4 650	3 938	3 608	7 724
Ash and residues	76	18	5	38	1	186	30	62	32	4
Unwrought	2 952	3 088	3 625	2 781	2 646	72 524	69 446	58 768	39 752	34 076
Wrought	280	270	231	590	785	7 149	6 960	4 614	8 259	8 393
Oxides	799	672	504	496	641	12 791	11 836	5 437	6 012	6 858
<i>Exports</i>										
Scrap	391	642	655	379	474	3 872	5 454	3 645	2 823	3 119
Unwrought	983	891	685	787	737	19 817	18 076	15 656	14 476	12 960
Wrought	485	468	453	465	644	16 782	15 754	14 501	13 055	14 474
Oxides	1 229	1 323	1 012	1 141	1 256	25 466	28 295	13 912	14 504	14 111

(a) Metal content.

(b) BGS estimates; see p.v.

# Coke and breeze

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Coke and breeze</b>										
<i>Production</i>										
Coke oven										
–coke	6 192 000	6 178 000	5 837 000	6 058 000	5 306 000					
–breeze	41 000	37 000	33 000	148 000	210 000					
<i>Consumption</i>										
Coke oven coke	5 553 000	5 432 000	5 640 000	5 316 000	4 394 000					
Breeze	1 255 000	1 190 000	1 109 000	1 036 000	1 120 000					
<i>Imports</i>										
Coke from coal	864 445	830 873	429 438	482 561	139 041	52 340	44 900	18 996	24 942	11 407
<i>Exports</i>										
Coke from coal	258 114	288 637	249 577	380 146	314 024	16 061	17 786	15 254	23 615	19 604
Coke from lignite	3 722	3 670	4 294	6 898	5 253	953	642	646	552	578

# Copper

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001
	Tonnes				
<b>Copper</b>					
<i>Production</i>					
Unwrought–					
Refined, primary		9 100	7 000	1 000	—
Refined, secondary		51 300	47 000	49 000	—
Total		60 402	53 774	50 334	—
<i>Consumption</i>					
Unwrought–					
Refined		408 330	374 125	305 290	322 748
Copper in scrap for direct use (a)		69 000	65 000	112 000	127 000
					<i>continued</i>

(a) Additional to that used in secondary metal.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Copper continued</b>										
<i>Imports</i>										
Ores and concentrates	642	499	510	517	756	337	515	1 769	2 296	1 391
Matte and cement	52	58	428	17	92	176	115	394	59	308
Scrap	54 856	54 483	35 572	20 597	19 651	52 222	39 532	21 700	15 839	16 349
Ash and residues	879	43	1 466	122	0	271	20	47	7	1
Unwrought–										
Unrefined	2 262	236	629	1 085	290	2 946	263	730	1 339	1 467
Refined	365 895	348 509	303 267	337 969	310 894	528 314	373 351	294 293	415 445	368 498
Alloys	2 689	5 050	4 191	6 641	6 088	4 397	6 701	4 902	8 783	8 444
Master alloys	664	373	774	684	1 161	1 245	634	1 223	1 237	1 714
<i>Exports</i>										
Matte and cement	10 076	8 524	9 662	6 704	10 931	5 368	4 862	6 467	4 345	4 662
Scrap	111 722	108 407	107 527	217 016	156 121	113 127	89 440	79 948	128 092	119 579
Ash and residues	2 117	2 045	2 864	2 409	1 873	524	394	396	460	430
Unwrought–										
Unrefined	427	41	199	450	69	587	173	389	533	347
Refined	5 425	9 735	8 449	10 121	10 246	7 753	11 399	7 458	11 585	12 002
Alloys	19 090	23 336	31 618	17 823	19 689	27 016	29 991	33 872	22 145	25 656
Master alloys	4 963	5 460	3 994	3 405	4 119	8 693	8 380	4 906	4 664	6 318

## Crushed rock (also see Aggregates)

### Great Britain production of crushed rock by Region 1975–2001

Year	Thousand tonnes										Great Britain	
	North East (a)	North West (b)	Yorks. & Humberside	West Midlands	East Midlands	East of England (c)	South East (d)	South West	England	Wales		Scotland
1975	10 714	5 037	10 082	8 693	18 282	...	...	23 059	78 276	15 346	15 971	109 594
1976	11 363	4 285	9 483	7 903	16 094	...	...	...	70 714	14 091	13 520	98 325
1977	10 401	4 414	9 492	7 526	15 911	584	1 244	19 549	69 121	13 352	11 931	94 404
1978	10 926	5 235	9 913	7 601	15 375	693	1 296	19 965	71 006	14 164	13 567	98 737
1979	10 731	5 779	9 502	7 974	16 817	741	1 158	21 205	73 910	15 912	13 687	103 509
1980	9 948	4 951	10 714	7 364	15 996	658	1 114	21 934	72 679	15 998	13 586	102 533
1981	8 677	4 504	9 442	6 713	15 854	534	961	18 763	65 450	14 249	11 681	91 381
1982	9 362	4 779	10 108	8 181	17 237	537	1 112	21 175	72 492	16 754	13 602	102 848
1983	8 978	5 311	11 481	9 192	19 206	...	...	23 178	79 541	18 835	13 706	112 082
1984	9 668	5 116	9 557	8 861	19 142	...	...	25 107	79 650	16 965	14 063	110 678
1985	9 823	5 330	9 444	8 589	21 429	674	1 404	26 510	83 203	17 423	14 370	114 995
1986	9 861	5 469	11 201	8 780	23 038	500	1 597	29 194	89 640	17 881	14 844	122 365
1987	10 375	5 328	15 407	10 015	26 355	772	1 601	34 443	104 296	20 950	16 990	142 237
1988	11 453	6 849	14 885	12 519	32 026	853	2 589	39 108	120 283	23 102	17 629	161 014
1989	13 497	7 078	16 895	12 519	32 646	611	3 254	37 589	124 088	23 581	21 125	168 794
1990	14 602	7 533	15 449	11 047	34 143	709	1 320	33 073	117 875	22 646	21 094	161 615
1991	13 378	6 320	14 269	10 009	29 862	676	1 625	28 037	104 177	22 123	21 707	148 007
1992	12 669	5 899	12 812	8 783	29 879	...	...	28 564	100 553	21 482	21 932	143 967
1993	12 724	6 748	12 734	8 225	31 522	625	1 168	29 848	103 595	23 237	22 743	149 576
1994	13 365	7 892	15 576	8 839	33 713	1 705	1 433	32 141	114 665	24 346	22 746	161 757
1995	10 930	8 077	15 664	...	31 881	629	...	27 419	103 475	23 139	24 224	150 838
1996	10 385	6 448	12 350	6 514	29 001	595	1 210	22 940	89 444	21 273	22 177	132 894
1997	10 619	7 086	12 484	6 416	29 925	536	1 352	23 117	91 535	20 585	21 667	133 787
1998	10 246	6 348	13 745	6 028	26 933	607	1 358	23 411	88 675	19 903	23 138	131 716
1999	9 298	5 829	11 689	5 996	30 724	575	1 343	23 183	88 637	20 429	23 531	132 598
2000	5 441	10 381	11 748	5 533	28 679	475	1 624	24 146	88 027	19 044	23 236	130 307
2001	6 338	9 601	11 718	5 688	30 780	452	1 984	28 067	94 630	17 765	21 364	133 759

(a) From 2000, excludes Cumbria.

(b) From 2000, includes Cumbria.

(c) From 2000, includes Essex, Hertfordshire and Bedfordshire.

(d) From 2000, excludes Essex, Hertfordshire and Bedfordshire.

Source: Office for National Statistics.

## Great Britain production of crushed rock by end-use and area of origin 2001

Thousand tonnes

Area of origin	Crushed rock					
	Roadstone			Fill and ballast	Concrete aggregate	Total
	Sold coated	For coating at remote plants	Uncoated			
North East	718	529	2 336	1 941	814	6 338
North West	600	1 219	1 442	3 981	2 359	9 601
Yorkshire and Humberside	358	1 168	3 149	3 677	3 366	11 718
West Midlands	...	781	2 168	...	446	5 688
East Midlands	2 052	3 919	5 961	12 096	6 752	30 780
East of England	—	—	...	...	—	452
South East	...	—	...	1 242	169	1 984
South West	2 165	2 237	8 551	7 442	7 672	28 067
<b>England</b>	<b>7 347</b>	<b>9 855</b>	<b>24 333</b>	<b>31 518</b>	<b>21 578</b>	<b>94 630</b>
<b>Wales</b>	<b>1 830</b>	<b>1 439</b>	<b>2 436</b>	<b>7 212</b>	<b>4 848</b>	<b>17 765</b>
<b>Scotland</b>	<b>1 723</b>	<b>1 147</b>	<b>7 869</b>	<b>8 495</b>	<b>2 130</b>	<b>21 364</b>
<b>Great Britain</b>	<b>10 900</b>	<b>12 440</b>	<b>34 638</b>	<b>47 225</b>	<b>28 556</b>	<b>133 759</b>

Source: Office for National Statistics.

## Great Britain production of crushed rock for aggregate 2001

Thousand tonnes

Mineral	Roadstone			Railway ballast	Other constructional uses	Concrete aggregate	Total
	Sold coated	For coating at remote plants	Uncoated				
Limestone (inc. dolomite)	5 317	5 285	22 360	(a) 150	24 473	20 780	(a) 78 400
Igneous rock	4 793	4 730	10 547	2 341	15 780	6 351	44 542
Sandstone	791	2 425	1 731	(a) 150	4 290	1 425	(a) 10 800
<b>Total</b>	<b>10 900</b>	<b>12 440</b>	<b>34 638</b>	<b>(a) 2 682</b>	<b>44 543</b>	<b>28 556</b>	<b>133 759</b>

(a) BGS estimate.

Source: Office for National Statistics.

## Great Britain production of crushed rock by end-use 1990–2001

Thousand tonnes

Year	Roadstone		Railway ballast	Fill	Concrete aggregate	Total
	Coated	Uncoated				
1990	26 430	61 742	3 170	51 470	18 804	161 615
1991	26 387	60 748	2 817	42 852	15 203	148 007
1992	26 647	53 471	3 150	45 770	14 930	143 967
1993	27 238	54 412	(a) 2 620	49 521	15 786	149 576
1994	28 512	51 121	(a) 2 300	63 479	16 345	161 757
1995	28 972	49 307	(a) 2 916	53 224	16 419	150 838
1996	26 270	40 893	(a) 2 061	48 921	14 748	132 894
1997	23 906	40 186	(a) 2 304	49 092	18 300	133 787
1998	23 131	36 816	(a) 2 481	49 142	20 146	131 716
1999	22 260	38 114	(a) 2 196	49 948	20 080	132 598
2000	21 785	36 509	(a) 2 189	51 228	18 595	130 307
2001	23 340	34 638	(a) 2 682	44 543	28 556	133 759

(a) BGS estimate.

Source: Office for National Statistics.

## Great Britain production of crushed rock, gravel and sand for use in concrete, 1990–2001

Thousand tonnes

Year	Sandstone	Igneous rock	Limestone and dolomite	Gravel (a)	Concreting sand (a)	Total
1990	619	3 352	14 833	36 470	37 213	92 487
1991	590	2 951	11 663	29 445	31 239	75 888
1992	527	2 890	11 513	28 078	28 573	71 581
1993	589	2 366	12 831	27 215	28 021	71 022
1994	434	2 744	13 166	29 600	30 977	76 921
1995	652	3 022	12 745	27 867	29 390	73 676
1996	498	2 914	11 337	26 020	28 659	69 428
1997	324	3 490	14 486	28 235	30 130	76 665
1998	686	3 749	15 711	30 369	30 244	80 759
1999	773	3 998	15 309	30 349	31 730	82 159
2000	738	3 811	14 046	30 753	31 167	80 515
2001	1 425	6 351	20 780	29 969	31 656	90 181

(a) Including marine-dredged material landed at British ports.

Source: Office for National Statistics.

## Great Britain production of crushed rock for use as roadstone, 1990–2001

Thousand tonnes

Year	Sandstone		Igneous rock		Limestone and dolomite		Total	
	Coated	Uncoated	Coated	Uncoated	Coated	Uncoated	Coated	Uncoated
1990	2 382	4 971	11 909	16 714	12 139	40 056	26 430	61 741
1991	2 373	4 290	10 955	16 635	13 060	39 823	26 387	60 748
1992	2 377	2 854	11 850	16 229	12 420	34 388	26 647	53 471
1993	2 273	2 819	12 874	17 187	12 089	34 405	27 236	54 411
1994	2 460	2 824	13 136	14 257	12 916	34 041	28 512	51 122
1995	3 227	2 743	12 297	13 932	13 448	32 631	28 972	49 307
1996	2 944	2 910	11 789	12 431	11 537	25 552	26 270	40 893
1997	2 835	2 741	10 947	12 392	10 124	25 054	23 906	40 186
1998	3 506	2 689	9 273	10 100	10 352	24 027	23 131	36 816
1999	3 140	2 326	9 945	13 307	9 175	22 481	22 260	38 114
2000	3 315	2 201	9 890	13 394	8 580	20 915	21 785	36 509
2001	3 216	1 731	9 523	10 547	10 602	22 360	23 340	34 638

Source: Office for National Statistics.

## Great Britain production of crushed rock for railway ballast, 1990–2001

Thousand tonnes

Year	Sandstone	Igneous rock	Limestone/Dolomite	Total
1990	171	2 523	476	3 170
1991	206	2 320	291	2 817
1992	153	2 564	433	3 150
1993	(a) 180	2 236	(a) 204	(a) 2 620
1994	(a) 463	1 826	(a) 11	(a) 2 300
1995	(a) 441	2 393	(a) 82	(a) 2 916
1996	(a) 339	1 643	(a) 79	(a) 2 061
1997	(a) 343	1 870	(a) 89	(a) 2 304
1998	(a) 351	2 008	(a) 122	(a) 2 481
1999	(a) 138	1 959	(a) 99	(a) 2 196
2000	(a) 100	1 965	(a) 100	(a) 2 189
2001	(a) 150	2 341	(a) 150	(a) 2 682

(a) BGS estimate.

Source: Office for National Statistics.



## England production of crushed rock by end-use 1990–2001

Thousand tonnes

Year	Roadstone		Fill and ballast	Concrete aggregate	Total
	Coated	Uncoated			
1990	19 988	46 804	38 402	12 681	117 875
1991	19 522	42 555	31 364	10 735	104 177
1992	19 345	38 255	31 649	11 304	100 553
1993	19 831	38 856	33 342	11 566	103 595
1994	20 563	36 478	46 133	11 489	114 665
1995	20 584	35 599	35 858	11 433	103 475
1996	18 381	28 932	31 992	10 139	89 444
1997	17 405	28 125	33 252	12 754	91 535
1998	16 076	25 516	33 080	14 003	88 675
1999	15 663	24 338	34 754	13 882	88 637
2000	15 618	23 568	35 500	13 340	88 027
2001	17 202	24 333	31 518	21 578	94 630

Source: Office for National Statistics.

## Wales production of crushed rock by end-use 1990–2001

Thousand tonnes

Year	Roadstone		Fill and ballast	Concrete aggregate	Total
	Coated	Uncoated			
1990	3 128	6 758	8 658	4 102	22 646
1991	...	9 441	...	2 785	22 123
1992	3 652	7 609	...	...	21 482
1993	3 645	7 314	9 330	2 949	23 237
1994	3 905	7 045	10 004	3 392	24 346
1995	3 747	6 714	9 344	3 335	23 139
1996	3 687	5 504	8 921	3 161	21 273
1997	3 235	4 827	8 946	3 575	20 585
1998	3 318	4 222	8 445	3 919	19 903
1999	3 342	4 868	8 268	3 951	20 429
2000	2 748	3 269	9 532	3 495	19 044
2001	3 269	2 436	7 212	4 848	17 765

Source: Office for National Statistics.

## Scotland production of crushed rock by end-use 1990–2001

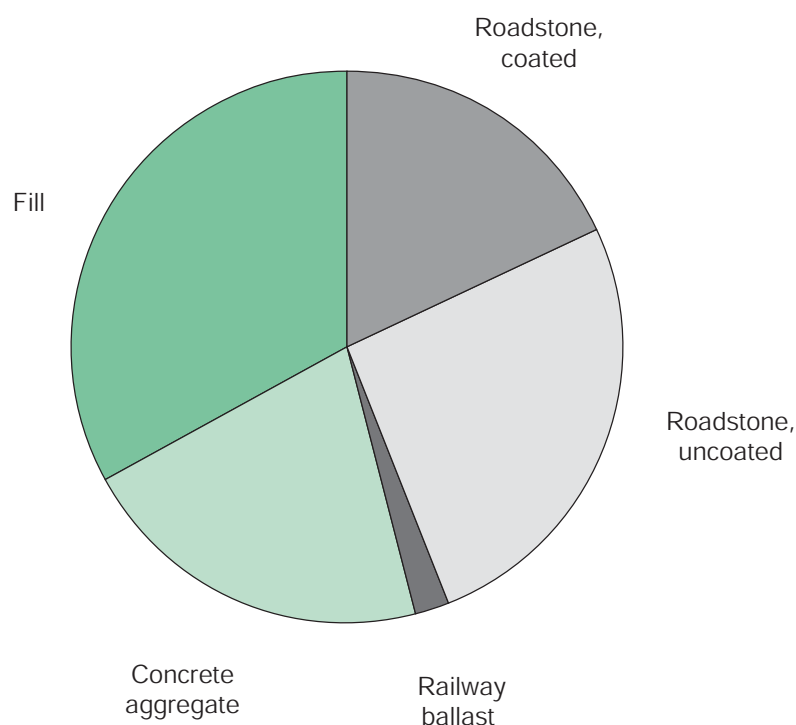
Thousand tonnes

Year	Roadstone		Fill and ballast	Concrete aggregate	Total
	Coated	Uncoated			
1990	3 314	8 180	7 580	2 021	21 094
1991	...	8 752	...	1 683	21 707
1992	3 650	7 608	...	...	21 932
1993	3 762	8 242	9 468	1 271	22 743
1994	4 043	7 598	9 641	1 464	22 746
1995	4 640	6 994	10 937	1 652	24 224
1996	4 203	6 457	10 069	1 449	22 177
1997	3 266	7 233	9 198	1 971	21 667
1998	3 738	7 077	10 098	2 224	23 138
1999	3 255	8 907	9 122	2 247	23 531
2000	3 420	9 672	8 385	1 760	23 236
2001	2 870	7 869	8 495	2 130	21 364

Source: Office for National Statistics.

Great Britain production of crushed rock by end-use 2001

(total production 133.8 million tonnes)



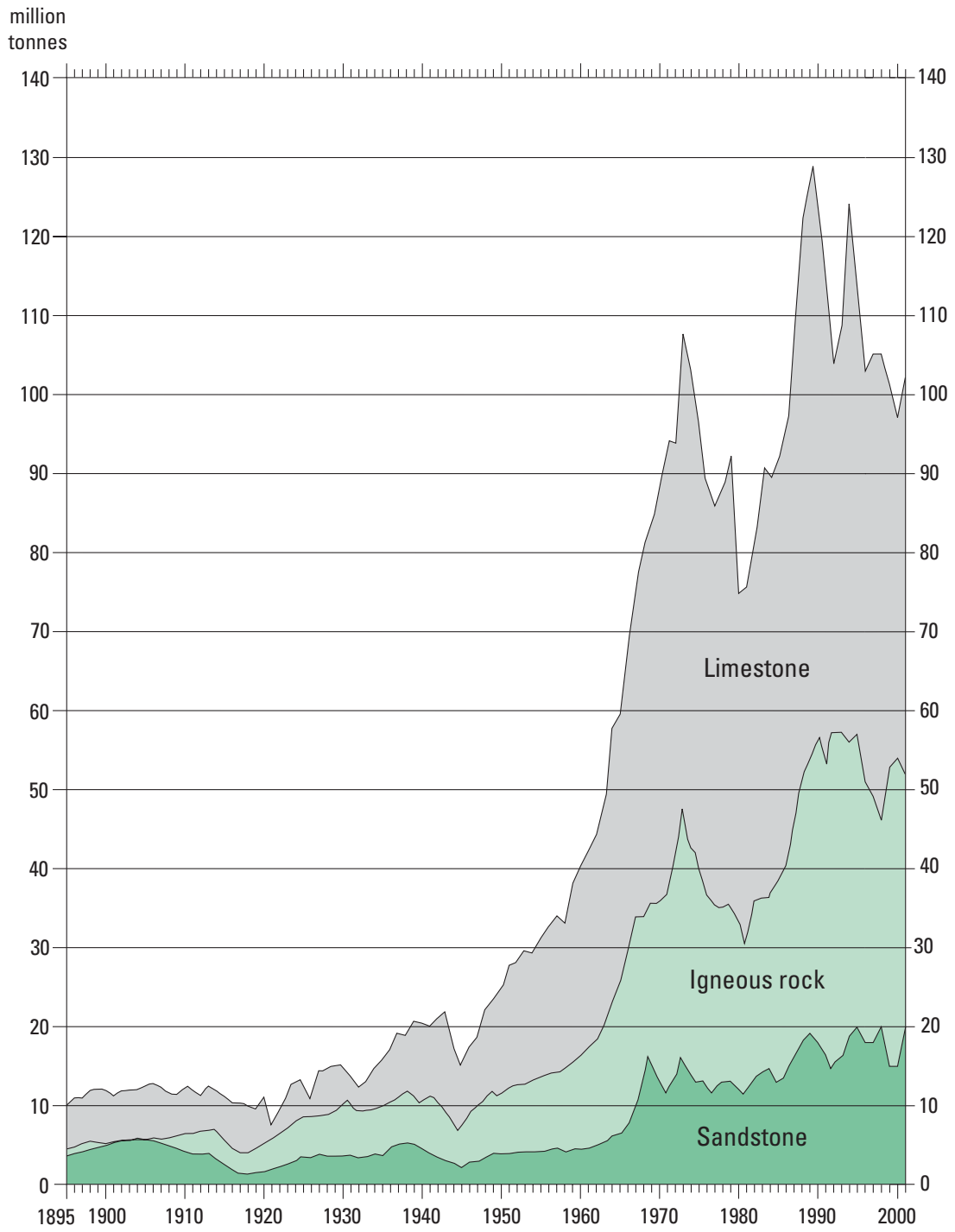
United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Crushed rock</b>										
<i>Production</i>										
Crushed rock (a)	133 787 000	131 716 000	132 598 000	130 307 000	133 759 000					
<i>Imports</i>										
Crushed rock (b)	331 227	348 613	458 980	347 048	409 174	7 407	6 515	7 125	7 771	7 253
<i>Exports</i>										
Crushed rock	2 441 221	2 812 368	2 982 440	2 402 611	3 367 217	11 411	16 720	11 300	9 782	15 089

(a) Great Britain only.

(b) For a number of years, a significant amount of crushed rock imports are believed to have been wrongly classified as 'granite, unworked'. In 2001, BGS estimate that crushed rock imports should be approximately 2 200 000 tonnes.

United Kingdom production of sandstone, igneous rock and limestone (including dolomite) 1895–2001



# Cryolite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Cryolite</b>										
<i>Imports</i>										
Natural cryolite	402	276	103	673	123	299	1 067	68	336	64
<i>Exports</i>										
Natural cryolite	101	157	211	301	137	80	134	101	189	93

# Diamond

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Carats					£ thousand				
<b>Diamond</b>										
<i>Imports</i>										
Unsorted Gem-	14 987 637	10 211 264	4 676 550	5 560 568	586 774	707 324	384 549	152 344	216 719	31 661
Rough	65 930 928	105 803 662	151 651 213	79 691 733	81 302 570	2 142 900	2 212 245	3 655 177	4 160 309	4 211 641
Cut	8 853 149	6 694 184	4 809 531	6 423 082	4 396 223	535 275	532 256	630 116	691 740	621 099
Industrial	28 967 856	28 797 763	8 406 120	16 208 556	7 344 542	23 714	81 619	11 461	17 853	12 334
Dust	68 967 250	82 518 395	64 953 625	98 133 490	74 756 325	13 441	14 892	12 743	15 162	14 266
<i>Exports</i>										
Unsorted Gem-	11 117 190	5 794 334	2 784 476	8 616 140	4 030 600	378 842	262 423	154 677	398 825	285 275
Rough	69 757 480	65 595 954	63 338 299	61 757 031	69 542 709	2 464 189	1 904 688	2 877 477	3 552 051	3 754 316
Cut	2 667 551	1 729 965	1 706 334	795 268	899 959	328 843	383 084	394 650	358 908	410 299
Industrial	25 772 889	35 394 187	29 978 880	27 030 867	11 861 312	29 090	29 220	23 127	27 900	19 047
Dust	73 505 020	56 682 115	49 034 945	...	88 612 930	15 449	13 905	11 458	14 352	13 667

# Diatomite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Diatomite</b>										
<i>Imports</i>										
Diatomite (a)	20 595	42 274	30 885	35 561	33 474	4 156	7 117	6 685	6 607	6 044
<i>Exports</i>										
Diatomite (a)	486	705	565	511	1 342	215	531	741	665	1 125

(a) Officially recorded under the heading 'Siliceous fossil meals and similar siliceous earths'. Excludes flux calcined diatomite.

# Dolomite (see Limestone)

# Feldspar

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Feldspar etc.</b>										
<i>Production</i>										
China stone	8 108	3 278	2 448	3 645	2 995					
<i>Imports</i>										
Feldspar	24 051	18 208	25 707	25 743	18 361	1 733	1 416	1 585	1 436	1 194
Nepheline-syenite	(a) 46 138	34 145	(a) 48 361	(a) 50 363	57 268	...	3 415	...	...	4 142
<i>Exports</i>										
Feldspar	853	148	131	101	93	358	130	130	25	20
Nepheline-syenite	10	38	17	36	54	26	19	10	15	16

(a) Exports from Canada and Norway.

# Fireclay

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Fireclay</b>										
<i>Production (a)</i>										
	338 000	577 000	545 000	595 000	459 000					
<i>Imports</i>										
Fireclay	1 116	3 159	241	220	260	199	274	99	89	459
Fireclay bricks, etc.	2 213	1 777	4 214	1 309	3 315	1 736	1 194	1 779	834	1 385
Refractory hollow-ware	1 743	1 609	1 863	2 227	1 860	3 603	2 186	2 135	2 038	2 725
<i>Exports</i>										
Fireclay	1 076	1 124	639	525	611	597	653	467	471	250
Fireclay bricks, etc.	8 984	8 375	8 371	2 252	1 956	3 324	2 436	2 814	1 482	1 751
Refractory hollow-ware	4 392	2 593	3 322	4 380	2 944	12 138	11 153	11 878	11 681	13 537

(a) Great Britain only. There is a small, undisclosed production in Northern Ireland.

## Great Britain production of fireclay by end-use and area of origin 2001

Thousand tonnes

Area of origin	Refractory purposes	Bricks, pipes and tiles	Other uses	Total
Northumberland	87	—	—	87
Tyne and Wear	31	—	—	31
<b>North East</b>	<b>118</b>	<b>—</b>	<b>—</b>	<b>118</b>
West Yorkshire	—	21	—	22
South Yorkshire	—	...	—	...
<b>Yorkshire and Humberside</b>	<b>—</b>	<b>...</b>	<b>—</b>	<b>...</b>
Leicestershire	...	...	...	...
Northamptonshire	...	—	—	...
<b>East Midlands</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>253</b>
Staffordshire	—	...	—	...
<b>West Midlands</b>	<b>—</b>	<b>...</b>	<b>—</b>	<b>...</b>
Buckinghamshire	—	5	—	5
<b>South East</b>	<b>—</b>	<b>5</b>	<b>—</b>	<b>5</b>
<b>England</b>	<b>...</b>	<b>170</b>	<b>...</b>	<b>419</b>
Central	40	—	—	40
<b>Scotland</b>	<b>40</b>	<b>—</b>	<b>—</b>	<b>40</b>
<b>Great Britain</b>	<b>...</b>	<b>170</b>	<b>...</b>	<b>459</b>

Source: Office for National Statistics.

## Great Britain production of fireclay by end-use 1990–2001

Thousand tonnes

Year	Refractory purposes	Bricks, pipes and tiles	Other uses	Total
1990	140	...	...	892
1991	...	475	...	867
1992	...	414	...	572
1993	85	364	30	479
1994	...	550	...	679
1995	201	441	67	708
1996	129	395	13	536
1997	170	168	—	338
1998	...	331	...	577
1999	...	243	...	545
2000	...	287	...	595
2001	...	170	...	459

Source: Office for National Statistics.

## Fluorspar

The official figure for fluorspar production in 2001 was 46 000 tonnes. This figure is believed to represent fluorspar 'ore' raised. BGS estimated that sales of fluorspar product were 50 000 tonnes in 2001, all of which was acid-grade fluorspar. Sales in 2002 are estimated at 53 000 tonnes, almost all of which was derived from ore produced in the Southern Pennine Orefield in the Peak District National Park of Derbyshire.

Trade data for fluorspar separately distinguishes between fluorspar containing more than and less than 97 per cent CaF<sub>2</sub>. The former corresponds to acid-grade fluorspar. For many years UK imports of acid-grade fluorspar have been withheld for confidential reasons, but this restriction has recently been lifted. Preliminary import figures for 2002 for acid-grade fluorspar were placed at 20 496 tonnes valued at £1.98 million and mostly derived from Spain.

Glebe Mines Ltd, a privately-owned company, is the sole UK producer of marketable fluorspar product. The company operates the Cavendish Mill, near Stoney Middleton for the supply of acid-grade fluorspar, together with by-product barytes, lead concentrate and limestone aggregate. Fluorspar ore, with associated barytes and galena, is obtained mainly from the company's own open pit operations on Longstone Edge. The Watersaw mine, also on Longstone Edge, supplied small amounts of ore during 2002, but the company's Milldam mine at Great Hucklow remains on care-and-maintenance. Local tributers meet about 20 per cent of the company's ore requirements. Total ore requirements are of the order of 350 000 t/y.

Fluorspar is principally valued for its chemical properties. UK output of acid-grade fluorspar is used mainly in the manufacture of hydrofluoric acid, the precursor for the production of a wide range of organic and inorganic fluorochemicals. The UK is an important producer of hydrofluoric acid.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Fluorine</b>										
<i>Production</i>										
Fluorspar (a)	64 000	65 000	40 000	36 000	50 000					
<i>Imports</i>										
Fluorspar	(a) 42 000	41 610	(a) 43 000	(a) 40 000	34 999	...	3 598	...	...	3 236
Natural cryolite	402	276	103	673	123	299	1 067	68	336	64
<i>Exports</i>										
Fluorspar	5 215	4 202	4 829	4 879	2 373	927	717	798	974	376
Natural cryolite	101	157	211	301	137	80	134	101	189	93

(a) BGS estimates.

# Fuller's earth

Sales of fuller's earth, most of which are in the sodium-exchanged form (bentonite), declined from 52 000 tonnes in 2001 to an estimated 44 000 dry tonnes in 2002, reflecting the continuing depletion of permitted reserves. Preliminary figures for UK imports of bentonite in 2002 were 216 247 tonnes valued at £12.2 million.

Fuller's earth is produced by two companies in the UK; Rockwood Absorbents (Baulking) Ltd and Steetley Bentonite and Absorbents Ltd. Rockwood Absorbents (Baulking) Ltd produces fuller's earth at Baulking in Oxfordshire. The clay is processed on site, mainly for conversion into bentonite by a sodium-exchange process, for use as a filler and fibre retention aid in papermaking and as a bonding agent for foundry sand. The original Baulking quarry was exhausted in summer 2002 and is currently being restored. Current sales are based on clay stocks. Remaining permitted reserves of fuller's earth in the Baulking area are now confined to the small satellite deposit at Moor Mill Farm, about 2 km from the plant at Baulking. This will be opened up in spring 2004 with anticipated first production of fuller's earth in the third quarter of 2004.

Steetley Bentonite and Absorbents Ltd, a wholly-owned subsidiary of Tolsa SA of Spain, produce fuller's earth in Bedfordshire near Woburn. The clay is processed on site and converted to bentonite, principally for use as a filler and fibre retention aid in papermaking. The company's planning application to extract fuller's earth from a southern extension to the deposit (Wavendon Heath South) was turned down in early 2001. The application was the subject of a public inquiry in September 2001 but the appeal was dismissed by the ODPM in July 2002. A challenge to this decision was made in the High Court in February 2003 but was also dismissed.

This decision will bring to an end a long history of fuller's earth working in the Woburn area where it is thought to have been extracted as early as Roman times. Large-scale extraction in the area by F W Berk Ltd (acquired by Steetley in 1970) commenced in 1950 and has continued ever since with a series of extensions to the original deposit. The Wavendon Heath South site, covering some 54 ha and containing some 320 000 tonnes of dry product, sufficient for about 10 years output, would have been the last site. Final closure of the operation is not anticipated before the end of 2003.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Fuller's earth</b>										
<i>Crude production</i>	162 000	111 000	83 000	103 000	...					
<i>Sales (a)</i>	134 800	94 400	74 500	65 500	52 000					
<i>Imports</i>	...	51 398	16 326	6 563	5 896	...	2 884	1 407	780	611
<i>Exports</i>	61 077	739	554	429	121	6 333	195	108	157	80

(a) BGS estimates based on data from producing companies. Dry weight.

# Gas, natural (see Petroleum)

# Germanium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Germanium</b>										
<i>Imports</i>										
Metal	13	14	18	75	7	5 675	3 119	3 563	1 845	921
<i>Exports</i>										
Metal	13	8	8	37	10	4 037	876	1 152	1 039	668

# Gold

Mines Royal (gold and silver) exploration and development in Britain requires a licence from the Crown Mineral Agent. Activity continues at a low level due principally to the low gold price, although there are signs of an increase in interest. The number of Mines Royal licences has reduced to 7 from the previous 10, with Mines Royal leases remaining constant at 6 (see map). Mines Royal licence and lease activity is distributed throughout the United Kingdom as follows:

	Exploration Licences		Mining Leases	
	Actual	In Preparation	Actual	In Preparation
England	—	—	—	—
Northern Ireland	5	—	1	—
Scotland	—	—	1	—
Wales	2	—	4	—
<b>Total</b>	<b>7</b>	<b>—</b>	<b>6</b>	<b>—</b>

*Supplied by the Crown Mineral Agent*

The principal companies holding Mines Royal licences are:

Northern Ireland	Conroy Diamonds and Gold plc Omagh Minerals Ltd Ulster Minerals Ltd (wholly owned subsidiary of Strongbow Resources Inc)
Wales	Cambrian Goldfields Ltd

The six Mines Royal leases and their current status are as follows:

Company	Country	Activity
Anglesey Mining plc	Wales	Dormant - potential underground Zn-Cu-Pb-Ag-Au mine at Parys Mountain deposit
Anglo Canadian Exploration	Wales	Dormant - part of Anglesey Mining plc (Dolaucothi mine)
Caledonia Mining Corporation	Scotland	Dormant - potential underground Au-Ag mine at Cononish deposit
National Trust	Wales	Visitor and educational centre at Dolaucothi mine
Omagh Minerals Ltd	Northern Ireland	Limited open pit gold mining at Cavanacaw deposit
Stoic Mining	Wales	Small scale exploration

*Supplied by the Crown Mineral Agent*

Bullion gold price is currently around \$350 per troy ounce, following a period of 2 to 3 years when the gold price fell to a low of \$250 per troy ounce. This compares with the situation in 1990 when there were 51 exploration licences and 6 leases with a gold price of around \$400 per troy ounce.

Tournigan Gold Corporation of Canada announced in November 2002 that it had acquired options on the Curraghinalt and Cavanacaw gold properties in Northern Ireland. Curraghinalt is owned by Strongbow Resources of Canada and Tournigan can earn up to a 51 % interest in the area by spending Can\$2 000 000 over three years and thereafter up to 75 %. It can also earn a 50 % interest in the larger Tyrone project by spending Can\$1 500 000 over three years and thereafter up to 75 %. Both agreements envisage a feasibility study within seven years. Tournigan has committed to at least 1000 metres of drilling on the Tyrone project within six months. The Tyrone area is prospective for gold and base metals with recent trenching in the Glenlark region returning a reported 21-metre interval of stratabound gold-bearing mineralization with an average of 2.55 grams of gold per tonne.

Cavanacaw is owned by European Gold Resources Inc of Canada and Tournigan can earn a 54 % interest initially and later, in stages, up to 75 % by funding exploration, feasibility and development work. European Gold Resources will continue to develop its Galantas Irish gold jewellery range.

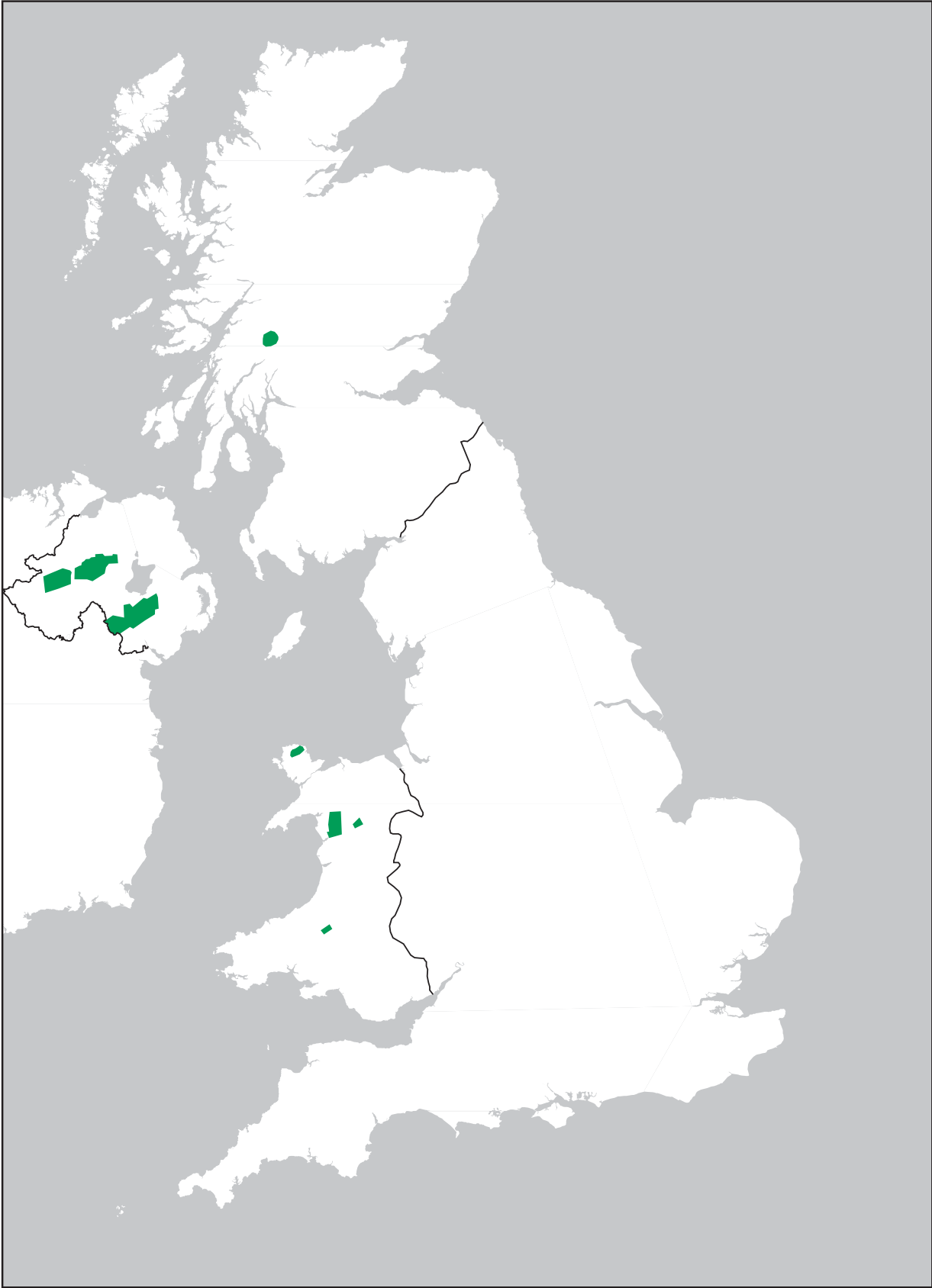
Conroy Diamonds and Gold are continuing to explore the Armagh-Monaghan 'Gold Belt' in the Longford-Down Massif which extends between Northern Ireland and the Republic of Ireland. The company reported in November 2002 that additional shear-hosted gold mineralisation had been found by trenching and drilling at Tivnacree, 1.2 km southwest of Cargaligossan in Co. Armagh, Northern Ireland, where previous drill intersections had been reported.

Caledonia Mining Corporation continues to provide management services to the Cononish gold exploration project in Scotland.

Cambrian Goldfields is continuing a re-assessment of the Clogau gold mine near Dolgellau in North Wales which was abandoned by its previous operators in 1998.



Mines Royal Licences and Leases in 2002



By courtesy of The Crown Estate

As Crown Estate licences for gold and silver exploration are surrendered, the reports on the work carried out are deposited by the Crown Mineral Agent with the British Geological Survey for archive within the National Geoscience Records Centre. Over 30 reports are now held, some of which are available for public access. Others will become available as the term of confidentiality expires.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Gold</b>										
<i>Imports</i>										
Waste and scrap	153	217	161	319	168	77 428	212 531	94 059	152 634	122 319
Unwrought (a)	487	1 090	807	915	951	2 831 803	5 896 163	3 647 930	4 191 091	3 231 446
Semi-manufactured	19	100	21	57	21	99 958	580 075	121 999	338 323	119 642
<i>Exports</i>										
Waste and scrap	54	105	378	356	494	2 271	2 503	2 771	2 747	5 471
Unwrought (a)	1 103	485	399	397	353	7 311 293	2 778 200	2 159 650	2 291 595	2 136 962
Semi-manufactured	48	139	190	41	52	316 922	812 174	1 046 693	226 774	301 266

(a) Mainly refined gold bullion in the form accepted in inter-bank transactions.

## Granite (see Igneous rock)

## Graphite

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Graphite</b>										
<i>Imports</i>										
Natural graphite	23 740	27 885	21 204	26 088	22 482	10 899	11 712	8 971	11 396	9 933
Artificial graphite	16 151	18 807	8 799	9 573	16 704	22 292	21 436	18 331	19 227	19 076
Graphite crucibles etc.	976	952	699	736	2 027	3 056	3 569	2 589	3 085	3 004
<i>Exports</i>										
Natural graphite	1 871	2 206	1 973	2 429	2 635	1 798	2 278	1 929	2 542	2 825
Artificial graphite	3 593	3 828	3 541	3 168	4 014	7 720	8 014	8 573	9 213	7 126
Graphite crucibles etc.	13 901	14 753	12 840	9 886	10 089	31 744	31 886	28 527	22 856	20 139

## Gypsum

UK consumption of gypsum is derived from three sources: the production of natural gypsum, mainly by underground mining, but with some surface extraction in Nottinghamshire; recovery of synthetic gypsum as a by-product of certain industrial processes; and imports of both natural and synthetic gypsum. Natural gypsum, of which British Gypsum Ltd is the sole producer, is extracted in Leicestershire, Nottinghamshire, Staffordshire, Cumbria and East Sussex. Extraction is mainly by underground mining. Total output has not been disclosed in official statistics for some years but is thought to be about 1.7 million tonnes a year. Official figures for imports of gypsum, mainly from Spain and Germany, were reported to be 755 112 tonnes in 2001 valued at £10.4 million.

Desulphogypsum, the synthetic gypsum produced by the neutralisation of sulphur dioxide contained in flue gases at coal-fired power stations, is currently produced at two sites in Britain. The largest is the 4 000 MW Drax power station in North Yorkshire, owned by AES Drax Power Ltd, part of the AES Corporation of the USA. Sales of desulphogypsum from Drax were 485 000 tonnes in 2002, somewhat down on 2001. Desulphogypsum is also produced at the 2 000 MW Ratcliffe-on-Soar power station in Nottinghamshire operated by Powergen. Output was some 358 000 tonnes in 2002. The desulphogypsum from both plants is supplied to British Gypsum for plasterboard manufacture. Sales of desulphogypsum since full-scale production began in 1994 are shown opposite:

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Drax	300	320	510	549	323	483	565	506	485
Ratcliffe	200	280	300	296	278	220	260	291	358
<b>Total</b>	<b>500</b>	<b>600</b>	<b>810</b>	<b>845</b>	<b>510</b>	<b>703</b>	<b>825</b>	<b>797</b>	<b>843</b>

The availability of desulphogypsum will increase significantly in the next few years as there are also proposals to fit FGD plant to several other coal-fired stations. A third source of desulphogypsum will become available during 2003. London Power Company, a subsidiary of London Electricity, is retrofitting FGD plant based on the limestone/gypsum process to its 2 000 MW West Burton coal-fired power station in Nottinghamshire. The FGD system will serve all four generating sets, and two are scheduled for commissioning in spring 2003 and the remaining two in the autumn. When fully operational the plant will make a further substantial contribution to desulphogypsum supply. The company is also to fit a FGD system to its Cottam station also in Nottinghamshire. These installations will ensure that the stations maintain the option to burn British coal which is relatively high in sulphur.

The amount of desulphogypsum produced at FGD plants is dependent on two main factors: the electricity output of the station and the amount of sulphur in the coal. Lower sulphur coals are being used than originally intended and consequently desulphogypsum production has never achieved the design output of the plants. High purity limestone for the FGD plants is obtained from the Tunstead quarry near Buxton and is delivered by train.

Synthetic gypsum is also produced by the neutralisation of acid effluent from the manufacture of titanium dioxide by the Sulphate Process at Tioxide Europe's plant at Grimsby. Production of white titanogypsum is some 200 000 t/y and is used by Knauf for the manufacture of plasterboard at their Immingham plant.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Gypsum and plaster</b>										
<i>Production</i>										
Gypsum (natural) (a)	2 000 000	2 000 000	1 800 000	1 500 000	1 700 000					
<i>Imports</i>										
Gypsum–										
Calcined (plasters) etc.	42 859	33 227	33 818	62 728	31 481	9 392	5 807	6 597	9 231	6 029
Other	521 455	328 175	391 447	492 422	755 112	10 257	8 914	12 159	14 501	10 390
<i>Exports</i>										
Gypsum–										
Calcined (plasters) etc.	25 113	24 352	73 865	31 474	29 474	6 925	6 574	10 485	7 894	7 505
Other	10 239	9 322	6 746	9 709	3 049	625	499	1 214	657	459

(a) BGS estimates.

## Hafnium

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Hafnium</b>										
<i>Imports</i>										
	27	19	3	9	2	1 264	1 003	225	537	327
<i>Exports</i>										
	2	1	1	1	2	62	82	48	48	169

# Igneous rock (for graph, see Crushed rock)

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Igneous rock</b> —see Building and dimension stone										
<i>Production (a)</i>	48 656 000	45 945 000	53 155 000	54 113 000	51 501 000					
<i>Imports</i>										
Granite—										
Unworked	883 546	736 462	1 045 451	865 710	1 781 220	27 374	26 546	23 980	36 452	28 908
Worked	23 809	24 541	25 961	34 928	37 533	19 002	20 097	19 214	24 215	26 334
<i>Exports</i>										
Granite—										
Unworked	3 961	1 111	983	1 594	1 558	201	370	133	331	370
Worked	115	101	85	713	53	170	211	82	360	99

(a) Excluding a small production of granite in Northern Ireland.

## Great Britain production of igneous rock by end-use and area of origin 2001

Area of origin	Thousand tonnes								Total
	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	
		Sold coated	For coating at remote plants	Uncoated					
North East	6	445	...	398	12	45	395	1	...
East Midlands	...	1 234	2 501	...	...	2 966	5 741	3	15 117
South West	...	315	169	638	30	...	1 235	—	3 323
West Midlands	...	798	...	...	...	...	...	1	1 944
North West	6	—	305	...	—	13	...	—	...
<b>England</b>	...	<b>2 792</b>	<b>3 523</b>	<b>2 844</b>	...	<b>4 059</b>	<b>8 051</b>	<b>6</b>	<b>22 647</b>
<b>Wales</b>	...	<b>393</b>	<b>197</b>	<b>266</b>	...	<b>369</b>	...	—	<b>2 372</b>
<b>Scotland</b>	<b>423</b>	<b>1 608</b>	<b>1 010</b>	<b>7 437</b>	...	<b>1 922</b>	...	<b>26</b>	<b>20 034</b>
<b>Great Britain</b>	<b>479</b>	<b>4 793</b>	<b>4 730</b>	<b>10 547</b>	<b>2 341</b>	<b>6 351</b>	<b>15 780</b>	<b>31</b>	<b>45 053</b>
<b>England</b>	<b>Wales</b>			<b>Scotland</b>					
County	Total	County		Total	Region		Total		
Northumberland	1 289	Dyfed		...	Borders		229		
Durham	...	Powys		...	Central		1 236		
Cumbria	...	Gwynedd		...	Tayside		981		
Leicestershire	15 117				Dumfries and Galloway		497		
Shropshire	...	<b>Wales</b>		<b>2 372</b>	Fife		...		
Warwickshire	...				Grampian		1 287		
West Midlands	...				Highland		6 077		
Somerset	...				Lothian		1 626		
Devon	...				Strathclyde		6 608		
Cornwall	2 286				Shetland Islands area		...		
					Western Isles area		165		
<b>England</b>	<b>22 647</b>				<b>Scotland</b>		<b>20 034</b>		

Source: Office for National Statistics.

## England production of igneous rock by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	13	5 029	3 060	8 532	1 759	1 304	6 662	164	26 522
1991	22	4 129	2 665	7 407	1 711	1 270	5 770	151	23 126
1992	25	4 098	3 420	8 387	1 847	1 640	5 543	277	25 238
1993	47	4 139	...	8 555	...	1 190	4 901	292	24 783
1994	...	3 970	4 072	6 183	1 197	1 173	8 303	...	25 134
1995	...	4 171	3 657	6 212	...	1 272	7 434	185	24 651
1996	7	3 753	3 733	5 816	921	1 399	5 793	105	21 526
1997	49	3 120	4 412	5 141	1 020	1 434	5 073	87	20 335
1998	26	2 505	3 384	2 935	944	...	5 926	...	17 228
1999	37	2 568	3 919	...	...	1 724	7 538	...	20 803
2000	27	2 726	3 916	3 587	...	2 106	6 799	...	20 435
2001	...	2 792	3 523	2 844	...	4 059	8 051	6	22 647

Source: Office for National Statistics.

## Wales production of igneous rock by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	24	688	235	862	337	166	1 416	13	3 741
1991	11	812	275	992	248	168	777	12	3 294
1992	14	826	370	927	...	...	825	8	3 329
1993	24	947	457	1 084	...	...	781	...	3 621
1994	14	...	...	1 079	...	217	1 128	...	4 208
1995	...	...	...	1 222	...	204	735	29	3 259
1996	...	...	...	...	...	157	386	—	2 272
1997	(a) 11	...	359	472	...	...	486	—	2 172
1998	4	...	339	578	...	203	364	...	2 110
1999	6	...	355	...	...	164	556	—	2 730
2000	...	314	227	659	...	...	...	—	2 743
2001	...	393	197	266	...	369	...	—	2 372

(a) BGS estimate.

Source: Office for National Statistics.

## Scotland production of igneous rock by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	109	2 361	537	7 320	427	1 882	6 352	291	19 280
1991	94	2 356	718	8 236	361	1 513	6 298	12	19 588
1992	112	2 472	684	6 916	...	...	8 243	52	20 064
1993	142	2 613	...	7 548	...	...	8 274	...	20 806
1994	...	...	...	6 995	...	1 354	8 179	...	20 672
1995	130	...	...	6 498	...	1 546	9 407	16	21 731
1996	128	...	...	...	...	1 358	8 488	...	19 933
1997	129	...	693	6 778	...	...	7 812	(a) 24	19 863
1998	107	...	934	6 587	...	...	8 140	2	20 500
1999	141	...	804	8 367	740	2 110	7 702	...	21 761
2000	179	1 762	945	9 148	...	...	...	39	21 455
2001	423	1 608	1 010	7 437	...	1 922	...	26	20 034

(a) BGS estimate.

Source: Office for National Statistics.

# Insulating materials

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Insulating materials</b> (not elsewhere specified)										
<i>Imports</i>										
Mineral wools (a)	30 082	31 546	35 346	30 735	25 008	15 906	16 986	16 564	17 128	17 266
Expanded minerals (b)	86 579	95 450	124 102	58 347	60 811	7 977	7 910	7 288	7 169	5 291
Other (c)	21 145	24 065	24 822	73 900	32 951	21 320	20 973	23 989	27 353	26 346
<i>Exports</i>										
Mineral wools (a)	9 702	6 884	12 532	14 752	12 830	28 550	26 568	26 232	20 670	22 435
Expanded minerals (b)	17 976	21 032	16 076	27 895	27 752	8 229	9 807	8 032	12 220	15 340
Other (c)	26 988	25 147	22 129	16 477	17 685	34 311	27 711	27 422	25 786	33 206

(a) Slag wool, rock wool and similar mineral wools.

(b) Exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral materials.

(c) Mixtures and articles of heat-insulating, sound-insulating or sound-absorbing mineral materials.

# Iodine

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Iodine</b>										
<i>Imports</i>										
	1 353	1 693	957	1 305	1 015	13 676	15 164	9 995	12 859	9 592
<i>Exports</i>										
	184	138	148	385	507	1 953	1 572	1 441	1 788	1 844

# Iron compounds and earth colours

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Iron compounds and earth colours</b>										
<i>Imports</i>										
Natural micaceous oxides	2 585	7 876	2 593	3 916	2 244	768	1 391	829	1 206	684
Earth colours containing 70% or more ferric oxide	162	209	199	93	94	79	163	88	62	43
Other iron compounds—Oxides and hydroxides	56 637	53 351	54 508	68 839	50 299	27 736	27 013	26 587	34 626	22 996
<i>Exports</i>										
Natural micaceous oxides	2 299	3 396	3 083	3 293	3 037	779	943	849	1 304	1 242
Earth colours containing 70% or more ferric oxide	312	120	219	92	42	298	360	257	113	50
Other iron compounds—Oxides and hydroxides	28 397	18 956	16 326	21 349	17 077	20 724	15 860	12 808	17 131	15 233

# Iron ore

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Iron ore</b>										
<i>Production (a)</i>	1 210	1 188	(b) 1 000	1 033	510					
Fe content	666	653	(b) 540	568	281					
<i>Consumption</i>										
Home-produced	1 200	1 200	(b) 1 000	1 000	500					
Imported	20 370 500	19 510 200	18 739 400	16 955 000	15 108 300					
<i>Imports</i>										
Iron ore	21 032 971	20 764 785	17 030 212	16 778 947	15 351 877	343 895	316 474	278 509	260 406	248 246
Fe content (b)	13 000 000	12 900 000	10 500 000	10 300 000	9 500 000					
<i>Exports</i>										
Iron ore	397	606	573	898	5 257	101	177	155	129	417

(a) The Florence mine near Egremont, Cumbria produces high-grade hematite for foundry uses, mineral specimens and jewellery. The mine is also an active tourist attraction.

(b) BGS estimates.

# Iron and steel

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Iron and steel</b>										
<i>Production</i>										
Pig iron	13 054 500	12 746 100	12 139 300	10 890 500	9 870 400					
Crude steel–										
Alloy qualities	1 306 300	1 170 400	1 030 600	1 151 100	1 045 900					
Other	17 194 200	16 144 600	15 253 100	14 003 500	12 496 800					
Total	18 500 500	17 315 000	16 283 700	15 154 600	13 542 700					
<i>Consumption</i>										
Scrap (a)	7 206 000	6 409 000	5 884 000	5 675 000	5 026 000					
Pig iron (a)	13 018 000	12 619 000	11 859 000	10 970 000	9 713 000					
Finished steel (b)	13 994 000	14 594 000	13 460 000	13 359 000	13 410 000					
<i>Imports</i>										
Scrap	211 827	179 204	164 757	201 251	178 923	68 093	43 673	41 589	72 142	50 275
Pig iron	210 112	225 303	156 325	133 734	159 725	23 963	25 126	14 608	12 887	16 087
Shot, powder, sponge etc.	36 861	43 801	37 304	56 892	37 128	20 499	22 399	20 637	21 444	19 154
Ferro-alloys	434 121	394 065	372 305	361 692	327 666	205 974	170 653	135 973	136 322	126 781
Iron and steel–										
Ingots and other primary forms	458 875	549 465	412 482	518 194	388 350	141 085	137 342	91 910	134 381	121 148
<i>Exports</i>										
Scrap	3 561 352	3 177 490	3 578 027	4 378 117	4 821 840	290 104	238 610	212 743	323 233	369 196
Pig iron	4 411	1 632	446	679	6 749	1 307	853	153	248	3 441
Shot, powder, sponge etc.	69 918	70 448	83 322	83 430	66 637	28 059	29 365	27 372	27 701	27 903
Ferro-alloys	47 268	49 076	37 664	38 005	36 495	89 319	90 585	58 174	65 627	68 042
Iron and steel–										
Ingots and other primary forms	954 817	561 451	407 044	520 306	746 730	419 726	232 428	154 086	193 789	219 641

(a) Consumption in steel making only.

(b) Net home disposals.

## Consumption in the United Kingdom iron and steel industry 1992–2001

Thousand tonnes

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Iron ore –										
Home produced (a)(c)	31	1	1	1	1	1	1	1	1	1
Imported (b)	17 235	17 507	18 161	18 671	19 720	20 371	19 510	18 739	16 955	15 108
Manganese ore	308	152	64	32	48	36	22	14	36	4
Iron and steel scrap	(e) 7 746	(g) 6 522	(g) 6 839	(g) 7 000	(g) 6 822	(g) 7 206	(g) 6 409	(g) 5 884	(g) 5 675	(g) 5 026
Pig iron	11 677	(g) 11 554	(g) 11 889	(g) 12 121	(g) 12 753	(g) 13 018	(g) 12 619	(g) 11 859	(g) 10 970	(g) 9 713
Alloy metals (h) –										
Nickel	17.5	19.3	23.4	24.7	21.5	18.3	13.8	15.5	15.0	15.2
Molybdenum	2.2	2.2	2.6	2.9	2.7	2.7	2.5	2.4	2.3	2.0
Tungsten	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Vanadium	0.6	0.7	0.9	1.0	1.0	0.9	0.8	0.8	0.7	0.7
Cobalt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chromium	48.7	54.3	64.6	66.9	66.5	66.1	61.9	58.2	55.1	49.6
Niobium	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4
Ferro-alloys –										
Ferro-manganese	111.3	116.3	125.4	129.1	128.1	133.8	125.2	117.7	111.5	96.5
Ferro-silico- manganese	33.6	34.4	32.4	32.5	31.7	33.7	31.5	29.9	27.8	25.1
Ferro-aluminium	3.0	3.2	2.8	2.9	2.8	3.4	3.1	3.1	2.9	2.8
Ferro-chromium	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
Ferro-silico- chromium	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
Ferro-silicon	42.1	43.3	49.5	51.6	51.2	53.9	50.5	45.9	43.7	38.5
Ferro-silico- zirconium	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Calcium silicide	1.1	1.3	1.3	1.2	1.1	1.3	1.2	1.1	0.1	0.1
Ferro-phosphorous	1.2	1.2	1.4	1.5	1.4	1.5	1.4	1.3	1.3	1.2
Ferro-niobium	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)
Ferro-titanium	0.7	0.7	0.9	1.1	1.1	1.2	1.1	1.1	1.0	0.9
Dolomite (raw and burnt) (f)	637.0	514.6	465.8	382.7	455.9	503.8	495.3	369.5	338.0	264.4
Limestone (f)	2 032.7	2 077.0	2 235.7	2 317.5	2 224.7	2 445.2	2 411.2	2 408.3	2 166.0	1 890.9
Lime (f)	681.5	719.3	766.8	787.3	743.9	750.5	739.0	698.4	660.1	563.6
Zinc for galvanising	103.4	105.1	107.5	110.8	89.9	104.0	96.8	88.6	87.4	63.5
Tin for tinplating	3.6	3.6	3.6	3.6	3.1	3.4	3.5	3.3	3.4	2.8

Average Fe content: (a) 2001: 55%, (b) 2001: 62%, (c) as charged.

(d) Included under alloying metals.

(e) Including consumption at iron foundries.

(f) Restricted to consumption in blast furnaces, sinter plants and steel furnaces.

(g) Consumption in steel making only.

(h) Metal content.

Source: Iron and Steel Statistics Bureau.

## Lead

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001
Tonnes					
<b>Lead</b>					
<i>Production</i>					
Concentrate (a)					
Pb content	(c) 1 600	(c) 1 600	1 000	(c) 1 000	(c) 800
Unwrought–					
Bullion	38 000	37 927	40 635	36 700	36 000
Refined–					
Primary (b)	213 209	186 212	184 713	157 164	202 915
Secondary	170 903	163 492	162 604	170 740	163 390
<i>Consumption</i>					
Refined	270 395	275 492	283 265	293 954	298 276
Scrap	39 066	38 409	32 245	40 894	40 661

*continued*

(a) Byproduct of Pennine fluorspar operations.

(b) Refined from imported bullion including lead content of alloys.

(c) BGS estimate.



## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Lead continued</b>										
<i>Imports</i>										
Ores and concentrates	(a) 40 569	(a) 34 276	(a) 34 080	(b) 34 000	(b) 33 000					
Ash and residues	1 066	1 938	2 120	2 510	2 503	139	251	152	126	212
Scrap	5 120	5 537	7 704	10 849	15 633	1 509	1 126	1 767	2 295	4 271
Unwrought—										
Unrefined—										
Bullion (c)	189 508	169 839	174 757	140 344	184 518	106 061	80 788	78 106	61 846	94 002
Other	5 053	50	418	1 461	1 538	2 606	99	171	624	1 071
Refined	16 277	27 238	35 789	98 090	28 623	6 775	9 648	13 795	33 095	10 738
Alloys	1 448	2 727	3 078	9 551	3 041	957	852	905	2 994	1 146
<i>Exports</i>										
Ores and concentrates	243	23	2 927	5	39	81	26	201	6	44
Ash and residues	1 191	21	53	—	4	351	17	24	—	1
Scrap	10 618	6 178	11 577	7 352	10 700	4 336	2 535	3 520	2 261	3 737
Unwrought—										
Unrefined—										
Bullion	2 470	3 081	2	306	—	1 250	1 089	4	143	—
Other	6 435	6 179	6 714	3 340	7 640	3 204	4 432	2 315	2 297	3 586
Refined	76 101	95 066	76 172	78 893	85 912	34 041	50 602	30 314	26 535	32 200
Alloys	31 909	33 096	31 460	35 145	42 308	15 297	13 525	12 364	13 024	17 495

(a) Estimates published by the World Bureau of Metal Statistics. Lead content of both lead concentrate and mixed zinc-lead concentrate.

(b) BGS estimate.

(c) Containing substantial quantities of silver; see p.100.

## Limestone, dolomite and chalk (for graph, see Crushed Rock)

### Great Britain production of limestone, dolomite and chalk by broad end-uses 2001

Thousand tonnes

Mineral	Constructional uses (b)	Cement	Agricultural uses (a)	Industrial uses (a)	Total
Limestone	66 202	10 123	810	6 357	83 492
Dolomite	12 415	—	...	...	14 314
Chalk	925	5 111	...	...	8 205
<b>Total</b>	<b>79 542</b>	<b>15 234</b>	<b>1 610</b>	<b>9 625</b>	<b>106 011</b>

(a) Including material for calcination.

(b) Including building stone.

Source: Office for National Statistics.

### Great Britain production of limestone, dolomite and chalk for agricultural and industrial uses (a) 2001

Thousand tonnes

Use	Limestone	Dolomite	Chalk	Total	Of which for conversion by calcination
Agricultural	810	...	...	1 610	11
Iron and steel	1 844	39	...	...	1 248
Glass making	...	...	—	278	—
Asphalt filler	...	...	—	211	—
Other fillers	959	—	...	...	—
Chemical use	...	757	...	2 630	2 630
Building materials	...	430	...	957	957
Other uses	...	...	...	1 384	90
<b>Total</b>	<b>7 167</b>	<b>1 899</b>	<b>2 169</b>	<b>11 236</b>	<b>4 936</b>

(a) Including material for calcination.

Source: Office for National Statistics.

## Great Britain production of limestone and chalk for cement, 1990–2001

Thousand tonnes

Year	Limestone	Chalk	Total
1990	...	...	20 205
1991	8 903	7 057	15 960
1992	8 622	...	...
1993	(a) 9 137	(a) 5 839	14 976
1994	(a) 10 089	(a) 6 731	16 820
1995	(a) 10 234	(a) 6 343	16 577
1996	(a) 9 673	(a) 5 697	15 369
1997	(a) 9 959	(a) 6 157	16 115
1998	(a) 10 465	(a) 6 736	17 201
1999	(a) 9 831	(a) 6 345	16 176
2000	(a) 9 821	(a) 6 288	16 109
2001	10 123	5 111	15 234

(a) BGS estimate.

Source: Office for National Statistics.

## Great Britain production of limestone, dolomite and chalk for agricultural uses, 1990–2001

Thousand tonnes

Year	Limestone	Dolomite	Chalk	Total	Calcination (a)
1990	1 304	1 259	645	3 208	64
1991	1 206	2 096	547	3 849	...
1992	1 384	2 114	435	3 934	...
1993	1 039	999	466	2 504	20
1994	1 169	1 070	574	2 813	18
1995	1 476	...	...	3 405	18
1996	1 414	(b) 1 321	(b) 624	3 359	20
1997	...	...	590	3 053	42
1998	(b) 1 009	...	...	2 343	10
1999	...	...	...	1 961	8
2000	...	...	...	1 749	2
2001	810	...	...	1 610	11

(a) Comprises material included in the total which, after calcination, was used as lime and dolomitic lime.

Source: Office for National Statistics.

(b) BGS estimate.

## Great Britain production of limestone, dolomite and chalk for industrial uses, 1990–2001

Thousand tonnes

Year	Limestone	Dolomite	Chalk	Total	Calcination
1990	...	2 022	...	10 291	(a) 4 948
1991	6 563	1 520	1 677	9 760	(b) 4 437
1992	6 326	...	...	9 345	(b) 4 069
1993	(c) 6 416	1 578	(c) 1 858	9 852	(a) 4 373
1994	(c) 7 489	1 397	(c) 1 955	10 841	(a) 4 316
1995	(c) 7 211	...	...	10 774	(a) 5 032
1996	(c) 7 618	(c) 1 551	1 879	11 048	(a) 5 074
1997	...	...	(c) 2 035	11 332	(a) 5 579
1998	(c) 7 705	...	...	11 345	(a) 5 694
1999	...	...	...	10 282	(a) 5 258
2000	...	...	...	9 867	(a) 4 797
2001	6 357	...	...	9 625	(a) 4 925

(a) Comprises material included in the total which, after calcination, was used for industrial purposes as lime or dolomitic lime. Excludes small amounts for agricultural purposes.

Source: Office for National Statistics.

(b) Including small amounts used for agricultural purposes but excluded from the total.

(c) BGS estimate.

## Great Britain production of limestone, dolomite and chalk for industrial uses by end-use, 1990–2001

Thousand tonnes

Year	Iron and steel making (a)	Chemicals (a)	Glass making	Special fillers	Asphalt fillers	Building materials (a)	Others (a)	Total (a)
1990	5 038	2 304	355	1 449	456	688		10 290
1991	4 273	2 020	330	1 490	499	302	849	9 763
1992	4 285	...	...	1 605	391	...	645	9 345
1993	4 254	1 952	...	1 710	...	220	966	9 852
1994	4 813	2 004	...	...	408	175	...	10 841
1995	4 778	...	...	...	414	292	1 067	10 774
1996	5 091	2 185	344	1 561	342	399	1 127	11 048
1997	...	...	361	...	340	...	...	11 332
1998	...	2 047	375	...	...	459	...	11 345
1999	...	1 689	203	...	...	460	...	10 282
2000	...	1 864	...	...	192	474	1 144	9 867
2001	...	2 630	278	...	211	957	1 384	9 625

(a) Including material for calcination.

Source: Office for National Statistics.

## Great Britain production of limestone, dolomite and chalk for calcination by end-use, 1990–2001

Thousand tonnes

Year	Agriculture	Iron and Steel	Chemicals	Building materials	Others	Total
1990	64	2 408	2 304	236	...	5 012
1991	...	1 944	2 020	302	...	4 437
1992	...	1 864	...	...	...	4 069
1993	20	2 081	1 952	220	120	4 393
1994	18	2 015	2 004	175	122	4 334
1995	18	2 381	2 289	291	71	5 050
1996	20	2 400	2 184	398	92	5 094
1997	42	2 595	2 332	435	217	5 621
1998	10	3 035	2 047	459	153	5 704
1999	8	2 970	1 689	460	139	5 266
2000	2	2 301	1 864	474	158	4 799
2001	11	1 248	2 630	957	90	4 936

Source: Office for National Statistics.

## Great Britain production of limestone, dolomite and chalk for iron and steel making, 1990–2001

Thousand tonnes

Year	Limestone	Dolomite and chalk	Total	Calcination (a)
1990	2 620	2 418	5 038	2 408
1991	2 206	2 067	4 273	1 944
1992	2 318	1 967	4 285	1 864
1993	2 438	1 816	4 254	2 081
1994	2 703	2 110	4 813	2 015
1995	2 699	2 079	4 778	2 381
1996	3 043	2 048	5 091	2 400
1997	2 935	...	...	2 595
1998	3 346	...	...	3 035
1999	3 239	...	...	2 970
2000	2 500	...	...	2 301
2001	1 844	...	...	1 248

(a) Comprises material included in the total which, after calcination, was used as lime or dolomitic lime.

Source: Office for National Statistics.

## Great Britain production of limestone by end-use and area of origin 2001

Area of origin	Building stone	For constructional uses (a)			For other uses				
		Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Agricultural use	Iron and steel
		Sold coated	For coating at remote plants	Uncoated					
North East	—	273	...	1 937	—	769	1 499	...	—
Yorkshire and Humberside	...	358	558	2 882	...	3 198	3 389	17	—
East Midlands	24	819	1 418	4 484	—	3 786	5 031	192	259
East of England	—	—	—	...	—	—	—	—	—
South East	...	...	—	...	—	169	1 176	2	—
South West	123	...	...	7 859	—	6 476	5 919	268	...
West Midlands	4	278	162	1 445	—	...	519	...	—
North West	8	600	627	...	—	...	2 012	32	892
<b>England</b>	<b>168</b>	<b>...</b>	<b>4 956</b>	<b>20 502</b>	<b>...</b>	<b>16 457</b>	<b>19 545</b>	<b>561</b>	<b>...</b>
<b>Wales</b>	<b>44</b>	<b>...</b>	<b>328</b>	<b>1 731</b>	<b>...</b>	<b>4 299</b>	<b>4 802</b>	<b>101</b>	<b>...</b>
<b>Scotland</b>	<b>...</b>	<b>...</b>	<b>—</b>	<b>127</b>	<b>—</b>	<b>24</b>	<b>126</b>	<b>148</b>	<b>—</b>
<b>Great Britain</b>	<b>...</b>	<b>5 317</b>	<b>5 285</b>	<b>22 360</b>	<b>(d) 150</b>	<b>20 780</b>	<b>24 473</b>	<b>810</b>	<b>1 844</b>
<b>England</b>									
County	Total		County	Total					
Avon	5 887		Leicestershire	3 921					
Cambridgeshire	...		Lincolnshire	1 070					
Cumbria	4 273		Dorset	386					
Derbyshire	18 479		Northamptonshire	299					
Devon	2 420		Cleveland	...					
Cornwall	...		Northumberland	...					
Durham	4 756		Tyne and Wear	...					
Gloucestershire	2 142		North Yorkshire	7 404					
Hereford and Worcester	...		West Yorkshire	...					
Warwickshire	35		South Yorkshire	...					
Shropshire	...		Oxfordshire	748					
Staffordshire	2 760		Somerset	13 557					
Kent	...		Wiltshire	...					
Lancashire	4 912								
					<b>England</b>	<b>79 902</b>			<i>continued</i>

(a) Including dolomite.

(b) For filler in asphalt and as mine dust.

(c) For other fillers, powders and whittings (e.g. in animal feed, polymers, paint, paper and pharmaceuticals).

(d) BGS estimate.

Source: Office for National Statistics.

					Total
Cement	Glass making	Asphalt filler (b)	Other fillers (c)	Other uses	
936	—	—	—	—	5 731
—	—	—	—	150	10 559
...	...	63	755	2 953	23 769
—	—	18	—	—	...
—	—	—	—	—	...
—	—	25	20	...	24 496
1 161	—	—	92	2	3 923
...	—	2	...	...	9 186
...	...	<b>109</b>	...	...	<b>79 902</b>
...	—	—	<b>8</b>	...	<b>14 238</b>
<b>1 218</b>	—	...	...	—	<b>1 733</b>
<b>10 123</b>	...	...	<b>959</b>	<b>3 292</b>	<b>95 873</b>
<b>Wales</b>			<b>Scotland</b>		
County	Total		Region	Total	
Clwyd	6 392		Lothian	1 218	
Dyfed	1 434		Tayside	...	
Gwynedd	...		Strathclyde	143	
Powys	194		Grampian	...	
Gwent	...		Highland	141	
Mid Glamorgan	4 066				
South Glamorgan	1 394		<b>Scotland</b>	<b>1 733</b>	
	<b>Wales</b>	<b>14 238</b>			

## England production of limestone by end-use 1990–2001

Year	Building stone	For constructional uses (a)			For other uses				
		Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Agricultural use	Iron and steel
		Sold coated	For coating at remote plants	Uncoated					
1990	207	6 526	3 786	34 424	...	10 925	24 663	970	2 025
1991	1 407	7 053	4 173	31 691	9	9 089	19 560	836	...
1992	115	6 230	4 234	27 869	...	9 355	19 963	1 125	...
1993	105	6 025	4 282	28 252	...	9 995	21 833	758	...
1994	...	6 994	4 051	28 104	...	10 012	30 775	930	...
1995	...	6 933	4 551	27 487	...	9 793	20 968	1 174	...
1996	211	6 020	3 584	21 291	14	8 405	21 372	1 025	1 884
1997	212	5 192	3 440	21 380	18	11 144	22 775	947	2 045
1998	...	4 441	4 425	21 124	12	12 094	21 989	765	...
1999	245	4 226	3 528	19 265	...	11 610	22 616	685	...
2000	278	4 079	3 363	18 648	...	10 654	23 897	537	1 620
2001	168	...	4 956	20 502	...	16 457	19 545	561	...

*continued*

## Wales production of limestone by end-use 1990–2001

Year	Building stone	For constructional uses (a)			For other uses				
		Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Agricultural use	Iron and steel
		Sold coated	For coating at remote plants	Uncoated					
1990	38	1 587	194	5 446	422	...	...	235	595
1991	22	...	200	7 918	...	...	4 821	...	...
1992	25	...	285	6 269	...	...	5 706	...	...
1993	22	...	190	5 936	...	2 836	7 674	196	...
1994	...	...	182	5 687	—	3 154	7 975	...	...
1995	46	...	183	5 029	...	...	7 100	...	...
1996	10	...	177	4 164	(d) 65	...	7 192	...	1 158
1997	(d) 6	1 123	329	3 588	(d) 71	3 322	6 952	228	890
1998	37	1 107	341	2 849	(d) 110	3 607	6 653	119	...
1999	52	...	275	3 136	...	3 688	6 502	110	...
2000	45	...	206	2 177	...	3 375	6 676	106	880
2001	44	...	328	1 731	...	4 299	4 802	101	...

*continued*

## Scotland production of limestone by end-use 1990–2001

Year	Building stone	For constructional uses (a)			For other uses				
		Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Agricultural use	Iron and steel
		Sold coated	For coating at remote plants	Uncoated					
1990	—	45	—	187	...	...	...	98	—
1991	—	...	—	214	...	...	446	...	—
1992	—	...	—	249	—	...	114	...	—
1993	—	...	—	217	—	—	132	84	—
1994	—	...	—	249	—	—	178	...	—
1995	...	...	—	114	—	...	79	...	—
1996	—	...	—	97	—	...	108	...	—
1997	—	41	—	86	—	20	107	...	—
1998	...	38	—	53	—	10	123	(d) 125	—
1999	(d) 4	...	—	80	—	11	144	...	—
2000	...	...	—	90	—	17	149	...	—
2001	...	...	—	127	—	24	126	148	—

*continued*

(a) Including dolomite.

(b) For filler in asphalt and as mine dust.

(c) For other fillers, powders and whittings (e.g. in animal feed, polymers, paint, paper and pharmaceuticals).

(d) BGS estimate.

Source: Office for National Statistics.

Thousand tonnes

					Total
Cement	Glass making	Asphalt filler (b)	Other fillers (c)	Other uses	
...	252	...	...	...	95 762
...	231	...	...	...	86 762
...	221	...	...	...	81 338
...	222	...	...	...	84 123
...	251	247	...	3 316	95 448
...	257	260	...	2 867	85 379
...	...	211	...	2 961	75 633
...	...	213	...	3 045	79 342
...	255	...	...	2 775	79 780
...	...	...	...	...	75 820
...	115	...	...	2 983	74 954
...	...	109	...	...	79 902

Thousand tonnes

					Total
Cement	Glass making	Asphalt filler (b)	Other fillers (c)	Other uses	
...	—	1	33	—	19 472
...	—	5	...	—	18 986
...	—	—	—	—	18 262
...	—	35	—	—	20 330
...	—	—	26	—	20 883
...	—	...	31	—	19 249
...	—	—	...	—	18 863
...	—	—	...	—	17 752
...	—	...	...	—	17 136
...	—	...	...	...	17 220
...	—	12	...	...	15 543
...	—	—	8	...	14 238

Thousand tonnes

					Total
Cement	Glass making	Asphalt filler (b)	Other fillers (c)	Other uses	
...	—	...	...	...	1 778
...	—	...	5	...	2 018
...	—	...	...	...	1 410
...	—	...	...	...	1 432
...	—	...	...	—	1 650
...	—	...	...	—	1 540
...	—	...	...	—	1 607
...	—	...	...	—	1 624
...	—	...	...	—	1 535
...	—	...	...	—	1 507
...	—	...	...	—	1 722
1 218	—	...	...	—	1 733

## Great Britain consumption of dolomite, limestone and lime in iron and steel production, 1970–2001

Thousand tonnes

Year	Dolomite, incl. calcined dolomite (dolime)			Limestone			Lime	
	Blast furnaces and sinter plants	Steel furnaces	Other purposes	Blast furnaces and sinter plants	Steel furnaces	Other purposes	Steel Furnaces	Other purposes
1970	532.3	250.1	0.3	2 351.0	713.1	313.4	1 481.6	18.9
1971	454.8	186.2	0.1	2 072.6	570.0	281.4	1 254.0	18.1
1972	391.5	166.1	0.1	2 023.1	479.9	306.1	1 396.1	18.6
1973	445.7	156.6	7.6	2 291.4	518.1	288.0	1 531.6	22.0
1974	468.4	94.9	8.0	1 784.8	302.9	161.9	1 250.6	11.0
1975	299.5	89.6	7.7	1 735.1	280.3	65.3	1 204.6	8.2
1976	516.5	150.3	0.3	1 776.6	333.9	6.5	1 287.6	35.8
1977	642.7	192.2	—	1 487.4	252.1	5.2	1 174.5	14.1
1978	647.0	182.5	—	1 399.3	106.3	—	1 227.0	—
1979	858.7	323.2	—	1 089.6	116.2	—	1 322.6	—
1980	389.2	182.4	—	611.2	6.6	—	662.6	—
1981	400.0	307.9	—	1 030.5	1.9	—	911.2	—
1982	280.0	255.0	—	887.6	2.1	—	798.5	—
1983	400.0	298.4	—	1 164.2	0.5	—	864.8	—
1984	405.4	309.8	—	1 143.4	0.6	—	824.3	—
1985	424.7	284.1	—	1 562.0	—	—	801.3	—
1986	333.3	270.2	—	1 493.9	1.8	—	680.4	—
1987	405.1	275.0	—	1 827.3	—	—	760.9	—
1988	477.2	319.1	—	1 948.1	—	—	810.4	—
1989	429.5	315.2	—	2 061.5	—	—	822.0	—
1990	410.4	287.1	—	1 991.9	—	—	777.5	—
1991	323.0	264.4	—	2 124.1	—	—	695.7	—
1992	390.7	246.3	—	2 032.7	—	—	681.5	—
1993	276.4	238.2	—	2 077.0	—	—	719.3	—
1994	201.4	264.4	—	2 235.7	—	—	766.8	—
1995	66.9	315.8	—	2 317.5	—	—	787.3	—
1996	58.5	397.4	—	2 224.7	—	—	743.9	—
1997	41.6	462.2	—	2 445.2	—	—	750.5	—
1998	3.4	492.0	—	2 411.2	—	—	739.0	—
1999	5.4	364.1	—	2 408.3	—	—	698.4	—
2000	1.3	336.7	—	2 166.0	—	—	660.1	—
2001	7.2	257.2	—	1 890.9	—	—	563.6	—

Source: Iron and Steel Statistics Bureau.

This table shows the consumption of fluxes used in iron and steelmaking. Dolomite and limestone are used in blast furnaces and in sinter plants, whilst lime and calcined dolomite, or dolime, are used in steelmaking. These figures do not entirely agree with those shown on p.61 for the production of limestone, dolomite and chalk for iron and steelmaking, even allowing for the conversion of lime and dolime to carbonate.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Limestone</b> —see Building and dimension stone										
<i>Production</i>										
Limestone	87 752 000	89 274 000	86 933 000	84 348 000	88 238 000					
Dolomite	17 282 000	15 632 000	13 698 000	13 069 000	14 314 000					
<i>Imports</i>										
Dolomite	184 282	219 824	228 874	174 353	188 312	5 678	6 235	4 198	3 798	3 671
Limestone flux (a)	4 773	1 602	2 146	4 035	7 613	309	307	552	704	1 025
Lime	4 644	1 298	1 957	3 191	3 877	593	183	304	509	364
<i>Exports</i>										
Dolomite	(c) 124 009	137 128	(c) 91 489	(c) 112 875	(c) 131 073	(c) 6 199	8 076	(c) 4 358	(c) 4 947	(c) 4 653
Limestone flux (a)	556 689	192 715	145 544	232 480	81 519	5 674	3 756	5 187	4 180	2 094
Lime	69 136	92 881	124 910	125 104	113 753	4 287	6 512	9 037	9 047	9 404
<b>Chalk</b>										
<i>Production</i> (b)										
	9 550 000	9 934 000	9 667 000	9 213 000	8 205 000					
<i>Imports</i>										
	55 255	47 700	17 409	5 566	3 465	2 178	1 863	1 300	365	310
<i>Exports</i>										
	65 414	47 829	43 367	25 266	23 952	8 548	6 327	3 836	2 698	1 898

(a) Including calcareous stone commonly used for the manufacture of lime or cement.

(c) Crude.

(b) Great Britain only. There is a small, undisclosed production in Northern Ireland.



## Great Britain production of dolomite by end-use and area of origin 2001

Thousand tonnes

Area of origin	Building stone	Constructional use (a)	Agricultural use (b)	Other uses (b)	Total
North East	...	3 040	...	447	3 802
Yorkshire and Humberside	22	...	35	...	3 816
East Midlands	4	2 544	39	758	3 344
South West	—	...	...	—	...
West Midlands	—	370	33	—	403
<b>England</b>	...	...	<b>426</b>	...	...
<b>Wales</b>	...	...	...	...	...
<b>Scotland</b>	—	...	...	—	...
<b>Great Britain</b>	<b>34</b>	<b>12 381</b>	...	...	<b>14 314</b>

(a) Data also included in table for 'Limestone'.

Source: Office for National Statistics.

(b) Including material for calcination.

## Great Britain production of dolomite by end-use 1990–2001

Thousand tonnes

Year	Building stone	Constructional use (a)	Agricultural use (b)	Other uses (b)	Total
1990	154	17 239	1 259	2 022	20 674
1991	70	...	2 096	...	19 454
1992	...	...	2 114	...	18 539
1993	14	15 394	999	1 578	17 985
1994	(c) 13	(c) 15 136	1 070	1 397	17 616
1995	14	(c) 15 236	...	...	17 966
1996	(c) 21	(c) 13 662	(c) 1 321	(c) 1 551	16 555
1997	(c) 10	14 465	...	...	17 282
1998	10	13 070	...	...	15 632
1999	14	11 833	...	...	13 698
2000	15	11 409	...	...	13 069
2001	34	12 381	...	...	14 314

(a) Data also included in table for 'Limestone'.

Source: Office for National Statistics.

(b) Including material for calcination.

(c) BGS estimate.

## England (d) production of dolomite by end-use 1990–2001

Thousand tonnes

Year	Building stone	Constructional use (a)	Agricultural use (b)	Other uses (b)	Total
1990	57	...	...	...	17 757
1991	70	...	...	...	16 602
1992	...	...	...	1 397	...
1993	13	...	918	...	...
1994	(c) 13	...	...	...	...
1995	14	...	...	...	...
1996	(c) 21	...	1 230	...	...
1997	(c) 10	11 607	1 070	(c) 1 593	14 280
1998	...	11 289	...	...	13 723
1999	...	9 681	...	...	11 485
2000	15	9 509	...	...	11 120
2001	...	...	426	...	...

(a) Data also included in table for 'Limestone'.

(d) Small amounts of dolomite are also produced in Wales and very minor amounts in Scotland.

(b) Including material for calcination.

(c) BGS estimate.

Source: Office for National Statistics.

## Great Britain production of chalk by end-use and area of origin 2001

Thousand tonnes

Area of origin	Cement	Construc- tional use	Agricultural use	Fillers, powders, whitings	Other uses	Total
Humberside	950	...	...	...	...	2 986
North Yorkshire	—	41	15	—	—	55
<b>Yorkshire and Humberside</b>	<b>950</b>	...	...	...	...	<b>3 041</b>
Lincolnshire	—	...	...	—	...	...
<b>East Midlands</b>	—	...	...	—	...	...
Cambridgeshire	472	—	...	...	—	...
Norfolk	—	4	47	—	—	52
Suffolk	—	—	...	9	35	...
Essex	—	—	10	—	—	10
Hertfordshire	—	3	28	—	—	31
Bedfordshire	919	1	5	—	—	924
<b>East of England</b>	<b>1 390</b>	<b>8</b>	...	...	<b>36</b>	<b>1 689</b>
Berkshire	—	2	16	—	—	19
Buckinghamshire	—	—	...	—	—	...
East Sussex	—	—	—	—	...	...
Hampshire	—	—	...	—	...	...
Isle of Wight	—	29	12	—	—	41
Kent	1 796	...	...	—	—	1 839
Surrey	—	8	—	—	—	8
West Sussex	—	2	22	—	—	24
<b>South East</b>	<b>1 796</b>	...	<b>140</b>	—	...	<b>2 000</b>
Devon	—	53	...	—	—	...
Dorset	—	...	...	—	—	...
Wiltshire	974	—	...	35	—	...
<b>South West</b>	<b>974</b>	...	...	<b>35</b>	—	...
<b>Great Britain (England)</b>	<b>5 111</b>	<b>925</b>	...	...	...	<b>8 205</b>

Source: Office for National Statistics.

## England production of chalk by end-use 1990–2001

Thousand tonnes

Year	Cement	Construc- tional use	Agricultural use	Fillers, powders, whitings	Other uses	Total
1990	...	1 309	645	545	...	13 129
1991	7 057	1 036	547	...	...	10 317
1992	...	1 260	435	483	...	9 171
1993	(a) 5 839	914	466	500	(a) 1 358	9 076
1994	(a) 6 731	976	574	479	(a) 1 476	10 236
1995	(a) 6 343	828	...	488	...	9 949
1996	(a) 5 697	1 039	(a) 624	...	...	9 239
1997	(a) 6 157	768	590	...	...	9 550
1998	(a) 6 736	768	...	397	...	9 934
1999	(a) 6 345	1 021	...	...	...	9 667
2000	(a) 6 288	683	...	352	...	9 213
2001	5 111	925	...	...	...	8 205

(a) BGS estimate.

Source: Office for National Statistics.

# Lithium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Lithium</b>										
<i>Imports</i>										
Oxide and hydroxide	602	589	389	376	374	1 494	1 430	916	973	1 222
Carbonate	2 070	1 925	818	779	499	3 264	2 314	1 133	1 197	851
<i>Exports</i>										
Oxide and hydroxide	103	134	85	116	95	352	487	333	346	663
Carbonate	342	397	308	285	214	591	509	454	623	296

# Magnesia

Britmag Ltd, the seawater magnesia and derivative products producer based at Hartlepool, was placed into administration in February 2002. The company, which was owned by KHSL Industries Ltd of Kolkata (Calcutta), had been experiencing difficult trading conditions for some time. The non-refractory assets of Britmag Ltd were sold to a management buyout in March 2002 and the new company trades under the name CJC Chemicals & Magnesia Ltd. The new company will no longer produce refractory grades of magnesia but intended to focus on the production of higher purity magnesia products with different reactivities, chemistry and particle sizes, including magnesium oxide and hydroxide powder products. Subsequently this product line was sold to Premier Chemicals LLC of the US and production of these powders will be shifted to Florida. In the future, the Hartlepool plant will be concentrating on the production of high purity magnesium hydroxide slurry products, which are used as neutralising agents for water and effluent treatment. This market is currently confined to the UK but possible markets exist in Europe.

The Hartlepool magnesia plant was established in 1937 and its owners, the Steetley Co Ltd, pioneered the process for the recovery of magnesia from seawater and became the world's first producer of dead-burned magnesia, using seawater and calcined dolomite (dolime). The latter is obtained from the Thrislington quarry in Durham. Ownership of the Hartlepool plant transferred to Redland PLC in 1992, with the acquisition of Steetley, and KHSL Industries subsequently acquired the plant in 1997.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Magnesia</b>										
<i>Imports</i>										
Dolomite	184 282	219 824	228 874	174 353	188 312	5 678	6 235	4 198	3 798	3 671
Magnesite	11 190	12 176	38 325	24 541	7 122	3 008	2 067	3 477	2 236	693
Magnesia–										
Dead burned	69 615	67 679	59 682	34 158	32 207	15 918	12 422	11 154	7 206	7 128
Caustic-calcined	77 190	71 862	57 399	82 680	73 952	13 565	11 242	7 914	8 101	7 065
Other	6 583	7 626	5 789	10 522	2 830	3 683	2 839	2 653	4 050	2 510
Kieserite	8 785	3 733	731	4 327	6 512	1 041	649	437	735	765
Magnesite or chrome-magnesite refractory bricks and shapes (a) (b)	10 068	26 063	28 326	69 081	83 447	7 113	7 197	4 221	8 914	6 632
<i>Exports</i>										
Dolomite	(c) 124 009	137 128	(c) 91 489	(c) 112 875	(c) 131 073	(c) 6 199	8 076	(c) 4 358	(c) 4 947	(c) 4 653
Magnesite	175	234	53	89	78	120	147	90	85	41
Magnesia–										
Dead burned	5 234	8 483	5 195	632	1 044	818	1 176	852	170	310
Caustic-calcined	4 883	2 657	1 961	6 419	4 097	1 643	1 333	1 370	2 856	1 449
Other	48 657	35 615	29 854	36 784	34 882	22 250	18 298	16 780	17 537	16 322
Magnesite or chrome-magnesite refractory bricks and shapes (a) (b)	63 302	65 736	62 698	85 856	88 896	33 775	34 214	27 034	25 579	31 365

(a) Fired bricks and shapes only: unfired (chemically bonded) products excluded.

(b) Including dolomite bricks.  
(c) Crude.

# Magnesium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Magnesium</b>										
<i>Consumption</i>										
Magnesium and alloys (a)	11 600	5 100	9 000	12 700	15 800					
<i>Imports</i>										
Ferro-silico-magnesium	11 374	9 671	8 565	6 965	5 318	7 802	6 465	5 171	3 790	3 007
Scrap	3 317	4 822	7 275	9 670	11 385	3 676	5 733	8 921	9 607	11 299
Unwrought	8 412	7 465	5 930	7 067	6 679	14 729	12 697	9 194	10 725	8 416
Unwrought alloys	637	1 029	2 507	3 261	2 247	1 076	1 641	3 192	3 859	2 800
Wrought	1 856	1 756	2 853	4 250	2 326	5 203	5 424	7 532	5 948	5 193
<i>Exports</i>										
Ferro-silico-magnesium	722	252	367	1 543	1 453	823	265	376	1 011	1 033
Scrap	185	68	167	108	169	393	111	139	122	229
Unwrought	234	252	359	...	341	475	597	636	385	478
Unwrought alloys	3 883	6 049	8 087	10 646	11 879	10 095	15 060	17 139	20 220	25 702
Wrought	1 157	1 072	1 122	667	339	5 171	3 557	2 960	2 941	2 444

(a) BGS estimates.

# Manganese

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Manganese</b>										
<i>Consumption in Iron and Steel Industry</i>										
Ore	36 300	21 500	14 300	35 700	3 800					
Ferro-manganese	133 790	125 230	117 720	111 450	96 450					
Ferro-silico-manganese	33 650	31 500	29 930	27 830	25 050					
Apparent consumption (a)	166 000	135 000	115 000	123 000	102 000					
<i>Imports</i>										
Ores and concentrates	71 233	28 300	8 234	2 956	2 701	2 826	2 286	1 585	942	534
Ferro-manganese	135 902	111 500	90 301	91 053	73 507	43 140	32 486	25 673	26 088	22 499
Ferro-silico-manganese	38 261	49 448	53 965	66 279	53 747	12 492	15 092	14 342	18 021	15 465
Scrap	0	46	2	217	220	0	39	4	156	205
Unwrought	6 572	8 468	6 644	7 880	8 926	6 916	10 417	5 287	6 163	7 437
Wrought	653	282	638	523	490	771	787	621	823	640
Oxides	4 997	4 869	4 422	5 795	5 344	1 899	1 802	1 843	3 939	1 868
<i>Exports</i>										
Ores and concentrates	1 009	1 196	490	290	714	253	356	255	559	382
Ferro-manganese	1 578	2 878	452	1 327	792	1 015	2 280	529	1 219	1 342
Ferro-silico-manganese	532	2 456	1 327	1 307	8	264	801	377	313	7
Scrap	85	45	—	38	1	19	222	—	118	1
Metal	(b) 3 300	4 697	(b) 3 800	(b) 3 800	(b) 3 700	(b) 4 700	8 395	(b) 4 400	(b) 3 800	(b) 5 200
Oxides	964	813	725	394	1 146	1 248	960	1 093	763	492

(a) BGS estimates; see p.v.

(b) BGS estimates.

# Marble

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Marble</b>										
<i>Imports</i>										
Dimension stone—										
Unworked	13 995	9 571	8 473	29 015	9 985	7 891	7 094	7 976	7 709	7 727
Worked	22 951	53 489	53 639	32 425	64 637	22 134	27 575	21 566	23 668	28 291
Crushed and powdered	57 618	106 098	130 681	145 496	239 563	3 142	3 330	3 079	3 011	4 002
<i>Exports</i>										
Dimension stone—										
Unworked	4 580	7 332	6 084	8 668	4 140	392	535	425	501	770
Worked	915	601	622	839	526	1 377	1 420	1 366	1 407	1 456
Crushed and powdered	4 420	2 636	8 190	865	4 995	305	189	355	53	148

# Mercury

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Mercury</b>										
<i>Imports</i>										
Elemental	44	8	8	19	5	78	71	220	181	140
Oxide	5	3	1	1	0	74	21	20	7	20
<i>Exports</i>										
Elemental	17	35	5	3	17	134	288	121	71	65
Oxide	3	0	0	0	0	16	0	7	3	2

# Mica

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Mica</b>										
<i>Imports</i>										
Crude (a)	12	29	125	203	344	33	25	75	118	186
Ground	9 036	7 961	6 977	5 355	7 258	1 971	1 899	1 853	1 531	1 699
Waste	8 342	10 379	5 854	8 119	4 016	954	1 168	675	974	478
Worked	783	705	620	691	732	8 071	6 044	6 055	5 003	4 514
<i>Exports</i>										
Crude (a)	78	24	120	68	22	15	29	68	87	23
Ground	5 056	4 686	3 913	3 638	3 758	2 706	3 986	2 293	2 337	2 199
Waste	270	474	254	56	17	454	573	321	63	50
Worked	266	296	262	279	266	3 064	2 883	4 721	2 916	2 481

(a) Including sheets or splittings.

# Molybdenum

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Molybdenum</b>										
<i>Consumption in Iron and Steel Industry (a)</i>										
Industry (a)	2 710	2 540	2 390	2 270	2 040					
Apparent consumption (a) (b)	4 600	3 700	3 800	3 500	4 600					
<i>Imports</i>										
Roasted molybdenite concentrates	14 969	16 133	12 319	9 644	14 327	48 558	45 962	25 709	18 648	28 056
Other ores and concentrates	3 929	1 361	1 553	2 813	2 045	14 157	5 420	3 571	6 030	5 003
Ferro-molybdenum	773	599	792	490	351	2 636	1 902	2 130	1 304	1 041
Scrap	499	447	534	303	449	4 790	3 302	2 715	1 904	2 093
Powders	38	23	31	18	86	502	179	146	217	585
Unwrought	123	209	206	158	175	1 932	3 203	2 629	1 344	2 281
Wrought	199	224	603	366	455	6 192	5 664	5 613	7 192	10 655
Oxides and hydroxides	89	110	65	34	60	327	409	219	225	180
<i>Exports</i>										
Roasted molybdenite concentrates	3 677	2 204	918	181	213	13 877	7 335	1 941	398	451
Other ores and concentrates	39	197	81	136	83	188	692	434	422	285
Ferro-molybdenum	9 029	10 453	8 311	7 251	9 278	38 379	40 082	25 517	23 374	27 156
Scrap	29	33	26	21	167	306	247	217	161	778
Powders	9	25	11	13	55	131	324	293	354	598
Unwrought	2	5	15	5	26	65	60	279	54	186
Wrought	103	185	52	239	798	1 769	1 422	1 388	1 485	2 306
Oxides and hydroxides	30	20	32	7	7	172	123	135	54	58

(a) Metal content.

(b) BGS estimates; see p.v.

# Nepheline syenite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Nepheline-syenite</b>										
Imports	(a) 46 138	34 145	(a) 48 361	(a) 50 363	57 268	...	3 415	...	...	4 142
Exports	10	38	17	36	54	26	19	10	15	16

(a) Exports from Canada and Norway.

# Nickel

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Nickel</b>										
<i>Production</i> (a)	36 100	39 100	39 467	37 976	33 820					
<i>Consumption</i> (b)										
Iron and Steel Industry	18 300	13 800	15 500	15 000	15 200					
Other (c)	19 300	17 100	13 800	19 900	40 600					
Total (d)	37 606	30 891	29 276	34 870	55 802					
<i>Imports</i>										
Matte, oxide sinter etc.	54 534	59 263	57 457	54 768	51 963	127 984	111 763	96 027	156 260	131 751
Ash and residues	186	238	66	15	4	65	142	32	57	13
Scrap	13 181	11 884	15 731	22 644	14 963	17 564	15 069	14 684	26 571	19 571
Ferro-nickel	20 251	11 909	4 470	2 503	7 166	24 947	13 088	3 733	3 424	6 614
Unwrought	17 706	12 538	15 669	18 825	47 030	73 653	39 037	51 657	103 322	117 134
Unwrought alloys	3 424	4 182	7 355	2 095	2 788	19 927	18 890	22 083	15 919	23 788
Oxides	155	98	199	131	145	722	359	459	689	830
<i>Exports</i>										
Matte, oxide sinter etc.	146	58	197	1 634	136	664	232	546	1 772	805
Ash and residues	9 775	6 826	7 390	13 648	7 843	21 898	14 488	11 879	22 682	13 409
Scrap	4 367	5 109	5 432	7 015	7 736	10 802	10 316	9 932	14 383	17 893
Ferro-nickel	4 363	3 376	0	9	104	720	432	1	80	138
Unwrought	18 887	20 502	20 728	21 678	21 670	82 946	68 178	63 402	116 445	104 050
Unwrought alloys	3 558	4 271	3 733	5 203	5 955	30 429	35 147	30 016	49 075	64 131
Oxides	6	8	9	1	1	49	59	28	6	29

(a) Nickel content of refinery products.

(b) Metal content.

(c) Not independently recorded; obtained by subtraction. Believed to include stocks.

(d) Including the nickel content of ferro-nickel and other smelter products.

# Niobium and tantalum

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Niobium and tantalum</b>										
<i>Consumption in Iron and Steel Industry</i>										
Niobium (a)	550	510	480	460	410					
<i>Imports</i>										
Ores and concentrates	0	1	10	9	2	2	72	594	1 026	67
Ferro-niobium	856	1 086	952	1 548	1 261	5 171	6 181	5 344	8 206	8 853
Tantalum	1 463	1 375	1 119	979	1 610	115 391	86 116	99 486	122 081	133 549
Niobium (b)	214	478	262	129	192	2 828	3 760	3 774	3 677	4 431
<i>Exports</i>										
Ferro-niobium	32	32	47	107	280	192	152	283	975	660
Tantalum	349	290	354	569	395	46 586	37 171	51 682	72 265	78 838
Niobium (b)	24	24	...	24	31	424	496	...	558	812

(a) Metal content.

(b) Including rhenium.

# Peat

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Thousand cubic metres					£ thousand				
<b>Peat</b>										
<i>Production</i>	1 619	1 076	1 653	1 626	1 814					
<i>Imports</i>										
Peat and agglomerated peat	247 001	370 035	411 997	407 226	414 833	16 564	23 110	24 303	24 512	25 620
<i>Exports</i>										
Peat and agglomerated peat	61 198	48 832	60 285	38 412	35 551	7 055	4 933	3 614	3 405	2 993

# Perlite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Perlite</b>										
<i>Imports</i>	55 243	47 119	34 632	(a) 94 580	46 250	3 649	2 425	2 507	3 005	2 343
<i>Exports</i>	1 092	2 504	(a) 12 627	(a) 9 614	720	94	234	71	112	103

(a) Figure believed to be too high.

## Petroleum and natural gas (also see Primary fuels)

The oil price began the year at just under US\$20 and rose in the spring to hover between US\$25 and US\$29 for much of the year, ending the year close to US\$30 per barrel.

Government and industry continued to work together through the PILOT initiative to encourage more exploration, increase recovery and cut industry costs. A new DTI CD-ROM was produced summarising licensing and tax regimes and highlighting exploration potential in the North Sea. This is specifically designed to attract new players, particularly from America, to enter the UK for the first time. Several relinquished discoveries and prospects were highlighted and increased participation is expected in the next round of offshore licensing. Companies are also being attracted to purchase other "fallow blocks", and many more of these assets are now highlighted on the PILOT sponsored DEAL and LIFT websites. The larger multi-nationals, who have traditionally lead exploration in the UK are focussing their activities on less mature exploration hot-spots, and it has become government policy to attract new players with lower overheads who can generate profits from smaller discoveries.

The Government increased tax on oil profits by 10% in the budget, but partially offset the rise with measures to support development including a change from 25% to 100% for first year capital allowances. It was also announced that North Sea royalty would be abolished. Currently royalty applies to fields under agreed development prior to 1982 and the new measures will help investment in the older producing fields. The DTI is also encouraging the third party use of existing infrastructure with the aim of increasing transparency and hence removing another obstacle to development of marginal and satellite developments.

A new "promote" licence is planned, which will allow companies to take a licence without committing to new seismic and well data. The licensees will be given a period of time to work up old data and develop prospects before having to commit to major expenditure.

As part of the scheme to attract new players another initiative is to make more data easily and cheaply available. At present the release of data in the UK is very restricted and the obligation to store data relies solely with operators and their partners. A new scheme to pass selected data to a National Archive is proposed. This will remove obligations on licensees and former licensees, ensure data is not left in deep storage, and open up a supply of cheap data for analysis by companies wishing to develop new exploration ideas. It is proposed that the National Archive will be run by the British Geological Survey.

The UK and Norwegian governments released proposals for a new treaty making it easier to co-operate to develop reserves close to or straddling the median line.

Trading and asset swaps left the major companies holding fewer licence interests, with companies tending to focus on local areas. Dana, CNR, BG, Gaz de France and First Oil were amongst the largest acquirers of assets, whereas Agip, BP and Kerr-McGee disposed of significant assets. After acquiring Enterprise, Shell is now the largest operator in the UK, followed by ExxonMobil and BP.

### Production

In the Northern North Sea, ExxonMobil announced first production from the Lewis Field (9/13), as a single well tieback to Beryl, with reserves of 11 million barrels. Kerr-McGee started production from Tullich (9/23) and BP from Maclure (9/19). Both fields are subsea tiebacks to the Gryphon FPSO.

In the Central North Sea, Phillips announced the start of production from the Jade Field (30/2, 30/7), originally discovered in 1996. Talisman announced the start-up of the Hannay Field (20/5), as a single well tieback to Buchan, with reserves of 10 million barrels. Talisman also began production from the Halley Oil Field in 30/11 and 30/12, where oil is produced through a single well tied back to the Fulmar platform.

In the Southern North Sea, Shell began production from the Brigantine C and D Fields in 49/19, with gas transported to the Corvette platform. ConocoPhillips began production from the Hawksley and Murdoch K fields, as satellites developed as part of the CMS3 (Caister-Murdoch-System) of five fields, with combined reserves of 430bcf.

Centrica received approval to develop the Bains Field (110/3), with 46-50bcf reserves, tied back to Morecambe South, and was able to begin production in November.

The first gas from the Faroe-Shetland Basin was piped ashore in Shetland. The gas will be used locally for power generation and also piped offshore to Magnus for use in a gas injection scheme on the Magnus Field to boost oil production.

### *Development*

In the Northern North Sea, BP requested approval to develop the HTHP Rhum Field (3/29) with reserves of 23bcf, as a subsea tieback to Bruce. The BP-operated Maclure Field (9/19) was sanctioned as a one well development tied back to the Gryphon floating production facility. DNO is proposing the development of a subsea satellite tied back to Heather with reserves estimated at 40 million barrels of oil. Marathon received approval to develop Braemar (16/3) as a subsea tieback to East Brae.

In the Moray Firth, Shell received approval to develop Goldeneye (14/29), first discovered in 1996. The field has reserves of 500bcf gas and 17-20 million barrels of condensate, which will be produced via a not normally manned platform tied back by pipeline to St Fergus. Production rates are estimated at 300mmscf/d from a Lower Cretaceous reservoir. BP submitted applications to develop Atlantic (14/26) and Cromarty (13/30) using the same export route to St Fergus, but later in the year traded the Atlantic asset with BG.

In the Central North Sea, DTI sanctioned the BP-operated Madoes (22/23b) and Mirren (22/28a) fields to be developed tied back to the ETAPs project. Madoes (30 million barrels plus 25bcf) was discovered in 1997 and will be developed using three wells, and Mirren (13 million barrels plus 57bcf), discovered in 1992 will be tied back using 2 wells. First production from Mirren was achieved in November. DTI also sanctioned re-development of the Argyll Field (30/24) by two new companies, Tuscan and Acorn. The new development is known as Ardmore and is expected to recover more than 20 million barrels of oil by using high-angle/horizontal drilling technology, with export via shuttle tankers. Argyll was the first North Sea oil field in production, and was decommissioned in 1992.

In the southern North Sea, DTI awarded approval for ATP to develop the Helvellyn Field. ATP is now the sole licensee of 47/10d, which was originally awarded to BP in the first offshore round in 1964. BP discovered the Helvellyn Field in 1984, and ATP will now recover 53bcf over 8 years via a single well tied to the BP Amethyst Platform. Approval has also been granted to ConocoPhillips to develop the Viscount Field (49/16) using a not normally manned platform and three producing wells. Gas will be transported via pipeline to the Vampire facilities and then the LOGGS pipeline. Following disappointing drilling results, ExxonMobil decided to cancel development of the Bedevere Field (48/18).

In the Irish Sea, Burlington Resources received approval to develop the Calder Field (110/7), discovered in 1982, with reserves of 250bcf of gas and 49 000 barrels of condensate. The field will be developed using a not normally manned platform tied by a 50 km pipeline to facilities in Barrow. Four further fields (Darwen, Crossans, Hodder and Ashland) will be developed to use the same facilities as production declines on Calder. BHP received approval to develop Douglas West as a single well oil field.

On the Atlantic Margin, BP began a new phase of development on Schiehallion.

### *Exploration*

There was a significant fall in exploration and appraisal drilling on the UKCS, with 39 wells spudded, including several sidetracks and one re-entry. Around half the spuds were classified as exploration, although the trend for rapid development results in some exploration wells becoming production wells. Several exploration wells were drilled from platforms, searching for satellite pools close to existing infrastructure.

In the Northern North Sea, DNO followed up an exploration well on West Heather with successful appraisal. TotalFinaElf reported a gas and condensate discovery in 3/15-9a.

EnCana (PanCanadian) reported a discovery in the Moray Firth in 15/22-16, and drilled several appraisal wells on the Buzzard Field, which is now estimated to have more than 1 billion barrels of oil in place. Talisman, the most active exploration and appraisal company in 2002, reported poor results from a Kildrummy appraisal well (15/12b-4) and decided against development. They were more successful re-entering 21/1a-19 for a series of sidetracks into a Jurassic satellite to the Buchan Field.

In the Central North Sea Dana announced the discovery of a 376 feet reservoir in Amerada well 23/16c-8, and BG announced a discovery in an Armada appraisal well. Murphy drilled the latest in a series of disappointing exploration wells on the Mid North Sea High (38/10-1).

In the Southern North Sea, Shell reported a gas discovery in 49/20b-5 and BP in 49/30a-A5y, now under development as the Boyle Field.

In the Irish Rockall Trough, Shell completed the Dooish exploration well 12/2-1 close to the UK boundary and announced a discovery of hydrocarbons. This may give a much-needed boost to exploration in the UK sector, where ENI-AGIP drilled 164/27-1 without comment. Further north, Amerada undertook the only exploration activity in the Faroe-Shetland Basin, where they plugged and abandoned two wells 204/10-1 and 204/16-1, which unsuccessfully appraised the Marjun discovery in Faoes waters.

### *Licensing*

In February, DTI announced the results of the 10<sup>th</sup> onshore licensing round, and offered 22 petroleum exploration and production licences, including 14 concentrating on mine gas. Many of the licences are awarded on a drill or drop basis.



Licences were awarded to Alkane Energy UK (8 mine gas licences in central Scotland, Cumbria, Yorkshire, the Midlands and Wales); Sterling Resources (Hampshire); Sonorex Oil & Gas (Wales and Somerset); Northern Petroleum (Kent); Black Rock Resources (Hampshire and the Isle of Wight); Stratagas (3 mine gas licences in the Midlands, NW England and Yorkshire); Stag Energy (Nottinghamshire); Warwick Energy (2 licences in Hampshire and Yorkshire); Archean Energy (2 licences in Sussex and Cheshire and Merseyside) and Coalbed Methane Ltd (central Scotland).

The results of the 20<sup>th</sup> Round of offshore licensing included awards to 6 companies new to the North Sea. The new companies are OilExCo, CMS, Montrose, Reach, Egdon Resources and Warwick. The latter two companies have explored onshore in the UK. Twenty-five production licences were awarded to groups made up of 33 companies. Licence terms were reduced to two periods of 4 years each after which there must be complete relinquishment of all acreage not covered by a development plan. Previous licences were for up to 18 years. Data will be released after 3/4 years instead of 5 to encourage further exploration. Licences were awarded in the Moray Firth, Central and Southern North Sea.

### United Kingdom production of onshore crude petroleum and natural gas by fields 1991–2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Oil fields</b>	Thousand tonnes										
Beckingham W	1	1	1	1	1	1	1	1	1	1	1
Cold Hanworth	—	—	—	—	—	—	—	2	2	1	4
Crosby Warren	6	6	6	4	2	3	4	4	1	0	3
Farleys Wood	3	2	2	2	2	0	0	1	0	0	0
Fiskerton Airfield	—	—	—	—	—	—	—	1	19	18	5
Glentworth E	—	—	1	1	1	1	1	2	2	1	1
Goodworth	—	—	—	—	—	—	1	3	2	2	2
Herriard	3	2	2	2	4	3	2	1	1	1	—
Horndean	22	17	20	16	19	17	15	14	13	10	9
Humbly Grove	51	47	52	48	51	36	37	29	24	14	16
Keddington	—	—	—	—	—	—	—	2	5	3	1
Kirklington	1	1	—	—	0	0	0	—	—	—	—
Long Clawson	15	9	8	7	7	8	8	9	10	9	8
Nettleham	25	14	4	3	1	1	6	9	7	5	3
Newton-on-Trent	—	—	—	—	—	—	—	—	2	1	—
Palmers Wood	57	42	45	38	37	24	23	19	10	10	12
Rempstone	2	2	2	2	5	3	3	2	2	1	1
Scampton	—	—	—	—	—	1	2	0	—	—	0
Scampton N	19	15	12	8	8	13	17	12	11	11	11
Singleton	7	21	39	34	35	36	36	27	21	21	23
Stainton	2	2	2	1	1	1	1	1	0	1	1
Stockbridge	45	36	41	78	92	86	79	110	87	42	42
Storrington	—	—	—	—	—	—	—	14	15	8	4
Wareham	77	95	77	66	56	42	32	20	21	15	19
Welton	148	151	132	138	127	153	150	123	90	87	77
West Firsby	4	9	16	12	14	26	27	17	10	8	5
Whisby	4	4	4	4	4	1	0	0	0	0	0
Wytch Farm	3 145	3 423	3 210	4 123	4 543	4 730	4 481	4 690	3 867	2 919	2 656
Other	66	63	61	61	58	53	23	51	44	42	39
<b>Total</b>	<b>3 703</b>	<b>3 962</b>	<b>3 737</b>	<b>4 649</b>	<b>5 067</b>	<b>5 240</b>	<b>4 949</b>	<b>5 161</b>	<b>4 269</b>	<b>3 234</b>	<b>2 944</b>
<b>Gas fields</b>	Million cubic metres										
Wytch Farm	112	147	120	161	182	245	242	156	149	111	115
Others	46	60	107	80	140	137	146	179	161	564	438
<b>Total (a) (b)</b>	<b>158</b>	<b>207</b>	<b>227</b>	<b>241</b>	<b>322</b>	<b>382</b>	<b>388</b>	<b>335</b>	<b>310</b>	<b>675</b>	<b>553</b>

(a) Gross production, i.e. includes own use for drilling purposes, production and pumping operations, but excludes gas flared and vented.

(b) Other than colliery methane.

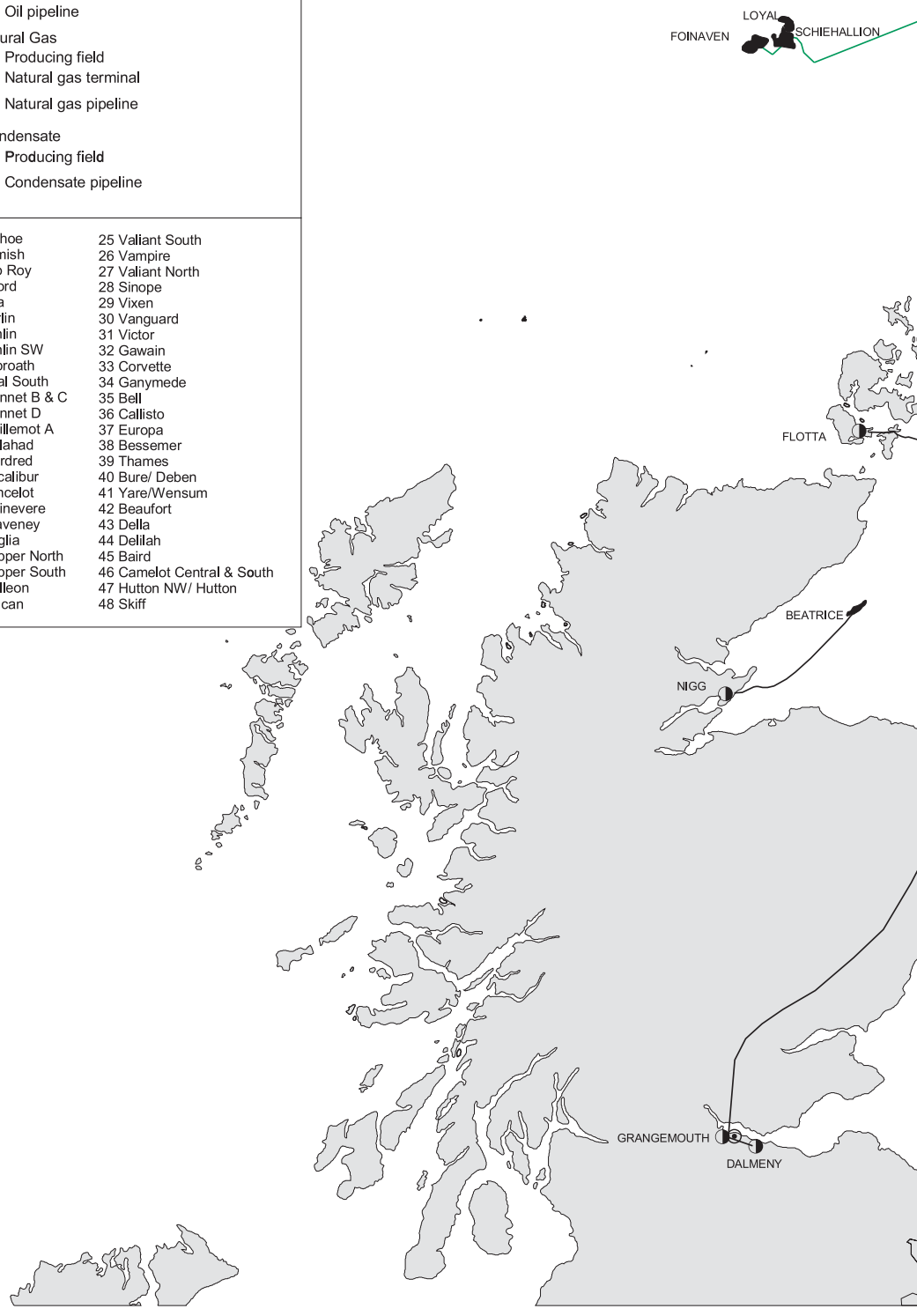
Source: Department of Trade and Industry.

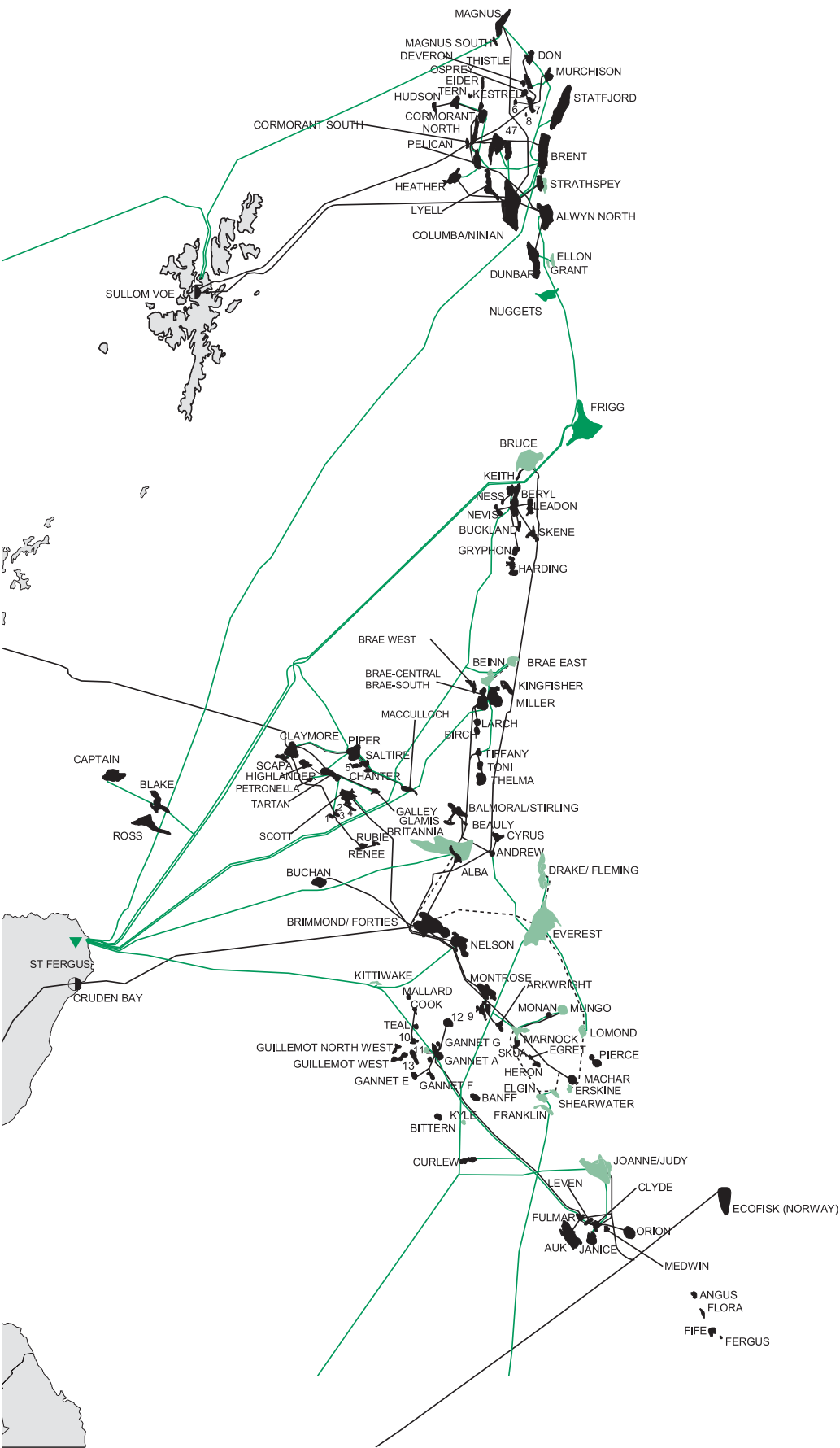
**United Kingdom crude petroleum and natural gas fields (North) 2001**  
 (Source: Department of Trade & Industry and BGS)

<b>Crude Petroleum</b>	
●	Producing field
⓪	Oil terminal
Ⓢ	Oil refinery (over 1 million tonnes annual capacity)
—	Oil pipeline
<b>Natural Gas</b>	
●	Producing field
▼	Natural gas terminal
—	Natural gas pipeline
<b>Condensate</b>	
●	Producing field
- - -	Condensate pipeline

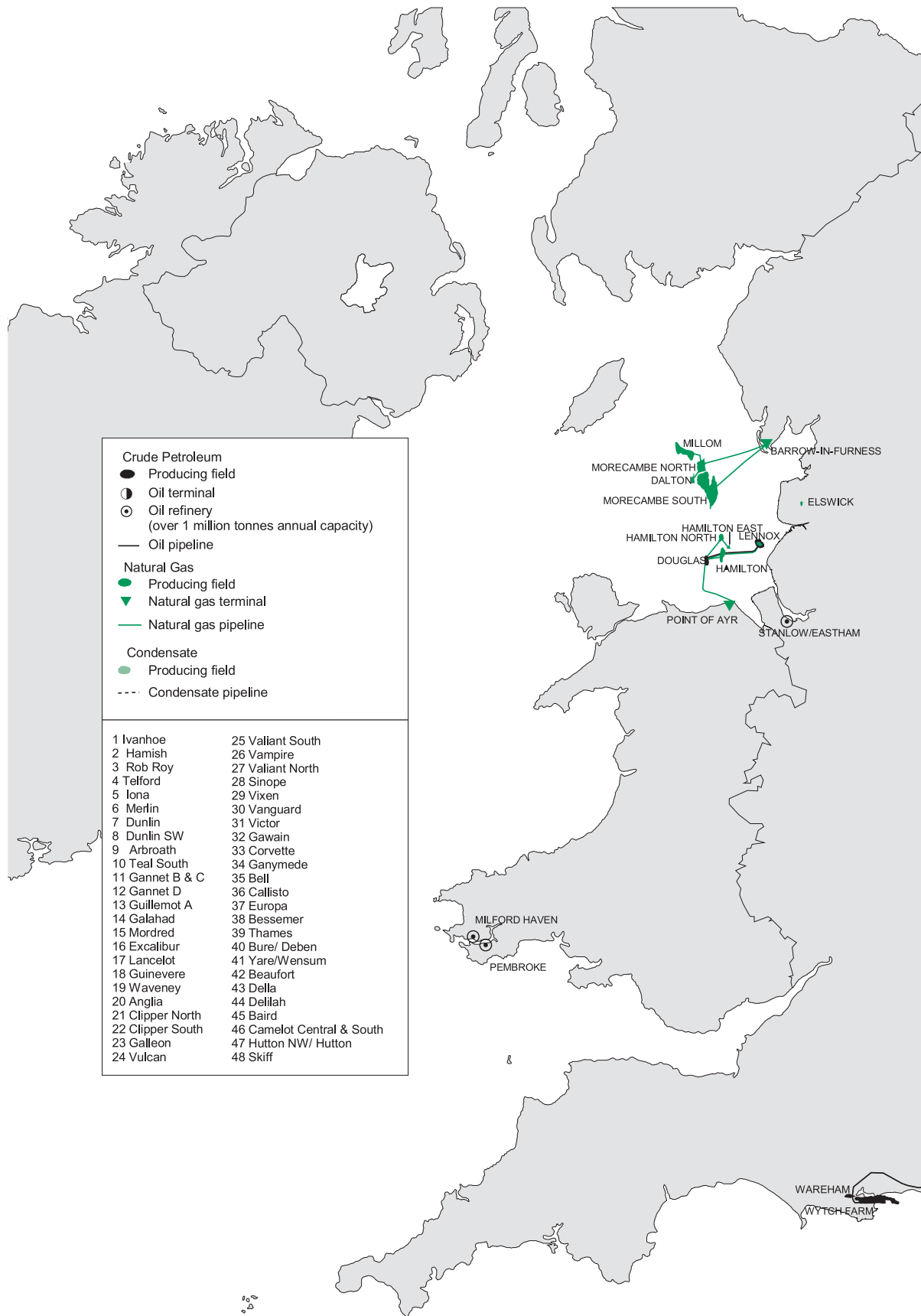
  

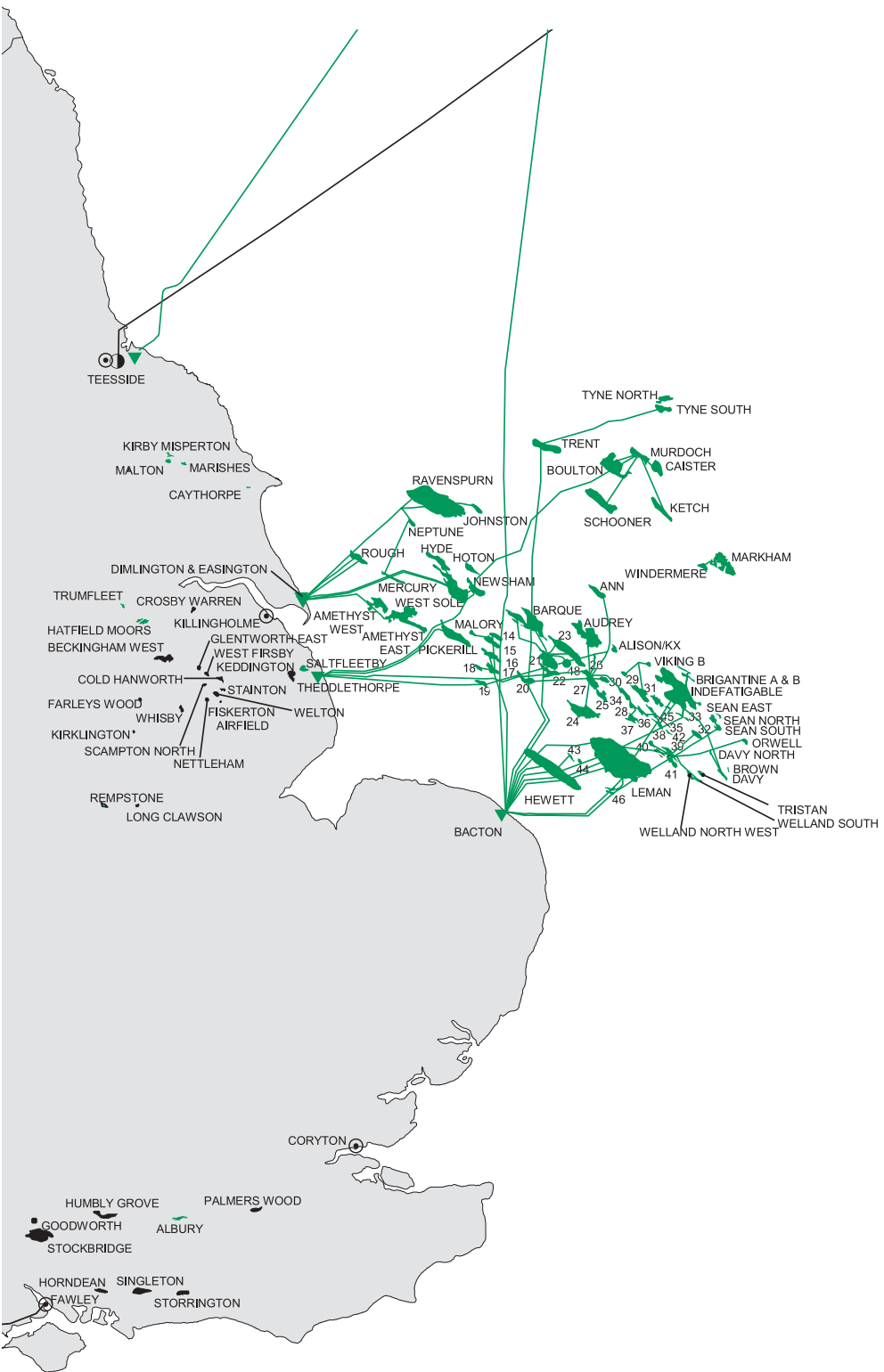
1 Ivanhoe	25 Valiant South
2 Hamish	26 Vampire
3 Rob Roy	27 Valiant North
4 Telford	28 Sinope
5 Iona	29 Vixen
6 Merlin	30 Vanguard
7 Dunlin	31 Victor
8 Dunlin SW	32 Gawain
9 Arbroath	33 Corvette
10 Teal South	34 Ganymede
11 Gannet B & C	35 Bell
12 Gannet D	36 Callisto
13 Guillemot A	37 Europa
14 Galahad	38 Bessemer
15 Mordred	39 Thames
16 Excalibur	40 Bure/ Deben
17 Lancelot	41 Yare/Wensum
18 Guinevere	42 Beaufort
19 Waveney	43 Della
20 Anglia	44 Delilah
21 Clipper North	45 Baird
22 Clipper South	46 Camelot Central & South
23 Galleon	47 Hutton NW/ Hutton
24 Vulcan	48 Skiff





**United Kingdom crude petroleum and natural gas fields (South) 2001**  
 (Source: Department of Trade & Industry and BGS)





## United Kingdom production of offshore crude petroleum and natural gas by fields 1991–2001

Thousand tonnes

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Oil fields</b>											
Alba	—	—	—	2 300	3 772	3 808	4 850	4 381	3 993	4 156	4 319
Alwyn N	3 995	3 613	2 891	1 943	1 391	1 066	966	1 078	1 093	891	810
Andrew	—	—	—	—	—	856	2 798	3 244	3 298	2 540	1 856
Angus	—	1 167	211	—	—	—	—	—	—	—	168
Arbroath	1 584	1 670	1 568	1 503	1 662	1 452	1 109	1 115	1 100	931	778
Argyll	203	186	—	—	—	—	—	—	—	—	—
Arkwright	—	—	—	—	—	65	462	300	185	261	253
Auk	434	354	399	528	607	458	647	784	621	558	392
Balmoral	1 314	1 344	1 011	805	637	410	467	392	354	275	292
Banff	—	—	—	—	—	380	278	—	1 102	711	834
Beatrice	967	724	605	537	473	438	151	365	194	137	97
Beaully	—	—	—	—	—	—	—	—	—	—	480
Beinn	—	—	112	212	391	389	286	214	116	30	47
Beryl	4 596	5 086	4 631	4 159	4 426	4 234	3 748	2 961	2 296	1 621	1 541
Birch	—	—	—	—	286	1 025	768	500	226	94	101
Bittern	—	—	—	—	—	—	—	—	—	1 150	2 404
Bladon	—	—	—	—	—	—	108	283	145	32	—
Blake	—	—	—	—	—	—	—	—	—	—	1 024
Blenheim	—	—	—	—	1 044	846	399	219	141	38	—
Brae Central	630	773	556	518	487	406	385	475	288	242	169
Brae E	—	—	17	2 637	3 323	2 739	2 074	1 459	1 192	837	593
Brae N	2 577	1 825	1 134	876	542	468	363	412	335	280	262
Brae S	927	563	459	521	533	522	443	412	268	250	275
Brae W/Sedgwick	—	—	—	—	—	—	159	1 627	1 505	1 633	1 435
Brent	8 518	10 798	10 906	9 495	9 205	9 468	6 264	6 054	4 536	3 538	2 843
Brimmond	—	—	—	—	—	18	60	80	48	48	31
Britannia	—	—	—	—	—	—	—	555	1 848	1 618	1 319
Bruce	—	—	853	2 090	1 713	1 705	1 289	898	1 845	1 647	1 448
Buchan	802	652	515	602	492	536	445	402	344	351	385
Buckland	—	—	—	—	—	—	—	—	474	1 601	1 141
Captain	—	—	—	—	—	—	1 461	2 836	2 525	2 458	3 107
Chanter	—	—	191	67	92	103	48	15	7	8	6
Claymore	2 553	2 301	2 355	2 235	2 258	2 154	2 096	1 818	1 658	1 564	1 411
Clyde	1 721	1 226	976	761	797	666	698	638	586	450	400
Columba B & D	—	—	—	102	288	579	511	319	243	538	931
Columba E	—	—	—	—	—	—	—	217	170	153	136
Cook	—	—	—	—	—	—	—	—	—	406	876
Cormorant N	1 697	1 406	1 706	2 128	2 074	1 470	1 477	1 638	1 541	1 513	1 469
Cormorant S	1 042	1 050	685	909	810	968	1 012	820	1 023	915	626
Curlew	—	—	—	—	—	—	86	1 438	1 508	817	386
Cyrus	280	66	—	—	—	203	603	541	402	253	181
Dauntless	—	—	—	—	—	—	197	308	38	—	—
Deveron	45	59	58	46	55	58	26	52	40	10	11
Don	258	245	202	207	234	169	108	100	89	69	45
Donan	—	282	486	421	357	283	193	—	—	—	—
Douglas	—	—	—	—	—	768	1 604	1 324	937	779	1 118
Drake	—	—	—	—	—	—	80	282	317	261	226
Dunbar	—	—	—	41	1 822	2 408	2 491	2 101	1 886	1 627	1 440
Duncan	43	36	—	—	—	—	—	—	—	—	—
Dunlin	1 271	1 345	1 124	1 040	961	755	807	643	627	525	574
Dunlin SW	—	—	—	—	—	259	197	236	232	109	88
Durward	—	—	—	—	—	—	273	589	45	—	—
Egret	—	—	—	—	—	—	—	—	383	214	95
Eider	1 684	1 568	1 554	1 224	908	815	654	616	601	356	242
Elgin	—	—	—	—	—	—	—	—	—	—	1 974
Ellon	—	—	—	6	98	140	377	283	129	152	76
Emerald	—	370	899	633	423	41	—	—	—	—	—
Erskine	—	—	—	—	—	—	4	791	883	82	837
Everest	—	—	138	232	262	277	313	286	235	203	230
Fergus	—	—	—	—	—	249	562	276	161	81	57
Fife	—	—	—	—	745	1 624	1 077	820	362	585	449
Fleming	—	—	—	—	—	—	93	507	477	424	367
Flora	—	—	—	—	—	—	—	152	506	495	278
Foinaven	—	—	—	—	—	—	252	3 691	4 262	4 588	4 424
Forties	8 172	7 550	5 841	6 044	5 252	5 140	4 109	3 998	3 227	2 720	2 828
Franklin	—	—	—	—	—	—	—	—	—	—	199
Fulmar	4 992	3 979	2 623	1 955	1 242	1 040	547	468	373	228	172
Galley	—	—	—	—	—	—	—	946	1 333	1 602	1 099
Gannet A	—	—	19	587	956	1 315	1 192	1 015	866	711	553
Gannet B	—	4	85	87	148	97	58	35	29	29	51
Gannet C	—	5	1 295	1 423	1 573	1 640	1 151	919	688	390	417
Gannet D	—	21	320	310	303	389	437	467	359	478	538
Gannet E	—	—	—	—	—	—	—	644	366	369	383
Gannet F	—	—	—	—	—	—	327	464	327	208	148
Gannet G	—	—	—	—	—	—	—	—	261	697	317
Glamis	506	167	226	346	152	72	50	47	36	21	16
Grant	—	—	—	—	—	—	—	138	257	217	170
Gryphon	—	—	222	1 702	2 204	1 879	1 542	1 348	1 094	904	962
Guillemot A	—	—	—	—	—	249	1 026	688	420	283	213
Guillemot NW	—	—	—	—	—	—	—	—	—	20	13
Guillemot W	—	—	—	—	—	—	—	—	—	329	467

continued

United Kingdom production of offshore crude petroleum and natural gas by fields 1991–2001 *continued*

Thousand tonnes

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Oil fields <i>continued</i></b>											
Hamish	143	108	13	23	5	3	17	10	8	6	3
Harding	—	—	—	—	—	1 930	3 860	4 655	4 281	4 328	3 178
Heather	491	449	375	341	295	285	251	225	204	191	222
Heron	—	—	—	—	—	—	—	—	2 369	2 466	1 604
Highlander	686	532	419	415	307	272	149	188	102	160	166
Hutton	—	—	820	1 461	1 504	1 516	1 595	400	1 245	1 227	981
Hutton NW	893	1 110	1 078	1 227	1 186	901	787	581	558	414	147
Iona	392	463	511	347	340	296	308	262	295	83	113
Ivanhoe	—	—	—	—	—	—	28	13	77	53	24
Janice	1 246	1 256	1 343	882	619	520	401	282	239	327	309
Joanne	—	—	—	—	40	258	1 200	1 249	924	537	401
Judy	—	—	—	—	27	99	651	755	532	428	525
Keith	—	—	—	—	—	—	—	—	—	59	293
Kestrel	—	—	—	—	—	—	—	—	—	—	51
Kingfisher	—	—	—	—	—	—	211	1 315	988	804	874
Kittiwake	1 299	1 295	1 400	1 507	1 365	1 056	629	444	228	157	33
Kyle	—	—	—	—	—	—	—	—	—	—	515
Larch	—	—	—	—	—	—	—	169	14	73	170
Leadon	—	—	—	—	—	—	—	—	—	—	158
Lennox	—	—	—	—	—	105	454	894	857	1 376	1 798
Leven	—	149	224	76	83	59	83	42	37	125	90
Linnhe	25	—	—	—	—	—	—	—	—	—	—
Lomond	—	—	67	194	152	181	198	207	182	186	166
Loyal	—	—	—	—	—	—	—	98	931	1 190	925
Lyell	—	—	471	775	449	433	278	215	146	116	117
MacCulloch	—	—	—	—	—	—	583	2 001	1 755	1 354	1 087
Machar	—	—	—	625	839	444	—	396	1 733	1 496	1 310
Magnus	6 352	6 724	6 711	6 812	5 362	4 546	3 091	3 148	3 046	2 924	2 214
Magnus S	—	—	—	—	—	235	383	435	482	311	256
Mailard	—	—	—	—	—	—	—	148	701	459	244
Marnock	—	—	—	—	—	—	—	12	747	982	656
Maureen	1 734	1 215	874	762	516	447	495	474	173	—	—
Medwin	—	—	—	84	53	7	—	—	0	—	—
Merlin	—	—	—	—	—	—	75	677	1 001	619	429
Miller	—	2 801	5 743	6 360	6 422	6 467	5 195	3 441	2 732	2 057	1 383
Moira	171	94	56	55	39	29	17	12	3	—	—
Monan	—	—	—	—	—	—	—	75	560	163	87
Montrose	62	121	87	171	128	90	62	64	55	37	34
Mungo	—	—	—	—	—	—	—	706	1 876	2 440	2 534
Murchison UK	1 116	1 334	819	644	535	681	806	792	744	495	411
Nelson	—	—	—	5 123	6 869	7 082	5 603	4 695	4 515	4 089	2 913
Ness	431	314	292	175	92	80	171	104	123	41	134
Nevis	—	—	—	—	—	184	744	1 084	1 595	1 447	1 146
Ninian	4 247	3 331	3 280	3 236	2 764	2 423	2 367	2 197	2 054	1 723	1 764
Orion	—	—	—	—	—	—	—	—	137	322	263
Osprey	930	1 378	1 649	1 251	1 420	1 299	1 204	764	618	295	450
Pelican	—	—	—	—	—	1 403	1 269	1 282	1 075	717	462
Petronella	541	526	448	428	297	137	119	123	52	61	79
Pierce	—	—	—	—	—	—	—	—	1 416	2 508	1 793
Piper	—	—	2 604	3 811	4 027	3 148	2 416	1 951	1 490	1 156	957
Renee	—	—	—	—	—	—	—	—	715	240	44
Rob Roy	1 692	1 739	1 743	1 889	1 413	1 076	570	289	272	180	185
Ross	—	—	—	—	—	—	—	—	761	1 208	459
Rubie	—	—	—	—	—	—	—	—	185	346	215
Saltire	—	—	698	1 821	1 763	1 831	1 908	1 335	757	479	360
Scapa	1 307	1 403	1 353	1 171	847	947	915	770	638	444	370
Schiehallion	—	—	—	—	—	—	—	1 100	4 183	5 073	4 780
Scott	—	—	1 547	8 048	8 769	7 037	5 569	4 531	4 017	2 771	2 162
Shearwater	—	—	—	—	—	—	—	—	—	82	650
Skene	—	—	—	—	—	—	—	—	—	—	7
Skua	—	—	—	—	—	—	—	—	—	—	195
Staffa	—	266	152	93	—	—	—	—	—	—	—
Stafford UK	4 612	3 202	3 806	4 528	3 931	3 424	3 581	2 346	1 768	1 187	797
Stirling	—	—	—	—	61	42	37	9	16	17	28
Strathspey	—	—	—	1 408	1 686	1 499	1 331	1 006	643	414	352
Tartan	659	440	318	580	453	475	333	332	272	240	177
Teal	—	—	—	—	—	—	1 091	1 123	1 216	1 511	1 040
Teal S	—	—	—	—	—	44	268	122	136	79	86
Telford	—	—	—	—	—	104	1 519	1 521	1 014	1 092	1 141
Tern	2 594	3 579	3 323	3 668	3 326	2 781	2 593	2 287	2 125	1 803	1 681
Thelma	—	—	—	—	—	165	1 309	1 051	905	773	669
Thistle	695	958	876	724	665	536	430	363	305	288	191
Tiffany	—	—	197	1 751	1 802	1 764	1 205	762	425	275	190
Toni	—	—	15	602	1 331	1 057	684	794	655	467	383
Other	—	—	28	83	—	—	94	—	—	202	—
<b>Total</b>	<b>83 129</b>	<b>85 222</b>	<b>90 213</b>	<b>114 383</b>	<b>115 096</b>	<b>116 500</b>	<b>115 395</b>	<b>119 049</b>	<b>124 886</b>	<b>114 830</b>	<b>106 552</b>

*continued*

United Kingdom production of offshore crude petroleum and natural gas by fields 1991–2001 *continued*

Million cubic metres

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Gas fields</b>											
Alison	—	—	—	—	31	128	91	97	18	53	55
Alwyn N (h)	3 145	2 981	3 100	2 508	1 876	1 829	2 039	1 730	1 608	1 288	832
Amethyst E	1 588	1 535	1 338	1 048	991	1 416	848	870	724	612	527
Amethyst W	—	122	400	451	312	421	515	423	262	471	643
Anglia	44	547	545	532	615	439	284	391	296	383	294
Ann	—	—	153	488	399	428	270	140	166	160	85
Audrey	2 097	1 956	1 943	1 458	1 179	1 197	1 171	729	531	624	523
Baird	—	—	24	193	219	459	435	374	311	138	228
Barque	504	804	952	788	577	1 829	2 244	1 503	1 327	2 190	1 823
Barque S	—	—	—	—	6	—	8	2	—	—	—
Beaufort	—	—	—	—	—	—	—	—	—	—	1
Bell	—	—	—	—	—	—	—	—	—	—	319
Bell Conoco	—	—	—	—	—	—	—	—	344	941	343
Bessemer	—	—	—	—	139	777	812	735	692	1 204	391
Boulton	—	—	—	—	—	—	—	925	459	587	299
Brigantine A	—	—	—	—	—	—	—	—	—	—	637
Brigantine B	—	—	—	—	—	—	—	—	—	—	573
Brown	—	—	—	—	—	—	—	(d)	(d)	(d)	(d) 118
Bruce (h)	—	—	1 720	4 481	5 175	6 577	5 613	4 959	5 164	5 678	6 264
Bure	219	106	139	103	58	55	42	64	12	35	21
Bure W	—	—	—	—	—	—	—	22	124	157	128
Caister Bunter	—	—	16	269	388	295	343	235	315	306	375
Caister Carboniferous	—	—	179	646	745	649	642	364	390	257	130
Callisto	—	—	—	—	102	254	254	199	104	24	86
Callisto N	—	—	—	—	—	—	—	—	—	16	119
Camelot C & S	555	691	371	420	526	403	846	563	187	206	150
Camelot N	96	107	55	88	246	84	49	30	1	—	11
Camelot NE	—	—	107	117	10	204	58	2	—	—	—
Captain (h)	—	—	—	—	—	—	—	—	—	—	71
CATS (g)	—	—	941	1 985	1 941	2 334	4 429	10 126	13 605	13 618	13 465
Cleeton	620	667	893	897	997	1 587	1 466	472	5	—	—
Clipper	744	1 109	880	954	621	1 190	1 152	669	598	1 101	903
Corvette	—	—	—	—	—	—	—	—	1 782	1 048	517
Dalton	—	—	—	—	—	—	—	—	267	471	32
Davy	—	—	—	—	197	930	806	(d) 719	(d) 908	(d) 881	(d) 381
Davy N	—	—	—	—	—	—	—	—	—	—	75
Dawn	—	—	—	—	1	170	92	94	102	29	—
Deben	—	—	—	—	—	—	—	66	240	93	28
Delilah	—	—	—	—	—	—	—	42	103	100	87
Dunbar (h)	—	—	—	23	954	1 371	1 359	1 121	1 133	1 216	1 229
Ellon (h)	—	—	—	26	337	521	791	448	162	129	188
Europa	—	—	—	—	—	—	—	—	—	322	451
Esmond	1 128	562	403	233	36	—	—	—	—	—	—
Excalibur	—	—	—	232	811	876	599	681	552	453	427
FLAGS (e)	4 516	6 564	6 482	6 430	6 214	6 459	6 948	7 417	7 596	(k) 10 307	(k) 11 643
Forbes	39	43	2	—	—	—	—	—	—	—	—
Frigg (UK) (h)	890	833	541	863	474	466	191	511	253	367	463
Fulmar (f)	410	529	1 103	1 456	1 854	1 716	1 505	1 890	2 104	(k)	(k)
Galahad	—	—	—	—	106	456	707	509	431	344	337
Galleon	—	—	—	270	518	1 398	1 501	1 493	1 168	1 677	1 635
Galley (h)	—	—	—	—	—	—	—	257	410	460	230
Ganymede	—	—	—	—	532	1 708	1 655	947	669	197	384
Gawain	—	—	—	—	92	929	820	798	666	694	690
Gordon	429	324	157	203	22	—	—	—	—	—	—
Grant (h)	—	—	—	—	—	—	—	322	672	675	557
Guinevere	—	—	144	311	358	243	271	227	232	222	138
Hamilton	—	—	—	—	—	—	1 176	1 752	1 416	1 685	1 933
Hamilton E	—	—	—	—	—	—	—	—	—	—	167
Hamilton N	—	—	—	—	—	625	667	546	454	543	553
Hewett & Della	2 612	2 547	2 164	1 671	1 290	2 188	1 301	1 324	1 133	1 484	1 211
Hoton	—	—	—	—	—	—	—	—	—	—	7
Hyde	—	—	171	415	346	357	284	291	259	219	195
Indefatigable	3 898	3 747	2 773	1 245	1 133	2 139	1 507	2 055	1 345	1 197	1 310
Indefatigable SW	—	—	—	—	63	242	210	179	198	126	188
Ivanhoe & Rob Roy (h)	272	249	221	237	159	152	79	38	48	15	22
Johnston	—	—	—	136	543	585	469	327	540	667	414
Keith (h)	—	—	—	—	—	—	—	—	—	12	79
Ketch	—	—	—	—	—	—	—	—	297	1 233	819
KX	—	—	—	—	27	81	60	62	52	46	58
Lancelot	—	—	495	888	868	685	621	557	761	696	495
Leman	7 451	6 130	4 874	3 584	4 049	3 468	3 013	4 740	3 060	3 957	3 835
Malory	—	—	—	—	—	—	—	126	668	571	449
Markham (UK)	—	57	621	865	933	807	663	514	485	463	350
Mercury	—	—	—	—	—	—	—	—	5	402	627
Miller (i)	—	834	2 126	2 388	2 467	2 534	2 028	1 254	1 109	624	334
Millom	—	—	—	—	—	—	—	—	29	144	1 023
Mordred	—	—	—	—	—	26	82	17	39	43	31
Morecambe N	—	—	—	555	2 399	2 626	2 930	1 294	848	3 872	3 017
Morecambe S	6 730	7 058	8 691	7 444	7 675	7 099	6 170	7 993	9 971	8 436	8 328
Murdoch	—	—	288	1 063	1 110	1 127	1 150	1 376	836	1 197	948
Neptune	—	—	—	—	—	—	—	—	17	1 466	2 007
Newsham	—	—	—	—	—	68	127	94	71	60	44
Nuggets (h)	—	—	—	—	—	—	—	—	—	—	134

*continued*



United Kingdom production of offshore crude petroleum and natural gas by fields 1991–2001 *continued*

Million cubic metres

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Gas fields <i>continued</i></b>											
Orwell	—	—	332	1 028	1 470	789	720	832	667	716	507
Pickerill	—	379	1 812	1 933	1 790	1 345	1 288	879	626	366	351
Piper & Tartan Area (h)	253	186	475	924	1 037	950	633	452	421	396	353
Ravenspurn N	2 519	2 862	2 826	2 494	1 716	2 942	2 968	1 580	1 319	1 294	761
Ravenspurn S	1 558	1 254	1 198	1 164	852	1 253	1 433	1 186	1 006	871	725
Renee/Rubie (h)	—	—	—	—	—	—	—	—	1	...	18
Ross (h)	—	—	—	—	—	—	—	—	28	89	60
Rough (b)	—	—	—	—	—	—	—	—	—	428	17
SAGE (j)	—	846	2 781	3 941	6 829	7 321	8 035	10 398	15 459	16 802	15 449
Schooner	—	—	—	—	—	243	1 245	1 088	1 237	882	917
Sean E	—	—	—	65	501	512	301	227	253	148	124
Sean N & S	422	312	186	493	428	942	639	50	312	581	1 120
Shearwater/Elgin (SEAL)	—	—	—	—	—	—	—	—	—	93	2 207
Sinope	—	—	—	—	—	—	—	—	75	274	20
Skiff	—	—	—	—	—	—	—	—	—	146	843
Thames	683	355	427	228	61	157	119	60	92	90	89
Wensum	20	10	1	2	4	3	3	—	2	—	—
Trent	—	—	—	—	—	80	279	347	521	341	228
Tristan	—	55	254	312	206	27	18	7	90	35	38
Tyne N	—	—	—	—	—	—	76	130	255	222	77
Tyne S	—	—	—	—	—	109	539	435	479	360	321
Valiant N	680	458	305	180	144	277	295	334	172	274	210
Valiant S	1 294	612	764	507	177	349	391	397	298	538	424
Vampire	—	—	—	—	—	—	—	—	367	727	317
Vanguard	375	247	293	134	30	109	120	132	78	166	184
Victor	1 845	1 006	1 226	1 545	1 399	1 657	1 724	1 064	949	970	775
Viking B	949	1 247	741	636	466	628	687	629	2 465	1 542	1 329
Vixen	—	—	—	—	—	—	—	—	—	499	1 035
Vulcan	1 717	1 168	1 611	915	415	656	827	816	584	952	797
Waveney	—	—	—	—	—	—	—	137	741	594	305
Welland NW	931	554	689	534	411	358	386	629	326	212	119
Welland S	177	389	366	229	208	117	173	210	155	76	44
West Sole	1 245	1 163	1 231	1 037	1 214	857	1 224	1 218	1 170	1 050	940
Windermere	—	—	—	—	—	—	279	438	320	273	196
Yare	219	96	126	89	63	51	14	72	21	11	45
Others (c)	2 177	2 437	2 453	2 989	3 016	3 175	3 361	3 719	3 937	3 763	3 821
<b>Total (a)</b>	<b>55 051</b>	<b>55 738</b>	<b>65 109</b>	<b>69 343</b>	<b>75 158</b>	<b>89 514</b>	<b>91 170</b>	<b>95 171</b>	<b>104 760</b>	<b>114 663</b>	<b>112 250</b>

- (a) Gross production, i.e. includes own use for drilling purposes, production and pumping operations, but excludes gas flared and vented.
- (b) Rough was converted for use as an off-peak storage unit with effect from 1985.
- (c) Associated gas, mainly methane, produced and used mainly on Northern Basin oil production platforms including those in the FLAGS and Fulmar systems.
- (d) From December 1998 to January 2001, Davy includes Brown.
- (e) Gas delivered to land via the Far-north Liquids and Associated Gas System from Brent, North and South Cormorant, Kyle, Magnus, Magnus South, Murchison (UK), Pelican, Statfjord (UK), Strathspey and Thistle.
- (f) Gas delivered to land via the Fulmar pipeline from Bittern, Clyde, Cook, Curlew, Fulmar, Gannet A-G, Guillemot A, NW and W, Kittiwake, Leven, Mallard, Medwin, Nelson, Orion, Teal and Teal South.

- (g) Gas delivered to land via the Central Area Transmission System from Andrew, Drake, Egret, Erskine, Everest, Fleming, Heron, Janice, Joanne, Judy, Lomond, Machar, Marnock, Monan, Mungo and Skua.
- (h) Associated gas used offshore or delivered to land via the Frigg pipeline system.
- (i) Gas delivered direct to Boddam (Peterhead) power station by dedicated pipeline.
- (j) Gas delivered to land via the Scottish Area Gas Evacuation system from Beinn, Beryl, Brae, Britannia, Ness, Nevis, Scott, Skene, Thelma, Tiffany and Toni.
- (k) FLAGS includes Fulmar.

Source: Department of Trade and Industry.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001
Tonnes					
<b>Petroleum</b>					
<i>Production</i>					
Crude petroleum	120 344 000	124 210 000	129 155 000	118 064 000	109 496 000
Condensates and other (a)	7 562 000	8 063 000	8 514 000	8 064 000	8 292 000
Refined products	90 366 000	87 096 000	81 987 000	82 739 000	76 930 000
<i>Consumption (inland deliveries) of refined products</i>					
Used as fuels—					
Refineries	6 572 000	6 468 000	5 969 000	5 245 000	5 162 000
Elsewhere	61 548 000	61 246 000	61 238 000	61 582 000	62 023 000
Not used as fuels	10 953 000	10 723 000	10 771 000	10 098 000	8 891 000
<b>Total</b>	<b>79 073 000</b>	<b>78 437 000</b>	<b>77 978 000</b>	<b>76 925 000</b>	<b>76 076 000</b>

- (a) Including ethane, propane and butane, in addition to condensates.

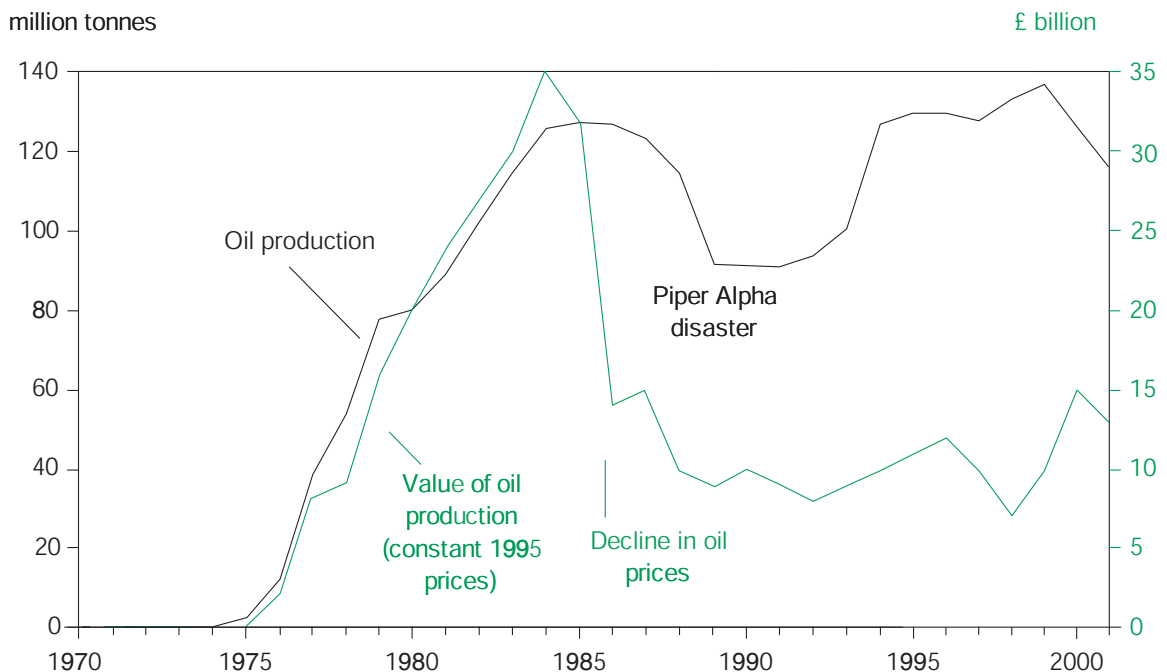
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## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Petroleum continued</b>										
<i>Imports</i>										
Crude petroleum	41 382 610	36 135 627	29 923 937	36 552 593	38 542 685	3 642 242	2 169 886	2 272 835	5 032 686	4 956 773
Partly refined petroleum and refined products	15 598 341	16 706 326	18 606 226	19 181 246	21 565 818	1 553 552	1 358 800	1 890 211	3 302 995	3 539 830
<i>Exports</i>										
Crude petroleum	71 795 525	73 428 795	75 473 136	78 022 274	82 057 946	6 476 176	4 482 384	6 193 458	10 536 029	10 497 748
Partly refined petroleum and refined products	27 109 386	23 591 120	23 238 014	24 620 358	23 050 414	3 167 664	1 980 327	2 343 648	3 977 424	3 454 196
<b>Natural gas</b>										
<i>Production</i>										
Methane (a)										
Colliery	45 000	41 000	41 000	42 000	35 000					
Offshore and onshore	85 805 000	90 106 000	99 024 000	108 457 000	105 753 000					
<i>Consumption</i>										
Natural gas (a)	83 534 000	86 861 000	92 451 000	95 531 000	95 055 000					
<i>Imports</i>										
Liquefied natural gas	511 990	425 264	556 224	1 119 528	1 156 724	70 684	47 609	63 023	147 348	138 255
Other natural gas	997 123	353 550	213 129	1 317 722	1 365 402	101 012	47 340	27 257	122 520	166 063
<i>Exports</i>										
Liquefied natural gas	4 172 425	3 696 891	5 076 713	5 313 838	4 173 082	595 429	324 104	517 783	855 754	719 608
Other natural gas	1 332 378	1 115 013	2 751 384	5 530 250	7 552 590	80 206	79 033	214 090	516 188	776 178

(a) Oil equivalent: converted from original data at 397 therms = 1 tonne.

## United Kingdom production and value of oil, including condensate 1970–2001



# Phosphorus

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Phosphorus</b>										
<i>Imports</i>										
Phosphate rock	38 103	23 410	19 831	13 808	9 223	4 716	3 096	2 366	1 420	1 418
Ammonium phosphates–										
Fertiliser	230 310	162 913	145 087	165 034	145 952	34 039	24 146	22 508	22 164	19 820
Other (a)	5 369	2 858	...	...	...	2 168	2 496	...	...	...
Superphosphates	269 359	261 490	232 851	221 040	230 374	32 038	29 035	25 293	22 777	21 866
Basic slag	...	9 394	8 178	7 888	11 216	...	365	297	385	462
Other phosphatic fertilisers	14 914	17 122	15 910	5 697	21 548	514	1 370	993	508	2 187
Elemental phosphorus	...	15 420	15 227	14 738	14 143	...	16 320	15 829	14 344	15 164
Phosphoric acids	491 141	420 945	408 981	318 645	315 593	72 377	65 624	57 731	50 991	48 085
Calcium phosphates	107 319	138 383	132 034	103 132	112 485	22 544	24 483	25 042	20 763	22 229
Sodium phosphates and orthophosphates	31 065	42 555	(b) 45 587	(b) 49 841	(b) 38 307	13 970	18 871	(b) 19 416	(b) 22 340	(b) 19 472
<i>Exports</i>										
Phosphate rock	425	321	261	1 295	317	254	144	56	269	80
Ammonium phosphates–										
Fertiliser	12 736	9 941	9 560	9 060	1 619	4 779	4 012	3 049	2 596	558
Other (a)	844	377	...	...	...	890	645	...	...	...
Superphosphates	34	24	26	3	4	66	206	76	2	16
Basic slag	85	34	9	3	2	25	22	42	2	1
Other phosphatic fertilisers	1 339	203	415	280	110	270	111	191	458	86
Phosphoric acids	...	25 765	25 970	28 851	21 109	...	9 458	9 660	9 403	8 299
Calcium phosphates	...	25 635	20 845	16 866	17 567	...	13 072	10 549	8 706	8 488

(a) Including polyphosphates.

(b) Excluding polyphosphates.

# Platinum group metals

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Platinum group metals</b>										
<i>Imports</i>										
Scrap	706	384	432	593	729	170 884	157 238	211 107	347 219	329 986
Unwrought or partly worked–										
Platinum	16	17	25	36	18	105 753	62 946	154 395	284 668	188 045
Palladium	25	27	22	34	20	64 747	117 115	94 031	331 739	257 947
Other platinum group	7	9	6	10	6	28 485	38 075	35 088	147 893	90 525
<i>Exports</i>										
Scrap	204	953	924	1 156	1 124	16 257	24 917	23 174	47 972	37 493
Unwrought or partly worked–										
Platinum	67	23	24	32	32	223 066	161 020	177 617	387 533	436 159
Palladium	21	59	13	17	23	71 980	111 976	85 618	218 961	339 248
Other platinum group	16	17	5	8	6	29 909	47 630	43 670	128 442	115 558

# Potash

Potash production at the Boulby mine in north-east England was 0.90 million tonnes KCl in 2002, of which 50 per cent was exported through the company's deepwater terminal on the River Tees. Production was 0.88 million tonnes KCl in 2001. Rock salt production was 0.63 million tonnes in 2002 (0.4 million tonnes in 2001). Salt is mined from the arterial roadways in the underlying Boulby Halite to maintain access to current potash mining areas and to explore and develop new areas for potash production.

The Boulby mine is operated by Cleveland Potash Ltd, a wholly-owned subsidiary of Israel Chemicals Ltd following the acquisition of the company from Anglo American plc in April 2002. With a total output of some 5 Mt/y, Israel Chemicals Ltd is now the second largest potash producer in Europe and the fifth largest in the world.

The Boulby Mine employs some 860 people and is the single most important non-hydrocarbon mineral operation in Britain generating total sales of £80 million in 2002, including by-product rock salt. The workings extend some 12.5 km, reaching 5 km offshore to the north where they are approximately 800 m below the seabed. In the south, a combination of seam dip and topographic relief leaves the workings more than 1300 m below the land surface.

Evaluation of a large carnallite (KCl.MgCl<sub>2</sub>.6H<sub>2</sub>O) resource, lying offshore at Boulby, is under investigation. Construction of a pilot plant was started in 2002 and mining and processing trials will follow.

Work on establishing the infrastructure for returning insoluble waste materials from potash processing back into the mine continued in 2002 and the process will commence in 2003. The work is part funded by a European Commission grant.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Potassium compounds</b>										
<i>Indigenous production</i>										
KCl product	941 000	1 014 000	825 000	966 000	882 000					
<i>Apparent consumption (a)</i>										
Potassic fertilisers (K <sub>2</sub> O content)	490 600	419 200	432 900	404 100	393 800					
<i>Imports</i>										
Crude natural salts	25 038	18 325	20 628	18 050	16 154	1 500	959	1 321	1 235	1 053
Chloride	331 300	209 519	232 983	255 572	335 398	33 868	23 313	30 144	24 824	26 679
Sulphate	11 436	11 579	5 215	10 514	14 243	1 446	1 817	1 121	1 669	2 145
Other potassic fertilisers	630	729	1 021	376	263	481	411	475	199	215
<i>Exports</i>										
Crude natural salts	56	36	18	23	91	75	318	22	58	36
Chloride	(b) 540 000	570 681	(b) 420 000	(b) 630 000	(b) 530 000	...	39 183	...	...	...
Sulphate	3 329	807	905	1 036	264	792	193	202	318	73
Other potassic fertilisers	835	393	207	107	877	1 460	497	185	326	360

(a) Home deliveries plus imports.

(b) BGS estimate.

## Precious and semi-precious stones

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Precious and semi-precious stones (excluding diamond) (a)</b>										
<i>Imports</i>										
Natural stones	193	229	293	234	713	83 569	60 950	61 085	44 708	60 792
Synthetic stones	9	7	5	11	10	6 518	6 719	4 599	5 952	6 994
Dust and powder	0	0	1	1	2	235	260	293	551	715
<i>Exports</i>										
Natural stones	7	26	57	62	21	55 353	53 710	55 674	34 380	49 158
Synthetic stones	1	33	3	1	41	824	1 815	2 364	1 038	1 330
Dust and powder	0	0	3	0	2	59	113	168	43	153

(a) Unworked, cut or otherwise worked, but not mounted, set or strung.

## Primary fuels

### United Kingdom production of primary fuels 1982–2001 (energy supplied basis)

Year	Million tonnes of oil or oil equivalent (a)					
	Coal	Petroleum	Natural gas (b)	Nuclear electricity	Hydro-electricity (c)	Total (d)
1982	76.1	112.5	35.3	11.9	0.4	236.1
1983	72.7	125.5	36.4	13.5	0.4	248.4
1984	30.7	137.6	35.6	14.5	0.3	218.8
1985	56.6	139.4	39.7	16.5	0.4	252.5
1986	65.6	139.1	41.7	15.4	0.4	262.2
1987	63.2	135.1	43.7	14.4	0.4	256.7
1988	63.3	125.5	42.1	16.6	0.4	248.5
1989	60.9	100.4	41.2	17.7	0.4	221.3
1990	56.4	100.1	45.5	16.3	0.4	219.4
1991	57.6	99.9	50.6	17.4	0.4	226.7
1992	51.5	103.7	51.5	18.5	0.5	226.5
1993	41.6	109.6	60.5	21.6	0.5	234.9
1994	29.7	138.9	64.6	21.2	0.4	256.6
1995	32.8	142.7	70.8	21.3	0.5	269.7
1996	31.1	142.1	84.2	22.1	0.3	281.6
1997	30.3	140.4	85.9	23.1	0.4	282.1
1998	25.8	145.3	90.2	23.4	0.5	287.2
1999	23.2	150.2	99.1	22.4	0.5	297.7
2000	19.6	138.3	108.3	19.6	0.5	288.7
2001	20.0	127.8	105.8	20.8	0.4	277.6

(a) Based on a standard 'tonne of oil equivalent' equal to 397 therms.

(b) Including colliery methane.

(c) Including, from 1988, other renewable primary electricity sources (wind, etc.).

(d) Including, from 1988, small amounts of primary heat sources (solar, geothermal, etc.), solid renewable sources (wood, waste, etc.) and gaseous renewable sources (landfill gas, sewage gas, etc.).

Source: Department of Trade and Industry.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Potassium compounds</b>										
<i>Indigenous production</i>										
KCl product	941 000	1 014 000	825 000	966 000	882 000					
<i>Apparent consumption (a)</i>										
Potassic fertilisers (K <sub>2</sub> O content)	490 600	419 200	432 900	404 100	393 800					
<i>Imports</i>										
Crude natural salts	25 038	18 325	20 628	18 050	16 154	1 500	959	1 321	1 235	1 053
Chloride	331 300	209 519	232 983	255 572	335 398	33 868	23 313	30 144	24 824	26 679
Sulphate	11 436	11 579	5 215	10 514	14 243	1 446	1 817	1 121	1 669	2 145
Other potassic fertilisers	630	729	1 021	376	263	481	411	475	199	215
<i>Exports</i>										
Crude natural salts	56	36	18	23	91	75	318	22	58	36
Chloride	(b) 540 000	570 681	(b) 420 000	(b) 630 000	(b) 530 000	...	39 183	...	...	...
Sulphate	3 329	807	905	1 036	264	792	193	202	318	73
Other potassic fertilisers	835	393	207	107	877	1 460	497	185	326	360

(a) Home deliveries plus imports.

(b) BGS estimate.

## Precious and semi-precious stones

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Precious and semi-precious stones (excluding diamond) (a)</b>										
<i>Imports</i>										
Natural stones	193	229	293	234	713	83 569	60 950	61 085	44 708	60 792
Synthetic stones	9	7	5	11	10	6 518	6 719	4 599	5 952	6 994
Dust and powder	0	0	1	1	2	235	260	293	551	715
<i>Exports</i>										
Natural stones	7	26	57	62	21	55 353	53 710	55 674	34 380	49 158
Synthetic stones	1	33	3	1	41	824	1 815	2 364	1 038	1 330
Dust and powder	0	0	3	0	2	59	113	168	43	153

(a) Unworked, cut or otherwise worked, but not mounted, set or strung.

## Primary fuels

### United Kingdom production of primary fuels 1982–2001 (energy supplied basis)

Year	Million tonnes of oil or oil equivalent (a)					
	Coal	Petroleum	Natural gas (b)	Nuclear electricity	Hydro-electricity (c)	Total (d)
1982	76.1	112.5	35.3	11.9	0.4	236.1
1983	72.7	125.5	36.4	13.5	0.4	248.4
1984	30.7	137.6	35.6	14.5	0.3	218.8
1985	56.6	139.4	39.7	16.5	0.4	252.5
1986	65.6	139.1	41.7	15.4	0.4	262.2
1987	63.2	135.1	43.7	14.4	0.4	256.7
1988	63.3	125.5	42.1	16.6	0.4	248.5
1989	60.9	100.4	41.2	17.7	0.4	221.3
1990	56.4	100.1	45.5	16.3	0.4	219.4
1991	57.6	99.9	50.6	17.4	0.4	226.7
1992	51.5	103.7	51.5	18.5	0.5	226.5
1993	41.6	109.6	60.5	21.6	0.5	234.9
1994	29.7	138.9	64.6	21.2	0.4	256.6
1995	32.8	142.7	70.8	21.3	0.5	269.7
1996	31.1	142.1	84.2	22.1	0.3	281.6
1997	30.3	140.4	85.9	23.1	0.4	282.1
1998	25.8	145.3	90.2	23.4	0.5	287.2
1999	23.2	150.2	99.1	22.4	0.5	297.7
2000	19.6	138.3	108.3	19.6	0.5	288.7
2001	20.0	127.8	105.8	20.8	0.4	277.6

(a) Based on a standard 'tonne of oil equivalent' equal to 397 therms.

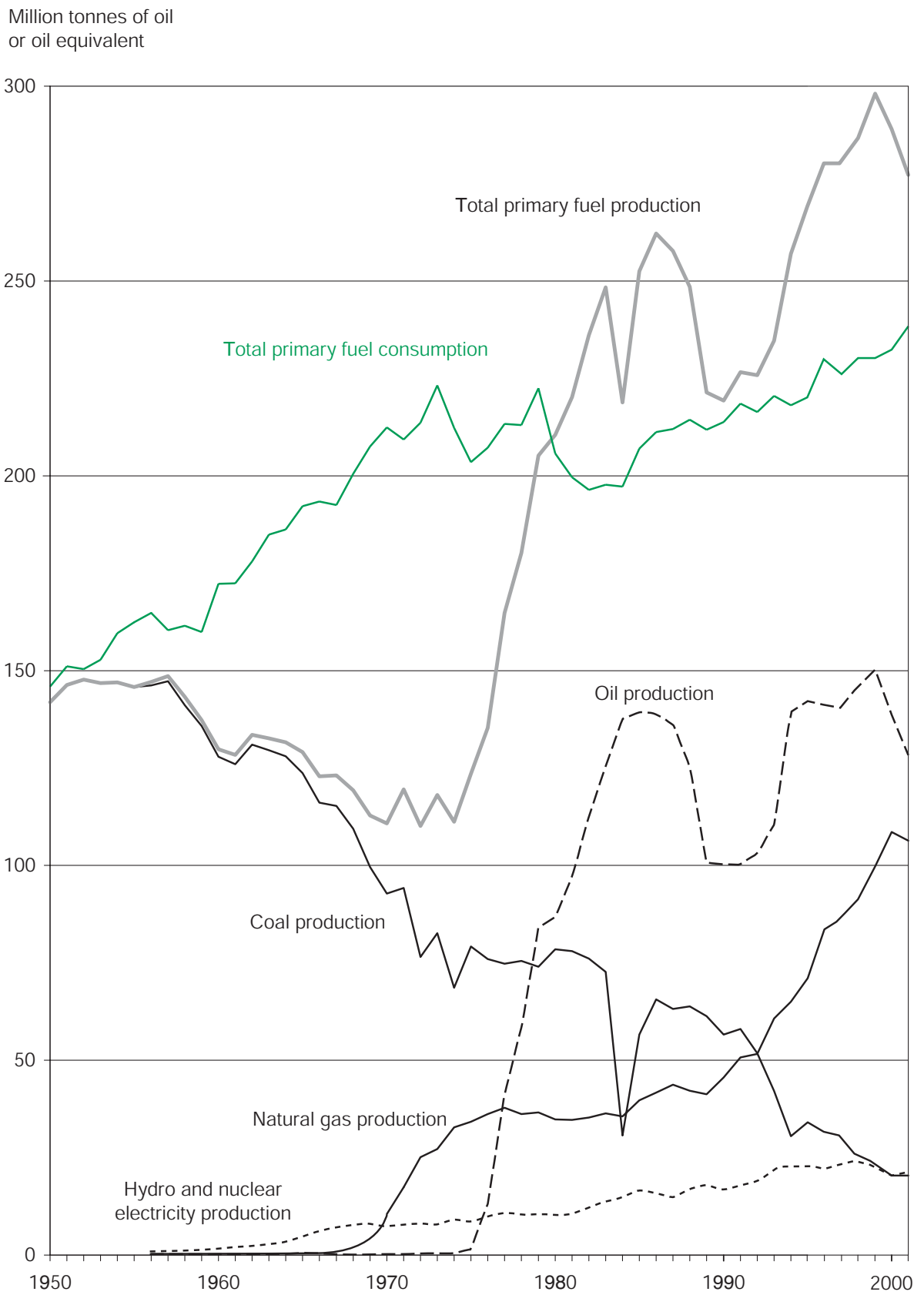
(b) Including colliery methane.

(c) Including, from 1988, other renewable primary electricity sources (wind, etc.).

(d) Including, from 1988, small amounts of primary heat sources (solar, geothermal, etc.), solid renewable sources (wood, waste, etc.) and gaseous renewable sources (landfill gas, sewage gas, etc.).

Source: Department of Trade and Industry.

# United Kingdom production and consumption of primary fuels 1950–2001



## United Kingdom consumption of energy (primary fuel input) 1982–2001 (energy supplied basis)

Million tonnes of oil or oil equivalent (a)

Year	Coal	Petroleum	Natural gas (b)	Nuclear electricity	Hydro-electricity (c)	Net imports of electricity	Total (d)
1982	68.0	70.7	45.2	11.9	0.4	—	196.1
1983	68.6	67.2	47.1	13.5	0.4	—	196.8
1984	48.7	84.7	48.2	14.5	0.3	—	196.4
1985	64.8	72.2	51.8	16.5	0.4	—	205.7
1986	70.0	71.1	52.7	15.4	0.4	0.4	210.0
1987	71.7	69.4	54.1	14.4	0.4	1.0	211.0
1988	69.6	74.0	51.4	16.6	0.4	1.1	213.1
1989	67.0	75.4	49.1	17.7	0.4	1.1	211.4
1990	67.0	77.2	51.2	16.3	0.4	1.0	213.7
1991	67.1	77.1	55.4	17.4	0.4	1.4	219.5
1992	63.1	77.5	55.1	18.5	0.5	1.4	216.8
1993	54.9	78.1	62.9	21.6	0.5	1.4	220.6
1994	51.3	76.7	64.9	21.2	0.4	1.5	217.5
1995	48.9	75.4	69.2	21.3	0.5	1.4	218.4
1996	45.7	77.8	81.0	22.1	0.3	1.4	230.0
1997	40.8	75.5	83.5	23.1	0.4	1.4	226.8
1998	40.9	76.1	86.9	23.4	0.5	1.1	230.8
1999	36.7	76.0	92.5	22.4	0.5	1.2	231.4
2000	38.1	76.1	95.5	19.6	0.5	1.2	233.4
2001	41.5	76.5	95.1	20.8	0.4	0.9	237.7

(a) Based on a standard 'tonne of oil equivalent' equal to 397 therms.

(b) Including colliery methane.

(c) Including, from 1988, other renewable primary electricity sources (wind, etc.).

(d) Including, from 1988, small amounts of primary heat sources (solar, geothermal, etc.), solid renewable sources (wood, waste, etc.) and gaseous renewable sources (landfill gas, sewage gas, etc.).

Source: Department of Trade and Industry.

## Pumice

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Pumice</b>										
Imports	7 441	16 061	40 873	19 210	17 165	1 683	1 670	1 436	2 073	2 377
Exports	343	759	282	379	1 397	332	849	459	719	666

## Pyrite

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Pyrite</b>										
Imports										
Iron pyrites (incl. cupreous) –										
Unroasted	24	29	11	5	220	13	86	13	6	157
Roasted	18 409	25 787	21 649	29 446	17 130	267	362	316	792	351
Exports										
Iron pyrites (incl. cupreous) –										
Unroasted	504	639	497	246	132	290	324	301	149	55
Roasted	21	0	31	—	0	17	2	20	—	10

# Quartz and quartzite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Quartz and quartzite</b>										
<i>Imports</i>										
Quartz	2 648	2 058	1 864	7 714	2 360	1 562	1 053	1 111	1 988	2 321
Quartzite	723	317	339	703	1 052	364	233	365	1 037	865
<i>Exports</i>										
Quartz	48	13	112	87	146	33	13	59	86	65
Quartzite	43	20	294	190	129	44	54	206	563	233

# Radioactive and associated materials

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Radioactive and associated materials</b>										
<i>Imports</i>										
Natural and enriched uranium, plutonium, artificial radioactive isotopes, and their compounds	...	3 537	...	...	...	238 161	215 934	286 899	246 503	322 264
<i>Exports</i>										
Natural and enriched uranium, plutonium, artificial radioactive isotopes, and their compounds	...	3 850	...	...	...	347 028	294 037	312 702	431 878	512 972

# Rare earths

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Rare earths</b>										
<i>Imports</i>										
Rare earth metals (a)	323	136	107	226	172	3 784	2 271	1 610	3 337	2 404
Cerium compounds	1 916	2 039	2 265	2 388	2 227	9 389	9 733	7 161	6 035	8 367
Other rare earth compounds (b)	398	378	543	466	403	4 126	4 107	4 142	3 922	3 021
Ferro-cerium and other pyrophoric alloys	3	85	9	14	1	47	179	1 273	3 745	38
<i>Exports</i>										
Rare earth metals (a)	70	70	352	60	51	1 307	1 485	1 315	897	1 077
Cerium compounds	407	463	374	317	415	1 929	3 747	5 422	4 763	3 976
Other rare earth compounds (b)	595	261	254	354	329	5 421	3 233	2 549	3 716	3 764
Ferro-cerium and other pyrophoric alloys	11	15	23	26	9	106	120	84	...	85

(a) Including yttrium and scandium.

(b) Including yttrium and scandium compounds.

# Salt

Official figures for the production of rock salt and white (or brine) salt have not been published for a number of years. Production of rock salt, which is largely used in winter road maintenance, is dependent on the weather. Production is estimated at about 1.9 million tonnes in 2002. Rock salt is produced at three locations in the UK. The Winsford mine in Cheshire operated by the Salt Union is the largest source, but large tonnages are also produced at the Boulby potash mine (see p.85). The third producer, Irish Salt Mining and Exploration Co Ltd, operates the Kilroot mine in Northern Ireland.



The Salt Union Ltd is part of the Compass Minerals Group, which was a wholly-owned subsidiary of IMC Global until November 2001 when a controlling interest (80 per cent) was acquired by Apollo Management LP. The remaining 20 per cent is still held by IMC Global.

In addition to the extraction of rock salt by underground mining, large quantities of salt are produced by controlled solution mining. Production is now confined to Cheshire, where controlled solution mining is undertaken by two principal companies, INEOS Chlor Ltd and British Salt Ltd. INEOS Chlor supplies brine from the Holford brinefield to its own business for chlorine and caustic soda manufacture, to two plants operated by Brunner Mond in Northwich for the production of soda ash by the ammonia-soda process, and to the Salt Union at Runcorn for white salt production by vacuum evaporation. Until recently INEOS Chlor also extracted brine by controlled solution methods at Saltholme on Teesside, but the company's chlorine plant at Wilton was closed in June 2002 removing the need to extract brine. However, there will be a continuing requirement to extract salt to produce cavity storage.

British Salt Ltd, through its subsidiary British Stasal Ltd, also produces brine from the Warrington brinefield in Cheshire for the production of white salt at its plant near Middlewich. British Salt is a wholly-owned subsidiary of US Salt Holdings. New Cheshire Salt Works Ltd extracts natural brine at the Wincham Brinefield, near Northwich for the production of small quantities of white salt. Total UK production of white (brine) salt is estimated to be about 1.2 million tonnes and salt-in-brine for use as a chemical feedstock 3 million tonnes.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Salt</b>										
<i>Production</i>										
Rock salt (a)	1 800 000	700 000	1 500 000	1 700 000	1 900 000					
Salt from brine (a)	1 300 000	1 200 000	1 200 000	1 200 000	1 200 000					
Salt in brine (b)	3 561 000 (a)	3 500 000 (a)	3 000 000 (a)	3 000 000 (a)	3 000 000					
<i>Imports</i>	242 368	237 284	261 434	...	...	11 796	11 807	11 573	...	...
<i>Exports</i>	284 571	485 815	276 402	307 899	299 607	18 639	18 274	22 125	16 548	17 466

(a) BGS estimate.

(b) Used for purposes other than salt making.

## Sand and gravel (also see Aggregates)

### United Kingdom production of sand and gravel 1982–2001

Year	Million tonnes							
	Land-based production			Marine-dredged			Total production United Kingdom	For beach replenishment (c) (d)
	Great Britain (a)	Northern Ireland (b)	Total	For home market (a)	For export (c)	Total		
1982	79.3	3.7	83.0	11.9	2.9	14.8	97.8	2.1
1983	88.0	3.2	91.2	12.8	3.1	15.9	107.1	1.4
1984	87.1	3.5	90.6	12.6	2.8	15.4	106.0	1.2
1985	87.8	3.6	91.4	13.8	2.5	16.3	107.7	1.7
1986	90.2	4.2	94.4	15.3	2.3	17.6	112.0	2.2
1987	95.4	3.6	99.0	16.2	2.6	18.8	117.8	5.5
1988	110.5	3.9	114.4	19.6	2.4	22.0	136.4	3.9
1989	110.5	4.6	115.1	20.7	2.6	23.3	138.4	4.3
1990	99.0	4.0	103.0	17.2	3.8	21.0	124.0	2.3
1991	85.5	3.8	89.3	12.4	4.6	17.0	106.3	1.9
1992	78.3	3.7	82.0	10.6	6.3	16.9	98.9	1.3
1993	79.4	4.3	83.7	10.1	6.2	16.3	100.0	0.8
1994	86.3	5.1	91.5	11.3	6.6	18.0	109.4	1.3
1995	78.0	5.3	83.3	11.6	6.8	18.4	101.7	5.2
1996	70.5	5.3	75.7	11.5	6.7	18.2	93.9	7.2
1997	74.4	5.1	79.5	12.0	6.9	18.9	98.4	4.9
1998	73.0	5.3	78.3	13.0	7.0	20.0	98.3	2.4
1999	74.8	5.5	80.3	13.4	7.2	20.7	101.0	2.8
2000	74.9	5.1	80.0	14.4	7.3	21.7	101.6	2.4
2001	74.6	6.2	80.8	13.6	7.0	20.6	101.4	1.6

Sources:

(a) Office for National Statistics.

(b) Department of Enterprise, Trade & Investment.

(c) Crown Estate Commissioners.

(d) These figures for marine-dredged sand and gravel used for beach replenishment and contract fill may be included in home market production, and have therefore not been included in the totals.

The Salt Union Ltd is part of the Compass Minerals Group, which was a wholly-owned subsidiary of IMC Global until November 2001 when a controlling interest (80 per cent) was acquired by Apollo Management LP. The remaining 20 per cent is still held by IMC Global.

In addition to the extraction of rock salt by underground mining, large quantities of salt are produced by controlled solution mining. Production is now confined to Cheshire, where controlled solution mining is undertaken by two principal companies, INEOS Chlor Ltd and British Salt Ltd. INEOS Chlor supplies brine from the Holford brinefield to its own business for chlorine and caustic soda manufacture, to two plants operated by Brunner Mond in Northwich for the production of soda ash by the ammonia-soda process, and to the Salt Union at Runcorn for white salt production by vacuum evaporation. Until recently INEOS Chlor also extracted brine by controlled solution methods at Saltholme on Teesside, but the company's chlorine plant at Wilton was closed in June 2002 removing the need to extract brine. However, there will be a continuing requirement to extract salt to produce cavity storage.

British Salt Ltd, through its subsidiary British Stasal Ltd, also produces brine from the Warrington brinefield in Cheshire for the production of white salt at its plant near Middlewich. British Salt is a wholly-owned subsidiary of US Salt Holdings. New Cheshire Salt Works Ltd extracts natural brine at the Wincham Brinefield, near Northwich for the production of small quantities of white salt. Total UK production of white (brine) salt is estimated to be about 1.2 million tonnes and salt-in-brine for use as a chemical feedstock 3 million tonnes.

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Salt</b>										
<i>Production</i>										
Rock salt (a)	1 800 000	700 000	1 500 000	1 700 000	1 900 000					
Salt from brine (a)	1 300 000	1 200 000	1 200 000	1 200 000	1 200 000					
Salt in brine (b)	3 561 000 (a)	3 500 000 (a)	3 000 000 (a)	3 000 000 (a)	3 000 000					
<i>Imports</i>	242 368	237 284	261 434	...	...	11 796	11 807	11 573	...	...
<i>Exports</i>	284 571	485 815	276 402	307 899	299 607	18 639	18 274	22 125	16 548	17 466

(a) BGS estimate.

(b) Used for purposes other than salt making.

## Sand and gravel (also see Aggregates)

### United Kingdom production of sand and gravel 1982–2001

Year	Million tonnes							
	Land-based production			Marine-dredged			Total production United Kingdom	For beach replenishment (c) (d)
	Great Britain (a)	Northern Ireland (b)	Total	For home market (a)	For export (c)	Total		
1982	79.3	3.7	83.0	11.9	2.9	14.8	97.8	2.1
1983	88.0	3.2	91.2	12.8	3.1	15.9	107.1	1.4
1984	87.1	3.5	90.6	12.6	2.8	15.4	106.0	1.2
1985	87.8	3.6	91.4	13.8	2.5	16.3	107.7	1.7
1986	90.2	4.2	94.4	15.3	2.3	17.6	112.0	2.2
1987	95.4	3.6	99.0	16.2	2.6	18.8	117.8	5.5
1988	110.5	3.9	114.4	19.6	2.4	22.0	136.4	3.9
1989	110.5	4.6	115.1	20.7	2.6	23.3	138.4	4.3
1990	99.0	4.0	103.0	17.2	3.8	21.0	124.0	2.3
1991	85.5	3.8	89.3	12.4	4.6	17.0	106.3	1.9
1992	78.3	3.7	82.0	10.6	6.3	16.9	98.9	1.3
1993	79.4	4.3	83.7	10.1	6.2	16.3	100.0	0.8
1994	86.3	5.1	91.5	11.3	6.6	18.0	109.4	1.3
1995	78.0	5.3	83.3	11.6	6.8	18.4	101.7	5.2
1996	70.5	5.3	75.7	11.5	6.7	18.2	93.9	7.2
1997	74.4	5.1	79.5	12.0	6.9	18.9	98.4	4.9
1998	73.0	5.3	78.3	13.0	7.0	20.0	98.3	2.4
1999	74.8	5.5	80.3	13.4	7.2	20.7	101.0	2.8
2000	74.9	5.1	80.0	14.4	7.3	21.7	101.6	2.4
2001	74.6	6.2	80.8	13.6	7.0	20.6	101.4	1.6

Sources:

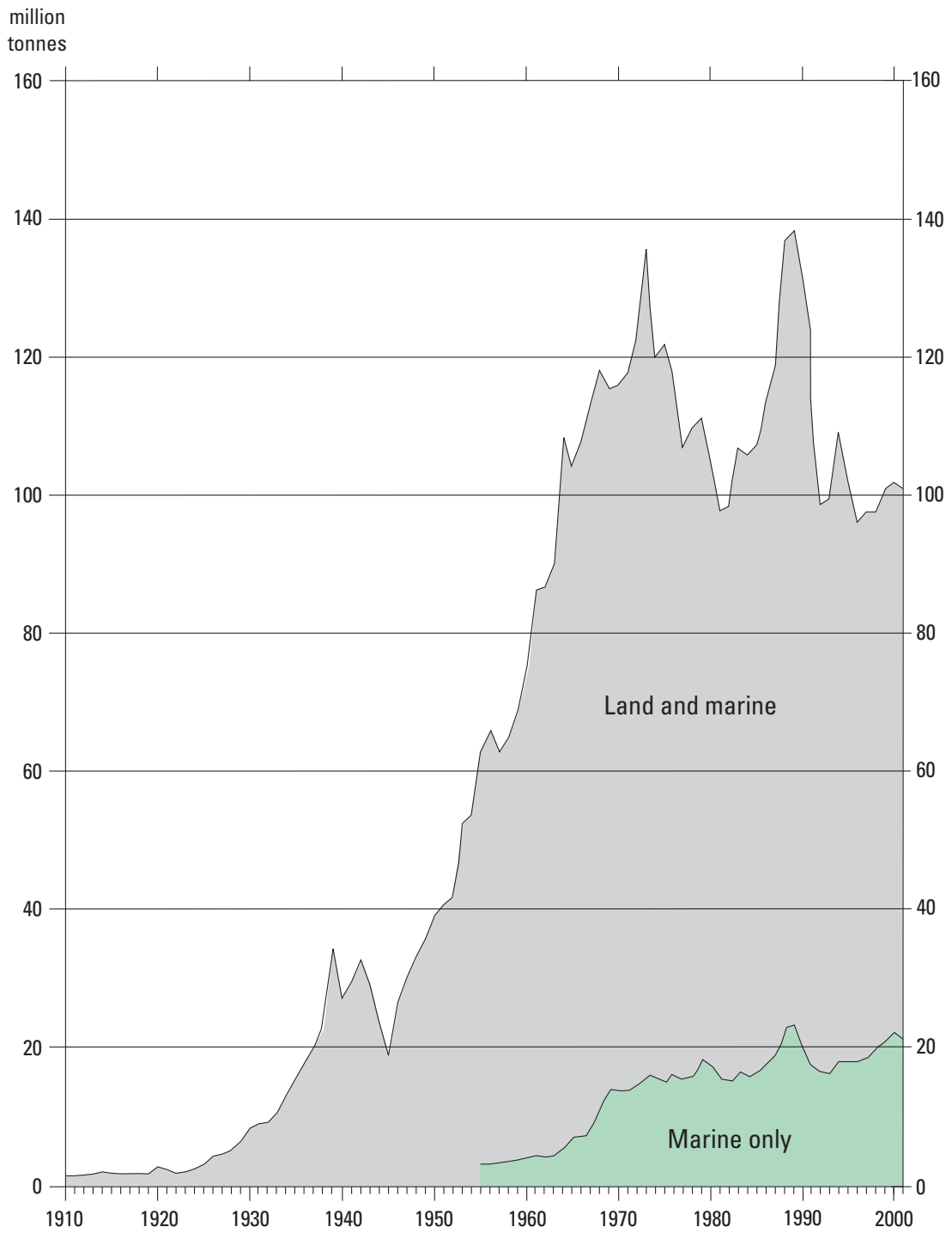
(a) Office for National Statistics.

(b) Department of Enterprise, Trade & Investment.

(c) Crown Estate Commissioners.

(d) These figures for marine-dredged sand and gravel used for beach replenishment and contract fill may be included in home market production, and have therefore not been included in the totals.

# United Kingdom production of sand and gravel 1910–2001



**United Kingdom summary 1997–2001**

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Sand and gravel</b>										
<i>Production</i>										
Sand and gravel (a)	98 383 000	98 315 000	100 953 000	101 622 000	101 397 000					
<i>Consumption (b)</i>										
Building sand	14 636 000	13 323 000	13 696 000	14 017 000	13 511 000					
Concreting sand	30 130 000	30 244 000	31 730 000	31 167 000	31 656 000					
Gravel and hoggin	41 600 000	42 401 000	42 783 000	44 049 000	43 043 000					
<b>Total</b>	<b>86 366 000</b>	<b>85 968 000</b>	<b>88 209 000</b>	<b>89 234 000</b>	<b>88 210 000</b>					
<i>Imports</i>										
Sand and gravel	171 154	473 474	221 292	168 358	362 076	4 237	5 122	5 877	6 688	9 417
<i>Exports</i>										
Sand and gravel (c)	8 777 496	8 422 940	8 906 868	9 931 641	9 871 523	31 718	23 049	30 734	31 264	32 389

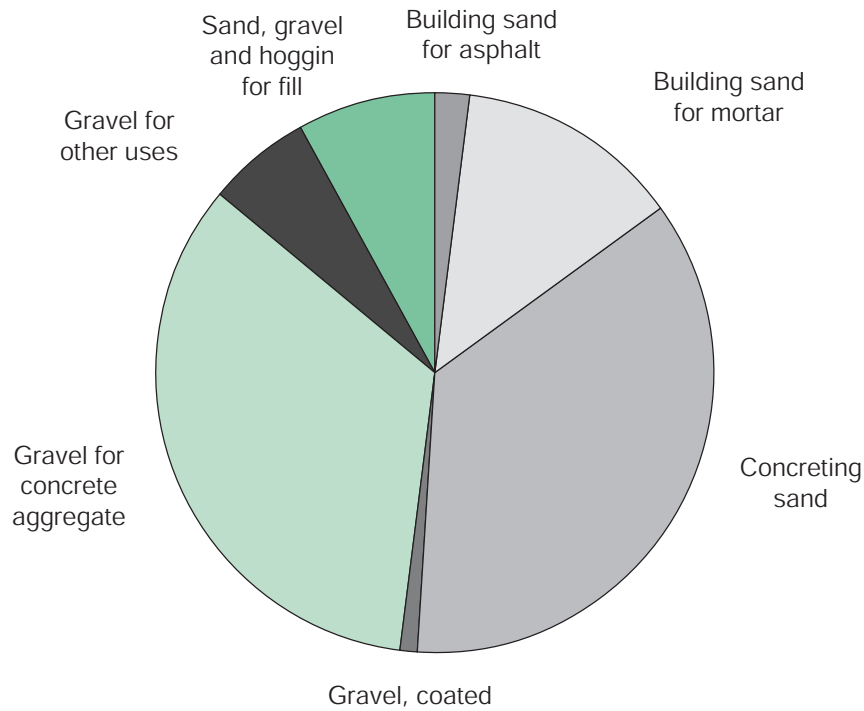
(a) Including production from marine dredging.

(b) Great Britain: production for the home market including landings of marine-dredged materials at British ports.

(c) Principally marine-dredged sand and gravel. Source: HM Customs and Excise. However, the Crown Estate Commissioners give the following figures for marine-dredged sand and gravel landed at foreign ports (tonnes): 1997: 6 878 892; 1998: 7 046 645; 1999: 7 226 549; 2000: 7 314 813; 2001: 6 992 731.

**Great Britain production of sand and gravel by end-use 2001**

**(total production 88.2 million tonnes)**



## Great Britain production of sand and gravel by end-use and area of origin 2001

Thousand tonnes

Area of origin	Sand		Gravel				Sand, gravel and hoggin for fill	Total
	Building sand		Concreting sand	Coated with a bituminous binder	Concrete aggregate	Other screened & graded gravels (c)		
	For asphalt	For use in mortar						
North East	...	...	(a) 465	—	(a) 539	...	145	(a) 1 566
Yorkshire and Humberside	63	...	(a) 2 010	—	...	254	366	(a) 5 171
East Midlands	...	906	4 109	...	3 570	358	577	9 716
East of England	(a) 535	(a) 1 511	(a) 5 537	(a) 62	(a) 5 452	1 334	(a) 1 264	(a) 15 694
South East								
Land-won	404	...	...	—	...	...	...	12 752
Marine	—	...	...	—	...	...	...	9 252
Total	404	(a) 2 664	(a) 6 798	—	(a) 9 915	(a) 988	(a) 1 265	(a) 22 004
South West	...	(a) 978	(a) 3 401	...	(a) 1 570	477	(a) 569	(a) 7 126
West Midlands	214	1 009	4 030	...	3 729	...	474	9 894
North West	...	(a) 1 315	(a) 1 339	—	...	162	417	(a) 3 402
<b>England</b>								
Land-won	...	...	...	...	...	...	...	62 177
Marine (b)	...	...	...	...	...	...	...	12 395
<b>Total</b>	<b>(a) 1 605</b>	<b>(a) 9 317</b>	<b>(a) 27 658</b>	<b>(a) 189</b>	<b>(a) 26 731</b>	<b>(a) 3 994</b>	<b>(a) 5 077</b>	<b>(a) 74 572</b>
<b>Wales</b>								
Land-won	...	...	...	—	...	116	...	1 670
Marine	...	...	...	—	...	—	...	1 216
<b>Total</b>	<b>(a) 16</b>	<b>(a) 1 120</b>	<b>(a) 923</b>	<b>—</b>	<b>(a) 524</b>	<b>116</b>	<b>(a) 187</b>	<b>(a) 2 886</b>
<b>Scotland</b>								
<b>Total</b>	<b>374</b>	<b>1 079</b>	<b>3 075</b>	<b>72</b>	<b>2 715</b>	<b>1 056</b>	<b>2 382</b>	<b>10 753</b>
<b>Great Britain</b>								
Land-won	...	10 671	26 943	...	22 233	5 151	...	74 599
Marine (b)	...	844	4 713	...	7 736	15	...	13 611
<b>Total</b>	<b>(a) 1 996</b>	<b>(a) 11 515</b>	<b>(a) 31 656</b>	<b>(a) 261</b>	<b>(a) 29 969</b>	<b>(a) 5 166</b>	<b>(a) 7 647</b>	<b>(a) 88 210</b>

(a) Including marine-dredged material.

(b) Excluding marine-dredged landings at foreign ports (exports), see p.92.

(c) This heading is now believed to include material previously classified as construction fill.

Source: Office for National Statistics.

## Great Britain production of sand and gravel (a) by Region 1975–2001

Thousand tonnes

Year	North East (b)	North West (c)	Yorks. & Humberside	West Midlands	East Midlands	East of England (d)	South East (e)	South West	England	Wales	Scotland	Great Britain
1975	4 150	4 485	6 196	11 572	12 304	7 733	43 028	7 120	96 588	5 051	15 541	117 180
1976	3 855	3 948	5 288	10 920	11 844	7 264	43 412	6 499	93 030	4 353	12 506	109 888
1977	4 178	3 330	4 552	9 783	10 277	7 821	37 994	5 656	83 592	3 769	11 645	99 007
1978	3 995	3 371	4 469	9 546	10 620	8 511	39 730	6 067	86 310	4 229	11 817	102 356
1979	4 072	3 445	4 755	9 957	10 449	8 312	39 534	6 350	86 875	4 373	11 507	102 755
1980	3 872	3 207	4 250	9 090	10 440	7 234	36 331	6 279	80 704	4 033	11 421	96 158
1981	2 798	3 043	4 668	8 109	9 217	6 532	35 864	5 843	76 074	3 492	9 886	89 453
1982	2 685	3 410	4 397	9 892	9 100	7 026	35 374	6 017	77 901	3 444	9 861	91 206
1983	3 087	3 730	4 690	9 847	10 470	7 581	39 035	8 017	86 457	4 033	10 309	100 799
1984	3 062	4 080	4 680	10 827	10 604	6 934	38 862	7 010	86 060	3 437	10 178	99 675
1985	2 717	3 823	4 537	10 728	10 609	7 540	39 930	6 981	86 865	3 420	11 320	101 605
1986	2 863	4 036	4 686	10 486	11 743	7 547	42 192	7 152	90 706	4 083	10 710	105 498
1987	2 932	4 006	4 780	11 095	13 348	8 306	43 563	8 495	96 525	4 793	10 311	111 629
1988	3 291	4 156	5 306	14 138	15 603	11 361	50 970	9 843	114 667	4 734	10 753	130 154
1989	3 802	4 709	5 722	14 020	15 892	10 145	51 208	9 142	114 640	4 588	12 004	131 232
1990	3 951	4 641	5 485	12 581	14 051	8 762	42 516	7 559	99 547	3 990	12 634	116 172
1991	3 017	4 243	4 960	10 698	12 683	7 288	33 318	6 045	82 253	3 439	12 226	97 918
1992	2 732	3 894	4 028	9 976	12 072	6 456	28 590	6 171	73 290	3 205	11 774	88 898
1993	2 856	4 028	4 539	10 345	12 364	5 962	28 600	6 138	74 833	3 278	11 359	89 470
1994	3 268	4 843	4 907	12 207	12 860	6 947	31 140	6 765	82 937	3 312	11 423	97 672
1995	3 086	4 529	4 333	10 722	11 556	6 550	28 046	6 684	75 506	3 260	10 889	89 656
1996	2 909	3 792	3 923	9 633	10 827	5 623	26 485	5 790	68 983	3 111	9 904	81 997
1997	3 109	4 294	4 041	9 966	10 899	5 899	29 154	6 054	73 416	3 050	9 900	86 366
1998	3 056	3 579	4 381	9 721	10 416	5 979	29 637	6 166	72 935	2 959	10 074	85 968
1999	3 117	3 801	4 872	9 901	10 216	6 395	30 821	6 016	75 139	3 039	10 031	88 209
2000	2 003	4 003	4 559	9 879	10 253	15 637	22 553	7 385	76 272	2 939	10 022	89 234
2001	1 566	3 402	5 171	9 894	9 716	15 694	22 004	7 126	74 572	2 886	10 753	88 210

(a) Including marine-dredged material.

(b) From 2000, excludes Cumbria.

(c) From 2000, includes Cumbria.

(d) From 2000, includes Essex, Hertfordshire and Bedfordshire.

(e) From 2000, excludes Essex, Hertfordshire and Bedfordshire.

Source: Office for National Statistics.

# England production of sand and gravel by end-use 1990–2001

Thousand tonnes

Year	Sand		Gravel				Sand, gravel and hoggin for fill	Total
	Building sand		Concreting sand	Coated with a bituminous binder	Concrete aggregate	Other screened & graded gravels (b)		
	For asphalt	For use in mortar						
<b>1990</b>								
Land-won	...	13 112	...	444	...	...	...	84 399
Marine (a)	...	5	...	—	...	...	...	15 148
<b>Total</b>	<b>3 511</b>	<b>13 117</b>	<b>32 290</b>	<b>444</b>	...	...	<b>14 386</b>	<b>99 547</b>
<b>1991</b>								
Land-won	3 517	10 854	22 330	356	19 843	2 210	12 308	71 417
Marine (a)	86	28	3 927	—	6 256	145	393	10 836
<b>Total</b>	<b>3 604</b>	<b>10 882</b>	<b>26 257</b>	<b>356</b>	<b>26 099</b>	<b>2 355</b>	<b>12 700</b>	<b>82 253</b>
<b>1992</b>								
Land-won	...	9 735	...	484	19 880	...	...	65 006
Marine (a)	...	114	...	—	4 930	...	...	8 913
<b>Total</b>	<b>3 596</b>	<b>9 849</b>	<b>24 078</b>	<b>484</b>	<b>24 810</b>	<b>842</b>	<b>10 262</b>	<b>73 920</b>
<b>1993</b>								
Land-won	...	9 343	...	...	...	...	...	66 320
Marine (a)	...	158	...	...	...	...	...	8 513
<b>Total</b>	<b>4 113</b>	<b>9 502</b>	<b>23 719</b>	...	<b>24 381</b>	...	<b>12 058</b>	<b>74 833</b>
<b>1994</b>								
Land-won	...	...	...	...	...	...	...	73 161
Marine (a)	...	...	...	...	...	...	...	9 776
<b>Total</b>	<b>3 803</b>	<b>11 214</b>	<b>26 250</b>	...	<b>26 876</b>	...	<b>13 535</b>	<b>82 937</b>
<b>1995</b>								
Land-won	...	...	21 306	301	...	1 457	9 131	65 480
Marine (a)	...	...	3 387	—	...	—	450	10 026
<b>Total</b>	<b>3 402</b>	<b>10 776</b>	<b>24 693</b>	<b>301</b>	<b>25 297</b>	<b>1 457</b>	<b>9 581</b>	<b>75 506</b>
<b>1996</b>								
Land-won	2 663	...	20 734	237	...	752	8 179	59 067
Marine (a)	23	...	3 430	1	...	—	389	9 915
<b>Total</b>	<b>2 685</b>	<b>8 979</b>	<b>24 164</b>	<b>238</b>	<b>23 596</b>	<b>752</b>	<b>8 568</b>	<b>68 983</b>
<b>1997</b>								
Land-won	...	9 050	21 982	...	19 315	419	...	63 010
Marine (a)	...	326	3 577	...	6 250	—	...	10 406
<b>Total</b>	<b>2 634</b>	<b>9 376</b>	<b>25 559</b>	<b>653</b>	<b>25 565</b>	<b>419</b>	<b>9 210</b>	<b>73 416</b>
<b>1998</b>								
Land-won	...	8 645	21 892	...	20 495	433	...	61 241
Marine (a)	...	274	3 861	...	7 375	3	...	11 694
<b>Total</b>	<b>1 991</b>	<b>8 919</b>	<b>25 753</b>	<b>408</b>	<b>27 870</b>	<b>436</b>	<b>7 559</b>	<b>72 935</b>
<b>1999</b>								
Land-won	...	...	22 936	...	20 421	...	7 591	62 954
Marine (a)	...	...	4 297	...	7 292	...	167	12 185
<b>Total</b>	<b>1 847</b>	<b>9 372</b>	<b>27 234</b>	<b>150</b>	<b>27 713</b>	<b>1 065</b>	<b>7 758</b>	<b>75 139</b>
<b>2000</b>								
Land-won	...	9 189	22 769	...	20 164	746	...	63 196
Marine (a)	...	345	4 206	...	8 272	—	...	13 076
<b>Total</b>	<b>1 817</b>	<b>9 533</b>	<b>26 975</b>	<b>135</b>	<b>28 436</b>	<b>746</b>	<b>8 631</b>	<b>76 272</b>
<b>2001</b>								
Land-won	...	...	...	...	...	...	...	62 177
Marine (a)	...	...	...	...	...	...	...	12 395
<b>Total</b>	<b>1 605</b>	<b>9 317</b>	<b>27 658</b>	<b>189</b>	<b>26 731</b>	<b>3 994</b>	<b>5 077</b>	<b>74 572</b>

(a) Excluding marine-dredged landings at foreign ports (exports), see p.92.

Source: Office for National Statistics.

(b) From 2001, this heading is believed to include material previously classified as construction fill.

## Wales production of sand and gravel by end-use 1991–2001

Thousand tonnes

Year	Sand		Gravel				Sand, gravel and hoggin for fill	Total
	Building sand		Concreting sand	Coated with a bituminous binder	Concrete aggregate	Other screened & graded gravels (b)		
	For asphalt	For use in mortar						
<b>1991</b>								
Land-won	...	266	831	—	321	...	221	1 836
Marine	—	893	507	—	201	—	3	1 603
<b>Total</b>	...	<b>1 159</b>	<b>1 337</b>	—	<b>522</b>	...	<b>224</b>	<b>3 439</b>
<b>1992</b>								
Land-won	...	229	...	—	361	...	...	1 561
Marine	—	869	...	—	243	—	...	1 644
<b>Total</b>	...	<b>1 099</b>	<b>1 114</b>	—	<b>604</b>	...	<b>208</b>	<b>3 205</b>
<b>1993</b>								
Land-won	75	275	...	—	...	(a) 144	415	1 701
Marine	2	850	...	—	...	—	(a) 3	1 578
<b>Total</b>	<b>77</b>	<b>1 124</b>	<b>1 019</b>	—	<b>496</b>	<b>(a) 144</b>	<b>(a) 418</b>	<b>3 278</b>
<b>1994</b>								
Land-won	88	...	...	—	...	...	...	1 757
Marine	...	...	...	—	...	...	...	1 555
<b>Total</b>	...	<b>1 062</b>	<b>1 210</b>	—	<b>484</b>	...	<b>381</b>	<b>3 312</b>
<b>1995</b>								
Land-won	...	...	675	—	...	—	396	1 661
Marine	...	...	631	—	...	—	3	1 599
<b>Total</b>	<b>97</b>	<b>993</b>	<b>1 306</b>	—	<b>464</b>	—	<b>399</b>	<b>3 260</b>
<b>1996</b>								
Land-won	44	...	610	—	...	—	460	1 519
Marine	33	...	683	—	...	—	4	1 593
<b>Total</b>	<b>77</b>	<b>817</b>	<b>1 293</b>	—	<b>459</b>	—	<b>464</b>	<b>3 111</b>
<b>1997</b>								
Land-won	27	162	598	—	327	—	338	1 452
Marine	32	590	774	—	201	—	1	1 598
<b>Total</b>	<b>59</b>	<b>752</b>	<b>1 372</b>	—	<b>528</b>	—	<b>339</b>	<b>3 050</b>
<b>1998</b>								
Land-won	...	270	712	—	370	—	...	1 701
Marine	...	497	570	—	162	—	...	1 258
<b>Total</b>	<b>45</b>	<b>768</b>	<b>1 282</b>	—	<b>532</b>	—	<b>333</b>	<b>2 959</b>
<b>1999</b>								
Land-won	...	...	683	—	453	2	354	1 800
Marine	...	...	543	—	175	—	3	1 240
<b>Total</b>	<b>37</b>	<b>789</b>	<b>1 226</b>	—	<b>628</b>	<b>2</b>	<b>357</b>	<b>3 039</b>
<b>2000</b>								
Land-won	...	331	502	—	404	...	386	1 658
Marine	4	620	489	—	164	—	3	1 280
<b>Total</b>	...	<b>951</b>	<b>991</b>	—	<b>568</b>	...	<b>389</b>	<b>2 939</b>
<b>2001</b>								
Land-won	...	...	...	—	...	116	...	1 670
Marine	...	...	...	—	...	—	...	1 216
<b>Total</b>	<b>16</b>	<b>1 120</b>	<b>923</b>	—	<b>524</b>	<b>116</b>	<b>187</b>	<b>2 886</b>

(a) BGS estimate.

Source: Office for National Statistics.

(b) From 2001, this heading is believed to include material previously classified as construction fill.

## Scotland (land-won) production of sand and gravel by end-use 1991–2001

Thousand tonnes

Year	Sand		Gravel				Sand, gravel and hoggin for fill	Total
	Building sand		Concreting sand	Coated with a bituminous binder	Concrete aggregate	Other screened & graded gravels (a)		
	For asphalt	For use in mortar						
1991	...	1 299	3 644	135	2 824	...	3 025	12 226
1992	...	1 201	3 383	118	2 664	...	3 176	11 774
1993	1 169	1 421	3 283	220	2 339	175	2 753	11 359
1994	...	1 512	3 517	...	2 239	...	2 981	11 423
1995	709	1 412	3 391	96	2 106	158	3 018	10 889
1996	546	1 265	3 202	47	1 965	203	2 676	9 904
1997	547	1 268	3 199	48	2 142	64	2 632	9 900
1998	447	1 153	3 210	79	1 968	198	3 020	10 074
1999	455	1 195	3 270	95	2 008	198	2 809	10 031
2000	...	1 274	3 202	67	1 749	...	3 031	10 022
2001	374	1 079	3 075	72	2 715	1 056	2 382	10 753

(a) From 2001, this heading is believed to include material previously classified as construction fill.

Source: Office for National Statistics.

# Sandstone (for graph, see Crushed rock)

## United Kingdom summary 1997–2001

Tonnes

Commodity	1997	1998	1999	2000	2001
<b>Sandstone</b> —see Building and dimension stone					
<i>Production</i>	18 499 000	20 129 000	15 485 000	14 900 000	19 967 000

## Great Britain production of sandstone by end-use and area of origin 2001

Thousand tonnes

Area of origin	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
North East	30	—	—	—	—	—	36	—	65
Yorkshire and Humberside	85	—	610	267	—	168	...	...	1 502
East Midlands	72	—	—	...	—	—	...	—	204
East of England	...	—	—	—	—	—	...	—	...
South East	3	—	—	—	—	—	66	—	68
South West	14	...	...	54	110	...	148	—	812
West Midlands	...	...	...	...	—	98	...	41	...
North West	48	—	288	...	—	...	...	...	3 235
<b>England</b>	<b>253</b>	...	<b>1 375</b>	<b>987</b>	<b>110</b>	<b>1 061</b>	<b>2 474</b>	...	<b>7 201</b>
<b>Wales</b>	...	...	<b>913</b>	<b>439</b>	—	<b>180</b>	<b>1 132</b>	...	<b>3 094</b>
<b>Scotland</b>	<b>18</b>	...	<b>136</b>	<b>305</b>	...	<b>184</b>	<b>685</b>	...	<b>1 603</b>
<b>Great Britain</b>	...	<b>791</b>	<b>2 425</b>	<b>1 731</b>	<b>(a) 150</b>	<b>1 425</b>	<b>4 290</b>	<b>773</b>	<b>11 897</b>
<b>England</b>					<b>Wales</b>				
County	Total	County			Total	County			Total
Avon	59	Durham			32	Powys			1 455
Somerset	...	Norfolk			155	Dyfed			...
Cheshire	209	Northumberland			34	West Glamorgan			...
Greater Manchester	907	North Yorkshire			953	Mid Glamorgan			...
Lancashire	1 737	West Yorkshire			548	Gwent			336
Cumbria	382	South Yorkshire			1	<b>Wales</b>			<b>3 094</b>
Derbyshire	204	Shropshire			1 116				
Staffordshire	42	West Sussex			47				
Devon	620	Bedfordshire			...				
Cornwall	124	Surrey			21				
Gloucestershire	...	Wiltshire			...				
Warwickshire	...				...				
<b>England</b>					<b>7 201</b>	<b>Scotland</b>			
						<b>Region</b>			<b>Total</b>
						Tayside			...
						Dumfries and Galloway			358
						Grampian			42
						Highland			117
						Strathclyde			...
						Borders			455
						Orkney Isles area			...
						Shetland Isles area			...
						<b>Scotland</b>			<b>1 603</b>

(a) BGS estimate.

Source: Office for National Statistics.



## England production of sandstone by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	351	985	602	3 848	...	453	5 132	...	11 545
1991	227	803	699	3 457	...	376	4 143	...	9 907
1992	205	686	677	2 000	...	309	4 139	...	8 198
1993	192	647	...	2 048	...	381	4 786	71	9 003
1994	237	666	811	2 191	...	305	5 738	...	10 155
1995	282	640	632	1 900	...	367	5 684	...	9 719
1996	257	638	653	1 825	66	335	3 827	27	7 627
1997	(a) 243	366	876	1 604	55	176	4 312	(a) 14	7 646
1998	254	371	949	1 457	63	...	4 146	...	7 792
1999	420	333	1 090	...	68	548	3 502	...	7 241
2000	214	332	1 201	1 334	...	581	3 598	...	7 401
2001	253	...	1 375	987	110	1 061	2 474	...	7 201

(a) BGS estimate.

Source: Office for National Statistics.

## Wales production of sandstone by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	12	281	143	450	—	...	...	—	1 573
1991	9	258	189	532	—	49	431	—	1 466
1992	5	261	271	413	—	30	748	—	1 731
1993	10	...	255	294	—	...	...	(a) 9	1 381
1994	4	...	...	279	...	20	...	8	1 568
1995	6	634	...	462	...	...	1 268	...	2 898
1996	3	648	...	...	...	...	1 111	2	2 781
1997	(a) 5	...	443	767	...	...	1 219	57	3 098
1998	16	...	667	795	...	109	...	...	3 214
1999	21	493	706	...	—	99	(a) 922	...	2 973
2000	...	...	673	433	...	...	1 355	...	2 941
2001	...	...	913	439	—	180	1 132	...	3 094

(a) BGS estimate.

Source: Office for National Statistics.

## Scotland production of sandstone by end-use 1990–2001

Thousand tonnes

Year	Building stone	Roadstone			Railway ballast	Concrete aggregate	Other constructional uses	Other uses	Total
		Sold coated	For coating at remote plants	Uncoated					
1990	10	279	92	673	...	...	...	...	1 834
1991	...	402	22	302	...	165	605	...	1 555
1992	9	462	19	443	...	188	489	...	1 658
1993	30	...	...	477	...	...	...	—	1 716
1994	22	...	...	353	...	109	...	...	1 772
1995	15	457	...	382	...	...	550	—	2 400
1996	11	258	...	...	...	...	646	(a) 7	2 172
1997	8	...	454	370	...	...	356	—	1 712
1998	17	...	606	437	...	...	...	—	2 539
1999	14	229	290	460	(a) 70	126	(a) 466	2	1 657
2000	...	...	523	434	...	...	371	—	1 715
2001	18	...	136	305	...	184	685	...	1 603

(a) BGS estimate.

Source: Office for National Statistics.

# Selenium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Selenium</b>										
<i>Imports</i>										
Elemental	1 200	397	518	521	436	2 427	1 759	1 210	1 810	1 760
<i>Exports</i>										
Elemental	202	161	199	279	209	673	625	493	1 369	803

# Sepiolite

## United Kingdom summary 1997–2001

Tonnes

Commodity	1997	1998	1999	2000	2001
<b>Sepiolite</b>					
<i>Imports (a)</i>	70 153	74 407	63 567	80 538	65 062

(a) Exports from Spain.

# Silica sand

Silica sand production in the UK has been about 4 Mt/y for several years and total sales were 3.85 million tonnes in 2001. The major producer is WBB Minerals (formerly Sibelco Minerals and Chemicals). Foundry sand production has been declining for a number of years, reflecting the general decline in the UK manufacturing base. However, glass sand production has increased somewhat due in part to the commissioning by St Gobain of France, of a new flat glass plant at Eggborough in Yorkshire. A further flat glass plant is currently being constructed by Guardian at Goole and will come on stream during 2003. The new flat glass plants are supplied with glass sand from WBB Minerals' operation at King's Lynn in Norfolk. WBB Minerals also supplies Pilkington's flat glass plants at St Helens from its site at Chelford in Cheshire.

Following the decision by the Competition Commission in late 2001 that Sibelco Minerals and Chemicals (now WBB Minerals) should divest Fife Silica Sands Ltd, Pattersons of Greenoakhill Ltd, an independent aggregate company with operations in central and southern Scotland, purchased Fife for an undisclosed sum.

The silica sand quarrying and resin-coated sand business of Schenectady Europe Ltd at Burythorpe in North Yorkshire has been acquired through a management buyout. The operation will trade under the name Burythorpe Silica Sand Products Ltd. The other main producers of silica sand in the UK are Tarmac, Hanson Aggregates, RMC, Aggregate Industries, Bathgate Silica Sands, UG Sand Developments, Mansfield Sand Co Ltd, Bucbricks Ltd and the Southport Sand Co Ltd.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Silica sand</b>										
<i>Production (a)</i>	4 704 000	4 662 000	4 092 000	4 095 000	3 848 000					
<i>Imports</i>	55 562	31 784	46 934	33 209	46 500	5 812	5 492	6 095	6 489	6 624
<i>Exports</i>	61 894	52 672	42 935	28 796	54 419	7 301	5 508	4 042	3 779	4 809

(a) Silica sands for glass making, moulding and other non-constructural uses.

## Great Britain production of silica sand by end-use and area of origin 2001

Thousand tonnes

Area of origin	For foundry purposes		Glass manufacture	Other industrial uses	Total
	Naturally bonded	Other			
North East (a)	1	—	—	10	11
Yorkshire and Humberside (b)	—	...	...	67	...
East Midlands (c)	...	...	...	...	...
West Midlands (d)	13	—	...	...	...
East of England (e)	...	...	...	245	...
South East (f)	—	...	...	174	489
South West (g)	—	...	—	...	86
North West (h)	...	592	...	...	1 361
<b>England</b>	...	...	...	<b>1 022</b>	<b>3 343</b>
<b>Wales (i)</b>	—	—	—	...	...
<b>Scotland (j)</b>	...	...	...	...	...
<b>Great Britain</b>	<b>109</b>	<b>771</b>	<b>1 853</b>	<b>1 115</b>	<b>3 848</b>

(a) From Durham.

(b) From Humberside, South Yorkshire and North Yorkshire.

(c) From Nottinghamshire, Leicestershire and Lincolnshire.

(d) From Hereford and Worcester, West Midlands and Staffordshire.

(e) From Cambridgeshire, Norfolk, Suffolk, Essex, Hertfordshire and Bedfordshire.

(f) From Buckinghamshire, Berkshire, Kent, Surrey, West Sussex and Hampshire.

(g) From Cornwall and Dorset.

(h) From Cheshire and Merseyside.

(i) From Clwyd.

(j) From Fife, Highland, Lothian, Strathclyde, Central and Orkney Isles.

Source: Office for National Statistics.

## Silicon

### United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Silicon</b>										
<i>Consumption in Iron and Steel Industry</i>										
Ferro-silicon	53 900	50 450	45 910	43 690	38 450					
Silico-manganese	33 650	31 500	29 930	27 830	25 050					
Calcium silicide	1 260	1 180	1 100	100	90					
Ferro-silico-zirconium	70	70	70	70	60					
<i>Imports</i>										
Elemental silicon—										
Containing not less than 99.99% silicon	164	392	290	758	882	12 603	15 272	14 720	24 910	25 161
Other	46 511	44 893	57 875	77 331	85 144	46 545	41 649	47 372	59 314	68 102
Doped silicon	622	538	407	390	196	69 705	68 889	64 042	74 956	48 351
Ferro-silicon	96 005	82 802	80 753	67 821	72 663	41 626	31 203	28 514	24 019	26 123
Ferro-silico-manganese	38 261	49 448	53 965	66 279	53 747	12 492	15 092	14 342	18 021	15 465
Ferro-silico-magnesium	11 374	9 671	8 565	6 965	5 318	7 802	6 465	5 171	3 790	3 007
Ferro-silico-chrome	0	78	5 482	7 415	5 136	0	50	1 488	2 365	1 488
<i>Exports</i>										
Elemental silicon—										
Containing not less than 99.99% silicon	20	26	25	108	524	220	1 112	1 058	3 472	11 325
Other	1 273	1 514	2 340	1 469	1 390	3 058	3 624	3 922	2 589	4 845
Doped silicon	369	271	247	199	...	33 556	48 876	53 837	74 383	69 723
Ferro-silicon	4 026	2 502	2 382	1 400	2 247	2 814	2 121	1 563	1 089	2 146
Ferro-silico-manganese	532	2 456	1 327	1 307	8	264	801	377	313	7
Ferro-silico-magnesium	722	252	367	1 543	1 453	823	265	376	1 011	1 033
Ferro-silico-chrome	44	264	—	19	52	10	98	—	19	41

# Sillimanite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Sillimanite etc.</b>										
<i>Imports</i>										
Sillimanite minerals (a)	53 877	47 985	37 870	28 081	28 470	6 818	5 948	4 154	3 614	2 511
Mullite	12 922	8 417	7 432	5 198	5 174	2 852	2 170	2 424	1 955	3 016
Chamotte earth (b)	31 988	37 789	29 858	23 804	19 300	3 762	5 202	4 017	3 170	3 526
<i>Exports</i>										
Sillimanite minerals (a)	56	20	5	53	54	19	2	1	15	11
Mullite	7 386	6 658	6 891	6 689	6 841	5 394	4 629	4 333	4 534	4 722
Chamotte earth (b)	4 393	817	112	80	290	446	181	68	61	170

(a) Andalusite, kyanite and sillimanite.

(b) Calcined refractory clay including flint clay.

# Silver

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Silver</b>										
<i>Imports</i>										
Scrap (a)	1 970	4 101	3 273	4 887	4 472	52 329	91 435	141 269	226 927	279 096
Unwrought	3 104	6 543	2 341	1 971	2 986	379 187	802 153	263 712	247 622	314 655
Partly worked	207	230	248	570	486	17 785	23 863	26 900	70 618	59 019
Silver in unrefined lead bullion (b)	410	380	360	280	390					
<i>Exports</i>										
Scrap (a)	3 590	2 811	3 284	3 455	7 269	14 533	13 511	17 819	10 717	10 880
Unwrought	2 764	1 501	1 108	3 230	2 048	282 619	163 056	113 799	356 454	160 052
Partly worked	424	552	298	231	234	30 168	42 119	22 396	20 781	22 338

(a) Including scrap of platinum group metals.

(b) BGS estimates of silver content of unrefined lead bullion imported from Australia (see p.59).

# Slate

Slate is produced mainly in North Wales and the Lake District with small quantities in Cornwall and Devon.

Slate quarrying has resumed at Ballachulish on Loch Leven in north-west Scotland and the first 30 tonnes of Scottish slate to be worked for 50 years was produced in August 2002. The slate will be used for roofing on listed buildings and in conservation areas.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Slate</b>										
<i>Production</i>										
Architectural and cladding uses, roofing and damp proof courses	53 000	33 000	45 000	51 000	45 000					
Powder and granules	39 000	37 000	32 000	24 000	27 000					
Crude blocks	25 000	36 000	38 000	33 000	39 000					
Fill and other uses	229 000	319 000	246 000	371 000	440 000					
<b>Total</b>	<b>347 000</b>	<b>425 000</b>	<b>361 000</b>	<b>479 000</b>	<b>551 000</b>					
<i>Imports</i>										
Unworked (a)	13 782	18 507	25 708	26 672	27 351	3 337	4 536	5 954	6 416	6 844
Roofing and wall tiles	51 293	59 420	63 266	99 332	112 325	20 190	22 042	24 251	32 157	35 162
Other worked slate (b)	8 902	5 244	5 242	7 502	8 581	3 077	1 808	1 747	2 404	2 761
<i>Exports</i>										
Unworked (a)	2 934	5 037	3 526	1 272	467	1 009	1 053	582	329	427
Roofing and wall tiles	5 531	6 640	7 033	10 199	10 814	3 721	3 509	3 860	4 254	4 687
Other worked slate (b)	5 401	5 983	7 315	4 724	2 119	5 859	6 211	6 805	5 504	4 102

(a) Including roughly split or squared.

(b) Including articles of slate or agglomerated slate.

# Strontium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Strontium</b>										
<i>Imports</i>										
Oxides	3	2	30	124	42	25	9	54	106	107
Carbonate	14 953	18 417	17 326	14 777	18 842	7 664	7 596	6 872	5 361	6 678
<i>Exports</i>										
Oxides	0	15	4	14	11	5	26	13	45	33
Carbonate	209	102	78	17	13	86	107	45	16	13

# Sulphur

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Sulphur</b>										
<i>Supply</i>										
Produced (a)	177 000	184 000	136 000	140 000	111 000					
Imported (b)	371 962	196 327	190 439	211 888	170 055					
Zinc concentrates (imported) (c)	39 200	40 500	26 600	51 400	62 400					
<i>Consumption</i>										
For sulphuric acid–										
Sulphur	389 600	370 400	316 200	324 100	276 700					
Zinc concentrates (c)	55 300	50 800	59 500	45 800	54 900					
<i>Imports</i>										
Sulphur–										
Crude	371 962	196 327	190 439	211 888	170 055	12 742	8 356	8 539	10 276	11 185
Sublimed, colloidal etc.	495	2 420	213	94	390	303	446	138	39	541
<i>Exports</i>										
Sulphur–										
Crude	(e) 22 423	(d) 51 809	50 897	10 824	376	1 799	2 465	1 751	1 332	674
Sublimed, colloidal etc.	(e) 14 624	140	277	379	386	915	263	328	234	372

(a) Produced from oil refineries.  
 (b) Including waste and residues.  
 (c) Sulphur content calculated at 29%.

(d) Figure under investigation.  
 (e) Figure believed to be too high.

# Talc

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Talc</b>										
<i>Production</i>	5 749	4 937	6 256	4 832	4 947					
<i>Imports</i>	83 013	76 744	57 439	61 975	66 737	10 245	9 587	8 558	10 209	10 730
<i>Exports</i>	3 100	4 574	3 175	3 812	4 034	1 188	1 374	1 083	1 328	1 237

# Tellurium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Tellurium</b>										
<i>Imports</i>	340	87	86	140	48	772	405	271	555	371
<i>Exports</i>	28	33	31	39	54	247	240	271	288	512

# Tin

Baseresult Holdings Ltd, owners of the South Crofty tin mine and processing plant in Cornwall, have stated that they have been reviewing all the records and information relating to the mine in order to bring it forward to modern operational, and environmental standards. A re-evaluation of the ore resource is under way based on the proposed change in mining methods to be used. Baseresult says that the company is committed to researching and producing an Environmental Impact Assessment and Statement for completion early in 2003.

Apart from this, the only remaining tin mining activity is the very small-scale production of cassiterite by tourist operations.

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Tin</b>										
<i>Production</i>										
Concentrate (Sn content)	2 396	448	—	—	—					
<i>Consumption</i>										
Refined	10 396	9 779	9 583	9 963	9 954					
<i>Imports</i>										
Concentrates	11	11	1	0	6	27	11	17	0	2
Sn content (a)	8	7	0	0	...					
Scrap	456	477	393	388	179	1 260	1 095	947	630	223
Ash and residues	10	—	20	0	0	24	—	4	0	0
Unwrought	14 768	10 753	9 120	9 190	6 857	41 385	30 850	29 878	32 540	22 107
Unwrought alloys	1 303	1 220	952	1 760	2 442	3 867	2 988	2 554	4 215	7 789
<i>Exports</i>										
Concentrates	3 646	1 292	173	121	59	6 656	2 650	1 277	1 174	661
Scrap	875	1 356	3 631	1 322	2 256	1 476	1 951	3 642	1 287	2 023
Ash and residues	591	305	514	473	262	728	246	390	459	177
Unwrought	281	3 396	88	146	426	803	8 307	361	652	1 306
Unwrought alloys	1 759	2 100	2 239	2 993	2 485	5 996	5 681	7 567	8 081	7 314

(a) Estimated by UNCTAD.

# Titanium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001
	Tonnes				
<b>Titanium</b>					
<i>Production</i>					
Titanium dioxide pigment	(b) 233 000	(c) 200 000	(c) 200 000	(c) 200 000	(c) 200 000
<i>Apparent consumption (a)</i>	118 800	167 300	81 500	96 200	96 800
<i>Consumption in Iron and Steel Industry</i>					
Ferro-titanium	1 220	1 140	1 050	1 030	920

(a) BGS estimates; see p.v.

(b) Artikol estimate.

(c) BGS estimates.

*continued*

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Titanium continued</b>										
<i>Imports</i>										
Ores and concentrates—										
Ilmenite	156 649	100 765	95 473	134 861	112 447	10 131	7 532	8 642	11 563	9 082
Other (rutile)	93 122	181 420	84 841	70 348	110 526	27 689	18 400	20 026	19 720	30 909
Scrap	11 776	15 737	13 634	14 953	15 258	14 946	18 289	12 713	20 680	23 597
Unwrought	12 720	11 654	10 105	9 403	11 851	55 131	57 379	39 245	36 954	53 303
Wrought	3 622	3 321	3 145	2 975	3 643	75 318	79 963	64 804	71 591	80 770
Ferro-titanium (a)	5 161	4 887	4 054	2 672	2 465	7 236	7 363	4 474	4 029	4 124
Oxides	7 687	8 036	6 057	6 717	6 048	9 720	10 647	8 516	9 909	9 955
Pigments based on titanium dioxide	72 451	94 661	68 377	73 370	76 804	85 754	110 039	85 856	87 859	94 873
Titanium slag	99 308	119 386	120 890	160 738	110 697	24 247	28 105	29 151	43 704	32 353
<i>Exports</i>										
Ores and concentrates—										
Ilmenite	10	0	70	3	—	12	0	19	1	—
Other (rutile)	(b) 95	2 281	(b) 115	(b) 400	(b) 30	(b) 130	2 825	(b) 55	(b) 245	(b) 80
Scrap	2 579	3 672	1 995	2 888	3 188	8 442	6 629	4 105	7 389	8 557
Unwrought	5 744	3 655	4 187	7 364	4 090	25 091	16 124	13 198	15 468	16 639
Wrought	4 056	4 116	3 146	3 900	6 318	77 881	87 952	73 646	72 993	93 662
Ferro-titanium (a)	18 823	20 211	18 894	18 839	16 422	32 580	34 846	22 792	31 926	28 922
Oxides	3 743	1 415	1 482	2 135	1 788	4 848	2 714	2 810	3 494	3 026
Pigments based on titanium dioxide	154 590	164 220	188 958	207 448	205 695	153 184	200 802	214 737	234 642	243 631

(a) Including ferro-silico-titanium.

(b) BGS estimates.

# Tungsten

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Tungsten</b>										
<i>Consumption in Iron and Steel Industry (a)</i>										
	40	40	40	40	40					
<i>Imports</i>										
Ores and concentrates	3	0	96	...	...	16	3	138	20	66
W content	1	0	50	...	...					
Scrap	1 242	1 333	1 080	1 380	1 828	4 372	4 894	2 852	4 548	8 335
Unwrought	480	476	558	379	405	4 021	7 064	5 299	6 878	4 484
Wrought	168	246	181	417	305	8 716	7 189	5 697	6 552	5 990
Ferro-tungsten (b)	112	56	66	63	96	156	185	61	171	340
Carbide	1 357	2 293	752	829	1 381	11 614	16 341	6 829	8 256	19 297
Ash and residues	15	28	3	0	0	34	77	5	4	1
Tungstates	464	122	149	107	85	1 796	362	403	526	414
Oxides and hydroxides	547	902	1 056	1 207	1 490	1 920	3 197	3 343	4 329	9 151
<i>Exports</i>										
Ores and concentrates	98	1	5	2	11	136	15	22	4	34
W content	51	0	3	1	5					
Scrap	444	578	560	1 225	1 471	1 574	2 334	1 467	2 704	4 218
Unwrought	1 425	1 581	598	835	253	9 992	12 366	3 557	6 743	3 517
Wrought	69	141	177	2 586	149	2 399	1 288	1 568	4 047	1 310
Ferro-tungsten (b)	4	—	1	93	6	21	—	5	261	27
Carbide	270	291	481	8	20	3 114	3 819	5 340	168	303
Tungstates	6	9	13	3	23	31	64	62	39	180
Oxides and hydroxides	22	17	7	62	8	190	149	76	364	441

(a) Metal content.

(b) Including ferro-silico-tungsten.

# Vanadium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Vanadium</b>										
<i>Consumption in Iron and Steel Industry (a)</i>										
	890	830	780	730	660					
<i>Imports</i>										
Scrap	2	32	38	23	7	6	195	151	115	61
Unwrought	292	129	17	69	95	2 995	1 463	164	624	1 139
Wrought	334	530	318	181	278	3 556	6 418	2 958	1 615	1 924
Ferro-vanadium	378	378	648	1 443	727	3 392	4 743	3 441	3 380	3 393
Oxides	161	156	306	277	319	795	847	1 321	613	989
<i>Exports</i>										
Ash and residues	252	358	0	—	0	28	258	0	—	81
Scrap	188	—	71	85	59	31	—	56	580	451
Unwrought	0	315	0	0	0	1	270	6	2	2
Wrought	0	(b) 1 546	656	1 705	1 346	50	(b) 2 246	468	964	723
Ferro-vanadium	201	96	77	49	118	1 600	808	403	265	484
Oxides	37	103	966	1 933	14	211	125	389	642	64

(a) Vanadium content of ferro-vanadium.

(b) Figure under investigation.

# Vermiculite

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Vermiculite</b>										
<i>Imports</i>	47 035	36 489	32 058	36 341	31 602	3 604	3 498	3 219	3 548	3 472
<i>Exports</i>	1 796	1 237	(a) 18 845	83	109	516	307	199	119	107

(a) Figure under investigation.

# Zinc

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Zinc</b>										
<i>Production (a)</i>										
Slab	107 704	99 600	132 800	99 600	99 600					
<i>Consumption</i>										
Slab	194 815	187 854	198 898	206 486	197 140					
Scrap (Zn content)	41 485	38 312	37 817	36 058	34 043					
Total	236 300	226 166	236 715	242 544	231 183					
<i>Imports</i>										
Ores and concentrates (b)	135 209	139 806	91 613	177 332	215 342	29 632	28 365	18 046	31 332	33 120
Ash and residues	41 550	6 156	7 496	11 108	4 401	6 936	5 738	...	...	...
Scrap	3 238	3 806	3 507	4 983	3 219	1 791	2 337	1 926	2 778	1 645
Unwrought	136 217	162 046	111 382	119 052	110 157	110 344	103 395	91 309	105 955	75 822
Unwrought alloys	12 035	10 908	6 293	7 133	6 363	10 143	9 056	4 137	6 140	4 990
<i>Exports</i>										
Ores and concentrates	32	70	3 856	1 353	72	60	90	1 040	266	85
Ash and residues	6 703	7 495	5 564	10 420	9 534	1 789	1 562	1 422	2 279	2 926
Scrap	33 723	21 877	43 025	45 202	19 157	18 231	10 105	23 053	24 000	11 384
Unwrought	10 309	10 879	15 924	12 231	15 455	7 649	8 893	10 120	8 749	10 595
Unwrought alloys	24 730	23 840	22 656	19 940	21 971	21 830	20 140	17 448	17 373	18 296

(a) Anglesey Mining Co continued small-scale geological and scientific studies at the Parys Mountain polymetallic Cu-Pb-Zn-Ag-Au deposit on Anglesey in North Wales.

(b) Zinc and mixed zinc-lead concentrates.



# Zirconium

## United Kingdom summary 1997–2001

Commodity	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
	Tonnes					£ thousand				
<b>Zirconium</b>										
<i>Consumption in Iron and Steel Industry</i>										
Ferro-silico-zirconium	70	70	70	70	60					
<i>Apparent consumption (a)</i>	26 800	24 400	17 400	15 800	20 800					
<i>Imports</i>										
Ores and concentrates (b)	57 830	54 986	37 695	34 053	46 548	15 013	13 629	10 307	13 115	16 798
Scrap	79	137	73	437	335	336	642	416	1 171	860
Unwrought	53	135	40	76	91	946	2 000	612	838	481
Wrought	402	238	150	220	268	3 677	4 967	4 200	3 039	3 622
<i>Exports</i>										
Ores and concentrates	4 492	3 039	333	567	1 776	2 776	1 423	290	496	1 022
Scrap	118	102	167	192	222	548	581	843	944	1 101
Unwrought	94	73	165	67	85	45	383	363	101	49
Wrought	69	71	49	57	73	396	786	913	1 491	1 348

(a) BGS estimates; see p.v.

(b) Mainly zircon.