



2011 Minerals Yearbook

GERMANY

THE MINERAL INDUSTRY OF GERMANY

By Steven T. Anderson

In 2011, Germany was a leading global exporter of industrial goods and services (including processed and fabricated mineral products). The country's mineral industry, however, depended heavily on imported mineral raw materials. Germany was the leading producer of lignite in the world, and essentially all of the lignite consumed in the country was supplied by domestic production. Combustion of lignite accounted for 11.7% of total primary energy consumption in the country. Germany was dependent on imports of other mineral fuels for most of the remainder of its primary energy consumption, and combustion of petroleum and petroleum refinery products accounted for 34% of total primary energy consumption in Germany; that of natural gas, 20.4%; and that of anthracite and bituminous coal (hard coal), 12.6%. Renewable energy resources, such as wind power, accounted for 10.9% of total primary energy consumption; nuclear energy accounted for 8.8%; and other energy sources, including imported electricity, accounted for 1.6%. Germany's metal processing sector relied on imports of metal ores and concentrates and reprocessing of metallic scrap and waste materials (both imported and produced domestically) because no metals were mined in sufficient amounts for metallurgical use in the country. Germany was also heavily reliant on imports of numerous industrial minerals and many refined metals (Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 15–35, 44, 157; Bundesministerium für Wirtschaft und Technologie, 2011, p. 5–12, 28–30; AG Energiebilanzen e.V., 2012, p. 4).

In 2011, the country was estimated to have been the leading producer of refined selenium in the world (and was estimated to have accounted for 32.5% of global production); the third ranked producer of kaolin (13.5%), salt (6.9%), and refined lead (4.2%); the fifth ranked producer of potash (about 8.6%), sulfur (5.4%), and bentonite (3.2%); the sixth ranked producer of refined copper (3.6%); and the seventh ranked producer of crude steel (2.9%). Additionally, in 2010 (the latest year for which data were available), Germany either produced or was estimated to have produced between about 1% and probably not greater than 6% of the world's output of primary aluminum, barite, refined cadmium, cement, feldspar, natural gypsum, indium, crude iron, iron oxide pigments (natural), lime, magnesium compounds (as byproducts of potash mining), nitrogen (ammonia), silica (industrial sand and gravel), and zinc metal. It was estimated to have accounted for at least 5% of the world's total production capacity of alumina, fused aluminum oxide (abrasive), gallium (primary), graphite, magnesium metal (secondary), platinum metal (including secondary), rhenium metal (byproduct), strontium compounds, and titanium dioxide pigments (table 1; International Copper Study Group, 2012, p. 15–17; International Lead and Zinc Study Group, 2012, p. 7, 44; U.S. Geological Survey, 2012, p. 6, 15, 17, 25, 35, 37, 39, 45, 55, 59, 71, 75, 79, 87, 93, 97, 113, 123, 135, 139, 143, 157, 159, 173; World Steel Association, 2012, p. 9).

The international competitiveness of the country's nonfuel mineral processing and fabrication sector relied primarily on such factors as a highly skilled labor force, research, development and rapid assimilation of new technologies (including metal and other mineral materials recycling technologies), and the development and maintenance of liberal trade relationships both within and outside the European Union (EU). Germany's position in the global mineral economy is predominantly that of a major consumer and processor of minerals, and this role continues to evolve as emerging economies grow and competition for mineral raw materials increases. In 2010 (the latest year for which data were available), Germany was the world's third ranked consumer of copper, the fourth ranked consumer of aluminum and nickel, and the fifth ranked consumer of tin; it was not among the world's top five consumers of hard coal, lead, crude petroleum, crude steel, or zinc (Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 9–28).

Minerals in the National Economy

In 2011, the total value of Germany's industrial output (including the value of output by the country's mineral industry, but not that of the construction sector) accounted for 23% (\$820 billion¹) of the gross domestic product (GDP) compared with 22% (\$727 billion) in 2010. The value of marketed production by the country's metals processing sector (up to the foundry stage) accounted for about 3.8% (about \$135 billion) of the GDP compared with about 3.3% (about \$110 billion) in 2010, and that of the minerals extraction sector (excluding coal) accounted for about 0.24% (\$8.7 billion) of the GDP compared with 0.23% (\$7.4 billion) in 2010 (International Monetary Fund, 2012; Statistisches Bundesamt, 2012a; 2012b, p. 8, 11).

One of Germany's competitive advantages is its vibrant industrial sector, which enables the country to maintain a highly skilled industrial workforce. In 2011, the number of employees in the country's metal processing sector increased to 238,826 from 232,424 in 2010, although the number of employees in the coking plant and petroleum processing sector decreased to 17,127 from 17,812 in 2010; in the nonfuel mining and quarrying sector (including services), to 12,423 from 14,730 in 2010; and in the coal mining sector, to 10,098 from 12,444 in 2010. In 2011, Germany's manufacturing sector reportedly increased its share of the world's manufacturing output to 6.4% from 6.3% in 2010, and this was perceived to be following a trend of manufacturing resurgence in high-cost countries. Some analysts felt this trend was mostly owing to improvements in technology that have reduced the amount of labor required in

¹Where necessary, values have been converted from euro area euros (€) to U.S. dollars (US\$) at an annual average exchange rate of about €0.7536=US\$1.00 for 2010 and €0.7187=US\$1.00 for 2011. All values are nominal, at current prices, unless otherwise stated.

the manufacturing sectors of many high-cost countries (Marsh, 2012; Statistisches Bundesamt, 2012d).

According to the Bundesanstalt für Geowissenschaften und Rohstoffe, the 12 most valuable mineral raw materials produced in Germany in 2010 (the latest year for which data were available) were, in decreasing order of value of production, lignite (\$9.0 billion); natural gas (about \$3.9 billion); construction sand and gravel (about \$1.9 billion); crushed stone, including chalk (\$1.6 billion); crude petroleum (\$1.55 billion); hard coal (about \$1.5 billion); potash (\$1 billion); rock salt and industrial brines, NaCl content (\$800 million); kaolin (\$613 million); dolomite, limestone and marble (about \$598 million); ceramic and refractory clays (about \$458 million); and silica sand (\$248 million). Domestic production of mineral fuels appeared to have some economic benefit in addition to the simple value of output in that it helped to mitigate uncertainty in the domestic provision of electricity and distribution of imported mineral fuels (Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 15–28).

According to Germany's Federal Statistics Office (DESTATIS), the country's estimated mineral trade balance in 2011 for all sectors of the mineral industry (including trade in intermediate mineral products, such as cement) was –\$156 billion compared with –\$118 billion in 2010 and –\$94.4 billion in 2009. In 2011, Germany's mineral trade deficit increased compared with that of 2010 because the increase in the total value of the country's mineral imports (to \$237 billion from \$181 billion) was of greater magnitude than the increase in the total value of its mineral exports (to \$81 billion from \$63 billion). The most costly mineral imports were crude petroleum and natural gas (Germany's 2011 import expenditure on these minerals was \$114 billion), and the most costly nonfuel mineral import was iron ore (\$7 billion). The most valuable mineral export was petroleum refinery products (the country's revenue from the export of these mineral products was about \$17 billion), the most lucrative nonfuel mineral export was gold for commercial or industrial use (\$9 billion), and the most valuable nonprecious metal export was iron and steel scrap (\$6 billion) (Statistisches Bundesamt, 2012c, p. 74–78).

Government Policies and Programs

Germany's main mining law is the Federal Mining Act (BGBl. IS. 1310), which was approved on August 13, 1980, and revised on December 9, 2006, through slight revision to provisions of Article 11 (BGBl. IS. 2833). The country's production of some minerals (including gypsum and anhydrite, limestone and some other types of natural stone, peat, and some types of sand and gravel) was not directly regulated under the Federal Mining Act but was covered by a variety of other land-management and environmental regulations at both the Federal and State levels. Also, the setup of the Federal Mines Inspectorate was not determined in the Federal Mining Act (although this inspectorate does enforce many of the regulations in the main mining law); the Federal Mines Inspectorate was established through Articles 83 and 84 of Germany's Constitution (Bundesministerium der Justiz, 2007, p. 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011,

p. 17–19; Bundesministerium für Wirtschaft und Technologie, 2011, p. 34–45).

During 2011, the Government program to phase out the subsidy for the mining of hard coal was ongoing and continued to adhere to a schedule to eliminate the subsidy completely by the end of 2018. The Coal Industry Financing Act (BGBl. IS. 3086), which was approved on December 20, 2007 (and provides the legal framework for the Government's coal subsidy program), requires the Government to present an updated review on or before June 30, 2012, on whether the hard coal mining sector should continue to receive some portion of the subsidy (or some other form of state aid) after 2018, but this review clause was deleted by a revision of the law, which became effective on July 15, 2011. Therefore, the total amount of the subsidy was still scheduled to be reduced to 1.8 billion euros in 2012 compared with a subsidy of 2 billion euros (about \$2.7 billion) in 2010 (the latest year for which information on the realized subsidy amount was available) (Bundesministerium der Justiz, 2007, p. 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 32–34; Bundesministerium für Wirtschaft und Technologie, 2011, p. 9; Gesamtverbands Steinkohle e.V., 2011, p. 3, 12, 14–15).

On August 6, 2011, the 13th amendment (BGBl. IS. 1704) to the Atomic Energy Act (BGBl. IS. 1565) of July 15, 1985, came into effect and reaffirmed the Government's goal to close all the nuclear powerplants in Germany by 2022. In effect, the 13th amendment annulled the 11th amendment (approved by the German Parliament on November 26, 2010), which would have allowed extensions of the closure dates of some of the country's nuclear powerplants by 8 to 14 years (allowing some to remain open until 2036). The Government's mandate of a complete withdrawal from nuclear power in Germany by 2022 came after a shutdown of the Fukushima Daiichi nuclear powerplant following the earthquake and tsunami that struck Japan in March 2011. By sometime between 2020 and 2022, it was estimated that 35% of Germany's primary energy consumption could be provided by renewable sources as a result of the program to phase out nuclear power in the country (in combination with the effects of other Government policies, including the country's program to eliminate the hard-coal subsidy). The Government also planned to encourage investment in new natural gas- and lignite-fired powerplants that would be more flexible in producing electricity in order to make up for any power shortfalls during the decommissioning of the nuclear powerplants and decrease the uncertainty of energy provision as the country transitions to an energy mix that is expected to rely much more heavily on nontraditional energy technologies (Gesamtverbands Steinkohle e.V., 2011, p. 3, 5–7, 15–17, 22–31, 43–45; Pfeifer, 2011; Bernasconi-Osterwalder and Hoffmann, 2012; Bundesministerium für Wirtschaft und Technologie, 2012, p. 6–9).

On October 20, 2010, the Government launched a new raw materials strategy. The main objectives of the new raw materials strategy are—

- Reduce trade barriers and distortions of competition
- Help German industry diversify its sources of raw materials
- Help industry develop synergies from sustainable economic activity and enhanced materials efficiency

- Develop technologies and instruments to improve the conditions for recycling
- Establish bilateral raw materials partnerships with selected countries
- Do research into substitution and materials in order to open up fresh options
- Focus research programs relating to raw materials
- Create transparency and good governance in raw materials extraction
- Integrate national measures with European policy on raw materials.

In 2011, the Government continued to implement measures related to these objectives, including developing a national resource efficiency program (ProgRess). The main goals of ProgRess are to make the growth of the German economy less dependent on the use of natural resources and to reduce resource use and (global) environmental impacts. Expenditures on inputs of mineral raw materials accounted for about 45% of total operating costs for the manufacturing sector in Germany (Bundesministerium für Wirtschaft und Technologie, 2010, p. 7, 25; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 26–28; Clauder, 2011).

The Environmental Impact Assessment Act (EIA Act) (BGBl. IS. 1757, 2797), which was approved on June 25, 2005, and revised through slight changes to Article 2 (BGBl. IS. 3316) of the Act on December 21, 2006, was the environmental law that was most applicable to the mineral industry during 2011. This Act incorporates provisions of an older ordinance concerning the assessment of environmental impacts for mining projects (BGBl. IS. 1420), which was approved on July 13, 1990, and revised through slight changes to Article 8 (BGBl. IS. 2819) on December 9, 2006; the Act also incorporated other older ordinances, such as one for the protection of groundwater against pollution caused by certain dangerous substances (BGBl. IS. 542), which was approved on March 18, 1997, and was still applicable to the use and disposal of many of the chemicals used in mining and mineral processing in Germany. The EIA Act requires environmental impact assessments for all domestic waste repositories created or used by the mineral industry. The Federal Mining Act actually stipulates how these repositories are to be constructed and operated (monitored) (Bundesministerium der Justiz, 2007, p. 30; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 17–19; Bundesministerium für Wirtschaft und Technologie, 2011, p. 34–45).

Production

Data on mineral production are in table 1. In 2011, the real value added to the GDP by the construction sector increased by about 3.5% compared with that of 2010. In response to increased demand from the domestic construction sector and that of important trading partners, Germany's production of gravel (unspecified) increased by 14%; construction sand, 13%; construction gravel and hydraulic cement, 12% each; natural gypsum, 11%; and dimension stone, 10% (table 1; HeidelbergCement AG, 2012, p. 70; Zentralverband des Deutschen Baugewerbes e.V., 2012).

In 2011, production of platinum-group metals (PGMs) was estimated to have decreased by about 50% compared with that of 2010. Reliable data were not available for the production of PGMs in the country in 2009 or 2010, however, so it could be that production actually decreased substantially in 2009 (in response to a possible decrease in demand during the global economic downturn). Annually, about 45% of the country's consumption of PGMs is of that produced from secondary source materials (recycled). The country's production of cobalt matte decreased by 19% compared with that of 2010. For 2011, information about German production and imports of cobalt was not available, but production of cobalt matte and imports of cobalt ore and concentrate in 2010 had increased by about 27% and 25%, respectively, compared with that of 2009 (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 42, 73–74; Heraeus Holding GmbH, 2012, p. 5, 40–44).

In 2011, estimated production of secondary zinc increased by about 29%; gold metal, 15%; and secondary smelter copper, 11% compared with that of 2010. The estimated increase in the production of secondary zinc could be at least partially owing to increased production of secondary zinc from waste electric steel mill dust. Although Germany's production of crude steel increased by only 1% during this timeframe, this amounted to an increase in production of more than 450,000 metric tons (t) of steel, which could have resulted in enough steel mill dust to account for the estimated 6,000 t increase in production of secondary zinc. From October 1, 2010, through September 30, 2011, production of gold metal by Aurubis AG (based in Hamburg, Germany) actually decreased to about 35 t from 38 t during the company's previous fiscal year, so the increase of production in Germany during the calendar year 2011 compared with that of 2010 was probably owing to increased production by other companies. The increase in secondary copper production could have been partially owing to Aurubis's completion of its KRS-Plus project to expand the company's processing capacity at its secondary metals production facilities at Luenen during the summer of 2011, and also to increased throughput for the electric furnace at its secondary smelter in Hamburg (tables 1, 2; Aurubis AG, 2012, p. 59, 75–76, 87; Recylex S.A., 2012, p. 1, 6–7).

In 2011, Germany's production of bromine compounds was estimated (from the country's reported value of marketed production) to have increased by about 27% compared with that of 2010. This increase appeared to be a supply response to an increase in the price of bromine by 32% in mid-2011 compared with that at the beginning of the year, and the price remained at that higher level until the end of the year. The country's production of rock salt decreased by 12% during this same timeframe owing to mild winter weather conditions, which led to lower than average demand for deicing compounds in Europe (table 1; K+S Aktiengesellschaft, 2012, p. 1, 24, 63).

In 2011, production of carbon black increased by about 33% compared with that of 2010, but information concerning whether this was mainly in response to an increase in demand for tires by the automotive sector in Germany or for some other use (such as in pigments, coatings, plastics, inks, or toners, among other uses) by some other sector was not available. Production of coke oven gas was estimated to have decreased

by 16%, and this decrease in production could have been at least partially owing to temporary pauses in the operation of the Prosper coking plant (located next to the Prosper-Haniel Mine) during the process of transition of operations to the control of ArcelorMittal Bremen GmbH in mid-2011 (table 1; Evonik Industries AG, 2011; Gesamtverbands Steinkohle e.V., 2011, p. 16–19; McNulty, 2011).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities. Since the closure of the last metal mines in 1992, there has been no mining of metallic minerals in Germany. Many of the leading companies in the global metals processing sector owned and operated significant facilities in Germany, however. ThyssenKrupp AG (based in Duisburg, Germany) was the leading producer of crude steel in Germany and the 16th ranked producer of crude steel in the world. Salzgitter AG (based in Salzgitter, Germany) was the second ranked producer of crude steel in the country but was not among the top 40 producers of crude steel in the world. ArcelorMittal (based in Luxembourg) was the third ranked producer of crude steel in Germany and the leading producer in the world. Aurubis was the leading producer of total refined copper in Germany and the EU, and Salzgitter held a 25% ownership interest in Aurubis. Aurubis was the second ranked producer of copper cathodes in the world and the leading producer of secondary refined copper. Xstrata plc (based in Switzerland and registered in the United Kingdom) was the leading producer of zinc metal in Germany and the leading producer of mined zinc in the world. Norsk Hydro ASA of Norway was the second ranked producer of aluminum in Germany and the fifth ranked producer of primary aluminum in the world, and the company owned the largest single primary aluminum smelter in Germany (the Rheinwerk primary smelter at Neuss). Berzelius Metall GmbH (based in Stolberg, Germany) was the leading producer of primary lead in the country (table 2; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 36–41; Aurubis AG, 2012, p. 57; Norsk Hydro ASA, 2012, p. 28–38; Stahlinstitut VDEh and Wirtschaftsvereinigung Stahl, 2012, World Steel Association, 2012, p. 8; Xstrata plc, 2012, p. vii, 66–71).

Sibelco Deutschland GmbH (a German subsidiary of S.C.R.-Sibelco NV of Belgium) was Germany's leading producer of mineral raw materials for use in the production of ceramics, and S.C.R.-Sibelco was the leading producer of olivine, plastic (ball) clays, quartz, and silica (industrial) sand in the world. Other than this subsidiary of a multinational company, family-owned small- and medium-scale enterprises (SMEs) accounted for most of the remainder of the country's production of ceramic, kaolinitic, and plastic (ball) clays in the country. S&B Industrial Minerals S.A. of Greece was the leading producer of bentonite in Germany and the EU and the second ranked producer of bentonite in the world. Süd-Chemie AG was the other major producer of bentonite in Germany (besides S&B). HeidelbergCement AG was the leading producer of cement in the country and the third ranked producer in the world. HeidelbergCement was also the world's leading producer of aggregates. K+S Aktiengesellschaft (K+S AG) was the leading producer of potash and salt (NaCl) in Germany

and the EU, and the company was the leading producer of salt and the fifth ranked producer of potash in the world (table 2; Arbeitsgemeinschaft Westerwald-Ton e.V., 2010, Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 43–46; Clariant International Ltd., 2012, p. 23, 38; HeidelbergCement AG, 2012, p. 8, 18, 21, 48, 70–72; 250–251; K+S Aktiengesellschaft, 2012, p. 61–62; S&B Industrial Minerals S.A., 2012, p. 23–24; Sibelco Deutschland GmbH, 2012).

In 2011, RWE Power AG accounted for about 54% of the total production of lignite in Germany, and 88% of this lignite production was used to generate electricity domestically. RWE was the leading producer of electricity in Germany. About 90% of all the lignite produced in Germany was used domestically to produce electricity. In 2010 (the latest year for which data were available), 72% of the salable production of hard coal in the country was used to produce electricity, about 25% was used to produce steel, and about 3% was used to produce thermal energy. Reliable information concerning the individual production capacities of the five remaining hard coal mines in Germany was not available, especially as production may have been decreasing as these mines continued to get nearer to their expected closure dates (tables 1, 2; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 29–34; Bundesministerium für Wirtschaft und Technologie, 2011, p. 6–12; Gesamtverbands Steinkohle e.V., 2011, p. 11–19; RWE Aktiengesellschaft, 2012, p. 1, 72).

On April 8, 2011, 5N Plus Inc. of Canada acquired MCP Group S.A. of Belgium, including MCP's 50% ownership share in the Ingal gallium plant in Stade, Germany, and thereby became the leading supplier of gallium in the world. On April 21, Clariant International Ltd. of Switzerland acquired control of Süd-Chemie AG, and completed acquisition of 100% of the shares in Süd-Chemie on December 1, 2011. On June 1, ArcelorMittal acquired the Prosper coking plant from RAG Aktiengesellschaft, which meant that all the hard coal coking plants in Germany were owned by steel companies and not by companies in the hard coal mining sector. At the end of July, an investment company (owned by investment management companies Rhône Capital LLC of the United States and Triton Advisors Ltd. of St. Helier, United Kingdom) acquired the carbon black business of Evonik Industries AG. Evonik Industries had named its German carbon black production subsidiary Evonik Carbon Black GmbH, and Rhône Capital and Triton Advisors renamed it Orion Engineered Carbons GmbH. At the beginning of 2011, all the carbon black producing subsidiaries of Evonik Industries combined to rank second in the world in the production of carbon black (for all uses), but the same collection of subsidiaries ranked third by the end of the year owing to global consolidation among other major carbon black producers. On November 4, 2011, Lafarge S.A. of France completed the sale of its gypsum assets in Europe and South America to the Etex Group S.A. of Belgium, and Lafarge retained a 20% ownership share in the new gypsum subsidiaries of Etex Group, including in Gyproc GmbH of Germany (table 2; 5N Plus Inc., 2011, p. 2–5, 12–13; Evonik Industries AG, 2011; 2012, p. 17, 63, 170; Gesamtverbands Steinkohle e.V., 2011, p. 16–19; McNulty, 2011; ArcelorMittal, 2012, p. 63; Clariant International Ltd., 2012, p. 15; Lafarge S.A., 2012, p. 28, 152).

Mineral Trade

Data on exports and imports of selected mineral commodities in 2010 (the latest year for which data were available) are provided in tables 3 and 4, respectively. In 2010, Germany produced enough sulfur to meet 100% of the country's domestic demand (volume) and was able to export slightly greater than three times (308%) the domestic volume of consumption; the country's production of gypsum and anhydrite was also enough to meet 100% of domestic demand, and the volume of exports exceeded the volume of domestic consumption by 27%, aggregates (5.5%), rock salt (2.8%), limestone and dolomite (1%), and lignite (0.6%). In addition to being 100% dependent on imports of metallic ores and concentrates, Germany also imported 100% of the magnesite, natural graphite, phosphates, and soapstone, steatite, and talc consumed in the country. In addition, imports accounted for 98% of the country's consumption of crude petroleum; 87%, of natural gas; about 83%, of barite; about 80%, of fluorspar; 77%, of hard coal; 57%, of refined copper; 45%, of bentonite; 40%,² of aluminum; 31%,² of refined lead; 29%, of feldspar; and between 6% and 7%, of kaolin. In 2008 (the latest year for which data were available), Germany produced enough potash to account for 100% of the country's domestic demand (volume) and was able to export about four times (432%) the domestic volume of consumption (tables 1, 3, 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 17, 111).

Although Germany has traditionally attempted to import minerals from as diverse a number of source countries as possible, the country has had to depend on single countries for close to 80% (or even more) of certain minerals during one or more years between 2000 and 2010. For at least 1 year during this timeframe, the following countries provided 80% or more of Germany's imports: Austria (processed rare-earth oxides), Brazil (ferro-niobium), Chile (lithium carbonate), China [antimony, barite, ferrotungsten and (or) tungsten oxides and hydroxides, fluorspar, graphite, manganese, and rare earths], Greece (perlite), Guinea (bauxite), Israel (phosphates), and South Africa [andalusite and sillimanite, chromite, ferrochromium, and (or) the PGMs iridium, osmium, platinum, and (or) ruthenium]. According to an analysis of the concentration of mineral supply by country (using an index indicator based on the Herfindahl-Hirschman Index) combined with the country risk ratings of the World Bank's Aggregate Governance Index, the European Commission (EC) determined that enough of a supply risk to EU countries existed for supplies of antimony, beryllium, cobalt, fluorspar, gallium, germanium, graphite, indium, magnesium, niobium, PGMs, rare earths, tantalum, and tungsten to rate these minerals as "critical." In addition to this possible "source country risk," Germany and the EC also expressed concern regarding the possibilities of certain minerals being produced by only a few companies worldwide. Some minerals that were considered by either the EC or Germany's Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) to have a notably high level of corporate concentration in their global production from 1998 through 2008 included numerous industrial minerals, iron ore that is shipped

²Includes use of primary refined metal that was produced in Germany from imported mineral raw materials.

overseas, niobium, PGMs, rare earths, rhenium, and tantalum (table 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 9–28).

On November 8, 2011, the Nord Stream natural gas pipeline, which runs under the Baltic Sea from Russia directly to Germany, was officially opened. The pipeline was expected to become fully operational in 2013, at which point it would have a natural gas transportation capacity of about 55 billion cubic meters per year. Germany had agreements to transship the natural gas on to Denmark, France, the Netherlands, and the United Kingdom. The main natural gas supply line from Russia to the EU passes through Ukraine and has an export capacity of about 150 billion cubic meters per year of natural gas (Wiesmann, 2011).

In 2010 (the latest year for which data were available), Germany's engineering sector exported about 87% of the mining equipment and services that it produced, and the leading destinations for these exports were China (the value of German mining technology and services exports to this country equaled \$448 million), Russia (\$367 million), the United States (\$200 million), Australia (\$96 million), and India (about \$80 million). Germany supplied about 21% (by value) of Russia's total imports of mining equipment and 16% of China's (Chadwick and Moore, 2011; Walker 2011, p. 2–3).

Commodity Review

Metals

Aluminum.—In 2011, the monthly average price of aluminum on the London Metals Exchange (LME) increased through April. In Germany, this was primarily because of strong demand in the automotive and construction sectors, and it was also reportedly because of increased demand in the nascent solar energy sector in the country. Especially after July, however, the LME price for aluminum decreased steadily until it was about 17% lower at the end of the year than it had been at the beginning. Aluminum production costs for German producers (including energy and raw materials costs) appeared to have increased in 2010 and 2011. For example, the total cost of raw materials (including mineral raw materials and assumed to include energy expenditures, as electrical power is considered to be an essential raw material by primary aluminum producers in Germany) for Germany's leading primary aluminum producer Trimet Aluminium AG increased to \$1,680 million during the company's fiscal year 2011 (from July 1, 2010, until June 30, 2011) compared with \$910 million during fiscal year 2010 (Farchy, 2011a; Trimet Aluminium AG, 2011; Gesamtverband der Aluminiumindustrie e.V., 2012b; YCharts.com, 2012).

Despite the increased cost, Germany's production of primary aluminum increased by about 7.5% compared with that of 2010, and that of secondary aluminum increased by 3.8%. Apparently, aluminum prices would have to decrease further or greater changes in the cost of staying in operation relative to the cost of shutting down would have to take place before primary aluminum plant closures or other reductions in aluminum production capacity would become necessary in Germany. Companies could also shift production toward

less energy-intensive production of secondary aluminum (at existing facilities with idle secondary production capacity) or take other measures to reduce costs (table 1; Farchy, 2011a; Gesamtverband der Aluminiumindustrie e.V., 2012b).

In November 2011, Novelis Inc. began operation of a new aluminum melting furnace at the site of the company's 50%-owned Aluminium Norf GmbH (Alunorf) aluminum plant at Neuss. The new furnace increased the recycling capacity of the new Neuss secondary aluminum facilities, enabling the facility to process 100,000 metric tons per year (t/yr) of aluminum scrap compared with 50,000 t/yr of aluminum scrap in 2010 (Gesamtverband der Aluminiumindustrie e.V., 2011).

Cobalt.—In 2010 (the latest year for which data were available), Germany's imports of cobalt oxides and hydroxides and of cobalt scrap increased by 16% and 280%, respectively, compared with that of 2009. Given the relative tonnages of the country's imports and exports of cobalt-bearing raw materials and the historical pattern of production of cobalt matte, a significant proportion of Germany's production of cobalt matte could be secondary and depend heavily on the country's imports of cobalt scrap (tables 1, 3, 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 73–74).

Iron and Steel.—Expenditures on raw materials was an important limiting factor for steelmakers in Germany. According to a German import price index, the price of imported iron ore increased by about 35% compared with that of 2010, and the total value of the country's iron ore imports increased by 28.5%, even though the tonnage of iron ore imports decreased by about 3.5% during this timeframe. In 2011, Brazil was by far the leading supplier of iron ore imports to Germany, and the value of iron ore imports from Brazil accounted for about 55% of the total value of iron ore imports, Canada was the second ranked supplier (17%), and Sweden was third (about 13%). Prices for German imports of coking coal were expected to be about \$300 per metric ton for most of 2011, after floods in Australia caused shortages for several months early in the year. By February 2011, the free on board (f.o.b.) export price of Australian coking coal increased to about \$320 per metric ton compared with about \$225 per metric ton in December 2010. By June 2011, the U.S. f.o.b. export price of premium coking coal increased to above the Australian price because German and other European steel producers turned to the United States to supply them with coking coal following the force majeure declarations by many Australian suppliers earlier in the year (Farchy, 2011b; Gesamtverbands Steinkohle e.V., 2011, p. 39; ThyssenKrupp AG, 2011, p. 7, 67, 75; ArcelorMittal, 2012, p. 8; Salzgitter AG, 2012, p. 81–83; Triebkorn, 2012).

In 2011, global apparent steel use increased by about 5.6% compared with that of 2010, including in Germany (by 8.8%) and in the EU as a whole (by about 5.5%); however, companies reported that demand for crude steel in Germany and the EU increased early in the year primarily owing to annual restocking of inventories but decreased steadily during the second half of the year. In November 2011, ArcelorMittal temporarily idled a blast furnace at the steel plant operated by its German subsidiary ArcelorMittal Eisenhüttenstadt GmbH (Antonoli, 2011; Business News Americas Ltda., 2011; ThyssenKrupp AG, 2011, p. 14, 22, 48–50, 57–61, 66–71; ArcelorMittal, 2012, p. 8, 64;

Salzgitter AG, 2012, p. 84, 89–90; World Steel Association, 2012, p. 16).

On January 25, 2011, ArcelorMittal completed the spinoff of its stainless steel operations, and ThyssenKrupp did likewise later in the year. During 2011, European and German demand for stainless steel followed a similar pattern to that for crude steel and increased overall in 2011 compared with that of 2010, but ThyssenKrupp reported that the spinoff of its stainless steel unit would improve the company's competitiveness. The company reported that there were structural problems in the (global) stainless steel market, which meant that the current market valuations of producers of stainless steel included high risk premiums and discounts, and that divestment of the stainless steel unit would substantially reduce its debt. Immediately prior to the divestment of its stainless steel business, ThyssenKrupp was reportedly the market leader in sales of stainless steel in Europe (Schäfer, 2011; ThyssenKrupp AG, 2011, p. 6–7, 48–50, 58–61, 81–82; ArcelorMittal, 2012, p. 6, 25).

Platinum-Group Metals.—In both 2010 and 2011, Heraeus Precious Metals GmbH & Co. KG's revenues from sales of products manufactured with PGMs appeared to have increased significantly compared with those of 2009 and 2010, respectively. This followed a downturn in production (in response to decreased demand) in 2009. In 2011, one of the PGM-based products that Heraeus appeared to receive increased sales revenue from was a catalytic gauze of fine platinum-rhodium threads that is used to produce nitric acid for fertilizers through an ammonium oxidation process (Heraeus Holding GmbH, 2012, p. 5, 20–22, 40–44).

Industrial Minerals

Cement.—In 2011, HeidelbergCement significantly increased the company's sales of cement in Germany, and its cement division earned greater profits than in 2010 despite significantly higher costs for energy (energy expenditures increased by 23.5% during this timeframe) and raw materials (11.1%), including expenditures on anhydrite, gypsum, and limestone. HeidelbergCement planned to invest in construction of a new cement blending silo at the company's cement plant in Hanover. Cement consumption in Germany increased by 13% compared with that in 2010. Information on individual companies' actual tonnages of annual production in the country was not available (HeidelbergCement AG, 2012, p. 42–48; Verein Deutscher Zementwerke e.V., 2012).

Gypsum.—On June 17, 2010, the Court of Justice of the European Union upheld an EC decision of November 27, 2002, to impose fines on BPB plc of the United Kingdom, Gebrueder Knauf Westdeutsche Gipswerke KG (operating under the name of Knauf Gips KG in 2011) of Germany, Gyproc S.A. of France, and Lafarge for anti-competitive conduct in the wallboard market (a major market for gypsum) between 1992 and 1998. In 2011, Lafarge announced plans to divest itself of most of its gypsum business, reportedly as part of a plan to reduce company debt, and proceeded to sell off gypsum production facilities in Asia, Australia, Europe, and South America during the year. At the beginning of 2011, Cie. De Saint-Gobain S.A. of France,

Knauf Gips, and Lafarge controlled 95% of the European market for gypsum, and Lafarge was reportedly the third ranked supplier of gypsum in the world. Among German producers of gypsum, the ownership concentration may be greater than it appears in table 2. On the Web site of Knauf Gips, VG-ORTH GmbH & Co. KG was listed as part of the Knauf group of companies (in Germany), but no other information concerning Knauf's possible (percent) ownership of VG-ORTH was available. On VG-ORTH's Web site, VG-ORTH is described as a family-owned company and any information concerning a possible ownership share of Knauf in VG-ORTH was also not apparently available. So, the two companies remain listed as under completely separate ownership in table 2 (Court of Justice of the European Union, 2010; Knauf Gips KG, 2011; World Cement, 2011; Lafarge S.A., 2012, p. 26–29, 41–48, 152; VG-ORTH GmbH & Co. KG, 2012)

Potash.—K+S AG has described a possible future scenario for optimization of crop yields in China and India where the potash input into agricultural production in those countries could increase by a factor of 1.7 and 2.5, respectively, compared with that of 2011. In 2011, sales in Europe accounted for 54% of the company's total revenue from potash and magnesium products (including sales within Germany, which accounted for 16.5%) compared with about 56.5% (about 19.5% within Germany) in 2010; Asia accounted for 22% of K+S AG's sales of potash and magnesium products compared with about 21.5% in 2010; South America, about 17.5% compared with about 16.5%; Africa and Oceania, about 4.5% compared with 3%; and North America, about 2% during both years. K+S AG's sales of potash accounted for approximately a 10% share of the global potash market. In the future, the company expected the markets in South America and Southeast Asia to account for gradually increasing shares of its total potash sales (K+S Aktiengesellschaft, 2012, p. 1–4, 60–61, 136).

One of K+S AG's major competitors for sales of potash in Europe and globally was JSC Uralkali of Russia. Uralkali announced that the EC had lifted anti-dumping duties and import quotas on EU imports of potash from Russia and Belarus on July 13, 2011. In 2011, however, the strongest growth in sales of potash by Uralkali was in Brazil, China, and in Southeast Asia (similar to the regional pattern of growth in potash sales of K+S AG), and only 9% of the company's total sales of potash were to countries of Western Europe. This was reportedly because of the maturity of markets for potash in Western Europe relative to those in emerging markets (including those in Eastern Europe) (JSC Uralkali, 2012, p. 13–14, 52–53, 95, 121; K+S Aktiengesellschaft, 2012, p. 60–61, 136, 140–141).

Mineral Fuels

Coal.—Hard coal mining was centered in the Ibbenbüren, the Ruhr, and the Saar coalfields and was uneconomical without a subsidy. An economic consequence of decreasing production of hard coal domestically is that Germany would become more dependent on imported coke and coking coal from hard coal mines outside of the country, and this would subject sectors of the mineral industry, such as steel manufacturing, and other sectors of the economy to greater cost uncertainty. The sale

of the Prosper coking plant to ArcelorMittal could have been necessary to enable it to keep operating (processing imported coking coal) after the last of Germany's hard coal mines closes in 2018. In 2011, a project was underway to study the possibility of running water down the deep main shaft of at least one of the closed hard coal mines in order to run a hydroelectric turbine, which (in theory) would generate enough electricity to supply a medium-sized city in Germany (Dohmen and Schmid, 2011; Gesamtverbands Steinkohle e.V., 2011, p. 3–14, 16–32).

In 2011, RWE produced about 95.6 million metric tons (Mt) of lignite compared with 91 Mt in 2010 at the company's Garzweiler, Hambach, and Inden Mines in the Rhineland, which was the main region for production of lignite by RWE and in Germany. RWE planned to complete construction of a new lignite-fired powerplant at Neurath in Germany by the end of the first quarter 2012, and the company planned to decommission an undisclosed number of older lignite-fired powerplants in Germany after the new plant at Neurath is running at full capacity. RWE expected this switch from older to newer lignite-fired electricity generation eventually to reduce the company's emissions of CO₂ in Germany by about 6 million metric tons per year. The price of the lignite used by RWE to generate electricity in Germany does not change much from year to year, as this lignite is not traded on international markets (RWE Aktiengesellschaft, 2012, p. 1, 31, 41, 47–49, 69–72).

Natural Gas.—Although the area covered by oil and gas exploration licenses in Germany increased to 109,000 square kilometers (km²) from 97,000 km² in 2010, no significant increase in actual exploration activities (such as drilling and seismic surveys) was apparent. Not all exploration activities were completely observable. Exxon Mobil Corp. had reportedly been conducting exploration for shale gas in Germany since 2008, but the results of this exploration remained confidential through 2011. From 2003 through 2011, the country's annual production of natural gas decreased by an average of about 6.5% owing to depletion of reserves (Freedman and O'Rourke, 2011; Landesamt für Bergbau, Energie und Geologie, 2012, p. 10).

Reserves and Resources

At the end of 2011, Germany's reserves of lignite were estimated to be 40.5 billion metric tons (Gt), and this preliminary figure was equal to the estimated lignite reserves at yearend 2010; the country's proven and probable reserves of natural gas were estimated to have decreased to about 133 billion cubic meters compared with 146 billion cubic meters in 2010; and its proven and probable reserves of crude petroleum were estimated to be about 259 million barrels (Mbbbl) (converted from a reported figure of 35.3 Mt) compared with 263 Mbbbl (35.9 Mt) in 2010. At the end of 2011, K+S AG estimated company reserves of potash (K₂O content) in Germany to be about 137 Mt compared with 150 Mt at yearend 2010, its reserves of salt in Germany to be about 118 Mt compared with 126 Mt at yearend 2010, and reserves of kieserite (usable magnesium compounds contained in the company's potash deposits in Germany) to be 110 Mt compared with 125 Mt at yearend 2010. Reliable information concerning additional reserves of industrial minerals in the country was not available (Bundesverband Braunkohle e.V., 2011, 2012b;

K+S Aktiengesellschaft, 2011, p. 218–219; 2012, p. 214–215; Landesamt für Bergbau, Energie und Geologie, 2012, p. 10, 42–43).

Assuming that the phase-out of the Government's subsidy of hard coal production will proceed according to the schedule as it stood in 2011, this policy will gradually increase the volumes of hard coal resources in Germany that are not economical to mine until the end of 2018, when hard coal production is expected to cease (owing to the end of the subsidy). In 2010 (the latest year for which data were available), the Government had an estimate of how much hard coal would be produced in 2011 and through 2018 (conditional on the subsidies allowing it to be profitable to do so), and considered this estimated future production to represent a type of reserve figure for hard coal in Germany. Under this definition, the country's economically exploitable reserves of hard coal (in the presence of planned subsidies) were estimated to be about 59 Mt at the end of 2010 compared with about 73 Mt at yearend 2009, and the country's annual production of hard coal was expected to be the primary reason for annual decreases in these reserves until the end of 2018. In 2010 (also the latest year for which data were available), the country's hard coal resources remained at approximately 83 Gt (Bundesanstalt für Geowissenschaften und Rohstoffe, 2010, p. 196; 2011, p. 163).

Outlook

In order to eliminate nuclear power gradually from Germany's energy mix by 2022 and still be on track to reduce greenhouse gas emissions by 80% in 2050 (compared with the level of emissions in 2010), it is projected that about 38% of the electricity generated in the country in 2030 will come from renewable energy resources (compared with 20% in 2011, according to preliminary data); 23% from lignite (25% in 2011); about 20% from natural gas (about 14% in 2011); 15% from hard coal (about 19% in 2011); about 4% from heating oil, pumped storage, and other (5% in 2011); and 0% from nuclear power (about 17% in 2011). In energy equivalents, the direct implications of the realization of this scenario could be that Germany would consume about 50% more natural gas in the generation of electricity in 2030 than in 2011, about 7% less lignite, and about 19% less hard coal. In 2030, the country's entire hard coal demand would have to be satisfied with imports if the elimination of the hard coal subsidy results in zero production by 2030 (as expected), and approximately all the increase in natural gas consumption would also have to be satisfied through increased imports of natural gas. This projected 2030 energy mix would require approximately a 96% increase in electrical power generated from renewable energy resources compared with that of 2011; indirect implications of increased consumption of renewable energy resources for the mineral industry could include increases in consumption of minerals used in wind turbines (including rare earths), in solar cells (including silicon and silver), and in other renewable energy technologies (Gesamtverbands Steinkohle e.V., 2011, p. 22–26; AG Energiebilanzen e.V., 2012, p. 25–27; Bundesministerium für Wirtschaft und Technologie, 2012, p. 4–5, 8, 16–18, 38, 49–51; Bundesverband Braunkohle e.V., 2012a, p. 7–15).

RWE expected that the company's startup of its lignite-fired powerplant in Neurath (near Cologne) in 2012 (or possibly 2013) would increase demand for (and the company's production of) lignite in Germany. The Government's program to eliminate the hard coal subsidy by the end of 2018 was expected to result in the closure of the Saar Mine on July 1, 2012, and the West Mine at the end of 2012. This would leave only three mines producing hard coal in Germany in 2013. In 2012, however, it was expected that Germany would still produce about 12 Mt of hard coal, which was about the same as in 2011, before production of hard coal began to decrease significantly in 2013. Information was not available concerning how much hard coal was produced at the Saar Mine and the West Mine in 2011, so accurate estimates of how much production of hard coal would decrease in 2013 after these mines are closed were not available (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, p. 12–14, 32–35; Gesamtverbands Steinkohle e.V., 2011, p. 14–18; RWE Aktiengesellschaft, 2012, p. 1, 31, 41, 69–72, 96–100).

Future levels of production of fertilizer materials (such as potash) in Germany are expected to vary more with respect to fluctuations in demand outside of Europe than within Europe. Expected increases in the global population and in the level of prosperity in emerging market economies, including those of Latin America and Southeast Asia, are likely to increase food consumption and thus the intensity of land cultivation. Also, expected increases in meat consumption will likely drive the need for animal feed and therefore increase demand for almost all of Germany's fertilizer products even more than just an increase in the total level of food consumption. For 2012 and 2013, however, K+S AG expects global demand for fertilizers to remain at about the same level as in 2011, and the company estimated that the world's entire sales volume of potash (KCl) could decrease to slightly less than 58 Mt in 2012 compared with an estimated 58.7 Mt in 2011 before increasing to slightly greater than 60 Mt in 2013. Germany's production of potash in 2012 is also not expected to change much compared with that of 2011. The marketable production of potash (K₂O equivalent) in 2011 is estimated to have been about 600,000 t below the level of production in 2007 and far below K+S's estimated potash production capacity in the country. So, marketable production of potash in Germany could increase significantly in 2013 compared with that of 2011 (tables 1, 2; K+S Aktiengesellschaft, 2012, p. 110–111, 135–141).

Germany's production of crude steel could decrease to about 42 Mt in 2012 and remain at close to that level in 2013. The estimated decrease in steel production in 2012 is based on a producer response to a projected decrease in demand for steel in the EU's (including Germany's) construction sector and much lower growth in steel demand in the EU's automotive and mechanical engineering sectors. In 2013, some growth in steel demand in all these sectors is expected, but demand is not projected to be nearly as high as it was in 2011. ThyssenKrupp expects significant uncertainty in markets for the company's sales of steel in 2012, and the company could not accurately predict whether it would produce more or less crude steel than it did in 2011 (ThyssenKrupp AG, 2011, p. 7–8, 56–59, 101–105; EUROFER, 2012).

Despite the expected slowdown in the European and German construction sectors in 2012, the construction sector in Germany is expected to exhibit slightly positive growth. German production of construction materials (cement, gypsum, certain clays, and so forth) is estimated to remain about the same or to increase slightly in 2012 compared with that of 2011 (Bundesverband Baustoffe - Steine und Erden e.V., 2012; EUROFER, 2012).

Estimates for 2012 based on preliminary data for German production in January and February 2012 indicate that production of refined copper in Germany (and important byproducts of refining copper in Germany, such as gold, PGMs, selenium, silver, and so forth) could decrease slightly (by about 1%) or remain about the same compared with production in 2011, and that production of refined lead and zinc metal could remain approximately flat during this timeframe. Aurubis expected to increase production of secondary refined copper in 2012 mostly owing to increased secondary production capacity at its recycling and secondary copper production facilities in Luenen. Total production of aluminum is projected to decrease to about 1.05 Mt in 2012 because of an estimated decrease in production of primary aluminum to about 405,000 t and despite an estimated increase in secondary production to about 645,000 t (Aurubis, 2012, p. 11; Gesamtverband der Aluminiumindustrie e.V., 2012a; International Copper Study Group, 2012, p. 15; International Lead and Zinc Study Group, 2012, p. 7, 20, 28, 44, 56, 63).

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TABLE 1
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011	
METALS						
Aluminum:						
Alumina	thousand metric tons	788 ^r	819 ^r	638 ^r	973 ^r	950 ^e
Aluminum hydroxide, Al ₂ O ₃ equivalent	do.	1,388	1,395	1,154	1,485	1,405
Metal:						
Primary		551,030	605,876	291,750	402,476	432,472
Secondary		857,619	720,898	560,755	611,139	634,441
Total		1,408,649	1,326,774	852,505	1,013,615	1,066,913
Cadmium, metal, refinery, including secondary ^e		475 ^r	420	278	290	300
Cobalt, matte, including shavings and scrap		685	913	654	829	671
Copper, metal:						
Smelter:						
Primary		270,200	295,000	286,300	378,700	343,700 ^p
Secondary		273,400	293,300	247,500	212,400	236,500 ^p
Total		543,600	588,300	533,800	591,100	580,200 ^p
Refined:						
Primary		301,702	300,470	290,200	401,900	393,600 ^p
Secondary		363,815	389,300	378,745	302,400	326,400 ^p
Total		665,517	689,770	668,945	704,300	720,000 ^p
Gallium, crude ^e		25 ^r	25 ^r	20 ^r	30 ^r	30
Gold, metal, refined, including secondary	kilograms	89,155	NA	204,766 ²	44,100 ^e	50,682
Indium, refined ^e		10	10	10	10	10
Iron and steel:						
Ore, run of mine:³						
Gross weight	thousand metric tons	422	455	364	390	400 ^e
Fe content	do.	44	48	38	41	42 ^e
Metal:						
Pig iron	do.	31,149	29,111	20,104	28,560	27,795
Direct-reduced iron	do.	590	520	380	450	380
Ferroalloys:						
Ferrochromium		22,030	26,960	13,667	17,300 ^{r,e}	17,900 ^e
Other ^e		5,000	5,000	6,336 ⁴	9,200	9,000
Steel, crude	thousand metric tons	48,550	45,833	32,671	43,830	44,288
Semimanufactures	do.	41,999	39,805	29,041	36,827	37,933
Lead, metal, refined:						
Primary		110,934	113,200	104,900	125,000	135,000 ^e
Secondary		294,147	301,900	285,700	280,400	303,000 ^e
Total		405,081	415,100	390,600	405,400	438,000 ^e
Magnesium, metal including castings		30,791	29,818	11,603	14,859	15,000 ^e
Platinum-group metals, metal, refined	kilograms	137,645	121,597	110,000 ^e	100,000 ^{r,e}	49,601
Selenium, metal ^e		650 ^r	650 ^r	600 ^r	650 ^r	650
Silicon, metal ^e		35,254 ⁴	35,000	20,000	30,000	30,000
Silver, metal, refined, including secondary		1,673	1,783	1,616	1,768 ^r	1,886
Tin, alloys		6,674	6,114	5,003	5,500 ^e	6,000 ^e
Zinc, metal:^e						
Primary		206,000	211,370 ⁴	134,000	144,000	142,000
Secondary		89,000	80,910 ⁴	19,000	21,000	27,000
Total		294,735 ⁴	292,280 ⁴	153,000	165,000	169,000
INDUSTRIAL MINERALS						
Abrasives, manufactured:						
Corundum		84,666	94,566	48,802	82,776	90,408
Fused aluminum oxide, crude ^e		20,000	20,000	20,000	20,000	20,000
Silicon carbide ^e		20,000	20,000	20,000	20,000	20,000
Aluminum salt slag, Al ₂ O ₃ equivalent ^e	thousand metric tons	200	200	150	200	200

See footnotes at end of table.

TABLE 1—Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011	
INDUSTRIAL MINERALS—Continued						
Barite, marketable (contained BaSO ₄)	88,265	78,941	45,606	55,887	60,000 ^c	
Boron compounds, manufactured, including boric acid and oxide	217,885	204,411	129,928	163,074	157,212	
Bromine compounds, including oxide ^e	1,612 ^d	1,680	985	1,500	1,900	
Cement:						
Clinker, intended for market	thousand metric tons	26,992	25,366	23,232	22,996 ^r	24,775
Hydraulic	do.	33,382	33,581	30,441	29,915 ^r	33,540
Chalk, natural, including ground	do.	1,358	1,495	1,322	1,350 ^e	1,400 ^e
Clays, natural:						
Bentonite	do.	385	414	326	363	350 ^e
Ceramic and refractory clays	do.	4,182	4,229	3,711	3,978	3,950 ^e
Of which, fire clay and chamotte	do.	252	267	250 ^e	246	253
Kaolin, marketable	do.	3,843	3,622	4,514	4,578	4,900 ^e
Other, unspecified	do.	467	182	193	198	200 ^e
Dolomite, neither burnt nor sintered	do.	880	850 ^e	800 ^e	792	622
Feldspar, all uses ^s	3,311,523	3,616,425	3,698,134	5,202,549	5,000,000 ^e	
Of which, feldspar for industrial uses	171,303	161,416	201,000 ^e	204,000 ^e	218,000 ^e	
Fluorspar, acid-grade	54,359	48,519	49,962	59,086	61,500 ^e	
Gypsum and anhydrite:						
Natural	thousand metric tons	1,898	2,112	1,898	1,822	2,021
Byproduct of flue-gas desulfurization ^e	do.	7,100	6,900	6,600	6,500	6,800
Lime, quicklime, dead-burned dolomite	do.	7,218	7,313	5,945	6,856	7,113
Magnesium compounds, byproduct of potash mining	do.	1,357	1,418	811	1,310	1,300
Mullite, synthetic ^e	do.	15	15	15	15	15
Nitrogen, N content of ammonia	do.	2,746	2,819	2,363	2,677	2,698
Peat, horticultural use	thousand cubic meters	8,269	7,629	8,364	7,759	7,911
Phosphoric acid, manufactured, P ₂ O ₅ content	31,684	31,756	19,531	21,259 ^r	19,607	
Pigments, iron oxide (including synthetic iron oxide)	240,310	251,412	209,172	233,909	223,288	
Potash, K ₂ O content:						
Crude	thousand metric tons	4,406	4,046	2,208	3,630	3,600 ^e
Marketable	do.	3,637	3,280	1,825	3,024	3,000 ^e
Salt, NaCl content, marketable:						
Evaporated salt, including marine salt	do.	592	580	325	322	300 ^e
Industrial brines	do.	10,395	9,084	9,798	8,752	9,161
Rock salt and other brines	do.	7,819	6,169	8,816	10,602	9,300 ^e
Total	do.	18,806	15,833	18,939	19,676	18,800 ^e
Siliceous earth, marketable	51,980	52,003	42,602	49,306	50,000 ^e	
Soda ash (Na ₂ CO ₃), manufactured	thousand metric tons	2,595	2,715	2,291	2,539	2,668
Stone, sand and gravel:						
Stone, crude:						
Dimension, including partially worked	do.	200	207	380	425	467
Of which, limestone, marble, and similar stone	do.	63	68	34 ^r	61 ^r	67
Crushed, not including chalk	do.	152,790	154,032	155,430	149,463 ^r	164,487
Dolomite and limestone, not for cement manufacture	do.	22,800	21,300	19,000	18,000	15,000 ^e
Gravel, natural:						
Construction gravel	do.	65,370	63,962	70,136	67,822	76,191
Crude, including flint and pebbles	do.	12,928	12,631	10,442	9,693 ^r	11,043
Other gravel, including quartzite	do.	12,639	11,911	NA	NA	NA
Sand, natural:						
Construction sand	do.	56,851	56,866	66,010	63,962	72,394
Silica sand, including glass sand and quartz sand	do.	8,382	8,186	6,453	7,234	7,770
Other, including from granite and pegmatite	do.	12,796	13,416	NA	NA	NA
Total sand and gravel	do.	168,966	166,972	153,041	148,711 ^r	167,398
Strontium carbonate, manufactured ^e	do.	80	80	50	70	80

See footnotes at end of table.

TABLE 1—Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011
INDUSTRIAL MINERALS—Continued					
Sulfur:					
Marketable thousand metric tons	1,093	1,030	927	832	950 ^c
Byproduct:					
Metallurgy do.	2,454	2,458	2,137	2,266	2,394
Natural gas and petroleum do.	1,637	1,709	1,623	1,447	1,514
Total do.	4,091	4,167	3,760	3,713	3,908
MINERAL FUELS AND RELATED MATERIALS					
Carbon black thousand metric tons	665	607	494	684	908
Coal:					
Anthracite and bituminous, marketable do.	21,531	17,171	13,766	12,900	12,059
Lignite do.	180,412	175,313	169,857	169,403	176,502
Coke:					
Of anthracite and bituminous coal do.	8,432	8,246	6,771	8,241	8,000 ^c
Of lignite do.	173	177	153	176	171
Fuel briquets:					
Of anthracite and bituminous coal do.	89	--	--	--	--
Of lignite, including dust and dried do.	1,328	1,631	1,959	2,024	2,136
Gas:					
Manufactured:					
Blast furnace ^c million cubic meters	9	9	6	9	9
Coke oven do.	970	969	718	951	800 ^c
Total ^c do.	979	978	724	960	810
Natural:					
Gross do.	17,966	16,449	15,464	13,584	12,873
Marketable do.	16,884	15,377	14,380	12,571	11,900 ^c
Petroleum: ⁶					
Crude thousand 42-gallon barrels	25,300	22,400	20,500	18,400	19,600
Refinery products:					
Liquefied petroleum gas do.	38,560	36,390	33,490	33,180	32,860
Distillate fuel oil do.	380,000	370,000	360,000	340,000	330,000
Residual fuel oil do.	75,300	67,500	55,600	41,600	42,400
Gasoline, including aviation do.	200,000	200,000	200,000	180,000	180,000
Kerosene and jet fuel do.	35,200	36,500	35,200	37,400	38,100
Naphtha do.	86,000	87,000	75,000	72,000	70,000
Refinery gas do.	48,300	47,800	44,500	44,500	45,100
Bitumen, bituminous mixtures, and other residues do.	31,300	33,900	34,300	32,800	34,600
Lubricants and miscellaneous oils do.	17,000	17,000	16,000	18,000	17,000
Petroleum coke do.	10,600	11,500	10,900	11,500	10,100
Mineral jelly, waxes, and paraffins do.	2,100	1,300	800	900	900
Other do.	10,700	8,290	6,040	8,630	6,590
Total ^c do.	935,000	917,000	872,000	821,000	808,000
Uranium concentrate, U ₃ O ₈ content	48	--	--	9	10 ^c

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^pPreliminary. ^rRevised. do. Ditto.

NA Not available. -- Zero.

¹Table includes data available through August 20, 2012.

²Could include production in 2008.

³Iron ore is used domestically as an additive in cement and other construction materials but is of too low a grade to be used in the steel industry.

⁴Reported figure.

⁵All uses include use as gravel for road construction, and industrial uses include use in the manufacturing of ceramics.

⁶All figures before 2011 were converted to barrels from those reported in metric tons according to data from Mineralölwirtschaftsverband e.V., 2011, Jahresbericht—Mineralöl-Zahlen, 2010: Berlin, Germany, Mineralölwirtschaftsverband e.V., May, p. 48 and 79, and reflect the significant digits of the conversion factors.

TABLE 2
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Abrasives (silicon carbide)	ESK-SiC GmbH	Plant at Grefrath, Cologne	36
Alumina	Almatis GmbH (Dubai International Capital LLC)	Plant at Ludwigshafen	NA
Do.	Nabaltec AG	Plant at Schwandorf	120
Do.	Aluminium Oxid Stade GmbH (DADCO Alumina & Chemicals Ltd., 100%)	Plant at Stade	1,050
Do.	Martinswerk GmbH (Albemarle Corp., 100%)	Plant at Bergheim	350
Do.	Rio Tinto Alcan (Rio Tinto plc, 100%)	Plant at Teutschenthal	17
Alumina, fused	Treibacher Schleifmittel GmbH (Imerys S.A., 100%)	Plant at Zschornowitz	NA
Aluminum	Hydro Aluminium Deutschland GmbH (Norsk Hydro ASA, 100%)	Rheinwerk primary smelter at Neuss	235
Do.	Metallhüttenwerke Bruch GmbH	Secondary foundry alloy plant at Dortmund; secondary cast alloy plants at Asperg and Bad Saeckingen	110
Do.	Aleris Recycling (German Works) GmbH (Aleris International Inc., 100%)	Secondary smelters: Erftwerk at Grevenbroich, Innwerk at Toeging am Inn, and Neckarwerk at Deizisau	320
Do.	Trimet Aluminium AG	Primary smelter at Essen-Borbeck	175 ^c
Do.	Hamburger Aluminium-Werke GmbH (Trimet Aluminium AG, 100%)	Primary smelter at Hamburg	133
Do.	Aluminiumwerk Voerde Aluminium GmbH (Klesch & Company Ltd., 100%)	Primary smelter at Voerde, North Rhine-Westphalia	90
Aluminum, hot-rolled products	Aluminium Norf GmbH [Novelis Inc. (Hindalco Industries Ltd., 100%), 50%, and Hydro Aluminium Deutschland GmbH, 50%]	Lippenwerk at Luenen (secondary) and rolling mill at Neuss	1,500
Aluminum salt slag	Alsa Technologies GmbH (Agor AG, 100%)	Plants at Hannover, Luenen, and Toeging	380
Do.	K+S Entsorgung GmbH (K+S Aktiengesellschaft, 100%)	REKAL plant at Sigmundshall	100
Arsenic, metal	metric tons PPM Pure Metals GmbH ² (Recylex S.A., 100%)	Plant at Langelsheim	5
Do.	do. Reinstmetalle Osterwieck GmbH (PPM Pure Metals GmbH, ² 100%)	Plant at Osterwieck	NA
Barite	Sachtleben Bergbau GmbH	Clara Mine in the Black Forest and plant at Wolfach, and Dreislar Mine at Medebach-Dreislar	87
Do.	Deutsche Baryt-Industrie Dr. Rudolf Alberti GmbH & Co. KG (Sachtleben Bergbau GmbH, 75%, and other private, 25%)	Wolkenhügel Mine ³ in the Harz Mountains and plant at Bad Lauterberg	50
Bentonite	Süd-Chemie AG (Clariant International Ltd., 100%)	Mining near Gammelsdorf, Bavaria, and plants at Duisburg, Heufeld, and Moosburg	500
Do.	S&B Industrial Minerals GmbH (S&B Industrial Minerals S.A., 100%)	Mining in region between Landshut and Mainburg, Bavaria	400
Do.	do.	Stollberg plant at Oberhausen	200 ^c
Do.	do.	Plant at Neuss	50
Do.	Kärlicher Ton- und Schamotte-Werke Mannheim & Co. KG (KTS)	Quarry at Muelheim-Kaerlich	50
Cadmium, metal	Accurec Recycling GmbH (I-met GmbH, 100%)	Battery recycling plant at Mülheim an der Ruhr	NA
Calcium carbonate, natural, ground	Alpha Calcit Fullstoff GmbH & Co. KG	Plant at Cologne	250
Do.	Omya GmbH (Omya AG, 100%)	Plants at Emden and Giengen-Burgberg	2,250
Do.	Omya Weil GmbH (Omya AG, 100%)	Plant at Weil am Rhein	NA
Do.	Eduard Merkle GmbH & Co. KG (Omya AG, 100%)	Plant at Blaubeuren-Altental	NA
Calcium carbonate, natural, including chalk	Vereinigte Kreidewerke Dammann KG (Omya AG, 100%)	Plants at Laegerdorf and Soehle	500
Do.	Kreidewerk Rügen GmbH (Omya AG, 100%)	Quarries and plant at Sassnitz, on Ruegen Island	NA
Carbon black	Orion Engineered Carbons GmbH (Rhône Capital LLC, 50%, and Triton Advisors Ltd., 50%)	Kalscheuren plant at Cologne, and plant at Dortmund	NA

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement	HeidelbergCement AG	Plant at Burglengenfeld; two plants at Ennigerloh; two plants at Geseke; plants at Koenigs Wusterhausen, Leimen, Paderborn, Mainz-Weisenau, and Schelklingen; the Lengfurt plant at Triefenstein; plant at Wetzlar	12,700
Do.	Dyckerhoff AG (Buzzi Unicem SpA, 88.37%, and other private, 11.63%)	Plants at Deuna, Geseke, Goellheim, Lengerich, Neuss, Neuwied, and the Amöneburg plant at Wiesbaden	7,200
Do.	SCHWENK Zement KG	Plants at Allmendingen, Bernburg, Heidenheim-Mergelstetten, and Karlstadt	6,900
Do.	CEMEX Deutschland AG (CEMEX S.A. de C.V., 100%)	Two plants at Beckum; plants at Dortmund, Duisburg, Eisenhuettenstadt, and Ruedersdorf	5,300
Do.	Holcim (Deutschland) AG (Holcim Ltd., 88.9%, and other private, 11.1%)	HANSA plant at Bremen, plants at Laegerdorf and Rostock, and the Höver plant at Sehnde	3,600
Do.	Lafarge Zement GmbH (Lafarge S.A., 100%)	Plants at Kall-Soetenich, Karsdorf, and Walzbachtal	3,400
Do.	Holcim (Baden-Württemberg) AG (Holcim Ltd., 100%)	Plant at Dotternhausen	1,600
Do.	TEUTONIA Zementwerk AG (HeidelbergCement AG, 94.2%, and other private, 5.8%)	Plant at Hannover	900
Do.	Märker Zement GmbH	Plants at Harburg and Lauffen	NA
Clays, including ball, ceramic, kaolinitic, and refractory clays	Sibelco Deutschland GmbH (S.C.R.- Sibelco NV, 100%)	25 quarries and 8 plants, including 2 at Ransbach and the Kannenbäckerland plant in Hoehr-Grenzhausen, Westerwald region; also including quarries and plants of Kaolin- und Tonwerke Seilitz-Loethain, Saxony region	2,000
Do.	Stephan Schmidt KG	Tonbergbau Grube Anton open pit mine, Dornburg-Langendernbach, Müllenbach and Thewald Mines, Hoehr-Grenzhausen; Wiesa-Thonberg and Cunnersdorf quarries, Kamenz-Wiesa, Westerwald	1,600
Do.	Marx Bergbau GmbH & Co. KG (Stephan Schmidt KG, 100%)	Lämmersbach and Meudt Mines, Ruppach-Goldhausen quarry, Dornburg-Langendernbach, Westerwald	350
Do.	Goerg & Schneider GmbH & Co. KG	Quarry and main plant at Boden, others at Mogendorf, Goddert, Siershahn, Wirges/Staudt, and Kettenbach/Taunus, Westerwald region; others in Saxony and Eifel regions	NA
Do.	Mittelhessische Tonbergbau GmbH (Goerg & Schneider GmbH & Co. KG, 50%, and Stephan Schmidt KG, 50%)	Quarry and plant in the Giessen/Lahn region	100
Do.	Rohstoffgesellschaft GmbH Ponholz	Mine and chamotte plant at Maxhuetten-Haidoff, and Aufofweiher Mine, Bavaria	150
Do.	Adolf Gottfried Tonwerke GmbH	Quarries and plant near Grosssheirath, Coburg, Bavaria	100
Do.	Erbsloh Lohrheim GmbH (Erbsloh family, 100%)	Mine at Lohrheim, Rheinland-Pfalz	30
Coal, anthracite and bituminous	Deutsche Steinkohle AG (RAG Aktiengesellschaft, 100%)	Augusta Victoria/Blumenthal, Prosper-Haniel, and West Mines, Ruhr region, North Rhine-Westphalia	11,000 ^e
Do.	do.	Saar Mine, Saar Basin, Saarland	1,500 ^e
Do.	do.	Ibbenbüren Mine, Steinfurt District, North Rhine-Westphalia	2,100
Coke	ArcelorMittal Bremen GmbH (ArcelorMittal, 99.88%, and other private, 0.12%)	Coking plant at the Prosper-Haniel Mine	2,000 ^e
Do.	ThyssenKrupp Steel AG	Schwelgern plant at Duisburg	2,100
Do.	Hüttenwerke Krupp Mannesmann GmbH (ThyssenKrupp Steel AG, 50%; Salzgitter AG, 30%; Vallourec & Mannesmann Tubes SA, 20%)	Plant at Duisberg-Huckingen steel complex	1,100

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Copper, refined	Aurubis AG (Salzgitter AG, 25%; institutional investors, 45%; other private investors, 30%)	Primary smelter and refinery and secondary plant at Hamburg	500 ^c
Do.	Hüttenwerke Kayser AG (Aurubis AG, 100%)	Secondary plant and refinery at Luenen	210 ^c
Dolomite	Rheinkalk Hagen-Halden GmbH & Co KG (Lhoist NV, 100%)	Steinbruch-Donnerkuhle quarry and Hönnetal plant at Menden, and plant at Hagen-Halden	7,500
Dolomite and lime	Geomin Erzgebirgische Kalkwerke GmbH	Underground mines at Hermsdorf and Lengenfeld	NA
Feldspar	Saarfeldspatwerke H. Huppert GmbH & Co. KG	Mine at Oberthal, Gudesweiler, Saarland	60
Do.	Gottfried Feldspat GmbH	Mine at Freihung-Thansuss, Weiden, Bavaria	15
Ferrochrome	Elektrowerk Weisweiler GmbH (Kermas Ltd., 100%)	Plant at Eschweiler-Weisweiler, near Aachen	30
Fluorspar	Sachtleben Bergbau GmbH	Clara Mine in the Black Forest and plant at Wolfach	55 ^c
Gallium	metric tons Ingal Stade GmbH (5N Plus Inc., 50%, and Neo Performance Materials Ltd., 50%)	Ingal plant at Stade	35
Do.	do. PPM Pure Metals GmbH ² (Recylex S.A., 100%)	Plant at Langelsheim	NA
Gold, metal	Aurubis AG (Salzgitter AG, 25%; institutional investors, 45%; other private investors, 30%)	Primary smelter and refinery and secondary plant at Hamburg	NA
Do.	Heraeus Precious Metals GmbH & Co. KG	Primary smelter and refinery and secondary plant at Hana	NA
Do.	Umicore AG & Co. KG (Umicore S.A., 100%)	Plant at Hanau	NA
Do.	Allgemeine Gold- und Silberscheideanstalt AG (Umicore S.A., 91.21%, and other, 8.79%)	Plant at Pforzheim	NA
Graphite, manufactured	Graphit Kropfmühl AG	Plant at Kropfmuehl, Passau	20
Do.	do.	Plants at Bad Godesberg and Wedel, Holstein	8
Gypsum	VG-ORTH GmbH & Co. KG	Mine and plant at Stadtoldendorf, and plants at Osterode, Spremberg, and Witzenhausen	150
Do.	Gyproc GmbH (Etex Group S.A., 80%, and Lafarge S.A., 20%)	Mines and plant in Lower Saxony	110
Do.	Knauf Gips KG	Mines and plant at Iphofen	NA
Iron, blast furnace	ThyssenKrupp Steel AG	Two blast furnace plants at Hamborn and Schwelgern	12,000
Iron, direct reduced	ArcelorMittal Hamburg GmbH (ArcelorMittal, 100%)	Plant at Hamburg	600 ^c
Iron oxide, pigments	Lanxess AG	Plant at Krefeld-Uerdingen	300
Kaolin, feldspar, and quartz	Amberger Kaolinwerke GmbH—Eduard Kick GmbH & Co. KG (Quarzwerke GmbH, 100%)	Mines at Caminau, Hirschau, Kemmlitz, and Schnaittenbach, Bavaria	350
Do.	Geb Brüder Dorfner GmbH & Co Kaolin - und Kristallquarzsand Werk KG	Mine near Hirschau, Bavaria	NA
Lead, metal	Weser Metall GmbH (Recylex S.A., 100%)	Primary and secondary smelter and refinery at Nordenhan	145
Do.	Berzelius Metall GmbH [Eco-Bat Technologies Ltd. (Quexco Inc., 100%), 100%]	Secondary smelters at Braubach am Rhein and Freiberg/Sachsen	200
Do.	do.	Primary smelter at Stolberg	150
Do.	Muldenhütten Recycling- und Umwelttechnik GmbH	Secondary smelter at Freiburg, Saxony	55
Do.	Aurubis AG	Refinery at Hamburg	50
Lead, oxide, Pb content	Weser Metall GmbH (Recylex S.A., 100%)	Primary and secondary smelter and refinery at Nordenhan	20
Lignite	RWE Power AG (RWE Aktiengesellschaft, 100%)	Open pit mines in Rhenish mining area: Bergheim, Garzweiler, Inden, and Hambach	105,000
Do.	Vattenfall Europe Mining AG	Jänschwalde-Cottbus-Nord, Nochten, and Welzow-Süd Mines, Lausatian mining area	60,000
Do.	Mitteldeutsche Braunkohlengesellschaft AG	Profen and Vereinigtes Schleenhain mines	25,000
Limestone	Harz-Kalk GmbH	Quarry at Ruebeland	2,000 ^c
Do.	Kalkwerk Bad Kösen GmbH	Quarry at Bad Kösen	2,000 ^c
Do.	Fels-Werke GmbH	Quarry at Kaltes Tal	2,000 ^c
Do.	Schäfer Kalk GmbH & Co KG	Plants at Hahnstaetten, Steeden, Stromberg, and Grevenbrueck	3,000
Do.	Rheinkalk GmbH & Co KG (Lhoist NV, 100%)	Flandersbach quarry and plant at Wuelfrath, and lime plant at Menden-Hoennetal	7,500

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Magnesium, metal, secondary		Norsk Hydro Magnesiumgesellschaft GmbH (Norsk Hydro ASA, 100%)	Plant at Bottrop	26
Do.		Aleris Recycling (German Works) GmbH (Aleris International Inc., 100%)	Plant at Toeging am Inn	15
Mullite, fused		Treibacher Schleifmittel Zschornowitz GmbH (Imerys S.A., 100%)	Plant at Zschornowitz	31
Mullite, sintered		Nabaltec AG	Plant at Schwandorf	10
Natural gas	million cubic meters	Mobil Erdgas-Erdöl GmbH (Exxon Mobil Corp., 100%), including any fields owned or operated by BEB Erdgas und Erdöl GmbH (Exxon Mobil Corp., 50%, and Royal Dutch Shell plc, 50%)	Goldenstedt, Hemmelte, Klosterseele, Söhlingen, and other fields in Lower Saxony	14,000 ^e
Do.	do.	RWE-Dea AG (RWE Power AG, 100%)	Böttersen, Hemsbünde, Völkersen, and smaller fields in Lower Saxony; Inzenham-West Field, Bavaria	3,000 ^e
Do.	do.	Gaz de France Produktion Exploration Deutschland GmbH (Gaz de France S.A., 100%)	Salzwedel Field, Saxony-Anhalt; Schneeren and smaller fields in Lower Saxony	1,500 ^e
Do.	do.	Wintershall Holding AG (BASF AG, 100%)	A6/B4 Blocks offshore Schleswig Holstein; smaller fields in Lower Saxony	1,200 ^e
Do.	do.	EEG-Erdgas Erdöl GmbH (Gaz de France S.A., 100%)	Muehlhausen and other fields in Thüringen	50 ^e
Petroleum:				
Crude	thousand 42-gallon barrels	Wintershall Holding AG (BASF AG, 100%), 50%, and RWE-Dea AG (RWE Power AG, 100%), 50%	Mittelplate-Dieksand field in tidal flats of the North Sea offshore Schleswig-Holstein	15,500
Do.	do.	Wintershall Holding AG (BASF AG, 100%)	A6/B4 Blocks offshore Schleswig Holstein; Aitingen field, Bavaria; Emlichheim field, Lower Saxony; and smaller fields in Lower Saxony and Rheinland-Pfalz	2,000 ^e
Do.	do.	Gaz de France Produktion Exploration Deutschland GmbH (Gaz de France S.A., 100%)	Bramberge, Ruehlertwist, Scheerhorn, and Ringe fields in Lower Saxony; smaller fields in the States of Bavaria, Hamburg, Lower Saxony, and Mecklenburg-Western Pomerania	3,500 ^e
Do.	do.	Mobil Erdgas-Erdöl GmbH (Exxon Mobil Corp., 100%)	Barenburg, Ruehme, and Lueben fields, Lower Saxony; smaller fields in the States of Lower Saxony and Rheinland-Pfalz	1,800 ^e
Do.	do.	BEB Erdgas und Erdöl GmbH (Exxon Mobil Corp., 50%, and Royal Dutch Shell plc, 50%)	Georgsdorf, Meppen, and Ruehlermoor fields, west of the Ems river (Emsland), Lower Saxony	3,000 ^e
Refined	do.	Deutsche Shell AG	Refineries at Godorf, Hamburg, and Grasbrook	256,000 ^e
Do.	do.	Raffinerie Heide GmbH (Klesch & Co. SA, 100%)	Refinery near Heide, State of Schleswig Holstein	35,000 ^e
Do.	do.	Esso Deutschland GmbH (ExxonMobil Central Europe Holding GmbH, 100%)	Refineries at Karlsruhe and Ingolstadt	245,000 ^e
Do.	do.	Ruhr Oel GmbH (Petróleos de Venezuela S.A., 50%, and BP Gelsenkirchen GmbH, 50%)	Refinery at Gelsenkirchen	215,500 ^e
Do.	do.	BAYERNOIL Raffineriegesellschaft mbH (OMV AG, 45%; Ruhr Oel GmbH, 25%; AGIP Deutschland GmbH, 20%; Deutsche BP AG, 10%)	Refinery at Neustadt-Donau	145,000 ^e
Platinum-group metals, refined		Aurubis AG (Salzgitter AG, 25%; institutional investors, 45%; other private investors, 30%)	Primary smelter and refinery and secondary plant at Hamburg	NA
Do.		Heraeus Precious Metals GmbH & Co. KG	Primary smelter and refinery and secondary plant at Hana	NA
Do.		Umicore AG & Co. KG (Umicore S.A., 100%)	Plant at Hanau	NA
Do.		Allgemeine Gold- und Silberscheideanstalt AG (Umicore S.A., 91.21%, and other, 8.79%)	Plant at Pforzheim	NA
Potash, K ₂ O content		K+S Kali GmbH (K+S Aktiengesellschaft, 100%)	Mines at Hattorf, Neuhoef-Ellers, Niedersachsen-Riedel, Sigmundshall, Unterbreizbach, Wintershall, and Zielitz	6,000
Salt (evaporated and rock)		esco - european salt company GmbH & Co. KG [K+S Salz GmbH (K+S Aktiengesellschaft, 100%)]	Bernburg Mine and evaporated salt works; Borth Mine and evaporated salt works near Wesel; Braunschweig-Lüneburg Mine near Helmstedt	5,300 ^e
Do.		Wacker Chemie AG	Stetten rock salt mine near Haigerloch	500

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt (evaporated and rock)— Continued	Südsalz GmbH (Südwestdeutsche Salzwerke AG, 90%, and Vereinigte Schweizerische Rheinsalinen AG, 10%)	Rock salt mine at Berchtesgaden and evaporated salt works at Bad Reichenhall, Bavaria; and mine at Heilbronn and evaporated salt works at Bad Friedrichshall-Kochendorf, Heilbronn district, State of Baden-Württemberg	5,000
Do.	Saline Luisenhall GmbH	Evaporated salt works at Göttingen	NA
Selenium, metal metric tons	Retorte GmbH (Aurubis AG, 100%)	Plant at Röthenbach	2,500
Silica sand (industrial sand)	Quarzwerke GmbH	Mines and plants at Frechen, Gambach, Haltern, Hohenbocka, and Weferlingen	4,500 ^c
Do.	Amberger Kaolinwerke GmbH—Eduard Kick GmbH & Co. KG (Quarzwerke GmbH, 100%)	Mines and plants at Hirschau and Schnaittenbach	850
Siliceous earth, silica	Hoffmann Mineral and Co. KG	Mine and plant near Neuburg	55
Silicon, metal metric tons	RW Silicium GmbH (Graphit Kropfmühl AG, 100%)	Four electric arc furnaces in plant at Pocking	27,500
Silver, metal	Aurubis AG (Salzgitter AG, 25%; institutional investors, 45%; other private investors, 30%)	Primary smelter and refinery and secondary plant at Hamburg	NA
Do.	Heraeus Precious Metals GmbH & Co. KG	Primary smelter and refinery and secondary plant at Hana	NA
Do.	Umicore AG & Co. KG (Umicore S.A., 100%)	Plant at Hanau	NA
Do.	Allgemeine Gold- und Silberscheideanstalt AG (Umicore S.A., 91.21%, and other, 8.79%)	Plant at Pforzheim	NA
Soda ash	Solvay S.A.	Plant at Rheinberg	NA
Steel, crude	ThyssenKrupp Steel AG (ThyssenKrupp AG, 100%)	Bruckhausen and Beeckerwerth plants, near Duisburg	12,000
Do.	Salzgitter AG	Plants at Peine and Salzgitter	6,400 ^c
Do.	Hüttenwerke Krupp Mannesmann GmbH (ThyssenKrupp Steel AG, 50%; Salzgitter AG, 30%; Vallourec & Mannesmann Tubes SA, 20%)	Plant at Duisberg-Huckingen	5,600
Do.	ArcelorMittal Bremen GmbH (ArcelorMittal, 99.88%, and other private, 0.12%)	Plant at Bremen	4,000
Do.	Saarstahl AG (Struktur-Holding-Stahl GmbH & Co KG, 74.9%, and Dillinger Hüttenwerke AG, 25.1%)	Plants at Burbach, Neunkirchen, and Voelklingen	3,000
Do.	AG der Dillinger Hüttenwerke (Saarstahl AG, 33.75%; Plant at Dillingen ArcelorMittal, 30.08%; Struktur-Holding-Stahl GmbH & Co KG, 26.17%; Dillinger Hütte und Saarstahl mbH, 10%; other, 4.72%)		2,800
Do.	ArcelorMittal Eisenhüttenstadt GmbH (ArcelorMittal, 100%)	Plant at Eisenhuettenstadt	2,400
Do.	Badische Stahlwerke GmbH	Plant at Kehl	2,300 ^c
Do.	Brandenburger Elektrostahlwerk GmbH (RIVA FIRE S.p.A, 100%)	Plant at Brandenburg	1,700 ^c
Do.	ThyssenKrupp Nirosta (ThyssenKrupp Steel AG, 100%)	Plants at Bochum and Krefeld	1,600 ^c
Do.	ArcelorMittal Ruhrort GmbH (ArcelorMittal, 100%)	Plant at Duisburg	1,500 ^c
Do.	Georgsmarienhütte GmbH	Plants at Bous, Georgsmarienhütte, and Groeditz	1,300 ^c
Do.	Stahlwerk Thüringen GmbH (Alfonso Gallardo S.A., 100%)	Plant at Unterwellenborn	1,100
Do.	Deutsche Edelstahlwerke GmbH	Plants at Siegen and Witten	1,100 ^c
Do.	Lech-Stahlwerke GmbH (Max Aicher GmbH & Co. KG, 100%)	Plant at Herbertshofen	1,100 ^c
Do.	ArcelorMittal Hamburg GmbH (ArcelorMittal, 100%)	Plant at Hamburg	1,100 ^c
Do.	Hennigsdorfer Elektrostahlwerk GmbH (RIVA FIRE S.p.A, 100%)	Plant at Hennigsdorf	1,000 ^c
Do.	Elbe-Stahlwerke Feralpi GmbH (Feralpi Siderurgica S.p.A., 100%)	Plant at Riesa	950 ^c

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Strontium carbonate	Solvay & CPC Barium Strontium GmbH & Co. KG (Solvay S.A., 75%, and Chemical Products Corp., 25%)	Plant at Bad Hoenningen, near Hannover	95
Sulfur	Norddeutsche Erdgas-Aufbereitungs GmbH NEAG [BEB Erdgas und Erdöl GmbH (ExxonMobil Production Deutschland GmbH, 50%, and Royal Dutch Shell plc, 50%), 100%]	Natural gas desulfurization plants at Grossenkneten and Voigtei (near Nienburg-Weser), Lower Saxony	600
Sulfuric acid	Aurubis AG (Salzgitter AG, 25%; institutional investors, 45%; other private investors, 30%)	Acid plant, part of primary copper production facilities at Hamburg	2,500 ^c
Do.	BASF SE	Plant at Ludwigshafen	NA
Do.	Berzelius Metall GmbH [Eco-Bat Technologies Ltd. (Quexco Inc., 100%), 100%]	Plant near primary lead smelter at Stolberg	NA
Do.	Evonik Degussa GmbH (Evonik Industries AG, 100%)	Plant at Worms	NA
Do.	Lanxess AG	Plant at Leverkusen	NA
Do.	Weser Metall GmbH (Recylex S.A., 100%)	Acid plant near primary lead smelter and refinery at Nordenham	55
Do.	Metaleurop Zinkbetrieb GmbH & Co. KG (Xstrata plc, 100%)	Acid plant near primary zinc smelter and refinery at Nordenham	NA
Zeolites	Hans G. Hauri Mineralstoffwerk GmbH	Mine and plant at Boetzingen, near Freiburg	NA
Zinc, metal	Metaleurop Zinkbetrieb GmbH & Co. KG (Xstrata plc, 100%)	Nordenham Smelter, near Bremerhaven	160
Do.	Ruhr-Zink GmbH (GEA Group AG, 100%)	Refinery at Datteln ⁴	140
Zinc, oxides	Harz Metall GmbH (Recylex S.A., 100%)	Waëlz rotary kilns at Oker-Goslar	80 ^c
Do.	Norzinco GmbH (Recylex S.A., 100%)	Secondary plant at Oker-Goslar	20
Zinc, powder	do.	do.	5

^cEstimated; estimated data are rounded to no more than three significant digits. NA Not available.

¹Table includes data available through June 29, 2012.

²In addition to producing arsenic as a byproduct of chemical manufacturing and gallium as a byproduct of aluminum production, PPM Pure Metals GmbH produces small quantities of germanium as a byproduct of processing imported ores and concentrates and small quantities of indium and tellurium as byproducts of zinc metal production by PPM's parent company, Recylex S.A.

³Closed in 2007.

⁴Closed at the end of 2008, and approximately 40% of total production of zinc metal at this refinery was from secondary materials.

TABLE 3
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
METALS			
Aluminum:			
Bauxite, ore and concentrate	thousand metric tons	26	-- Czech Republic 4; Poland 3; France 3.
Oxide	do.	424	-- Netherlands 166; France 67; Italy 23.
Hydroxide		551,813	99,900 Netherlands 103,000; France 45,200; Sweden 43,600.
Ash and residues containing aluminum		6,785	-- Hungary 2,280; France 1,740; Spain 1,310.
Metal:			
Primary, not alloyed		111,815	-- France 34,200; Hungary 23,500; Luxembourg 18,900.
Primary, alloys, all forms		170,898	-- Austria 64,100; Poland 27,200; Belgium 14,500.
Secondary		190,499	-- France 51,800; Switzerland 24,400; Belgium 18,300.
Scrap		823,809	-- Italy 154,000; Austria 116,000; Netherlands 107,000.
Antimony:			
Metal, including alloys, all forms		130	-- Spain 45; Bulgaria 35; Belgium 15.
Oxides		961	-- Belgium 382; Poland 132; United Kingdom 86.
Arsenic, metal, including alloys, all forms		56	3 Japan 35; China 12; Romania 4.
Bismuth, metal, crude, including scrap		122	-- Switzerland 51; Czech Republic 23; Slovenia 18.
Cadmium, metal, crude, powder, including scrap		518	-- United Kingdom 364; China 105.
Chromium:			
Ore and concentrate		32,068	-- Russia 12,900; Austria 6,480; France 1,890.
Metal:			
Crude, including powder		1,187	-- Austria 237; France 159; Canada 116.
Scrap		3,286	-- Sweden 2,100; Italy 683; Austria 223.
Cobalt:			
Ore and concentrate		88	-- Belgium 74; China 14.
Oxides and hydroxides		102	-- Sweden 23; France 21; Spain 14.
Metal, including alloys, all forms		449	-- Finland 132; United Kingdom 52; France 39.
Scrap		432	66 France 204; United Kingdom 99; Austria 39.
Copper:			
Ore and concentrate	thousand metric tons	49	-- Sweden 45.
Ash and residue containing copper		13,033	-- Belgium 9,330; Canada 3,520.
Matte and speiss, including cement copper		8,429	-- Bulgaria 8,420.
Metal:			
Unrefined		104	-- Czech Republic 100.
Refined, not alloyed		136,000	-- France 23,400; Poland 21,100; Belgium 20,800.
Alloys, all forms		13,268	-- Switzerland 2,480; China 1,690; Italy 1,210.
Scrap		578,446	-- China 219,000; Netherlands 98,900; Austria 51,500.
Gallium, indium, and thallium, metal, including scrap		41	13 United Kingdom 17; Switzerland 8; China 3.
Germanium:			
Oxides		201	11 Hungary 40; Italy 25; Russia 18.
Metal, all forms		9	-- China 6; Russia 2; Laos 1.
Gold:			
Metal, including alloys, all forms	kilograms	207,725	-- Switzerland 136,000; United Kingdom 31,200; Unspecified 22,000.
Waste, sweepings and scrap		904	-- Japan 893.
Iron and steel:			
Ore and concentrate	thousand metric tons	22	-- Denmark 15; Switzerland 3; Austria 1.
Pyrite, roasted		7,994	-- Switzerland, 100%.
Ash and residue containing iron	thousand metric tons	1,166	-- France 494; Netherlands 202; Luxembourg 192.
Metal:			
Pig iron, cast iron, related materials		180,543	-- France 31,400; Poland 26,400; Turkey 20,600.
Scrap	thousand metric tons	10,030	-- Netherlands 1,940; France 1,780; Luxembourg 1,330.
Sponge iron, powder		56,758	-- Spain 16,100; Sweden 9,990; Austria 6,750.
Ferroalloys:			
Ferchromium		50,626	6,990 Belgium 10,400; France 7,140; Sweden 4,610.
Ferromanganese		12,387	-- Poland 4,380; Italy 2,390; France 1,280.
Ferromolybdenum		3,173	-- Czech Republic 673; Italy 581; France 289.
Ferronickel		7,870	-- Belgium 7,680.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c		
		United States	Other (principal) ²	
METALS—Continued				
Iron and steel, metal—Continued:				
Ferroalloys—Continued:				
Ferroniobium	540	36	Czech Republic 146; France 104; Belgium 56.	
Ferrosilicochromium	4,334	--	Belgium 4,110; Italy 225.	
Ferrosilicomagnesium	1,720	--	Italy 440; Czech Republic 394; France 162.	
Ferrosilicomanganese	3,376	--	Belgium 1,390; France 760; Switzerland 192.	
Ferrosilicon	95,685	--	Belgium 19,200; Austria 14,400; Italy 12,300.	
Ferrotitanium	4,182	--	Italy 1,430; Belgium 544; Sweden 355.	
Ferrotungsten	640	--	Belgium 303; Austria 178; Italy 40.	
Ferrovandium	660	--	Netherlands 250; Italy 116; Czech Republic 65.	
Other ferroalloys	35,064	--	Italy 3,400; France 3,190; Poland 2,490.	
Steel, crude	2,183	264	United Arab Emirates 635; Bosnia 399; Australia 273.	
Lead:				
Ore and concentrate	4,296	--	Sweden 4,000; Poland 296.	
Ash, residues and slimes containing lead	22,084	--	Belgium 21,300.	
Lead containing antimony	9,298	--	Austria 4,180; Czech Republic 3,980; Poland 576.	
Metal:				
Alloys, all forms	38,593	--	Czech Republic 17,400; Belgium 5,870; France 5,060.	
Refined	154,840	--	Italy 33,600; Czech Republic 25,700; Austria 21,500.	
Unrefined	342	--	Czech Republic 212; Poland 95; Switzerland 24.	
Scrap	9,893	--	Netherlands 3,050; Poland 1,720; India 1,710.	
Lithium carbonate	2,382	--	Turkey 610; France 512; Austria 312.	
Magnesium, metal, including alloys:				
Scrap	14,380	--	Austria 4,990; Czech Republic 3,670; Spain 2,800.	
Unwrought	8,598	464	Italy 1,430; United Kingdom 989; Poland 946.	
Manganese:				
Ore and concentrate	4,480	--	Netherlands 1,220; Belgium 1,140; France 851.	
Oxides	676	--	Poland 218; Slovenia 90; Turkey 88.	
Metal:				
Crude	7,940	881	Austria 1,440; France 897; Canada 532.	
Scrap	259	--	Italy 133; France 123.	
Mercury	110	14	Spain 16; Hungary 11; Kenya 8.	
Molybdenum:				
Ore and concentrate	5,017	577	United Kingdom 1,130; Belgium 893; Vietnam 537.	
Metal, scrap	644	--	France 319; United Kingdom 137; Austria 67.	
Nickel:				
Ore and concentrate	2,678	--	Netherlands 1,490; Belgium 511; Canada 394.	
Matte, speiss, related materials	13,982	--	Canada 10,700; China 2,990.	
Oxides and hydroxides	90	5	Canada 40; Turkey 22; Austria 10.	
Ash and residue containing nickel	471	--	Netherlands 425; Sweden 24.	
Metal, including alloys:				
Alloys, all forms	1,861	411	United Kingdom 689; Austria 458; Czech Republic 106.	
Unalloyed	3,750	281	Austria 855; Netherlands 713; France 548.	
Scrap	9,562	1,760	Spain 3,110; Netherlands 1,050; France 669.	
Niobium (columbium):				
Scrap containing both niobium and tantalum	17	--	Kazakhstan 13; China 4.	
Platinum-group metals:				
Metal, including alloys, all forms:				
Platinum	kilograms	16,562	3,790	Switzerland 5,520; United Kingdom 2,200; Ireland 911.
Palladium	do.	26,886	4,440	China 7,310; Belgium 5,700; Brazil 4,220.
Rhodium	do.	3,376	1,390	China 658; Japan 544; Brazil 311.
Iridium, osmium and ruthenium	do.	29,755	5,120	Singapore 18,400; Belgium 2,710; Japan 1,700.
Waste, sweepings and scrap		5,996	4,240	Belgium 929; United Kingdom 588.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
METALS—Continued			
Precious metals, unspecified, waste, sweepings and scrap	22,994	--	Sweden 15,600; Belgium 5,060; Netherlands 1,400.
Rare-earth metals, including alloys:			
Cerium compounds	255	--	China 36; India 35; Czech Republic 23.
Other compounds, all forms	338	--	China 70; Republic of Korea 55; India 51.
Metal	25	--	Austria 5; China 4; Turkey, 4.
Selenium, metal	350	18	China 47; Mexico 35; Canada 33.
Silicon, metal	29,308	2,730	China 9,700; Norway 3,170; Japan 2,930.
Silver:			
Ore and concentrate	1	--	Italy, 100%.
Metal	2,132	--	Unspecified 761; United Kingdom 439; Austria 318.
Powder kilograms	59,575	8,340	France 14,500; Greece 11,700; Mexico 8,520.
Tin:			
Ore and concentrate	32	--	Belgium, 100%.
Ash and residue containing tin	235	--	Belgium 103; Luxembourg 101; Netherlands 29.
Metal:			
Alloys, all forms	954	--	Republic of Korea 265; Italy 104; Belgium 103.
Crude	1,250	--	Austria 226; France 204; Czech Republic 170.
Waste and scrap	1,440	--	France 732; Belgium 474; Netherlands 145.
Titanium:			
Ore and concentrate	22,383	--	Brazil 15,200; Mexico 7,010.
Oxide	55,445	4,930	Taiwan 5,490; China 4,490; India 4,440.
Metal:			
Powder	1,708	154	Italy 647; United Arab Emirates 142; France 113.
Waste and scrap	5,453	2,350	United Kingdom 1,370; Ukraine 872; Italy 344.
Tungsten:			
Ore and concentrate	164	--	China 100%.
Metal, waste and scrap	2,947	858	China 760; Austria 421; Czech Republic 171.
Vanadium, metal, including scrap	219	12	United Kingdom 89; Romania 39; France 18.
Zinc:			
Ore and concentrate	1,674	--	United Kingdom 907; Poland 767.
Ash and residue containing zinc	92,967	--	Belgium 69,400; France 9,580; Netherlands 8,000.
Matte and related materials	5,024	--	Austria 1,500; Italy 1,230; Belgium 1,080.
Oxide and peroxide	36,212	--	France 7,170; Belgium 4,850; China 4,820.
Metal:			
Alloys, all forms	31,857	--	Austria 23,000; Czech Republic 3,150.
Unalloyed	52,475	--	France 12,200; Austria 7,820; Poland 6,030.
Powder and dust	9,879	3,070	Switzerland 958; Spain 859; Republic of Korea 652.
Scrap	74,270	--	China 25,800; Netherlands 21,200; Italy 7,950.
Zirconium:			
Metal, including alloys	28	11	Japan 4; Czech Republic 3; Liechtenstein 2.
Scrap	18	6	United Kingdom 9; Spain 2; Netherlands 1.
INDUSTRIAL MINERALS			
Abrasives, natural:			
Corundum, emery, garnet, and so forth	10,379	--	Sweden 3,080; Switzerland 1,390; Netherlands 1,200.
Pumice	137,011	--	Netherlands 92,800; Luxembourg 23,600; France 9,590.
Asbestos, crude	8	--	Switzerland, 100%.
Borates, natural, including calcined	17	--	South Africa 8; China 5; Austria 4.
Cement thousand metric tons	6,864	--	Netherlands 2,270; Belgium 1,020; Austria 529.
Chalk, natural	170,241	--	Netherlands 45,800; Poland 34,600; Finland 20,400.
Clays, crude:			
Bentonite	84,920	--	Netherlands 22,400; France 11,600; Austria 7,980.
Ceramic and fire clays	8,240	--	Italy 4,850; Austria 1,090; Ukraine 906.
Chamotte or Dina's Earth	67,469	--	Italy 20,600; Austria 8,430; France 8,030.
Kaolin	389,921	--	Austria 110,000; Italy 71,000; Poland 53,400.
Other, unspecified thousand metric tons	2,204	--	Italy 879; Netherlands 630; Belgium 370.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c		
		United States	Other (principal) ²	
INDUSTRIAL MINERALS—Continued				
Diamond, natural:				
Gem, not set or strung	carats	170,237	15,500	Hong Kong 50,600; Israel 17,400; Thailand 15,500.
Industrial stones	thousand carats	7	--	United Kingdom 4; Switzerland 3.
Dust and powder	kilograms	1,142	81	China 243; Syria 172; India 145.
Diatomite and other infusorial earth		5,356	--	Netherlands 964; Russia 836; Lithuania 482.
Feldspar		78,610	--	Italy 15,700; France 14,100; Czech Republic 10,700.
Fluorspar:				
Acid-grade		20,319	--	France 4,670; Poland 3,470; Czech Republic 2,340.
Metallurgical-grade		13,169	--	Czech Republic 6,240; Poland 2,250; France 2,150.
Graphite, natural		20,580	--	Poland 3,870; Czech Republic 3,420; Austria 2,630.
Gypsum and anhydrite, natural	thousand metric tons	1,989	--	Poland 340; Belgium 278; Netherlands 267.
Kyanite and related materials:				
Andalusite, kyanite, sillimanite		3,489	--	Switzerland 761; Hungary 740; Czech Republic 314.
Mullite		9,885	2,010	Hungary 1,510; Italy 1,260; Poland 900.
Lime, hydrated	thousand metric tons	832	--	Netherlands 474; Belgium 83; France 62.
Magnesium compounds:				
Magnesite, natural, including burned		94,428	--	Austria 29,300; France 27,100; Slovakia 6,990.
Epsomite		732,796	--	Malaysia 195,000; Indonesia 154,000; France 87,900.
Mica, natural, including splittings and waste		4,197	--	Brazil 1,090; Poland 558; Italy 344.
Peat, natural	thousand metric tons	2,023	--	Netherlands 929; Italy 200; France 192.
Phosphates:				
Crude		175	--	Italy 54; Denmark 52; Netherlands 52.
Milled		315	--	Poland 155; Austria 76; Kazakhstan 65.
Precious and semiprecious stones, natural (other than diamond):				
Gem, not set or strung		494	--	Hong Kong 192; India 169; Brazil 51.
Dust and powder	grams	24,737	--	Italy 11,000; Poland 9,000; Slovakia 4,010.
Pyrite, unroasted		755	--	Netherlands 357; Saudi Arabia 144; Poland 86.
Salt and brine	thousand metric tons	3,098	--	Czech Republic 567; Belgium 527; Sweden 406.
Stone, sand and gravel:				
Basalt, lava rocks, and so forth		113,400	--	Netherlands 110,000.
Crushed rock, macadam		66,502	--	Switzerland 44,600; France 21,700.
Dimension stone:				
Dolomite and limestone		725,021	--	Luxembourg 463,000; Belgium 128,000; Netherlands 39,200.
Granite		112,991	--	Switzerland 93,800; Austria 7,800.
Marble, travertine, and so forth		233,650	--	China 143,000; Switzerland 49,100; Hong Kong 16,600.
Limestone for cement	thousand metric tons	275	--	Luxembourg 160; Netherlands 84.
Quartz and quartzite		567,205	--	France 242,000; Netherlands 167,000; Luxembourg 115,000.
Sand, natural	thousand metric tons	9,984	--	Netherlands 6,970; Belgium 1,670; Switzerland 649.
Sandstone		2,845	--	Netherlands 1,080; Switzerland 532; Australia 509.
Schist and shale		19,377	--	Belgium 8,350; Netherlands 6,650; Denmark 2,850.
Other natural stone, unspecified	thousand metric tons	18,070	--	Netherlands 10,900; Switzerland 1,770; Poland 1,550.
Sulfur		671,833	--	Belgium 188,000; France 85,300; Poland 69,900.
Talc, steatite and soapstone, natural		4,770	--	Slovenia 1,720; France 582.
Vermiculite and perlite, natural		3,122	--	Switzerland 805; Austria 393; Belgium 297.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural		606	--	Switzerland 338; Poland 144; Japan 68.
Coal:				
Anthracite and bituminous:				
Anthracite	thousand metric tons	222	--	Unspecified, 201.
Coke	do.	191	--	Netherlands 86; Belgium 48; United Kingdom 19.
Semicoke, coking coal	do.	6	--	Poland, 100%.
Other, including briquets	do.	27	--	Switzerland 6; Belgium 6; Austria 4.
Lignite	do.	1,158	--	Belgium 332; Czech Republic 151; France 151.
Coke of lignite		52,163	--	Austria 15,900; Netherlands 10,300; Czech Republic 8,450.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
MINERAL FUELS AND RELATED MATERIALS—Continued			
Gas, natural, gaseous	thousand metric tons	11,724	-- Unspecified, 100%.
Petroleum, crude	do.	181	-- Czech Republic 99; France 80.
Uranium, natural:			
Crude, U content		9	-- Czech Republic 7; Kazakhstan 1; South Africa 1.
Enriched, fissile isotopes	kilograms	12,803	3,850 Belgium 2,840; France 2,800; Republic of Korea 1,660.

^cEstimated; estimated tonnages are rounded to no more than three significant digits; may not add to totals shown. -- Less than 5%.

¹Source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, Table 2—Rohstoffsituation, 2010: Hannover, Germany, December.

²Destination country was estimated to have accounted for at least 5% of Germany's total exports of the mineral commodity.

TABLE 4
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^e	
		United States	Other (principal) ²
METALS			
Aluminum:			
Bauxite, ore and concentrate	thousand metric tons	2,005	-- Guinea 1,480; Ghana 299.
Oxide	do.	661	50 Suriname 143; Jamaica 141; Netherlands 89.
Hydroxide		260,486	-- Ireland 111,000; France 64,900; Spain 36,500.
Ash and residue containing aluminum		156,074	-- France 28,600; Netherlands 24,000; Switzerland 20,800.
Metal:			
Primary, not alloyed		799,782	-- Iceland 202,000; Netherlands 196,000; Russia 166,000.
Primary, alloys, all forms		970,124	-- Netherlands 201,000; Norway 169,000; France 151,000.
Secondary		621,869	-- United Kingdom 224,000; Austria 75,200; Italy 74,000.
Scrap		479,412	-- Netherlands 110,000; France 53,200; Switzerland 50,300.
Antimony:			
Metal, including alloys, all forms		485	-- China 409; Peru 25.
Ore and concentrate		11	-- Belgium 11.
Oxides		7,986	-- China 2,800; France 2,770; Belgium 1,810.
Arsenic, metal, including alloys, all forms		69	-- Belgium, 39; United Kingdom, 22; Netherlands, 8.
Bismuth, metal, crude, including scrap		920	-- Belgium 740; China 122.
Cadmium, metal, crude, powder, including scrap		17	1 Poland 6; Belgium 5; France 3.
Chromium:			
Ore and concentrate		101,972	-- South Africa 88,900; Netherlands 7,850; Turkey 5,100.
Metal:			
Crude, including powder		2,648	-- France 996; Russia 511; United Kingdom 448.
Scrap		1,721	-- France 585; Netherlands 429; Luxembourg 406.
Cobalt:			
Ore and concentrate		115	-- United Kingdom 34; Russia 29; Netherlands 24.
Oxides and hydroxides		1,068	-- Finland 778; Belgium 256.
Metal, including alloys, all forms		2,107	297 Belgium 360; Finland 333; United Kingdom 295.
Scrap		1,221	-- United Kingdom 426; Italy 219; Poland 193.
Copper:			
Ore and concentrate	thousand metric tons	1,128	-- Peru 284; Argentina 201; Chile 188.
Matte and speiss, including cement copper		12,740	-- Brazil 10,300; Congo (Kinshasa) 662.
Ash and residue containing copper		49,926	5,740 Italy 8,990; Belgium 7,040; Netherlands 5,640.
Metal:			
Unrefined		23,332	-- Namibia 11,600; Armenia 6,140; South Africa 1,420.
Refined, not alloyed		743,937	-- Russia 220,000; Poland 137,000; Chile 132,000.
Alloys, all forms		36,242	1,880 United Kingdom 7,940; Belgium 6,960; Spain 3,260.
Scrap		626,438	-- Netherlands 65,800; France 63,300; United Kingdom 57,600.
Gallium, indium, and thallium, metal, including scrap		73	9 United Kingdom 42; Slovakia 6; China 5.
Germanium:			
Metal, all forms		6	China 4; Russia 2.
Oxides		4,343	1,430 China 1,020; France 508; United Kingdom 443.
Gold:			
Metal, including alloys, all forms	kilograms	169,577	-- Switzerland 69,500; Chile 42,600; Unspecified 30,200.
Waste and sweepings		1,395	-- United Kingdom 377; Poland 285; Austria 100.
Iron and steel:			
Ore and concentrate	thousand metric tons	43,082	-- Brazil 22,700; Sweden 7,370; Canada 6,940.
Ash and residue containing iron		180	-- Austria 144; Luxembourg 35.
Pyrite, roasted		3,077	-- Norway, 100%.
Metal:			
Pig iron, cast iron, related materials		421,288	-- Russia 204,000; South Africa 79,200; Canada 57,300.
Scrap	thousand metric tons	5,708	-- Netherlands 1,070; Czech Republic 942; Poland 850.
Sponge iron, powder		500,969	-- Trinidad & Tobago 203,000; Latvia 95,200; Venezuela 88,700.
Ferrous alloys:			
Ferromanganese		454,003	-- South Africa 293,000; Unspecified 128,000.
Ferromanganese		209,199	-- South Africa 59,300; Norway 49,200; France 40,200.
Ferromolybdenum		16,375	-- Belgium 5,450; United Kingdom 2,690; Russia 2,670.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
METALS—Continued			
Iron and steel, metal—Continued:			
Ferroalloys—Continued:			
Ferronickel	192,392	--	Ukraine 113,000; Greece 26,900; Indonesia 22,700.
Ferroniobium	5,923	--	Brazil 4,490; Netherlands 811; Canada 503.
Ferrosilicochromium	29,047	--	Unspecified 15,100; Belgium 13,600.
Ferrosilicomagnesium	2,972	--	China 746; Slovenia 577; France 413.
Ferrosilicomanganese	185,066	--	Norway 51,600; India 30,400; South Africa 27,200.
Ferrosilicon	272,468	--	Norway 66,500; Brazil 37,900; France 37,300.
Ferrotitanium	8,755	--	United Kingdom 2,850; Netherlands 2,350; Russia 1,810.
Ferrotungsten	787	--	China 411; Vietnam 301.
Ferrovandium	5,035	--	Austria 3,030; South Africa 1,080; Czech Republic 468.
Other ferroalloys	63,438	--	France 21,900; China 8,120; United Kingdom 6,150.
Steel, crude	25,972	--	Czech Republic 10,900; Ukraine 4,620; Belarus 3,140.
Lead:			
Ore and concentrate	184,018	--	Sweden 46,600; Australia 41,600; Ireland 35,100.
Ash, residues and slimes containing lead	193,480	--	France 113,000; Belgium 19,000; Netherlands 14,900.
Lead containing antimony	31,052	--	Russia 9,780; Sweden 6,490; Belgium 4,780.
Metal:			
Alloys, all forms	4,854	--	United Kingdom 2,760; Poland 1,230; Belgium 471.
Refined	70,255	--	Belgium 26,700; United Kingdom 15,500; Netherlands 7,870.
Unrefined	51,173	--	United Kingdom 16,600; Netherlands 11,900; Belgium 6,290.
Scrap	39,651	--	Lithuania 12,100; Belgium 6,150; Nigeria 4,600.
Lithium carbonate	6,485	752	Chile 5,440.
Magnesium, metal, including alloys:			
Scrap	16,572	--	China 11,800; Austria 1,920; United Kingdom 862.
Unwrought	32,282	--	China 14,700; Austria 6,650; Netherlands 5,200.
Manganese:			
Ore and concentrate	17,346	--	Netherlands 5,530; Brazil 3,160; Morocco 2,690.
Oxides	25,304	--	Finland 11,500; Greece 4,400; Netherlands 2,100.
Metal:			
Crude	41,791	--	China 34,100; Russia 2,510; Ukraine 2,470.
Scrap	119	--	Netherlands 58; Poland 45; France 11.
Mercury	103	11	Sweden 51; United Kingdom 16; Netherlands 15.
Molybdenum:			
Ore and concentrate	9,134	776	Belgium 1,980; China 1,830; Netherlands 1,570.
Oxides and hydroxides, powder	3,059	--	Chile 1,840; Netherlands 499; United Kingdom 281.
Molybdate compounds	447	228	France 74; Poland 53; Italy 31.
Metal:			
Crude	150	--	China 46; Austria 38; United Kingdom 31.
Scrap	1,989	109	Austria 599; China 511; Armenia 450.
Nickel:			
Ore and concentrate	1,667	795	Indonesia 490; Malaysia 157; Brazil 97.
Ash and residue containing nickel	9,371	928	Netherlands 2,670; France 1,600; Thailand 525.
Matte, speiss, related materials	849	--	Netherlands 595; Russia 126; Canada 124.
Oxides and hydroxides	620	--	Czech Republic 413; Finland 66; Japan 33.
Metal:			
Alloys, all forms	8,021	--	Russia 2,620; Netherlands 1,660; United Kingdom 706.
Unalloyed	69,281	--	Russia 36,400; United Kingdom 10,500; Norway 7,140.
Scrap	8,584	472	Netherlands 1,300; Austria 987; France 841.
Niobium (columbium):			
Metal, powder containing both niobium and rhenium	244	--	Brazil 171; Estonia 34; United Kingdom 18.
Scrap containing both niobium and tantalum	98	48	Japan 25; Republic of Korea 18; Thailand 5.
Platinum-group metals:			
Waste and scrap	8,066	--	Italy 1,210; France 871; United Kingdom 613.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c		
		United States	Other (principal) ²	
METALS—Continued				
Platinum-group metals—Continued:				
Metal, including alloys, all forms:				
Platinum	kilograms	33,822	2,470	South Africa 13,600; Belgium 6,430; United Kingdom 3,590.
Palladium	do.	49,162	3,050	Russia 13,100; Belgium 9,490; United Kingdom 9,190.
Rhodium	do.	5,100	602	Belgium 2,340; South Africa 1,030; United Kingdom 551.
Iridium, osmium, and ruthenium	do.	14,417	1,690	Belgium 6,950; South Africa 2,750; Japan 1,380.
Precious metals, unspecified:				
Ore and concentrate		263	--	Sweden 108; Papua New Guinea 72; Australia 35.
Waste, sweepings and scrap		32,848	2,100	Netherlands 8,900; Italy 5,490.
Rare earths:				
Cerium compounds		1,005	--	China 278; Austria 232; France 207.
Other compounds, all forms		9,998	--	Austria 8,180; China 1,240.
Metal		458	--	China 232; Austria 134; Italy 60.
Selenium, metal		282	--	Canada 70; Sweden 47; Unspecified 35.
Silicon, metal		255,975	--	Norway 81,700; France 47,600; Brazil 38,100.
Silver:				
Ore and concentrate		4,003	--	Peru 3,280; Argentina 725.
Metal		1,736	--	Unspecified 832; Kazakhstan 221; United Kingdom 214.
Powder	kilograms	236,573	98,400	France 135,000.
Tantalum, metal:				
Powder		67	15	Kazakhstan 46.
Waste and scrap		134	56	Mexico 45; United Kingdom 8; Czech Republic 8.
Tin:				
Ash and residue containing tin		42	--	Estonia 23; Hungary 9; Finland 7.
Metal:				
Alloys, all forms		313	--	Netherlands 121; Poland 53; United Kingdom 26.
Crude		18,684	--	Peru 6,000; Indonesia 5,770; Belgium 3,640.
Waste and scrap		714	--	France 152; Italy 148; Poland 111.
Titanium:				
Ore and concentrate		838,768	--	Norway 272,000; Canada 198,000; South Africa 148,000.
Ash and residue containing titanium		164	--	Norway, 100%.
Oxide		16,540	--	France 5,040; Belgium 2,750; China 2,370.
Metal:				
Powder		5,387	--	Kazakhstan 1,730; Ukraine 1,150; Belgium 706.
Waste and scrap		3,533	--	Italy 760; Switzerland 452; Austria 304.
Tungsten:				
Ore and concentrate		1,030	334	Bolivia 263; Brazil 144; Vietnam 121.
Carbide		2,544	--	Austria 888; Unspecified 580; Luxembourg 389.
Oxides and hydroxides		1,285	--	China 979; Russia 280.
Wolframate compounds		2,076	521	China 1,000; Vietnam 274; Ireland 131.
Metal:				
Crude		132	44	China 46; United Kingdom 13; Russia 10.
Powder		2,328	128	Austria 1,290; Canada 452; Finland 128.
Waste and scrap		4,504	540	Netherlands 635; Russia 545; Italy 392.
Vanadium, metal, including scrap		63	32	Netherlands 13; France 11; United Kingdom 4.
Zinc:				
Ore and concentrate		285,330	56,200	Australia 76,200; Ireland 42,500; Sweden 41,700.
Matte and related materials		10,396	--	Netherlands 2,860; Austria 2,670; France 1,470.
Oxide and peroxide		29,149	--	Austria 6,530; Netherlands 6,330; Peru 5,650.
Ash and residue containing zinc		25,401	2,240	Switzerland 8,860; Italy 2,590; France 2,490.
Metal:				
Alloys, all forms		57,563	--	Belgium 22,300; Luxembourg 9,040; United Kingdom 6,500.
Unalloyed		380,806	--	Finland 126,000; Spain 105,000; Netherlands 52,600.
Powder and dust		5,609	--	Belgium 3,300; Norway 1,060; Netherlands 567.
Waste and scrap		23,692	--	Denmark 8,510; Netherlands 6,630; France 3,840.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
METALS—Continued			
Zirconium:			
Metal	77	6	Netherlands 60; France 6.
Waste and scrap	72	--	Sweden 39; Netherlands 12; China 10.
INDUSTRIAL MINERALS			
Abrasives, natural:			
Corundum, emery, garnet, and so forth	9,547	--	India 7,010; Netherlands 859; France 611.
Pumice	23,000	--	Iceland 22,400.
Asbestos, crude	72	--	Canada, 100%.
Barium compounds:			
Barite (barium sulfate)	263,819	--	China 230,000; Netherlands 16,900.
Witherite (barium carbonate)	18	--	India, 100%.
Borates, natural, including calcined	3,244	--	Belgium 1,930; Turkey 613; Argentina 324.
Cement	thousand metric tons 1,212	--	France 419; Czech Republic 204; Luxembourg 167.
Chalk, natural	159,031	--	France 72,400; Belgium 48,000; Denmark 18,300.
Clays, crude:			
Bentonite	386,260	--	Netherlands 130,000; Czech Republic 81,900; Italy 51,400.
Ceramic and fire clays	8,861	--	Czech Republic 2,640; France 2,640; Poland 1,460.
Chamotte or Dina's Earth	97,521	30,200	Luxembourg 23,500; Czech Republic 15,200; Netherlands 10,000.
Kaolin	715,768	128,000	Belgium 154,000; United Kingdom 137,000; Czech Republic 121,000.
Other, unspecified	thousand metric tons 66	--	Netherlands 17; Czech Republic 14; United Kingdom 13.
Diamond, natural:			
Gem, not set or strung	carats 371,176	--	India 156,000; Belgium 121,000; Israel 36,700.
Industrial stones	thousand carats 137	--	United Kingdom 34; Belgium 27; China 24.
Dust and powder	kilograms 12,012	1,240	Ireland 3,060; China 3,000; Switzerland 1,110.
Diatomite and other infusorial earth	43,486	10,700	Denmark 19,500; Mexico 5,570; France 2,300.
Feldspar	139,664	--	Turkey 44,300; Norway 33,900; France 23,300.
Fluorspar:			
Acid-grade	196,875	--	Namibia 68,500; South Africa 52,200; Mexico 37,600.
Metallurgical-grade	65,124	--	United Kingdom 46,000; China 17,900.
Graphite, natural	56,333	--	China 31,800; Unspecified 6,420; Brazil 6,310.
Gypsum and anhydrite, natural	thousand metric tons 111	--	Austria 44; Belgium 21; France 20.
Iron oxide pigments	33,863	--	China 18,300; Italy 3,830; Brazil 3,180.
Kyanite and related materials:			
Andalusite, kyanite, sillimanite	47,738	--	South Africa 26,400; France 12,200; Belgium 5,780.
Mullite	47,776	30,100	China 7,550; United Kingdom 3,200; Hungary 3,060.
Lime, hydrated	thousand metric tons 623	--	France 304; United Kingdom 117; Czech Republic 80.
Magnesium compounds:			
Magnesite, natural, including burned	486,294	--	China 216,000; Netherlands 78,800; Brazil 43,800.
Epsomite	902	--	Belgium 338; Netherlands 307; France 241.
Mica, natural, including splittings and waste	31,475	--	India 11,300; China 7,490; France 6,770.
Peat, natural	thousand metric tons 781	--	Lithuania 274; Latvia 208; Netherlands 128.
Phosphates:			
Crude	117,674	--	Israel 97,900; Syria 8,350; Algeria 7,300.
Milled	2,906	--	France 1,460; Denmark 962 Italy 186.
Potash and potassium fertilizers, K ₂ O content	2,279	--	Poland 1,400; Netherlands 613; United Kingdom 153.
Precious and semiprecious stones, natural (other than diamond):			
Gem, not set or strung	945	--	Brazil 454; Madagascar 83; South Africa 78.
Dust and powder	grams 300,896	--	China 145,000; France 83,000; Switzerland 23,800.
Pyrite, unroasted	76,101	--	Finland 68,300; Italy 4,490.
Salt and brine	thousand metric tons 2,655	--	Netherlands 1,960; Italy 141.
Stone, sand and gravel:			
Basalt, lava rocks, and so forth	63,861	--	Norway 37,000; Italy 10,200; Netherlands 7,850.
Crushed rock, macadam	22,025	--	Switzerland, 22,000.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2010¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^e	
		United States	Other (principal) ²
INDUSTRIAL MINERALS—Continued			
Stone, sand and gravel—Continued:			
Dimension stone:			
Dolomite and limestone	725,218	--	Belgium 329,000; Estonia 281,000.
Granite	142,993	--	Norway 52,300; Netherlands 20,600; Poland 14,900.
Marble, travertine, and so forth	59,975	--	Austria 22,100; Netherlands 16,000; Portugal 5,520.
Limestone for cement	thousand metric tons 1,981	--	Austria 630; Belgium 606; Poland 509.
Quartz and quartzite	122,125	--	Austria 43,500; Russia 30,800; Brazil 13,700.
Sand, natural	thousand metric tons 2,037	--	France 961; Denmark 377; Netherlands 318.
Sandstone	20,497	--	India 8,960; Netherlands 2,420; Poland 2,070.
Schist and shale	44,264	--	France 33,200; Italy 5,310; Netherlands 2,210.
Other natural stone, unspecified	thousand metric tons 10,485	--	Norway 4,850; France 1,490; Poland 965.
Sulfur	44,103	--	Belgium 16,800; Norway 9,040; Switzerland 4,590.
Talc, steatite and soapstone, natural	324,700	--	France 88,300; Netherlands 84,700; Austria 50,700.
Vermiculite and perlite, natural	117,270	--	Greece 102,000; Hungary 9,030.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	1,515	630	Czech Republic 405; France 336; Iran 80.
Coal:			
Bituminous:			
Anthracite	thousand metric tons 3,643	364	Russia 1,180; Colombia 984; South Africa 605.
Coke	do. 4,190	--	Poland 2,380; Czech Republic 377; Russia 239.
Semicoke, coking coal	do. 8,972	2,950	Australia 4,010; Canada 1,130; Russia 727.
Other, including briquets	do. 26,224	2,410	Russia 8,390; Colombia 6,450; Poland 3,590.
Lignite	do. 84	--	Czech Republic 84.
Coke of lignite	3,248	--	Italy 1,940; Austria 1,310.
Gas, natural, gaseous	thousand metric tons 82,818	--	Unspecified, 100%.
Petroleum, crude	do. 91,240	--	Russia 35,300; United Kingdom 13,000; Norway 8,300.
Uranium, natural:			
Crude, U content	4,800	--	France 2,390; United Kingdom 1,370; Canada 1,040.
Enriched, fissile isotopes	kilograms 24,573	--	France 9,710; Russia 8,040; United Kingdom 5,010.

^eEstimated; estimated tonnages are rounded to no more than three significant digits; may not add to totals shown. -- Less than 5%.

¹Source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2011, Table 2—Rohstoffsituation, 2010: Hannover, Germany, December.

²Source country was estimated to have accounted for at least 5% of Germany's total imports of the mineral commodity.