



2012 Minerals Yearbook

GERMANY

THE MINERAL INDUSTRY OF GERMANY

By Steven T. Anderson

In 2012, 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 the lignite consumed in the country was supplied by domestic production. Combustion of lignite accounted for 12.1% 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 33.1% of total primary energy consumption in Germany; that of natural gas, 21.6%; and that of anthracite and bituminous coal (hard coal), 12.2%. Renewable energy resources, such as wind power, accounted for 11.6% of total primary energy consumption; nuclear energy accounted for 7.9%; and other energy sources, including imported electricity, accounted for about 1.5%. 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 (tables 1, 3, 4; AG Energiebilanzen e.V., 2013, p. 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 12–32, 43–44, 109; Bundesministerium für Wirtschaft und Technologie, 2013, p. 5–12, 29–34).

In 2012, the country was estimated to have been the second-ranked 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%), salt (6.6%), and refined lead (4%); the fifth-ranked producer of potash (9%) and bentonite (3.5%); the sixth-ranked producer of sulfur (5.3%); and the seventh-ranked producer of refined copper (3.4%) and crude steel (about 2.8%). Additionally, in 2011 (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; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 13–16, 33–45, 125, 133, 136, 139, 142, 149, 153; International Copper Study Group, 2013, p. 15–17; International Lead and Zinc Study Group, 2013, p. 7–8, 44; U.S. Geological Survey, 2013, 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, 2013, 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 on 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 2012, Germany was the world's third-ranked consumer of aluminum and copper, the fourth-ranked consumer of nickel and tin, and the fifth-ranked consumer of lead. Although the country remained one of the world's leading consumers of hard coal, crude petroleum, crude steel, and zinc, it was not among the top five consumers of these commodities (Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 6–26).

Minerals in the National Economy

In 2012, 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 23.3% (\$793 billion¹) of the gross domestic product (GDP) compared with 23.4% (\$845 billion) in 2011. The value of marketed production by the country's metals processing sector (up to the foundry stage) accounted for about 3.4% (\$117 billion) of the GDP compared with about 3.7% (about \$135 billion) in 2011, and that of the minerals extraction sector (excluding coal) accounted for about 0.24% (about \$8 billion) of the GDP compared with 0.24% (\$8.7 billion) in 2011. Within the metals processing sector, the value of production of the nonferrous metals processing sector was \$65 billion in 2012, and this was 8% lower than in 2011; slightly greater than \$28 billion of the production by the nonferrous metals processing sector was marketed abroad (exported), and two-thirds of nonferrous exports went to other countries within the euro area (Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 11; International Monetary Fund, 2013; Statistisches Bundesamt, 2013a; 2013b, 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 2012, the number of employees in the country's metal processing sector increased to 242,571 from 238,826 in 2011, and in the nonfuel mining and quarrying

¹Where necessary, values have been converted from euro area euros (€) to U.S. dollars (US\$) at an annual average exchange rate of about €0.7187=US\$1.00 for 2011 and €0.7775=US\$1.00 for 2012. All values are nominal, at current prices, unless otherwise stated.

sector (including services), to 12,443 from 12,423 in 2011. In the coal mining sector the number of employees decreased to 32,449 from 37,730 in 2011; in the coking plant and petroleum processing sector, to 17,085 from 17,127 in 2011; and in the oil and natural gas extraction sector, to 3,019 from 3,076 in 2011 (Statistisches Bundesamt, 2013d).

According to the Bundesanstalt für Geowissenschaften und Rohstoffe, the 10 most valuable mineral raw materials produced in Germany in 2012 were, in decreasing order of value of production, lignite (\$10.9 billion); natural gas (about \$5.15 billion); crude petroleum (about \$2.17 billion); construction sand and gravel (\$1.8 billion); crushed stone, including chalk (\$1.74 billion); potash (\$1.5 billion); hard coal (\$1.4 billion); rock salt and industrial brines, NaCl content (\$745 million); dolomite, limestone, and marble (about \$679 million); and kaolin (\$656 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, 2013, p. 13–16; International Monetary Fund, 2013).

According to Germany's Federal Statistics Office (DESTATIS), the country's estimated mineral trade balance in 2012 for all sectors of the mineral industry (including trade in intermediate mineral products, such as cement) was -\$151 billion compared with a revised balance of -\$158 billion in 2011 and -\$118 billion in 2010. In 2012, Germany's mineral trade deficit decreased slightly compared with that of 2011 almost entirely because of a decrease in the total value of the country's mineral imports (to \$234 billion from a revised value of about \$241 billion), because there was only a slight decrease in the total value of its mineral exports (to about \$82.7 billion from a revised value of \$83 billion). The most costly mineral imports were crude petroleum and natural gas, and the most costly nonfuel mineral import was iron ore. The most valuable mineral export was petroleum refinery products, the most lucrative nonfuel mineral export was gold for commercial or industrial use, and the most valuable nonprecious metal export was iron and steel scrap. Germany's leading suppliers (by value) of mineral imports were Russia (\$52 billion), Norway (\$27 billion), and the Netherlands (\$23 billion), mainly because these countries were significant sources of mineral fuels. Despite being the leading source of imported iron ore for Germany, Brazil ranked 10th as a supplier of mineral imports (overall), and the total value of Germany's mineral imports from Brazil in 2012 was about \$4.5 billion (tables 3, 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 17–21; International Monetary Fund, 2013; Statistisches Bundesamt, 2013c, p. 74–79).

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 a 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 the 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, 2013, p. 13–15; Bundesministerium für Wirtschaft und Technologie, 2013, p. 35–46).

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—is the environmental law that was most applicable to the mineral industry during 2012. 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 EIA Act also incorporates 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 is 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, 2013, p. 13–15; Bundesministerium für Wirtschaft und Technologie, 2013, p. 35–46).

Production

Data on mineral production are in table 1. Owing to fairly stable demand from the construction, engineering, and machinery sectors in 2012, production of most metals and industrial minerals in Germany remained about the same or decreased slightly compared with levels of production in 2011. An exception is the decrease of about 29% in production of rock salt and other salt brines, which was primarily owing to a supplier response in Germany to decreased demand for deicing compounds as a consequence of the mild winter weather conditions in Central and Western Europe at the beginning of 2012. The only increases of greater than 10% in the year-on-year production of other industrial minerals during this timeframe was a 70% increase in the production of evaporated salt and about a 14% increase in the production of marble and other calcareous dimension stone. Otherwise, annual production of manufactured phosphoric acid decreased by 37%; dolomite, 19%; fluor spar, about 17%; other clays, 14%; crude gravel (other than for construction), about 13%; and kaolin, 10%. Other than for salt, information was not available concerning the main causes of the significant changes in Germany's production of these individual industrial minerals (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 42–45;

Bundesministerium für Wirtschaft und Technologie, 2013, p. 19–29; K+S Aktiengesellschaft, 2013, p. 88, 92–94, 119).

In 2012, increases of more than 10% in the annual production of metals compared with production in 2011 included a 47% increase in the production of direct-reduced iron; an estimated 17% increase in the production of tin alloys, and a 10% increase in the production of magnesium metal. Production of cobalt matte decreased by 26% and that of ferroalloys (other) decreased by 17% from 2011. Ferroalloys were used mostly in the production of specialty steels, and Germany's production of specialty steels decreased by 17.4% compared with that of 2011. Otherwise, information was not available concerning the main causes of the significant changes in Germany's production of these individual metals. The value of production of the entire nonferrous metals processing sector decreased by about 4% from that of 2011 owing to both an overall decrease in the sector's volume of production (in response to decreased demand, including from trading partners Italy and Spain) and a decrease in average prices during this timeframe (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 11, 35–42).

With respect to mineral fuels in 2012, production of hard coal decreased by about 11% from that of 2011 owing to the continuing decrease in the hard coal mining subsidy, which led to the incremental closure of about one hard coal mine per year in the country during the past 4 years. The Government's program to eliminate the hard coal subsidy by the end of 2018 resulted in the closure of the Saar Mine on July 1, 2012. The 9% to 10% decrease in the production of natural gas was mostly as a result of decreasing reserves in the existing major gasfields in the country (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 29–32; Bundesministerium für Wirtschaft und Technologie, 2013, p. 8–18; Landesamt für Bergbau, Energie und Geologie, 2013, p. 3, 9–10).

Structure of the Mineral Industry

Table 2 lists the major mineral industry facilities in Germany in 2012. Since the closure of the last metal mines in 1992, there has been no production of metallic ores with enough metal content for metallurgical use in Germany. The "iron ore" produced by Barbara Erzbergbau GmbH in 2012 had an estimated iron content of about 10.5% Fe (by volume), and was marketable only as an additive in construction materials (including as a cement additive). 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, 2013, p. 35–45; Stahlinstitut VDEh and Wirtschaftsvereinigung Stahl, 2013, World Steel Association, 2013, p. 8).

In October 2012, Advanced Metallurgical Group N.V. (AMG) of Belgium completed acquisition of 100% of Graphit Kropfmühl AG (the leading producer of graphite in Germany), including 100% ownership of RW Silicium GmbH (the only major producer of silicon metal in the country). In December 2012, AMG announced that it planned to achieve commercial production at Graphit Kropfmühl's reopened graphite mine (the only producer of natural graphite in Germany) by sometime in 2013 (table 2; Advanced Metallurgical Group N.V., 2013, p. 3–4, 12, 28–29).

Mineral Trade

Data on exports and imports of selected mineral commodities in 2012 are provided in tables 3 and 4, respectively. In 2012, the tonnage of Germany's imports of mineral fuels increased to 232 million metric tons (Mt) from about 227 Mt in 2011; metallic raw materials (including mineral ores and concentrates and other metallic raw materials, such as scrap metal), decreased to 62.4 Mt from 66.2 Mt in 2011; and industrial mineral raw materials decreased to 26 Mt from 30.7 Mt in 2011. Of the country's total volume of imports of mineral fuels in 2012, oil and natural gas imports accounted for 40% each, and the remaining 20% was almost entirely accounted for by imports of various types of coal, led by (in order of decreasing tonnage) steam coal, coking coal, and coke. Of the total volume of imports of metallic raw materials, imports of ores and concentrates accounted for 72%, and imports of iron ore accounted for about 88%. Scrap metal (all types) accounted for 14.4% of metallic raw materials, and iron and steel scrap accounted for the majority of scrap metal imports. Intermediate processed metals and refined metals accounted for slightly less than 10% of metallic raw materials. Imports of intermediate processed metals were led by imports of alumina and ferroalloys, and those of refined metals were led by imports of aluminum and refined copper. By far the leading industrial mineral imports (in decreasing order of tonnage) were gravel and stone pebbles, and these accounted for about 40% of the total volume of imports of industrial minerals (raw materials); rock salt, 8.8%; various types of sand, 8%; and limestone for cement manufacturing, 7.4% (tables 3, 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 17–20).

By region, Germany sourced about 68% of the country's total imports of mineral raw materials from Europe (including Eastern Europe and Russia); South America, 11.5%; Africa, about 8.8%; North America, 5.3%; Asia, 3.9%; Australia-Oceania, 1.8%; and the rest of the world, less than 1%. Producers in Europe were

the leading source of imports of mineral fuels and accounted for about 95% of Germany's imports of industrial minerals; those in South America accounted for the greatest share of the country's imports of metallic raw materials, especially of metal ores and concentrates (table 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 19–21).

For its iron and steel sector in 2012, Germany imported 100% of the iron ore and concentrate that it used (about 39 Mt), and Brazil was the supplier of about 61% of these imports; it imported about 5.7 Mt of iron and steel scrap, which was supplied mainly by other European countries. For its specialty steel sector, Germany imported all the ores and concentrates that it used to produce some ferroalloys, recycled domestic and imported scrap containing ferroalloys, and directly imported ferroalloys; these ferroalloy imports included about 393,000 t of ferrochromium (of which South Africa was the leading supplier and accounted for about 54% of Germany's imports); about 248,000 t of ferrosilicon (of which the leading suppliers were Norway, 26%, and Iceland, about 16%); about 233,000 t of silicon metal (Norway, about 39%); 207,000 t of ferrosilicomanganese (Norway, about 27%, and India, 23%); 193,000 t of ferromanganese (Norway, about 29%, and South Africa, 28%); about 189,000 t of chromite ore and concentrate (South Africa, about 68%); and about 140,000 t of ferronickel (Ukraine, 63%) (table 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 35–36).

For the country's nonferrous metals processing sector in 2012, some notable imports and sources included about 2.8 Mt of bauxite ore and concentrate (of which Guinea was the leading supplier, accounting for 77% of Germany's imports); 1.2 Mt of copper in ores and concentrates (Peru, 27%, and Chile, 21%); 652,000 t of titanium ore and concentrate (Norway, about 34%, and South Africa, about 23%); 325,000 t of zinc in ores and concentrates (Australia, about 44%); and about 228,000 t of lead in ores and concentrates (Sweden, about 26%). Some other important imports of metals (for alternative energy technologies, the automotive sector, and other industrial sectors) included about 43 t of palladium (of which Belgium and Russia were the leading suppliers, accounting for about 27% and 26%, respectively, of Germany's imports); 27 t of platinum (South Africa, about 37%); and about 4,160 t of rare-earth compounds, not including cerium compounds (the United States, about 53%) (table 4; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 37–42).

In 2012, Germany exported about \$50.5 billion of mineral raw materials, and the value of the country's exports of metallic raw materials accounted for 67.9% (\$34.3 billion) of the total export value; energy raw materials (including electricity), 26.3% (\$13.3 billion); and industrial minerals and other mineral raw materials that were not fuels and not metals, 5.8% (about \$2.9 billion). Precious metals, including platinum-group metals (PGMs), accounted for 40% of the export value of metallic raw materials. In 2012, Germany's leading exports (by volume) of nonprecious processed metals and destinations in 2012 included 9.66 Mt of scrap iron and steel, of which about 19% was exported to the Netherlands and about 18% went to Italy; 2.34 Mt of ash and residue containing iron, of which 48% went to France; 969,000 t of aluminum scrap, of which 19% went

to Italy and 15% went to Austria; 588,000 t of copper scrap, of which about 38% went to China; 455,000 t of aluminum hydroxide, of which 21% went to the Netherlands and about 18% went to the United States; about 369,000 t of aluminum oxide (alumina), of which 33% went to France; 277,000 t of refined copper (not alloyed), of which about 25% went to China; and 230,000 t of secondary aluminum (including alloys), of which about 22% to Austria and 19% went to France (table 3; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 21; International Monetary Fund, 2013).

In order to protect private company information, the data on Germany's exports of potash are not available from the Government, so these data are not listed in table 3. In 2012, sales to other countries in Europe accounted for 35.7% of the total volume of sales by the potash and magnesium products unit of K+S Aktiengesellschaft; Asia, 21.6%; South America, 21.3%; Germany, 14.9%; Africa and Oceania, 4.1%; and North America, 2.4%. Although most of the production by this unit of K+S Aktiengesellschaft took place within Germany, the company also owned potash production and processing facilities in Canada, France, and possibly other countries. Thus, information was not available with regard to exactly how much of these sales actually represented Germany's exports (table 3; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 21; K+S Aktiengesellschaft, 2013, p. 58–59).

Based on sales data for the first 9 months of 2012, Germany's mining-equipment manufacturing sector was on pace to increase sales of mining equipment by about 20% compared with that of 2011, despite receiving about one-half as many orders from China. The decrease in demand in China was offset by fourfold increases in demand for German mining equipment in Australia and Chile, and demand also increased significantly in other countries of Latin America (most notably in Colombia and Peru), Russia, and the United States. Because coal mining equipment was the leading type of mining equipment that Germany exported to China, the decrease in demand for mining equipment was estimated to have been mostly owing to decreased steel demand in the country, which negatively affected coking coal production in China. In 2012, China's increasing ability to produce its own mining equipment and the overall slowdown in the economic growth of the country also contributed to lower demand for Germany's exports of mining equipment compared with that of 2011 (Walker 2013, p. 4–5).

Commodity Review

Metals

Iron and Steel.—In 2012, global apparent steel use decreased by about 5.6% compared with that of 2011, including in Germany (by 8.8%) and in the EU as a whole (by about 5.5%); companies reported that demand for crude steel in Germany and the EU decreased steadily during the year. Production of crude steel in Germany decreased only by about 3.7% from that of 2011, however, and the country made up for the lower decrease in output (relative to the decrease in demand) with a decrease of 6.8% in imports of crude steel during this timeframe. In 2012, 43% of the total production of crude steel in the country was from secondary materials (recycled scrap) (tables 1, 4;

Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 35, 78; World Steel Association, 2013, p. 16).

Industrial Minerals

Graphite.—According to the Government, Graphit Kropfmühl had reopened the Kropfmühl Mine (Germany's only graphite mine) on June 21, 2012, after the company had decided to close the mine at the end of 2005 because of poor market conditions. In the interim, Germany continued to produce refined graphite from imports of crude graphite, but this production has not been included in table 1 to avoid double counting production of mined graphite in the countries that supply crude graphite to Germany. In 2012, Graphit Kropfmühl had reportedly produced some test samples of graphite from the mine before the company was acquired by AMG. This test production was not reported by the Government, possibly because it was too small to be marketable, or the production data could have been withheld to protect the single producer's private company information. At the end of 2012, AMG expected to ramp up production of graphite at the Kropfmühl Mine to some undisclosed level by the end of 2013 (table 1; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 44; Advanced Metallurgical Group N.V. 2013, p. 28–29)

Mineral Fuels

Coal.—At the beginning of 2012, there was hard coal mining in the Ibbenbüren, the Ruhr, and the Saar coalfields, but it was uneconomical without a subsidy. The Government's program to eliminate the hard coal subsidy by the end of 2018 resulted in the closure of the Saar Mine on July 1, 2012, so there was no longer any production in Saarland by the end of the year. The West Mine (in the Ruhr coalfields) closed at the end of 2012, and the last of Germany's hard coal mines was expected to close in 2018. An economic consequence of decreasing production of hard coal domestically is that Germany will become more dependent on imported coke and coking coal from hard coal mines outside of the country, and this will subject sectors of the mineral industry, such as steel manufacturing, and other sectors of the economy to greater cost uncertainty. In 2012, Germany's imports of coke (from hard coal) and coking coal decreased by about 25% and 2%, respectively, at least partially owing to decreased demand by the steel manufacturing sector (Gesamtverbands Steinkohle e.V., 2011, p. 13–14, 16–32; Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, p. 8, 32, 62, 67, 70–71, 118–120; Bundesministerium für Wirtschaft und Technologie, 2013, p. 11–12).

Reserves and Resources

At the end of 2012, Germany's reserves of lignite were estimated to be 40.4 billion metric tons (Gt) compared with about 40.5 Gt at yearend 2011; the country's proven and probable reserves of natural gas were estimated to have decreased to about 123 billion cubic meters compared with about 133 billion cubic meters in 2011; and its proven and probable reserves of crude petroleum were estimated to be 242 million barrels (Mbbbl) (converted from a reported figure

of about 32.5 Mt) compared with about 259 Mbbbl (35.3 Mt) in 2011. At the end of 2012, K+S AG estimated company reserves of potash (K₂O content) in Germany to be about 132 Mt compared with 137 Mt at yearend 2011, its reserves of salt in Germany to be 115 Mt compared with about 118 Mt at yearend 2011, and reserves of kieserite (usable magnesium compounds contained in the company's potash deposits in Germany) to be about 109 Mt compared with 110 Mt at yearend 2011. Reliable information concerning additional reserves of industrial minerals in the country was not available (Bundesanstalt für Geowissenschaften und Rohstoffe, 2012, p. 30–37, 105, 108, 116; 2013, p. 28–33, 110, 113, 121; Bundesministerium für Wirtschaft und Technologie, 2013, p. 15–17, 151; K+S Aktiengesellschaft, 2012, p. 214–215; 2013, p. 216–217; Landesamt für Bergbau, Energie und Geologie, 2013, p. 41–43).

Assuming that the phaseout of the Government's subsidy of hard coal production will proceed according to the schedule as it stood in 2012, 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 2012, the Government had an estimate of how much hard coal would be produced in 2013 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 36 Mt at the end of 2012 compared with about 48 Mt (of hard coal to be produced in 2012 and through 2018) at yearend 2011. 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 2012, the country's hard coal resources remained at approximately 83 Gt (Bundesanstalt für Geowissenschaften und Rohstoffe, 2012, p. 111; 2013, p. 31, 115).

Outlook

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), about 38% of the electricity generated in Germany in 2030 is projected to 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., 2013, p. 25–27; Bundesministerium für Wirtschaft und Technologie, 2013, p. 4–5, 8, 16–18, 38, 49–51).

RWE Aktiengesellschaft (RWE) expected that the company's startup of its lignite-fired powerplant in Neurath (near Cologne) in 2012 would increase demand for (and the company's production of) lignite in Germany in 2013 and beyond, but RWE also decommissioned the last of its older lignite-fired powerplants at the end of 2012. Although this new powerplant at Neurath has a greater capacity to generate electricity from lignite than the decommissioned older one, the new powerplants are more efficient than the older ones. So, the net effect on the demand for lignite and the company's production in 2013 and beyond was uncertain. The Government's program to eliminate the hard coal subsidy by the end of 2018 left only three mines producing hard coal in Germany in 2013 (table 1; Gesamtverbands Steinkohle e.V., 2011, p. 14–18; Bundesanstalt für Geowissenschaften und Rohstoffe, 2012, p. 12–14, 32–35; RWE Aktiengesellschaft, 2013, p. 22, 33, 53, 62, 70, 120).

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. In 2013, however, K+S AG expects global demand for potash to increase from that in 2012 because there were lingering supply contract negotiations that constrained potash purchases in 2012. The company also forecast that most of the increase in potash sales volume would occur in the big contract sales markets of China and India, however, which make up a small percentage of the sales market for German production of potash, so Germany could produce approximately the same amount of potash in 2013 as in 2012 and possibly increase production by about 1% in 2014 (tables 1, 2; K+S Aktiengesellschaft, 2013, p. 132–145).

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TABLE 1
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012	
METALS						
Aluminum:						
Alumina	819	638	973	950 ^e	967	
Aluminum hydroxide, Al ₂ O ₃ equivalent	1,395	1,154	1,485	1,405	1,364	
Metal:						
Primary	606	292	402	432	410	
Secondary	721	561	611	634	635	
Total ²	1,327	853	1,014	1,067	1,045	
Cadmium, metal, refinery ^c	metric tons	420	278	290	300	300
Cobalt, matte, including shavings and scrap	do.	913	654	829	671	497
Copper, metal:						
Smelter:						
Primary	295	286	379	346 ^r	340 ^p	
Secondary	293	248	212	218 ^r	217 ^p	
Total ²	588	534	591	564 ^r	556 ^p	
Refined:						
Primary	300	290	402	401 ^r	390 ^p	
Secondary	389	379	302	308 ^r	296 ^p	
Total ²	690	669	704	709 ^r	686 ^p	
Gallium, crude ^e	metric tons	25	20	30	30	30
Gold, metal, refined, including secondary	kilograms	NA	204,766 ³	44,100 ^e	50,682	53,476
Indium, refined ^e	metric tons	10	10	10	10	10
Iron and steel:						
Ore, run of mine:⁴						
Gross weight	455	364	390	489 ^r	448	
Fe content	48	38	41	51 ^r	47	
Metal:						
Pig iron	29,111	20,104	28,560	27,943 ^r	27,048	
Direct-reduced iron	520	380	450	380	560	
Ferroalloys:						
Ferrochromium ^e	metric tons	26,960 ⁵	13,667 ⁵	18,300 ^r	18,500 ^r	17,800
Other	do.	5,000 ^e	6,336	9,200 ^e	9,985 ^r	8,248
Steel, crude	45,833	32,671	43,830	44,284 ^r	42,661	
Semimanufactures	39,805	29,041	36,827	37,933	36,495	
Lead, metal, refined:						
Primary	113	105	125	136 ^r	134 ^e	
Secondary	302	286	279 ^r	293 ^r	290 ^e	
Total	415	391	404 ^r	429 ^r	424 ^e	
Magnesium, metal including castings	30	12	15	15	16	
Platinum-group metals, metal, refined	metric tons	122	110 ^e	100 ^e	50	54
Selenium, contained metal ^e	do.	650	600	650	700 ^r	650
Silicon, metal	do.	29,092 ^r	27,620 ^r	30,105 ^r	30,134 ^r	29,000 ^e
Silver, metal, refined, including secondary	do.	1,783	1,616	1,768	1,886	1,753
Tin, alloys ^e	do.	6,114 ⁵	5,003 ⁵	7,000 ^r	6,000	7,000
Zinc, metal:						
Primary	211	134	144	142	139 ^e	
Secondary	81	19	21	28 ^r	30 ^e	
Total	292	153	165	170 ^r	169 ^e	
INDUSTRIAL MINERALS						
Abrasives, manufactured:						
Corundum	95	49	83	90	83	
Fused aluminum oxide, crude ^e	20	20	20	20	20	
Silicon carbide ^e	20	20	20	20	20	
Aluminum salt slag, Al ₂ O ₃ equivalent ^e	200	150	200	200	200	

See footnotes at end of table.

TABLE 1—Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012
INDUSTRIAL MINERALS—Continued					
Barite, marketable (contained BaSO ₄)	79	46	56	55 ^r	52
Boron compounds, manufactured, including boric acid and oxide	204	130	163	157	149
Bromine compounds, including oxide ^e metric tons	1,680	985	1,500	1,600 ^r	1,600
Cement:					
Clinker, intended for market	25,366	23,232	22,996	24,775	24,581
Hydraulic	33,581	30,441	29,915	33,540	32,432
Chalk, natural, including ground ^e	1,495 ⁵	1,322 ⁵	1,350	1,400	1,450
Clays, natural:					
Bentonite	414	326	363	375 ^r	366
Ceramic and refractory clays	4,229	3,711	3,978	4,027 ^r	4,399
Of which, fire clay and chamotte	267	250 ^e	246	253	270 ^e
Kaolin, marketable	3,622	4,514	4,560 ^r	4,899 ^r	4,399
Other, unspecified	182	193	198	200 ^e	172
Dolomite, neither burnt nor sintered	850 ^e	800 ^e	792	622	504
Feldspar, all uses ⁶	3,616	3,698	5,203	5,483 ^r	5,321
Of which, feldspar for industrial uses ^e	161 ⁵	201	203 ^r	218	205
Fluorspar, acid-grade	49	50	59	66 ^r	54
Gypsum and anhydrite:					
Natural	2,112	1,898	1,822	2,021	1,949
Byproduct of flue-gas desulfurization ^e	6,900	6,600	6,320 ^r	6,780 ^r	7,010
Lime, quicklime, dead-burned dolomite	7,313	5,945	6,856	7,113	6,672
Magnesium compounds, byproduct of potash mining	1,418	811	1,310	1,348 ^r	1,372
Mullite, synthetic ^e	15	15	15	15	15
Nitrogen, N content of ammonia	2,819	2,363	2,677	2,821 ^r	2,823
Peat, horticultural use thousand cubic meters	7,629	8,364	7,759	7,911	8,205
Phosphoric acid, manufactured, P ₂ O ₅ content	32	20	21	20	12
Pigments, iron oxide (including synthetic iron oxide)	251	209	234	223	204
Potash, K ₂ O content:					
Crude	4,046	2,208	3,630	3,827 ^r	3,767
Marketable	3,280	1,825	3,024	3,215 ^r	3,149
Salt, NaCl content, marketable:					
Evaporated salt, including marine salt	580	325	322	329 ^r	559
Industrial brines	9,084	9,798	8,752	8,066 ^r	7,506
Rock salt and other brines	6,169	8,816	10,602	9,048 ^r	6,381
Total ²	15,833	18,939	19,676	17,432 ^r	14,445
Siliceous earth, marketable	52	43	49	53 ^r	50
Soda ash (Na ₂ CO ₃), manufactured	2,715	2,291	2,539	2,668	2,627
Stone, sand and gravel:					
Stone, crude:					
Dimension, including partially worked	400 ^{r,e}	380	425	467	477
Of which, marble and other calcareous stone	250 ^{r,e}	247 ^r	287 ^r	314 ^r	356
Crushed, not including chalk	155,527 ^r	156,752 ^r	149,463	164,487	154,020
Dolomite and limestone, not for cement manufacture	21,300	19,000	18,000	18,400 ^r	17,600
Gravel, natural:					
Construction gravel	63,962	70,136	67,822	76,191	72,615
Crude, including flint and pebbles	12,631	10,442	9,693	11,043	9,639
Other gravel, including quartzite	11,911	NA	NA	NA	NA
Sand, natural:					
Construction sand	56,866	66,010	63,962	72,394	67,852
Silica sand, including glass sand and quartz sand	8,186	6,453	7,234	7,770	7,498
Other, including from granite and pegmatite	13,416	NA	NA	NA	NA
Total, sand and gravel	166,972	153,041	148,711	167,398	157,604
Strontium carbonate, manufactured ^e	80	100 ^r	120 ^r	130 ^r	120

See footnotes at end of table.

TABLE 1—Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012
INDUSTRIAL MINERALS—Continued					
Sulfur:					
Marketable	1,030	927	832	875 ^r	798
Byproduct:					
Metallurgy	2,458	2,137	2,266	2,394	2,373
Natural gas and petroleum	1,709	1,623	1,447	1,514	1,445
Total	4,167	3,760	3,713	3,908	3,818
MINERAL FUELS AND RELATED MATERIALS					
Carbon black	607	494	684	908	923
Coal:					
Anthracite and bituminous, marketable	17,171	13,766	12,900	12,059	10,770
Lignite	175,313	169,857	169,403	176,502	185,432
Coke:					
Of anthracite and bituminous coal	8,246	6,771	8,241	7,990 ^r	8,050
Of lignite	177	153	176	171	170
Fuel briquets of lignite	1,631	1,959	2,024	2,136	1,910
Gas:					
Manufactured:					
Blast furnace ^c million cubic meters	9	6	9	9	9
Coke oven do.	969	718	951	922 ^{r, e}	929 ^e
Total ^e do.	978	724	960	931 ^r	938
Natural:					
Associated (byproduct of crude petroleum) do.	100	90	81	80	78
Gross (non-associated) do.	16,524 ^r	15,464	13,584	12,873	11,706
Marketable (dry or net) do.	15,377	14,380	12,571	11,799 ^r	10,660
Petroleum: ⁷					
Crude thousand 42-gallon barrels	22,400	20,500	18,400	19,600	19,200
Refinery products:					
Liquefied petroleum gas do.	36,390	33,490	33,180	32,860	33,010
Distillate fuel oil do.	370,000	360,000	340,000	330,000	340,000
Residual fuel oil do.	67,500	55,600	41,600	42,400	44,200
Gasoline, including aviation do.	200,000	200,000	180,000	180,000	170,000
Kerosene and jet fuel do.	36,500	35,200	37,400	38,100	40,000
Naphtha do.	87,000	75,000	72,000	70,000	70,000
Refinery gas do.	47,800	44,500	44,500	45,100	44,000
Bitumen, bituminous mixtures, and other residues do.	33,900	34,300	32,800	34,600	33,000
Lubricants and miscellaneous oils do.	17,000	16,000	18,000	17,000	17,000
Petroleum coke do.	11,500	10,900	11,500	10,100	9,970
Mineral jelly, waxes, and paraffins do.	1,300	800	900	900	1,000
Other do.	8,290	6,040	8,630	6,590	8,330
Total ^e do.	917,000	872,000	821,000	808,000	811,000
Uranium concentrate, U ₃ O ₈ content	--	--	9	60 ^r	59

^eEstimated; 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 February 21, 2014.

²Data may not add to totals shown.

³Could include production in 2008.

⁴Iron 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.

⁵Reported figure.

⁶All uses include use as gravel for road construction, and industrial uses include use in the manufacturing of ceramics.

⁷All figures through 2012 were converted to barrels from those reported in metric tons according to data from Mineralölwirtschaftsverband e.V., 2013, Jahresbericht—Mineralöl-Zahlen, 2012: Berlin, Germany, Mineralölwirtschaftsverband e.V., July, p. 48 and 79, and reflect the significant digits of the conversion factors.

TABLE 2
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(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 Corp., 100%)	Secondary smelters: Erftwerk at Grevenbroich, Innwerk at Toeving am Inn, and Neckarwerk at Deizisau	320	
Do.	TRIMET Aluminium AG	Primary smelter at Essen-Borbeck	175 ^e	
Do.	do.	Recycling plant and secondary smelter at Gelsenkirchen	160 ^e	
Do.	do.	Recycling plant and secondary smelter at Harzgerode	40	
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	130	
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 Toeving	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 ^e	
Do.	do.	Plant at Neuss	50	
Do.	Kärlicher Ton- und Schamotte-Werke Mannheim & Co. KG (KTS)	Quarry at Muelheim-Kaerlich	50	
Cadmium, metal:				
Primary (byproduct)	Metaleurop Zinkbetrieb GmbH & Co. KG (Xstrata plc, 100%)	Nordenham smelter, near Bremerhaven	160	
Secondary	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	

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Carbon black	Orion Engineered Carbons GmbH (Rhône Capital LLC, 50%, and Triton Advisors Ltd., 50%)	Kalscheuren plant at Cologne, and plant at Dortmund	NA
Cement	HeidelbergCement AG	Plant at Burglengenfeld; two plants at Ennigerloh; two plants at Geseke; plants at Königs 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	ThyssenKrupp Steel AG	Schwelgern plant at Duisburg	2,100
Do.	ArcelorMittal Bremen GmbH (ArcelorMittal, 99.88%, and other private, 0.12%)	Coking plant at the Prosper-Haniel Mine	2,000 ^e
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 2012¹

(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 ^e
Do.	Hüttenwerke Kayser AG (Aurubis AG, 100%)	Secondary plant and refinery at Luenen	210 ^e
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 Lengsfeld	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 ^e
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.	metric tons Hüttenwerke Kayser AG (Aurubis AG, 100%)	Secondary plant and refinery at Luenen	40 ^e
Do.	Heraeus Precious Metals GmbH & Co. KG	Primary smelter and refinery and secondary plant at Hanau	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	GK Graphit Kropfmühl GmbH (Advanced Metallurgical Group N.V., 100%)	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 Witzzenhausen	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 ^e
Iron oxide, pigments	Lanxess AG	Plant at Krefeld-Uerdingen	300
Kaolin, feldspar, and quartz	Amberger Kaolinwerke GmbH—Eduard Kick GmbH & Co. KG (Quarzwerte GmbH, 100%)	Mines at Caminau, Hirschau, Kemmlitz, and Schnaittenbach, Bavaria	350
Do.	Gebrüder Dorfner GmbH & Co Kaolin- und Kristallquartzsand Werk KG	Mine near Hirschau, Bavaria	NA
Lead, metal	Weser Metall GmbH (Recylex S.A., 100%)	Primary and secondary smelter and refinery at Nordenham	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	160 ^e
Do.	Johnson Controls Recycling GmbH (Johnson Controls Inc., 100%)	Battery recycling plant and secondary smelter at Krautscheid	120
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 Nordenham	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	Jämschwalde-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 ^e
Do.	Kalkwerk Bad Kösen GmbH	Quarry at Bad Kösen	2,000 ^e
Do.	Fels-Werke GmbH	Quarry at Kaltes Tal	2,000 ^e

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Limestone—Continued		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
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 (GDF Suez 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 (GDF Suez 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 Hanau	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

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
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
Do.	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	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 ^e
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 (Advanced Metallurgical Group N.V., 100%)	Four electric arc furnaces in plant at Pocking	32,000
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.	metric tons Hüttenwerke Kayser AG (Aurubis AG, 100%)	Secondary plant and refinery at Luenen	1,300 ^e
Do.	do. Berzelius Metall GmbH [Eco-Bat Technologies Ltd. (Quexco Inc., 100%), 100%]	Secondary (lead) smelters at Braubach am Rhein and Freiberg/Sachsen; primary (lead) smelter at Stolberg	400 ^e
Do.	Heraeus Precious Metals GmbH & Co. KG	Primary smelter and refinery and secondary plant at Hanau	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 ^e
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%; ArcelorMittal, 30.08%; Struktur-Holding-Stahl GmbH & Co KG, 26.17%; Dillinger Hütte und Saarstahl mbH, 10%; other, 4.72%)	Plant at Dillingen	2,800
Do.	ArcelorMittal Eisenhüttenstadt GmbH (ArcelorMittal, 100%)	Plant at Eisenhuettenstadt	2,400
Do.	Badische Stahlwerke GmbH	Plant at Kehl	2,300 ^e
Do.	Brandenburger Elektrostahlwerk GmbH (RIVA FIRE S.p.A, 100%)	Plant at Brandenburg	1,700 ^e
Do.	ThyssenKrupp Nirosta (ThyssenKrupp Steel AG, 100%)	Plants at Bochum and Krefeld	1,600 ^e
Do.	ArcelorMittal Ruhrort GmbH (ArcelorMittal, 100%)	Plant at Duisburg	1,500 ^e
Do.	Georgsmarienhütte GmbH	Plants at Bous, Georgsmarienhütte, and Groeditz	1,300 ^e

See footnotes at end of table.

TABLE 2—Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Steel, crude—Continued	Stahlwerk Thüringen GmbH (Alfonso Gallardo S.A., 100%)	Plant at Unterwellenborn	1,100
Do.	Deutsche Edelstahlwerke GmbH	Plants at Siegen and Witten	1,100 ^e
Do.	Lech-Stahlwerke GmbH (Max Aicher GmbH & Co. KG, 100%)	Plant at Herbertshofen	1,100 ^e
Do.	ArcelorMittal Hamburg GmbH (ArcelorMittal, 100%)	Plant at Hamburg	1,100 ^e
Do.	Hennigsdorfer Elektrostahlwerk GmbH (RIVA FIRE S.p.A, 100%)	Plant at Hennigsdorf	1,000 ^e
Do.	Elbe-Stahlwerke Feralpi GmbH (Feralpi Siderurgica S.p.A., 100%)	Plant at Riesa	950 ^e
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 ^e
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
Tin alloys, tinplate	ThyssenKrupp Rasselstein GmbH	Plant at Andernach	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%)	Waelz rotary kilns at Oker-Goslar	80 ^e
Do.	Norzinco GmbH (Recylex S.A., 100%)	Secondary plant at Harlingerode	20
Zinc, powder	do.	do.	5

^eEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

¹Table includes data available through March 7, 2014.

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 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
METALS			
Aluminum:			
Bauxite, ore and concentrate	thousand metric tons	35	-- Belgium 11; Netherlands 5.
Oxide		369,337	-- France 122,000.
Hydroxide		455,157	80,600 Netherlands 96,900.
Ash and residues containing aluminum		16,242	-- Austria 5,880; France 5,250; Spain 2,000.
Metal:			
Primary, not alloyed		42,580	-- France 17,200; Hungary 5,830; Luxembourg 5,580.
Primary, alloys, all forms	thousand metric tons	132	-- Austria 45; United Kingdom 24; Poland 15.
Secondary, including alloys		230,036	-- Austria 49,500; France 43,900.
Scrap		968,539	-- Italy 188,000; Austria 148,000; Netherlands 108,000.
Antimony:			
Metal, including alloys, all forms		103	-- France 39; Spain 24; Slovakia 12.
Ore and concentrate		5	-- Brazil, 100%.
Oxides		688	-- Belgium 126; Romania 82; Switzerland 80.
Arsenic, metal, including alloys, all forms		128	3 Belgium 100.
Bismuth, metal, crude, including scrap		92	-- Switzerland 50; United Kingdom 15.
Cadmium, metal, crude, powder, including scrap		379	-- Sweden 219; China 149.
Chromium:			
Chromate		815	-- Belgium 524; Austria 227.
Ore and concentrate		60,354	-- Russia 36,000.
Metal:			
Crude, including powder		1,384	-- Austria 227; France 177.
Scrap		4,737	-- Italy 4,610.
Cobalt:			
Ore and concentrate		8	-- Vietnam, 100%.
Oxides and hydroxides		84	-- France 16; Turkey 13; Spain 11.
Metal, including alloys, all forms		431	-- China 82; Italy 62.
Scrap		460	82 Luxembourg 112; France 111; United Kingdom 71.
Copper:			
Ore and concentrate	thousand metric tons	57	-- Sweden 55.
Ash and residue containing copper		16,807	-- Belgium 10,900; Canada 3,500.
Matte and speiss, including cement copper		2	-- Russia, 100%.
Metal:			
Unrefined		2,014	-- Belgium 1,450; Austria 441.
Refined, not alloyed		276,943	-- China 68,400; Belgium 50,100.
Alloys, all forms		14,579	-- Switzerland 2,320; China 1,970.
Scrap		587,935	-- China 226,000; Netherlands 118,000; Belgium 60,000.
Gallium, indium, and thallium, metal, including scrap		48	25 Switzerland 10; United Kingdom 10.
Germanium, metal, all forms		3	-- Russia 3.
Gold:			
Metal, including alloys, all forms	kilograms	197,894	-- Switzerland 121,000; United Kingdom 32,700; Unspecified 22,800.
Powder	do.	258	209 --
Waste, sweepings and scrap		956	-- Japan 929.
Iron and steel:			
Ore and concentrate	thousand metric tons	43	-- Denmark 20; Switzerland 15.
Ash and residue containing iron	do.	2,340	-- France 1,120; Netherlands 496; Luxembourg 255.
Metal:			
Pig iron, cast iron, related materials		171,304	-- France 31,900; Turkey 18,500; Poland 17,100.
Scrap	thousand metric tons	9,658	-- Netherlands 1,790; Italy 1,770; Luxembourg 1,270.
Sponge iron, powder		35,370	-- Austria 5,770; Sweden 4,100; Italy 4,070.
Ferroalloys:			
Ferrochromium		32,760	6,450 France 8,450; Austria 4,130; United Kingdom 3,640.
Ferromanganese		11,810	-- Poland 2,520; Austria 1,880; Czech Republic 1,830.
Ferromolybdenum		2,815	-- Sweden 926; Czech Republic 495.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
METALS—Continued			
Iron and steel—Continued:			
Metal—Continued:			
Ferroalloys—Continued:			
Ferronickel	391	--	Netherlands 202; Belgium 103; Italy 62.
Ferroniobium	228	--	France 35.
Ferrosilicomagnesium	2,062	--	Italy 483; Czech Republic 297; Brazil 254.
Ferrosilicomanganese	12,006	--	Poland 3,230; Czech Republic 2,520; France 2,440.
Ferrosilicon	67,352	--	Austria 13,500; France 10,800; Italy 8,150.
Ferrotitanium	4,687	--	Italy 708; Belgium 520.
Ferrotungsten	417	--	Austria 95; Italy 90; China 63.
Ferovanadium	226	--	China 74; Netherlands 31; Venezuela 27.
Other ferroalloys	33,947	--	Italy 3,800.
Steel, crude	8,726	--	Belgium 4,520.
Lead:			
Ore and concentrate	60,356	--	China 57,400.
Ash, residues and slimes containing lead	20,761	--	Belgium 20,700.
Lead containing antimony	9,823	--	Czech Republic 4,750; Austria 3,770.
Metal:			
Refined	146,370	--	Italy 32,600; Austria 26,200; Spain 25,500.
Unrefined	22,396	--	Czech Republic 15,400; Belgium 5,530.
Scrap	7,982	--	Netherlands 2,930; India 1,580; Belgium 1,470.
Magnesium, metal, including alloys:			
Scrap	14,863	--	Austria 2,630; Czech Republic 2,470; Belgium 2,230.
Unwrought	12,935	464	United Kingdom 2,290; Romania 1,900; Italy 1,600.
Manganese:			
Ore and concentrate	4,388	--	France 1,460; Denmark 755; Belgium 645.
Manganite, manganate	287	--	Japan 80; Taiwan 79; Belgium 49.
Oxides	939	--	Poland 426; Netherlands 124.
Metal:			
Crude	12,978	--	Netherlands 3,300; Belgium 3,140; France 1,800.
Scrap	574	--	Republic of Korea 348; Netherlands 76; France 72.
Mercury	103	13	Netherlands 40; Spain 16.
Molybdenum:			
Ore and concentrate	3,738	--	South Africa 1,050; Vietnam 916; Hong Kong 564.
Metal, scrap	1,205	--	France 677; Austria 229; United Kingdom 171.
Nickel:			
Ore and concentrate	778	--	China 198; Belgium 181; Poland 181.
Matte, speiss, related materials	19,412	--	Canada 18,600.
Oxides and hydroxides	39	--	France 10; Austria 8; Sweden 5.
Ash and residue containing nickel	22	--	Sweden, 100%.
Metal, including alloys:			
Alloys, all forms	5,036	1,060	Austria 1,920; United Kingdom 730; Slovenia 589.
Unalloyed	4,807	--	Austria 2,020; Poland 817.
Scrap	7,727	1,280	Sweden 1,550; United Kingdom 1,050; Spain 920.
Niobium (columbium), ash and residue containing niobium and tantalum	22	--	Kazakhstan 13; United Kingdom 8.
Platinum-group metals:			
Metal, including alloys, all forms:			
Platinum	kilograms 15,738	4,030	Switzerland 4,800.
Palladium	do. 35,069	4,490	China 7,470; Belgium 6,170; Brazil 4,560.
Rhodium	do. 3,794	960	China 884; Hong Kong 524.
Iridium, osmium and ruthenium	do. 17,048	--	Singapore 11,400; Belgium 2,010.
Waste, sweepings and scrap	6,048	3,370	United Kingdom 1,400; Belgium 1,120.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
METALS—Continued			
Rare-earth metals, including alloys:			
Cerium compounds	165	--	Austria 30; Italy 24; Republic of Korea 17.
Other compounds, all forms	534	--	Austria 401.
Metal	10	--	Saudi Arabia 3; Czech Republic 2; Turkey, 2.
Selenium, metal	343	--	Phillipines 44; Brazil 39; Mexico 37.
Silicon, metal	49,693	--	China 21,000.
Silver:			
Metal	1,963	--	United Kingdom 1,070; Unspecified 279.
Powder	kilograms 42,098	--	France 13,800; Greece 8,710.
Tin:			
Ash and residue containing tin	394	--	Belgium 334; Netherlands 60.
Metal:			
Alloys, all forms	1,352	--	Republic of Korea 379; Italy 201; Belgium 153.
Crude	1,223	--	Austria 278; Czech Republic 275; France 130.
Waste and scrap	1,141	--	Belgium 646; Netherlands 299; Poland 152.
Titanium:			
Ore and concentrate	13,792	--	Brazil 9,530; Mexico 3,250.
Metal:			
Powder	2,508	--	France 614; Italy 369.
Waste and scrap	6,663	2,290	United Kingdom 1,950; Ukraine 1,320.
Tungsten:			
Ore and concentrate	524	268	Vietnam 179; China 74.
Metal, waste and scrap	3,395	492	Austria 920; Sweden 384; Finland 367.
Vanadium, metal, including scrap	560	162	United Kingdom 122; Russia 80; Japan 57.
Zinc:			
Ore and concentrate	39,533	--	Belgium 18,100; France 16,400.
Ash and residue containing zinc	61,903	--	Belgium 35,500; Netherlands 18,100.
Matte and related materials	4,917	--	Belgium 2,300; Austria 1,410; Italy 649.
Oxide and peroxide	36,292	--	France 6,750; China 4,060.
Metal:			
Alloys, all forms	29,775	--	Austria 22,200.
Unalloyed	59,913	--	Austria 10,100; Poland 9,230; France 8,750.
Powder and dust	13,302	5,590	--
Scrap	73,200	--	China 30,100; Netherlands 14,000; Italy 9,370.
Zirconium:			
Metal, including alloys	146	24	France 40; Switzerland 32; Belgium 15.
Oxides, including germanium oxides	296	--	Austria 57; United Kingdom 44; Czech Republic 41.
Scrap	31	6	Spain 11; United Kingdom 11; Belgium 3.
INDUSTRIAL MINERALS			
Abrasives, natural:			
Corundum, emery, garnet, and so forth	9,725	--	Sweden 3,470; Norway 1,640; Switzerland 1,370.
Pumice	190,653	--	Netherlands 125,000; Luxembourg 35,500.
Asbestos, crude	10	--	Switzerland, 100%.
Borates, natural, including calcined	47	--	Turkey 16; United Kingdom 13; Czech Republic 12.
Cement	thousand metric tons 6,944	--	Netherlands 2,190; Belgium 917; France 910.
Chalk, natural	224,648	--	Netherlands 54,100; Poland 45,400; United Kingdom 35,900.
Clays, crude:			
Bentonite	82,504	--	Netherlands 22,400; Poland 12,300; Austria 9,570.
Ceramic and fire clays	7,093	--	Italy 3,530; Switzerland 2,260; Ukraine 745.
Chamotte or Dina's Earth	76,538	--	Italy 20,000; Czech Republic 11,900; Netherlands 10,000.
Kaolin	361,916	--	Austria 104,000; Italy 81,100; Poland 65,500.
Other, unspecified	thousand metric tons 2,288	--	Italy 824; Netherlands 693; Belgium 336.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(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	137,301	21,300 Hong Kong 35,000.
Industrial stones	do.	4,921	-- Switzerland 3,200; United Kingdom 876.
Dust and powder	kilograms	3,019	-- Italy 779; Belgium 555.
Diatomite and other infusorial earth		22,190	-- China 3,400.
Feldspar		70,936	-- Italy 15,700; France 11,600; Czech Republic 7,800.
Fluorspar:			
Acid-grade		22,636	-- Czech Republic 5,610; Poland 3,490; France 3,350.
Metallurgical-grade		15,393	-- Czech Republic 5,530; France 3,160; Poland 2,340.
Graphite, natural		12,721	-- Czech Republic 3,170; Austria 1,980.
Gypsum and anhydrite, natural	thousand metric tons	1,946	-- Netherlands 306; Belgium 280; Sweden 204.
Kyanite and related materials:			
Andalusite, kyanite, sillimanite		6,689	-- Czech Republic 1,150; Hungary 963; Slovakia 843.
Mullite		10,598	1,930 Hungary 1,350; Italy 1,310; Poland 1,200.
Lime, hydrated		731,403	-- Netherlands 182; France 84,800; Belgium 76,100.
Lithium carbonate		2,259	-- Turkey 953; France 298.
Magnesium compounds:			
Magnesite, natural, including burned		73,535	-- France 15,700; Austria 13,000; Poland 11,300.
Epsomite		797,248	-- Malaysia 193,000; Indonesia 140,000; France 114,000.
Mica, natural, including splittings and waste		4,475	-- Poland 993; Brazil 792; Italy 492.
Peat, natural	thousand metric tons	2,078	-- Netherlands 1,020.
Phosphates:			
Crude		1,534	-- Poland 994; Netherlands 176.
Milled		208	-- Austria 103; Kazakhstan 98.
Phosphoric acid, all forms, P ₂ O ₅ equivalent		9,178	-- Netherlands 4,820.
Precious and semiprecious stones, natural (other than diamond):			
Gem, not set or strung		824	-- Thailand 313; Hong Kong 180.
Dust and powder	kilograms	90	-- Poland 33; France 31; Kazakhstan 20.
Pyrite, unroasted		342	-- United Arab Emirates 90; Turkey 84; Poland 58.
Salt and brine	thousand metric tons	2,207	-- Belgium 313; Czech Republic 300; Italy 230.
Stone, sand and gravel:			
Basalt, lava rocks, and so forth		110,302	-- Netherlands 103,000.
Crushed rock, macadam		136,068	-- Switzerland 85,500; France 37,700.
Dimension stone:			
Dolomite and limestone		502,261	-- Luxembourg 228,000; Belgium 73,300; Poland 62,800.
Granite		60,015	-- Switzerland 49,500.
Marble, travertine, and so forth		214,499	-- China 139,000; Switzerland 45,500.
Limestone for cement	thousand metric tons	239	-- Luxembourg 140; Netherlands 44.
Quartz and quartzite		516,312	-- Netherlands 422,000.
Sand, natural	thousand metric tons	9,737	-- Netherlands 6,150; Belgium 1,990.
Sandstone		1,959	-- Netherlands 488; Switzerland 488; Austria 478.
Schist and shale		18,376	-- Belgium 7,350; Netherlands 6,540; Denmark 2,830.
Other natural stone, unspecified	thousand metric tons	16,912	-- Netherlands 9,860; Switzerland 2,030.
Sulfur		525,622	-- Belgium 120,000; Morocco 86,700; Israel 70,400.
Talc, steatite and soapstone, natural		5,275	-- Slovenia 2,080.
Vermiculite and perlite, natural		2,554	-- Poland 516; Austria 332; Czech Republic 324.

See footnotes at end of table.

TABLE 3—Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Destinations ^c	
		United States	Other (principal) ²
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	836	--	Turkey 403; Switzerland 287.
Coal:			
Anthracite and bituminous:			
Anthracite	thousand metric tons	167	-- Unspecified, 149.
Coke	do.	218	-- Belgium 110; Netherlands 40; Unspecified 31.
Semicoke, coking coal	do.	6	-- Poland, 5; Switzerland 1.
Other, including briquets	do.	103	-- Unspecified 31; Switzerland 30; Belgium 13.
Lignite	do.	1,584	-- Czech Republic 456; Belgium 382; Poland 190.
Coke of lignite		41,089	-- Austria 14,300; Czech Republic 8,630; Netherlands 6,160.
Gas, natural, gaseous	petajoules	1,188	-- Unspecified, 100%.
Petroleum, crude	do.	139	-- Bahamas 104; France 33.
Uranium, natural:			
Compounds, U content		98	-- Netherlands, 100%.
Crude, U content		55	-- Czech Republic 50.
Enriched, fissile isotopes	kilograms	24,584	8,600 France 6,420; United Kingdom 5,750.

^cEstimated; estimated tonnages are rounded to no more than three significant digits; may not add to totals shown. do. Ditto. -- Less than 10%.

¹Source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, Table 2—Rohstoffsituation, 2012: Hannover, Germany, November.

²Destination country was estimated to have accounted for at least 10% of Germany's total exports of the mineral commodity.

TABLE 4
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
METALS			
Aluminum:			
Bauxite, ore and concentrate	thousand metric tons	2,777	-- Guinea 2,140.
Oxide		476,257	-- Ireland 141,000; Netherlands 85,300; Jamaica 61,900.
Hydroxide		196,301	-- Spain 58,700; Ireland 57,100; France 38,500.
Ash and residue containing aluminum		184,491	-- France 30,800; Netherlands 20,300; Switzerland 20,300.
Metal:			
Primary, not alloyed		732,599	-- Netherlands 253,000; Iceland 123,000; Russia 110,000.
Primary, alloys, all forms	thousand metric tons	1,134	-- Netherlands 311; Norway 245; United Arab Emirates 11.
Secondary, including alloys		616,815	-- United Kingdom 178,000; Austria 85,700; Italy 76,500.
Scrap		575,926	-- Netherlands 123,000; Austria 74,300; France 59,900.
Antimony:			
Metal, including alloys, all forms		371	-- China 253; Belgium 71.
Ore and concentrate		6	-- Italy, 100%.
Oxides		6,013	-- China 1,950; France 1,950; Belgium 1,560.
Arsenic, metal, including alloys, all forms		43	-- China 40.
Bismuth, metal, crude, including scrap		968	-- Belgium 891.
Cadmium, metal, crude, powder, including scrap		69	1 Croatia 42; United Kingdom 18.
Chromium:			
Chromate		27,981	-- South Africa 15,700; Kazakhstan 6,070; Russia 4,030.
Ore and concentrate		188,783	-- South Africa 128,000; Turkey 51,900.
Metal:			
Crude, including powder		4,623	-- Russia 2,030; France 1,470; United Kingdom 582.
Scrap		1,679	-- Poland 635; Denmark 185; Sweden 171.
Cobalt:			
Ore and concentrate		128	-- Austria 44; Canada 32; United Kingdom 20.
Oxides and hydroxides		878	-- Finland 672; Belgium 176.
Metal, including alloys, all forms		2,513	392 Belgium 445; United Kingdom 430; Canada 304.
Scrap		1,416	-- United Kingdom 340; Poland 251; Austria 150.
Copper:			
Ore and concentrate	thousand metric tons	1,215	-- Peru 329; Chile 255; Argentina 186.
Matte and speiss, including cement copper		2,415	-- Ukraine 778; Morocco 604; Poland 536.
Ash and residue containing copper		61,283	15,400 Belgium 10,600; Italy 7,910.
Metal:			
Unrefined		45,708	-- Bulgaria 24,200.
Refined, not alloyed		702,576	-- Russia 190,000; Poland 145,000; Chile 109,000.
Alloys, all forms		37,491	-- United Kingdom 7,390; Spain 4,610; Belgium 4,050.
Scrap		655,895	-- Netherlands 74,800.
Gallium, indium, and thallium, metal, including scrap		63	7 United Kingdom 33; Slovakia 8.
Germanium, metal, all forms		7	1 China 3; Russia 2.
Gold:			
Metal, including alloys, all forms	kilograms	95,923	-- Unspecified 37,400; Switzerland 36,700.
Powder	do.	4,647	-- Switzerland 4,630.
Waste and sweepings		2,568	-- United Kingdom 560; Turkey 377.
Iron and steel:			
Ore and concentrate	thousand metric tons	38,908	-- Brazil 23,700; Sweden 5,060; Canada 4,400.
Ash and residue containing iron	do.	731	-- Austria 346; France 125; Belgium 97.
Pyrite, roasted		28,207	-- Finland 14,700; Russia 13,500.
Metal:			
Pig iron, cast iron, related materials		614,096	-- Russia 290,000; Brazil 87,800; South Africa 74,900.
Scrap	thousand metric tons	5,738	-- Netherlands 1,080; Poland 1,070; Czech Republic 1,000.
Sponge iron, powder		210,328	-- Netherlands 61,600; Trinidad & Tobago 53,600; Sweden 28,600.
Ferroalloys:			
Ferromanganese		392,515	-- South Africa 213,000; Unspecified 136,000.
Ferromanganese		192,818	-- Norway 55,300; South Africa 54,000; Spain 29,100.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
METALS—Continued			
Iron and steel—Continued:			
Metal—Continued:			
Ferroalloys—Continued:			
Ferromolybdenum	16,934	--	Belgium 6,030; United Kingdom 3,030; Armenia 2,830.
Ferronickel	139,658	--	Ukraine 88,000; Venezuela 19,000; United Kingdom 14,900.
Ferroniobium	6,297	--	Brazil 4,530; Netherlands 919; Canada 655.
Ferrosilicochromium	8,573	--	Belgium 6,880; Unspecified 1,650.
Ferrosilicomagnesium	4,528	--	Slovenia 1,200; China 924; France 643.
Ferrosilicomanganese	206,967	--	Norway 56,500; India 48,000; France 21,300.
Ferrosilicon	248,310	--	Norway 64,600; Iceland 40,700; France 28,300.
Ferrotitanium	9,912	--	United Kingdom 3,100; Russia 2,200; Netherlands 1,890.
Ferrotungsten	1,010	--	China 502; Vietnam 245; Netherlands 167.
Ferrovandium	5,096	--	Austria 2,900; South Africa 1,400.
Other ferroalloys	71,160	--	France 33,200; United Kingdom 10,900.
Steel, crude	27,853	--	Ukraine 11,900; Austria 4,620.
Lead:			
Ore and concentrate	228,444	--	Sweden 60,300; Australia 48,700; Ireland 47,500.
Ash, residues and slimes containing lead	173,826	--	France 135,000.
Lead containing antimony	23,760	--	Russia 9,930; Czech Republic 3,540; Sweden 3,140.
Metal:			
Refined	86,320	--	Belgium 28,700; United Kingdom 23,400; Poland 10,000.
Unrefined	38,496	--	United Kingdom 18,400; Belgium 6,850; Poland 6,390.
Scrap	28,058	--	Netherlands 8,280; Lithuania 5,810; France 4,410.
Magnesium, metal, including alloys:			
Scrap	20,493	--	China 11,500; Austria 3,320.
Unwrought	34,692	--	China 16,000; Czech Republic 4,580; Austria 4,200.
Manganese:			
Ore and concentrate	18,532	--	Netherlands 5,280; Brazil 4,370; Morocco 2,390.
Manganite, manganate	889	--	Spain 323; Austria 180; Netherlands 127.
Oxides	19,519	--	Greece 9,330; Spain 2,600.
Metal:			
Crude	34,380	--	China 22,600; Ukraine 3,640; Netherlands 3,510.
Scrap	381	--	Austria 228; Czech Republic 130.
Mercury	53	--	Peru 23; Portugal 9.
Molybdenum:			
Ore and concentrate	7,158	--	Netherlands 1,810; Belgium 1,320; United Kingdom 1,320.
Oxides and hydroxides, powder	2,477	--	Chile 1,490; Netherlands 379.
Molybdate compounds	319	128	Poland 68; France 35.
Metal:			
Crude	120	--	China 50; Russia 30.
Scrap	2,639	--	China 924; Austria 765; Armenia 668.
Nickel:			
Ore and concentrate	8,185	--	Netherlands 7,070.
Ash and residue containing nickel	9,680	--	Netherlands 3,160; France 1,510.
Matte, speiss, related materials	1,869	791	Netherlands 424; Japan 320; Brazil 316.
Oxides and hydroxides	609	--	Czech Republic 426.
Metal:			
Alloys, all forms	23,191	--	Indonesia 11,900; Russia 2,880.
Unalloyed	73,360	--	Russia 37,000; United Kingdom 11,600; Norway 8,510.
Scrap	14,191	--	Netherlands 5,410.
Niobium (columbium):			
Metal, powder containing niobium and rhenium	800	--	Brazil 764.
Ash and residue containing niobium and tantalum	12,305	48	Malyasia 10,300; Brazil 1,880.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
METALS—Continued			
Platinum-group metals:			
Metal, including alloys, all forms:			
Platinum	kilograms 27,259	3,710	South Africa 10,000; United Kingdom 4,310; Belgium 4,010.
Palladium	do. 42,705	4,700	Belgium 11,400; Russia 11,300; Switzerland 4,610.
Rhodium	do. 5,064	--	Belgium 1,940; South Africa 1,390; Russia 668.
Iridium, osmium, and ruthenium	do. 13,269	--	Belgium 7,580; South Africa 2,310; Japan 2,230.
Waste and scrap	8,021	--	France 1,120.
Rare earths:			
Cerium compounds	553	--	China 208; France 155; Estonia 76.
Other compounds, all forms	4,155	2,190	China 843; France 499.
Metal	290	--	China 264.
Selenium, metal	249	--	Sweden 61; Canada 51; Belgium 41.
Silicon, metal	232,639	--	Norway 91,200; France 36,500; Brazil 24,900.
Silver:			
Ore and concentrate	5,280	--	Peru 2,590; Mexico 919; Argentina 797.
Metal	1,262	--	Unspecified 862.
Powder	kilograms 201,655	98,000	Morocco 40,300; France 22,200.
Tantalum, metal:			
Powder	67	26	Kazakhstan 26.
Waste and scrap	109	30	Cyprus 20; Austria 16; United Kingdom 14.
Tin:			
Ash and residue containing tin	91	--	Belgium 45; Austria 26; Sweden 15.
Metal:			
Alloys, all forms	196	--	United Kingdom 93; Poland 45.
Crude	18,865	--	Indonesia 5,870; Peru 4,700; Belgium 3,910.
Waste and scrap	461	--	Netherlands 101; Czech Republic 71; Switzerland 60.
Titanium:			
Ore and concentrate	652,027	--	Norway 224,000; South Africa 149,000; Canada 123,000.
Oxide	17,359	--	France 4,010; Belgium 3,780; Netherlands 1,740.
Metal:			
Powder	6,937	--	Japan 1,240; Ukraine 1,210; Kazakhstan 1,080.
Waste and scrap	3,809	--	Italy 712; Switzerland 396; Austria 392.
Tungsten:			
Ore and concentrate	381	--	Bolivia 350.
Carbide	2,478	--	Austria 1,160; Unspecified 295; Canada 292.
Oxides and hydroxides	606	--	China 581.
Wolframate compounds	1,211	150	China 590; Russia 180.
Metal:			
Crude	104	--	China 31; Netherlands 30; United Kingdom 23.
Powder	1,816	--	Austria 982; Canada 340.
Waste and scrap	4,869	--	Czech Republic 506.
Vanadium, metal, including scrap	61	19	China 27; France 7.
Zinc:			
Ore and concentrate	324,954	51,700	Australia 142,000.
Matte and related materials	10,539	--	Netherlands 2,730; Austria 2,010; Belgium 1,740.
Oxide and peroxide	30,520	--	Austria 7,630; Peru 5,980; Netherlands 5,650.
Ash and residue containing zinc	27,108	--	Switzerland 10,700; France 3,770; Austria 2,950.
Metal:			
Alloys, all forms	64,642	--	Belgium 29,300; Luxembourg 9,050; Norway 7,950.
Unalloyed	365,788	--	Finland 135,000; Spain 99,100.
Powder and dust	6,717	--	Belgium 4,410.
Waste and scrap	25,536	--	Netherlands 9,270; Denmark 6,690; France 4,670.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^e	
		United States	Other (principal) ²
METALS—Continued			
Zirconium:			
Metal	105	43	France 35; China 21.
Oxides, including germanium oxides	2,452	741	France 508; China 383; United Kingdom 378.
Waste and scrap	8	1	Belgium 2; France 2; Switzerland 2.
Zinkate and vanadate compounds	1,000	--	Austria 541; China 341.
INDUSTRIAL MINERALS			
Abrasives, natural:			
Corundum, emery, garnet, and so forth	13,296	--	India 8,700; Netherlands 2,410.
Pumice	14,654	--	Iceland 14,200.
Asbestos, crude	554	--	Brazil, 100%.
Barium compounds:			
Barite (barium sulfate)	237,120	--	China 182,000; Netherlands 27,000.
Witherite (barium carbonate)	134	--	Poland 119; Canada 15.
Borates, natural, including calcined	4,557	--	Unspecified 2,600; Belgium 1,840.
Cement	thousand metric tons 1,324	--	France 434; Czech Republic 291; Luxembourg 159.
Chalk, natural	176,673	--	France 103,000; Denmark 28,600; Belgium 27,000.
Clays, crude:			
Bentonite	450,851	--	Netherlands 134,000; Czech Republic 107,000; Italy 53,200.
Ceramic and fire clays	22,331	--	Czech Republic 12,800; Poland 4,580.
Chamotte or Dina's Earth	70,842	--	Luxembourg 20,800; Czech Republic 18,500; Netherlands 14,200.
Kaolin	625,827	115,000	Belgium 153,000; Czech Republic 145,000; United Kingdom 77,600.
Other, unspecified	thousand metric tons 71	--	Czech Republic 24; United Kingdom 15; Netherlands 8.
Diamond, natural:			
Gem, not set or strung	carats 311,770	--	India 116,000; Belgium 110,000; Israel 39,000.
Industrial stones	do. 158,572	--	India 43,400; Belgium 32,200; China 30,300.
Dust and powder	kilograms 18,883	2,040	China 5,610; Ireland 3,610; Republic of Korea 2,960.
Diatomite and other infusorial earth	42,122	12,400	Denmark 19,700.
Feldspar	109,158	--	Turkey 32,900; France 26,700; Czech Republic 15,500.
Fluorspar:			
Acid-grade	223,910	--	South Africa 79,900; China 51,100; Namibia 46,300.
Metallurgical-grade	56,958	--	United Kingdom 42,700; China 8,940.
Graphite, natural	43,349	--	China 20,400; Unspecified 8,710; Brazil 6,850.
Gypsum and anhydrite, natural	thousand metric tons 120	--	Austria 56; Belgium 24; France 22.
Iron oxide pigments	38,804	--	China 11,600; Belgium 9,930.
Kyanite and related materials:			
Andalusite, kyanite, sillimanite	54,045	--	South Africa 27,200; France 16,600.
Mullite	51,710	31,500	China 13,300.
Lime, hydrated	473,859	--	France 338,000; Czech Republic 53,100.
Lithium carbonate	6,064	843	Chile 5,050.
Magnesium compounds:			
Magnesite, natural, including burned	501,487	--	China 186,000; Netherlands 76,700.
Epsomite	258	--	Netherlands 215; Czech Republic 32.
Mica, natural, including splittings and waste	33,051	--	China 10,300; India 9,090; France 6,180.
Peat, natural	thousand metric tons 811	--	Lithuania 280; Latvia 208; Netherlands 132.
Phosphates:			
Crude	131,008	--	Israel 114,000.
Milled	2,347	--	France 674; Denmark 662; Belgium 636.
Phosphoric acid, all forms, P ₂ O ₅ equivalent	163,907	--	Unspecified 79,500; Netherlands 26,700; Belgium 26,200.
Potash and potassium fertilizers, K ₂ O equivalent	2,056	--	United Kingdom 1,120; Netherlands 847.
Precious and semiprecious stones, natural (other than diamond):			
Gem, not set or strung	1,074	--	Brazil 481; South Africa 116.
Dust and powder	kilograms 963	--	China 560; Republic of Korea 196.

See footnotes at end of table.

TABLE 4—Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Total	Sources ^c	
		United States	Other (principal) ²
INDUSTRIAL MINERALS—Continued			
Pyrite, unroasted	74,726	--	Finland 69,700.
Salt and brine	thousand metric tons 2,278	--	Netherlands 1,940.
Stone, sand and gravel:			
Basalt, lava rocks, and so forth	69,775	--	Norway 39,100; Italy 11,800; Netherlands 7,750.
Crushed rock, macadam	44,480	--	Netherlands 30,900; Switzerland, 13,600.
Dimension stone:			
Dolomite and limestone	780,883	--	Estonia 295,000; Belgium 260,000; United Kingdom 131,000.
Granite	153,254	--	Netherlands 33,400; Austria 22,400; Poland 18,700.
Marble, travertine, and so forth	60,376	--	Austria 24,000; Netherlands 10,100; Turkey 8,210.
Limestone for cement	thousand metric tons 1,909	--	Austria 592; Belgium 584; Poland 464.
Quartz and quartzite	188,401	--	Austria 69,100; Russia 61,800.
Sand, natural	thousand metric tons 2,089	--	France 1,300; Netherlands 313.
Sandstone	17,290	--	India 7,140; Poland 3,230; China 2,130.
Other natural stone, unspecified	thousand metric tons 10,096	--	Norway 3,670; United Kingdom 1,850; France 1,360.
Stone, sand and gravel—Continued:			
Schist and shale	41,738	--	France 28,600; Italy 5,130.
Sulfur	34,102	--	Norway 9,310; Poland 8,010; Belgium 4,470.
Talc, steatite and soapstone, natural	293,175	--	Netherlands 74,200; France 63,300; Austria 53,100.
Vermiculite and perlite, natural	105,059	--	Greece 89,900.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	7,974	2,030	Trinidad and Tobago 4,480.
Coal:			
Bituminous:			
Anthracite	thousand metric tons 1,399	2,790	Russia 867; Colombia 155.
Coke	do. 3,162	--	Poland 1,570; Belgium 386.
Semicoke, coking coal	do. 9,486	2,790	Australia 4,210; Canada 1,530.
Other, including briquets	do. 32,641	6,990	Russia 9,630; Colombia 8,880.
Lignite	do. 26	--	Czech Republic 26.
Coke of lignite	5,804	--	Italy 2,900; Austria 1,430.
Gas, natural, gaseous	petajoules 4,676	--	Unspecified, 100%.
Petroleum, crude	thousand metric tons 92,278	--	Russia 34,400.
Uranium, natural:			
Compounds, U content	3,921		France 2,430; United Kingdom 961.
Crude, U content	213	--	France 210.
Enriched, fissile isotopes	kilograms 13,655	--	Netherlands 4,040; United Kingdom 3,740; France 2,720.

^cEstimated; estimated tonnages are rounded to no more than three significant digits; may not add to totals shown. do. Ditto. -- Less than 10%.

¹Source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2013, Table 2—Rohstoffsituation, 2012: Hannover, Germany, November.

²Source country was estimated to have accounted for at least 10% of Germany's total imports of the mineral commodity.