



2011 Minerals Yearbook

MEXICO

THE MINERAL INDUSTRY OF MEXICO

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In 2011, Mexico's economy in terms of the gross domestic product (GDP) was the second largest in Latin America after that of Brazil. Mexico's GDP based on purchasing power parity (PPP) was \$1.694 trillion in 2011, which was about a 4% increase from that of 2010. Mexico's official unemployment rate was 4.5%, although underemployment as defined by the U.S. Central Intelligence Agency may have been as high as 25% (U.S. Central Intelligence Agency, 2013).

The mineral industry was a significant economic sector of the country and represented a major source of revenue for the Government. The continued recovery in the prices of mineral commodities along with the increase in mineral demand led to a 45% increase in the value of mineral production in 2011 compared with that of 2010, reaching the highest level ever at \$20.148 billion. Employment in the mineral industry increased in 2011 as a result of the creation of about 26,000 new jobs in the industry.

The leading mineral-rich areas where copper, gold, silver, and zinc were produced (although not exclusively) are located in the north and the west-central parts of the country. The main oil producing areas are located in the east and south (Camara Minera de Mexico, 2012, p. 6, 25–26; U.S. Central Intelligence Agency, 2013).

Mexico was a leading world producer of several mineral commodities. In 2011, the country was the world's leading producer of silver, the second ranked producer of fluorspar, and the third ranked producer of bismuth, celestite, and sodium sulfate. Mexico also was the 4th ranked producer of wollastonite; the 5th ranked producer of cadmium, diatomite, lead, and molybdenum; the 7th ranked producer of gypsum and zinc; the 8th ranked producer of barite, graphite, and manganese; the 9th ranked producer of salt; the 10th ranked producer of copper ore and gold; the 14th ranked producer of iron ore; and the 15th ranked producer of phosphate rock and sulfur (Brooks, 2012a, b; Camara Minera de Mexico, 2012, p. 73; Carlin, 2012; Corathers, 2012; Guberman, 2012; Kostick, 2012; Miller, 2012; Polyak, 2012; Tolcin, 2012a, b).

Minerals in the National Economy

The mineral industry was an important source of foreign currency for the country. Of the total mineral industry production in Mexico in 2011, silver accounted for a 26% share, by value, followed by gold (22%); copper (18%); zinc (7%); iron, gravel, and sand (3% each), and other minerals (18%) (Camara Minera de Mexico, 2012, p. 14).

Government Policies and Programs

Natural resources, and minerals in particular, are considered part of the national patrimony of Mexico under its Constitution. Article 27 deals with issues of ownership and exploitation of natural resources; however, the mining law that became

effective in 1992 and was subsequently modified and expanded in 1996 and again in April 2005, clarifies and spells out the legal framework for the exploration, production, and processing of the country's mineral resources. The law allows a 100% private equity ownership stake in the exploration, production, and development of mineral resources, including resources previously reserved for direct Government exploitation, such as coal, iron, phosphorus, potassium, and sulfur. Oil and its derivatives, as well as radioactive materials, are not covered in this law. Exploration concessions are granted for 6 years and are not renewable. Production concessions are awarded for 50 years and are renewable for an additional 50 years (Camara de Diputados del H. Congreso de la Union, 2006, p. 1–33).

The mining law was revised to decrease the number of administrative procedures and establish time limits for most of the procedures. The public service manual of mining-related issues, which was published in July 1999 and is still in effect, spells out the established regulations and administrative procedures for all mining matters (Secretaria de Economia, 1999).

The mining sector is administered by the Secretaria de Economia. The Direccion General de Minas is the organization in charge of making revisions to the mining law and its regulations, as well as granting concessions and titles.

Another important law concerning all of Mexico's natural resources is the Law of Foreign Investment. This law regulates the degree and form of foreign investment in Mexico, and, in particular, in the natural resources sector, which is an area that was previously barred from foreign investment and ownership. This law was published in 1993 and has been revised and amended by decrees in 1995, 1996, 1998, 1999, and, most recently, in 2000. In particular, Articles 10 through 14 deal with foreign investment in the mineral sector and the development and exploitation of geographic areas considered restricted by the Government (Camara de Diputados del H. Congreso de la Union, 2012, p. 1–34).

The General Law of Ecological Balance and Environmental Protection (LGEEPA), which is the keystone of the country's environmental law, was passed in 1988. Those environmental responsibilities that had resided in various Government agencies were transferred to the Secretaria de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP) in 1994. In 2000, the agency became the Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT). Under SEMARNAT, mineral exploration and mining require a number of environmental permits and authorizations to conform to the statutes of the LGEEPA. These requirements include a preliminary environmental impact statement for all major activities of the projects. The SEMARNAT also requires all mines and plants to have an operating license, as well as permits for explosives, hazardous materials handling, land use, water discharge, and well usage. Other regulations are concerned with dumps and tailings,

electrical transformers, gas and dust emissions, noise, and the storage of oil and fuel.

The regulation of environmental impact statements was initiated in 2000. Under the new rules, environmental impact reports for beneficiation plants, gas and oil pipelines, and mines must be approved by the SEMARNAT. According to this agency, the level of sites considered contaminated with dangerous byproducts, including from mining and manufacturing, remained stable since 2006 at 330 registered sites; however, this was an increase from 297 registered sites in the period from 2000 through 2004. In their index of the physical volume of production of dangerous residuals produced by the mining sector, the SEMARNAT estimated that, since 2000, the level of dangerous residuals (measured in terms of the total value of production) had increased by 8%. In total volume of production, this was still lower than that produced by the manufacturing sector; however, the rate of growth of dangerous residuals produced by the manufacturing sector was lower at about 5% of the total value of production (Secretaría de Medio Ambiente y Recursos Naturales, 2008).

Production

Mexico's mineral production levels in 2011 generally increased in comparison with the levels of production in 2010. The principal increases were in the production of dolomite (which increased by 85.7%) followed by marble (77.6%), copper mine ore in content (69.4%), celestite (29.4%), coke (28.7%), coal (25.8%), gold (22.1%), lead (16.5%), and silver (8.3%), among others. Of note is the production of talc, which had diminished to almost zero production but in 2011 had a reported production of 51,221 metric tons (t) (table 1). Mineral commodities for which production decreased during the year included refined zinc (by 37.1%), fuller's earth (36.9%), calcite (25.7%), common clays (15.3%), ferromanganese (8.64%), and iron ore (8.52%) (table 1).

Crude oil production by Petroleos Mexicanos S.A. de C.V. (PEMEX), which was the state-owned oil monopoly, decreased by 1.0% to about 930 million barrels (Mbbbl). Gross natural gas production also decreased to 68.15 billion cubic meters (table 1; Petroleos Mexicanos S.A. de C.V., 2012, p. 4).

Structure of the Mineral Industry

A few large domestic companies produced a significant portion of Mexico's mineral output, including Cementos Mexicanos S.A.B. de C.V. (CEMEX), Compañía Minera Autlan S.A. de C.V. (Minera Autlan), Empresas Frisco S.A. de C.V. (Frisco), Fresnillo plc., Grupo Acerero del Norte S.A. de C.V. (GAN), Grupo Mexico S.A. de C.V. (Grupo Mexico), and Industrias Peñoles S.A. de C.V. (Peñoles). Medium- and small-size companies produced many of the industrial minerals. State-owned PEMEX controlled the crude petroleum, refining, and natural gas production sector (table 2).

The Secretaría de Economía reported that, in 2011, there were a total of 288 companies involved in 808 projects that had direct foreign investments in Mexico. Of these companies, 206 had their central offices in Canada and 46 were headquartered in the United States; 8, in China; 7, in Australia; 4 each, in

Japan and the Republic of Korea; 3, in the United Kingdom; 2 each, in India and Peru; and 1 each in Belgium, Chile, Italy, Luxembourg, the Netherlands and Spain. Precious metals, particularly gold and silver, were the primary targets for 500 of these projects (Secretaría de Economía, 2012a, p 534–537).

Mineral Trade

In 2011, Mexico was a net exporter of nonfuel minerals, in terms of value, registering a trade surplus of \$12.40 billion. This surplus was mostly because the country was a net precious minerals exporter in 2011, as it had been for the past several years, and the value of its precious metals exports increased by 49.7% compared with those of 2010 (Secretaría de Economía, 2012a, p. 19).

Mexico's principal export partners were the United States and Canada (which were fellow members of the North America Free Trade Agreement) and also, in order of the value of trade, Spain, Japan, Germany, Colombia, and China. Mexico's principal import partners were the United States and China; other significant sources of imports were, in order of the value of trade, Japan, the Republic of Korea, Germany, Canada, and Brazil (U.N. Comtrade, 2012).

China had eight companies with investments in the Mexican mineral industry. China's influence as a destination for Mexican mineral exports, however, was considerable.

Commodity Review

Metals

Copper.—In 2011, the volume of Mexican mine copper production increased by 69.4% compared with that of 2010. Ninety-four percent of all copper production took place in the following states: Sonora (80%), Zacatecas (9%), and San Luis Potosi (5%).

Work continued at the Buenavista Mine, which was owned by Buenavista del Cobre S.A. de C.V. (a fully owned subsidiary of Grupo Mexico), for the optimization of its solvent extraction-electrowinning operations; construction was expected to be finished in the second quarter of 2012. The objective of the optimization was to increase the volume of production and reduce extraction times. Progress continued at the El Boleo Mine project at Santa Rosalia in the State of Baja California. El Boleo was owned by Alianza Estrategica Baja Mining (70%) and Consorcio Coreano (30%). The project was expected to produce 38,000 metric tons per year (t/yr) of copper during its projected life of 23 years. It was also expected that the mine would produce cobalt, manganese, and zinc sulfate. Production at the mine was scheduled to start in the first quarter of 2013. The Chinese company Jinchuan Group continued with its development of the Bahuerachi project. The previous owner of the project, Tyler Resources Inc., had estimated that the Bahuerachi project would have a capacity of 80,000 t/yr of copper once in production and that it would also produce significant volumes of gold, molybdenum, silver, and zinc (Camara Minera de Mexico, 2012, p. 120–122).

Gold.—In 2011, the value of gold production in Mexico reached 22% of the total value of the mineral industry in Mexico.

Mexico's gold mine output, in terms of gold content, was 88,648 kilograms (kg), which was an increase of 22.1% compared with production in 2010 and the highest level of production ever for the country (table 1; Secretaria de Economia, 2012a, p. 19).

In 2011, the State of Sonora produced 31% of the national mined gold output, and it increased its volume of production by 22% compared with that of 2010. La Herradura Mine and the Soledad Dipolos Mine, which were owned by Fresnillo plc. and located in Sonora, together produced 15,116 kg, which was more than 50% of Sonora's production. The State of Zacatecas produced 19% of the mined gold output (by volume) in Mexico in 2011. Production by the State of Zacatecas increased by 3% compared with that of 2010 because of increased production at the Peñasquito Mine (owned by Goldcorp Inc. of Canada) and the Saucito Mine (owned by Fresnillo). The State of Chihuahua was the third ranked State in terms of the volume of gold production in Mexico in 2011, producing 17% of the total national mined gold output. Goldcorp owned El Sauzal Mine in the State of Chihuahua, which produced 3.16 t (a decrease of 34.9% compared with that of 2010, and continuing the trend expected as the mine was thought to be reaching the end of its life).

Fresnillo produced 3.64 t at its La Cienega Mine in the State of Durango. Alamos Gold Inc. of Canada produced 4.90 t at its Mulatos Mine in the State of Sonora. The Cerro San Pedro Mine in San Luis Potosi, which was owned by Minera San Xavier S.A. (a subsidiary of the Canadian company New Gold Inc.) produced 4.48 t of gold for the year. Coeur d'Alene Mines Corp. of the United States reported that its Palmarejo Mine, which is located in the State of Chihuahua, produced 3.89 t (Camara Minera de Mexico, 2012, p. 124–126).

Iron and Steel.—According to the Camara Minera de Mexico (CAMIMEX), Mexico does not have significant iron ore reserves; however, its production and reserves are sufficient to meet national demand (Camara Minera de Mexico, 2011, p. 22). In 2011, Mexico produced 12.81 million metric tons (Mt) of iron ore, which was 8.52% less than in 2010. Production was from the States of Colima, Durango, and Michoacan.

Iron ore exports to China increased by more than 1 Mt in 2010 compared with those of 2009 (the latest year for which data were available), and this trade was mostly done by private traders and mineral commodity consolidators. Most of the ore was shipped through the Ports of Lazaro Cardenas in Michoacan and Manzanillo in Colima (Camara Minera de Mexico, 2011, p. 22).

Crude steel production increased by 8.32% and pig iron production decreased by 1.85% compared with production in 2010. Mexico produced 18.10 Mt of crude steel and was the 13th ranked producer of steel, by volume, in the world in 2011. Altos Hornos de Mexico S.A. (AHMSA), ArcelorMittal of Luxembourg, DeAcero S.A. de C.V., and Ternium S.A. were the principal steel producers in the country and together accounted for 79.5% of Mexico's total crude steel production (table 1; Camara Minera de Mexico, 2011, p. 24; World Steel Association, 2012).

Lead.—In 2011, the output of lead mine production in Mexico increased by 16.5%; however, primary metal production decreased by 8.34%. According CAMIMEX, the total value of lead production in 2011 amounted to 26% more than in 2010.

Mexico was the world's fifth ranked producer of lead in 2011 (table 1; Camara Minera de Mexico, 2012, p. 131).

Goldcorp's Peñasquito Mine was the leading lead mine in Mexico in terms of lead content production. In 2011, Peñasquito produced 84,800 t of lead.

Industria Peñoles continued to be a major producer of lead in Mexico and had an output of 16,500 t in 2011 from its principal mine, the Naica, which is located in the State of Chihuahua. The Santa Barbara Mine, which is also located in Chihuahua and was owned by Grupo Mexico, produced 15,300 t of lead in 2011 (table 1; Secretaria de Economia, 2012b, p. 338–340).

Molybdenum.—Molybdenum production in the country decreased slightly (by less than 1%) to a total of 10,800 t in 2011. In terms of the value of molybdenum production, there was a decrease of 5% compared with that of 2010 owing to the decrease in the volume of production and the variation in international prices.

Grupo Mexico owned La Caridad Mine in the State of Sonora, which produced 98% of all molybdenum in the country. Most of La Caridad Mine's output was processed into molybdenum trioxide at the facilities in Cumpas, State of Sonora, mostly for export (table 1; Camara Minera de Mexico, 2012, p. 133).

Silver.—Mexico was the leading silver producer in the world in 2011, accounting for 20% of world silver production. Mexico's silver mine output was 4,780 t, which was a historic high for the country and represented an increase in production of 8.32% compared with that of 2010 (table 1).

The Fresnillo Mine, which is located in the State of Zacatecas, remained the richest silver mine in the world; it produced 1,125 t in 2011 and accounted for 24% of all silver produced in the country (Camara Minera de Mexico, 2012, p. 128). Goldcorp's Peñasquito Mine produced 719 t of silver and was the second ranked producer of silver, in terms of the volume of output, in Mexico after Fresnillo.

The Canadian company Pan American Silver Corp. owned the Alamo Dorado Mine, which is located in the State of Sonora, and La Colorada Mine, which is located in the State of Zacatecas. Alamo Dorado began operations in 2007 and produced 191.4 t of silver in 2011; La Colorada produced 146.3 t. The Canadian firm First Majestic Silver Corp. was also a significant silver producer in Mexico. The company's mines (La Encantada in the State of Coahuila, San Martin in the State of Jalisco, and La Parrila in the State of Durango) produced a combined 203 t in 2010 (the latest year for which data were available) (Camara Minera de Mexico, 2011, p. 15; 2012, p. 127–128).

Zinc.—Production of zinc metal in Mexico decreased by 37.10% in 2011 compared with that of 2010, and the level of zinc mine output increased by 10.85%. The decrease in refined zinc was a reflection of the demand and variation in prices compared with those of the previous year (Camara Minera de Mexico, 2012, p. 131; Secretaria de Economia, 2012a, p. 361).

Goldcorp's Peñasquito Mine produced about 74,000 t of zinc in 2011 and was the leading zinc mine in Mexico. The Charcas Mine in the State of San Luis Potosi, which was owned by Minera Mexico S.A. de C.V., was the second ranked producer of zinc in the country, producing 53,200 t in 2011. Industrias Peñoles' Bismarck Mine in Chihuahua produced 47,800 t, which

made it the third ranked zinc producing mine in the country (Camara Minera de Mexico, 2012, p. 131).

Industrial Minerals

Mexico was among the world's top 10 producers of industrial minerals. The value of the country's production of industrial minerals in 2011 increased by 13% compared with that of 2010 (table 1; Camara Minera de Mexico, 2012, p. 145).

Based on the value of production, the following nonmetallic minerals had the largest increases in 2011, in order of increase: dolomite (92%), sulfur (77%), sodium sulfate (56%), celestite (26%), magnesium sulfate (20%), kaolin (15%), graphite (14%), and diatomite (5%). In terms of the volume of output, production of fuller's earth dropped by 36.9% in 2011 compared with that of 2010. Decreases in the volumes of production were also reported for calcite, by 25.72%; limestone, by 15.98%; common clay, by 15.3%; and gravel, by 10.19% (table 1; Camara Minera de Mexico, 2012, p. 145).

The Rofomex phosphate rock mine, which is located in San Juan de la Costa in the State of Baja California Sur and which was operated by Roca Fosforica de Mexico (a subsidiary of Grupo Fertinal S.A. de C.V.), was reactivated in 2007. Production of phosphate rock at the mine increased by 1,960% in 2008 compared with that of 2007. By 2011, production had continued to increase but at a slower pace, recording an increase of 12.15% in 2011 compared with that of the previous year. The mine had been inactive between 2001 and 2007 owing to damage to the installations by Hurricane Juliette and later because of litigation between Fertinal and its insurers (table 1; Insurance Journal, 2007).

The municipality of Mulege, which is located in the State of Baja California Sur, was where more than 55% of the national production of gypsum took place. The principal producer of gypsum in Mexico was Compañía Occidental Mexicana S.A. de C.V. (tables 1, 2; Camara Minera de Mexico, 2011, p. 137).

Mineral Fuels

Coal.—Mexico's production of coal in 2011 totaled 34.7 Mt, which was an increase of 25.8% compared with that of 2010. The main companies that produced coal in Mexico were Carbonifera San Patricio S.A. de C.V., Grupo Acerero del Norte S.A. de C.V. (GAN), Grupo Mexico, and Materiales Industrializados S.A. de C.V. (Minsa). In 2010 (the latest year for which data were available), the distribution of production among the main concession holders was as follows: GAN (84%), Minsa (13%), Grupo Mexico (1.8%), Carbonifera San Patricio (about 1%), and Energia y Minería del Noroeste S.A. de C.V., the remaining 0.2% (table 1; Camara Minera de Mexico, 2011, p. 22; 2012 p. 141).

Crude Petroleum and Natural Gas.—Although demand for petroleum had increased, crude petroleum production by PEMEX had been decreasing in the past several years, partly owing to Mexico's declining reserves and partly owing to a past history of lack of investment, exploration, and development of new projects. In 2011, production decreased by 1% to about 930 Mbbbl. Gross natural gas production also decreased

by 6.14% to 68.15 billion cubic meters (table 1; Petroleos Mexicanos S.A. de C.V., 2012, p. 4).

Outlook

The year 2011 continued the trend of recovery started in the previous year, particularly in the metals sector. This sector represented the most dynamic and profitable part of the mineral industry. Gold and silver exploration is set to continue, and new projects are slated to reach their productive stages in 2012. Industrial minerals are expected to continue to play an important role in Mexico's exports and imports.

The mineral industry as a whole represents a very important source of foreign currency for Mexico, competing with the oil industry, tourism, and remittances by nationals living abroad. This trend is expected to increase as the prices of such commodities as copper, gold, and silver increase. The continued growth of the Mexican economy has helped all industries, and the Mexican Government expects that the country's economy will continue to grow in the coming years. The economy was forecasted to continue growing at a rate of 3.5% for 2012. The Mexican Government expects to continue controlling inflation; however, this will probably be the Government's greatest challenge. The Mexican Government estimates that growth in the coming years will be closely tied to that of the United States, as the United States is Mexico's principal commercial partner (U.S. Central Intelligence Agency, 2013).

The Government's promotion of investment in the mineral sector is likely to continue through the Subsecretaria de Minas, which is a Government agency created in 2007 to coordinate and promote the development of the mineral industry in Mexico.

References Cited

- Brooks, W.E., 2012a, Arsenic: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 20–21.
- Brooks, W.E., 2012b, Silver: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 146–147.
- Camara de Diputados del H. Congreso de la Union, 2006, Ley minera: Ciudad de Mexico, Mexico, Camara de Diputados del H. Congreso de la Union, 33 p. (Accessed April 25, 2012, at <http://www.diputados.gob.mx/LeyesBiblio/pdf/151.pdf>.)
- Camara de Diputados del H. Congreso de la Union, 2012, Ley de Inversion extranjera: Ciudad de Mexico, Mexico, Camara de Diputados del H. Congreso de la Union, 37 p. (Accessed April 25, 2012, at <http://www.diputados.gob.mx/LeyesBiblio/pdf/44.pdf>.)
- Camara Minera de Mexico, 2011, Informe Anual 2010: Ciudad de Mexico, Mexico, Camara Minera de Mexico, 159 p. (Accessed December 10, 2011, at <http://www.camimex.org.mx/publicaciones/informe.html>.)
- Camara Minera de Mexico, 2012, Informe Anual 2011: Ciudad de Mexico, Mexico, Camara Minera de Mexico, 176 p. (Accessed December 12, 2012, at <http://www.camimex.org.mx/publicaciones/informe.html>.)
- Carlin, J.F., Jr., 2012, Bismuth: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 30–31.
- Corathers, L.A., 2012, Manganese: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 100–101.
- Guberman, D.E., 2012, Lead: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 90–91.
- Insurance Journal, 2007, Mexican court ruling upholds ING's \$94 million Fertinal settlement: Insurance Journal, May 17, p. 1. (Accessed September 4, 2009, at <http://www.insurancejournal.com/news/international/2007/05/17/79780.htm>.)
- Kostick, D.S., 2012, Salt: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 134–135.
- Miller, M.M., 2012, Fluorspar: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 56–57.

- Petroleos Mexicanos S.A. de C.V., 2012, Anuario estadístico 2011: Mexico Distrito Federal, Mexico, Petroleos Mexicanos S.A. de C.V., 70 p. (Accessed December 12, 2012, at http://www.ri.pemex.com/files/content/pemex_Anuario_a.pdf.)
- Polyak, D.E., 2012, Molybdenum: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 106–107.
- Secretaría de Economía, 1999, Manual de servicios al público en material minera: Mexico Distrito Federal, Mexico, Secretaría de Economía. (Accessed December 12, 2012, at <http://www.economia-dgm.gob.mx/legislac/manual.htm>.)
- Secretaría de Economía, 2012a, Anuario estadístico de la minería ampliada 2011: Mexico Distrito Federal, Mexico, Secretaría de Economía, 568 p. (Accessed December 11, 2012, at http://www.sgm.gob.mx/productos/pdf/Capitulo_IV.pdf.)
- Secretaría de Economía, 2012b, Reporte de Coyuntura de la Minería Nacional: Mexico Distrito Federal, Mexico, Secretaría de Economía 4 p. (Accessed January 4, 2012, at <http://www.economia-dgm.gob.mx/dgpm/estadisticas/Informe.pdf>.)
- Secretaría de Medio Ambiente y Recursos Naturales, 2008, Conjunto de indicadores básicos del desempeño ambiental: Mexico Distrito Federal, Mexico, Secretaría de Medio Ambiente y Recursos Naturales, p. 1. (Accessed February 17, 2008, at <http://www.semarnat.gob.mx/leyesynormas/normas/Normas Oficiales Mexicanas vigentes/NOM-ECOL-120.pdf>.)
- Tolcin, A.C., 2012a, Cadmium: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 36–37.
- Tolcin, A.C., 2012b, Zinc: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 188–189.
- U.N. Comtrade, 2012, Mexico country report 2010: United Nations Statistics Division, p. 1. (Accessed January 12, 2012, at <http://comtrade.un.org/db/ce/ceSnapshot.aspx?r=484>.)
- U.S. Central Intelligence Agency, 2013, Mexico, *in* The world factbook: U.S. Central Intelligence Agency. (Accessed January 12, 2013, at <https://www.cia.gov/library/publications/the-world-factbook/geos/mx.html>.)
- World Steel Association, 2012, Steel statistical yearbook 2010: Brussels, Belgium, World Steel Association, 120 p.

TABLE 1
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2007	2008	2009	2010	2011
METALS					
Aluminum, metal, secondary ^{e,3}	600,000	600,000	600,000	600,000	600,000
Antimony ⁴	414	380	74	71	5
Arsenic ⁵	513	--	--	--	--
Bismuth:					
Mine output, Bi content ⁶	1,170	1,132	854	982	935
Metal, refined	1,170	1,132	854	952	935
Cadmium:					
Mine output, Cd content	1,605	1,550	1,510	1,464	1,485
Metal, refined	1,605	1,550	1,510	1,464	1,485
Copper:					
Mine output, Cu content:					
By concentration or cementation	276,530	214,644	170,597	168,855	336,739
Leaching, electrowon	58,972	53,975	57,151	68,754	65,691
Total	335,502	268,619	227,748	237,609	402,430
Metal:					
Anode and blister, primary	222,600	200,200	169,000	122,000 ^r	165,000
Refined:					
Primary	345,904	308,000	255,700	242,200 ^r	395,000
Secondary ^e	6,000	6,000	5,000	5,000	5,000
Total	351,904	314,000	260,700	247,200 ^r	400,000
Gold:					
Mine output, Au content kilograms	43,710	50,365	51,393	72,596	88,648
Metal, refined do.	30,226	37,760	19,410	29,000	32,729
Iron and steel:					
Iron ore, mine output: ⁷					
Gross weight thousand metric tons	10,916	11,688	11,677	13,998	12,806
Fe content do.	6,550	7,013	7,073	7,931	7,763
Metal:					
Pig iron do.	4,078	4,450	3,925	4,707 ^r	4,620
Direct-reduced iron do.	6,265	6,012	4,147	5,368	5,854
Total do.	10,343	10,462	8,072	10,075 ^r	10,474
Ferroalloys, electric arc furnace:⁸					
Ferromanganese do.	70	97	42	81	74
Silicomanganese do.	109	114	85	134	139
Total do.	179	211	127	215	213
Crude steel do.	17,563	17,209	13,957	16,710	18,101
Rolled products ⁹ do.	14,985	14,174	12,994	14,491	15,482
Lead:					
Mine output, Pb content	137,133	141,173	143,838	192,062	223,717
Metal:					
Smelter:					
Primary ¹⁰	89,838	91,364	85,411	110,980	101,729
Secondary ^e	110,000	110,000	110,000	110,000	110,000
Total ^c	200,000	201,364	195,411	220,980	211,729
Refined:					
Primary ¹¹	89,838	91,364	85,411	110,980	101,729
Secondary ^e	110,000	110,000	110,000	110,000	110,000
Total ^c	200,000	201,000	195,000	221,000	212,000

See footnotes at end of table.

TABLE 1—Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2007	2008	2009	2010	2011
METALS—Continued					
Manganese ore: ¹²					
Gross weight ^c	423,000	471,964	329,400	485,447	474,820
Mn content	152,446	169,907	118,577	174,761	170,935
Mercury, mine output, Hg content ^c	15	15	15	15	--
Molybdenum, mine output, Mo content	6,491	7,811	10,166	10,849	10,787
Silver:					
Mine output, Ag content kilograms	3,135,430	3,236,312	3,553,841	4,410,749	4,777,710
Metallurgical products, Ag content:					
In copper bars do.	238,755	154,266	104,922	--	--
Mixed gold and silver bars do.	224,765	207,457	353,930	572,901	817,981
Metal, refined, primary do.	1,665,618	2,101,454	1,845,029	2,230,024	2,336,141
Tin:					
Metal, smelter, primary	19	15	--	--	--
Zinc:					
Mine output, Zn content	452,012	453,588	489,766	570,004	631,859
Metal, refined, primary	321,932	305,188	313,044	322,508	202,846
INDUSTRIAL MINERALS					
Barite	185,921	140,066	152,790	143,225	134,727
Cement, hydraulic ¹³ thousand metric tons	40,670	37,139	35,160	34,503	34,500 ^e
Clays:					
Bentonite	613,895	374,933	511,429	590,998	563,795
Common	37,970,190	40,522,818	10,036,832	9,111,988	7,721,040
Fuller's earth	34,175	66,123	108,139	170,350	107,436
Kaolin	86,784	85,092	78,086	120,094	120,003
Diatomite	82,519	128,536	80,807	91,710	84,231
Feldspar	438,696	445,519	347,510	398,849	382,497
Fluorspar:					
Acid-grade thousand metric tons	630	592	641	719	731
Metallurgical-grade do.	303	466	405	348	475
Total do.	933	1,057	1,046	1,067	1,206
Graphite, natural, amorphous	9,900	7,229	5,105	6,628	7,348
Gypsum and anhydrite, crude (yeso)	5,963,715	5,135,151	5,756,936	3,559,579	3,560,000 ^e
Magnesium compounds:					
Magnesite	33,900	43,053	34,700	39,400	45,598
Magnesia ¹⁴	79,135	85,477	72,600	84,200	84,200
Mica, all grades	9,600	5,000	5,000	160	--
Nitrogen, N content of ammonia	624,720	736,512	861,034	824,373	824,000 ^e
Perlite	54,405	43,180	51,395	31,779	30,750
Phosphate rock ¹⁵	14,100	290,728	426,547	452,220	507,181
Salt, all types thousand metric tons	8,032	8,809	7,445	8,430	8,812
Sodium compounds: ^c					
Carbonate, soda ash, synthetic	290,000	290,000	290,000	290,000	290,000
Sulfate, natural, bloedite ¹⁶	645,000	658,000	646,000	620,000 ^r	630,500
Stone, sand and gravel:					
Calcite, common	2,483,605	2,352,109	2,555,544	3,185,369 ^r	2,366,160
Dolomite	1,123,225	1,233,993	982,650	1,499,744	2,785,314
Limestone thousand metric tons	62,600	64,857	62,000	64,678	54,344
Marble	3,547,081	2,495,649	2,800,512	2,495,649 ^r	4,431,447
Quartz, quartzite, glass sand (silica)	2,950,438	2,779,075	2,483,605	2,607,650	2,542,143
Sand thousand metric tons	68,141	72,570	89,172	89,036	86,324
Gravel do.	78,233	87,416	78,777	76,789	68,965
Strontium minerals, celestite	96,902	29,621	36,127	31,429	40,669

See footnotes at end of table.

TABLE 1—Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2007	2008	2009	2010	2011	
INDUSTRIAL MINERALS—Continued						
Sulfur, elemental, byproduct:						
Of metallurgy ⁵	thousand metric tons	550	700	700	800	800
Of petroleum and natural gas	do.	1,026	1,041	1,114	992	990
Total ⁶	do.	1,580	1,741	1,814	1,792	1,790
Talc		32,410	17,576	33,421	870	51,221
Vermiculite		102	132	291	98	--
Wollastonite		50,809	46,844	29,728	46,548	47,523
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Run of mine:						
Metallurgical	thousand metric tons	4,755	5,491	13,555	16,318	20,967
Steam	do.	7,132	10,403	9,496	11,247	13,718
Total	do.	11,887	15,894	23,051	27,565	34,685
Washed metallurgical coal	do.	2,000 ^e	2,000 ^e	2,000 ^e	4,767 ^f	5,061
Coke: ¹⁷						
Metallurgical	do.	1,449	1,459	1,240	1,553	2,016
Breeze	do.	87	88	75	95	105
Total	do.	1,536	1,547	1,315	1,648	2,121
Gas, natural:						
Gross	million cubic meters	62,613	71,523	72,660	72,615	68,153
Marketable (dry)	do.	36,654	31,897	32,237	33,632	34,986
Petroleum:						
Crude	thousand 42-gallon barrels	1,124,930	1,019,080	949,365	940,240	930,750
Condensate, natural gas liquids	do.	144,175	133,590	135,050	137,605	140,160
Total	do.	1,269,105	1,152,670	1,084,415	1,077,845	1,070,910
Refinery products:						
Liquefied petroleum gas	do.	9,709	9,454	9,891	9,308	7,811
Motor gasoline	do.	166,586	164,506	172,097	154,833	146,110
Jet fuel	do.	24,200	23,360	20,841	18,944	20,550
Distillate fuel oil, diesel	do.	121,910	125,378	123,005	105,668	99,937
Lubricants	do.	1,898	1,862	1,533	1,570	1,351
Residual fuel oil	do.	110,048	105,376	115,413	117,530	112,238
Asphalt	do.	11,644	12,520	11,643	9,089	9,527
Other, refinery fuel and losses	do.	33,212	34,201	36,900	11,571	13,834
Total	do.	479,207	476,655	491,323	428,513	411,358

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^fRevised. do. Ditto. -- Zero.

¹Table includes data available through January, 25, 2013.

²In addition to the commodities listed, additional types of crude construction materials are produced, but output is not reported, and available information is inadequate to make reliable estimates of output.

³Primary production of aluminum ceased by the closure of Aluminios y Derivados de Veracruz (Aluder) because of high energy costs.

⁴Sb content of antimonial lead.

⁵Arsenic content of white arsenic.

⁶Refined metal. Bismuth content of impure smelter products no longer reported.

⁷Iron ore pellets.

⁸Reported by Cámara Nacional del Hierro y del Acero.

⁹Includes flat, nonflat, and seamless pipe steel products.

¹⁰Lead content of impure bar, antimonial lead, and refined metal.

¹¹Includes lead content of antimonial lead.

¹²Mostly oxide nodules; includes smaller quantities of direct-shipping carbonates and oxide ores for metallurgical and battery applications.

¹³Includes gray and white portland and masonry cement.

¹⁴Reported by Industrias Peñoles, S.A. de C.V. as the only major producer. Includes caustic, electromelt, hydroxide, and refractory.

¹⁵Includes only output used to manufacture fertilizers.

¹⁶Series reflects output reported by Industrias Peñoles, S.A. de C.V. plus an additional 40,000 metric tons of estimated output by other producers.

¹⁷Includes coke made from imported metallurgical coal.

TABLE 2
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity
Antimony	Cía. Minera y Refinadora Mexicana, S.A. (private Mexican, 51%, and Cookson Ltd., 49%)	San Jose Mine, Catorce, S.L.P.	365.
Barite	Barita de Sonora, S.A. [Grupo Acerero del Norte, S.A. de C.V. (GAN), 100%]	Mazatan, Son.	219.
Do.	Minerales y Arcillas, S.A. de C.V. (private Mexican, 100%)	San Francisco del Huerto Mine in San Pedro, Coah., La Escondida and Angelita Mines and plant in Galeana	55.
Do.	Barita de Santa Rosa, S.A. de C.V. (private Mexican, 100%)	Muzquiz, Coah.	256.
Bismuth	metric tons Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreon, Coah.	1,200.
Cement	CEMEX México (Cementos Mexicanos, S.A.B. de C.V., 100%)	Ensenada, B.C.N.; Torreon, Coah.; Barrientos, D.F.; Arotonilco and Huichapan, Hgo.; Guadalajara and Zapotilic, Jal.; Hidalgo and Monterrey, N.L.; Tepeaca, Pue.; Tamuin and Valles, S.L.P; Hermosillo and Yaqui, Son.; and Merida, Yuc.	26,650.
Do.	Cementos Apasco, S.A. de C.V. (Holcim Group, 49%, and other, 51%)	Apasco, Mex.; Ramos Arizpe, Coah.; Macuspana, Tab.; Tecoman, Col.; Orizaba, Ver.; and Acapulco, Gro.	8,900.
Do.	Cooperativa La Cruz Azul, S.C.L. (private Mexican, 100%)	Cruz Azul, Hgo., Lagunas, Oax.	5,000.
Do.	Cementos de Chihuahua, S.A. de C.V. (CEMEX México, 36%, and private Mexican, 64%)	Chihuahua, Ciudad Juarez, and Samalayuca, Chih.	2,000.
Do.	Lafarge México (Lafarge Group, 100%)	Vito, Hgo.	600.
Do.	Corporación Moctezuma, S.A. (Cementos Molins, S.A., 50%, and Buzzi Unicem SpA, 50%)	Tepetzingo, Mor.	2,400.
Do.	Corporación Moctezuma, S.A. (Cementos Molins, S.A., 50%, and Buzzi Unicem SpA, 50%)	Cerritos, S.L.P.	2,400.
Coal	Minera Monclova, S.A. [Altos Hornos de México, S.A. de C.V. (AHMSA), 100%]	Mimosa and Palau Mines and Muzquiz washing plant at Palau, Coah., and coking plant at Monclova, Coah.	3,000.
Do.	Carbonifera de San Patricio, S.A. de C.V. (private Mexican, 100%)	Progreso, Coah.	1,314.
Do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A.B. de C.V., 90%)	Nueva Rosita, Coah.	1,500.
Do.	Minera Carbonifera Río Escondido, S.A. [Grupo Acerero del Norte, S.A. de C.V. [Altos Hornos de México (AHMSA), 100%]	Mina I, Mina II, and Tajo I at Nava and Piedras Negras, Coah.	6,500.
Copper	Mexicana de Cobre, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	La Caridad Mine, smelter, refinery, SX-EW ² plant, and rod plant at Nacozeni de Garcia, Son.	350 smelter, 50 SX-EW, ² 300 refinery, 150 rod plant.
Do.	Mexicana de Cananea, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	Mine and SX-EW ² plant at Cananea, Son.	29,200 mill, 33 SX-EW. ²
Do.	Minera María S.A. de C.V. (Grupo Frisco, 100%)	Mine and SX-EW ² plant at Cananea, Son.	20 SX-EW. ²
Do.	Cobre de México, S.A. de C.V. (Grupo ConduMex)	Primary refinery in Mexico City and secondary refinery in Villagran, Gto.	150.
Ferroalloys	Cía. Minera Autlán, S.A.B de C.V. (Grupo Ferrominero, S.A. de C.V., 54%; Minas de Basis, S.A. de C.V., 32%; BHP Billiton Ltd., 14%)	Plant in Tamos, Ver.	140.
Do.	do.	Plant in Teziutlan, Pue.	38.
Do.	do.	Plant in Gomez Palacio, Dgo.	35.

See footnotes at end of table.

TABLE 2—Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity
Fluorspar		Cía. Minera Las Cuevas, S.A. de C.V. (Mexichem, S.A. de C.V.)	Salitera (Zaragoza), S.L.P.	520.
Do.		Fluorita de México, S.A. de C.V. (Corp. Alfil, 51%, and Applied Industrial Minerals Corp., 49%)	Mines at La Encantada district and plant at Muzquiz, Coah.	150.
Gold, mine	kilograms	Fresnillo plc. (Industrias Peñoles S.A. de C.V., 77.1%)	Proaño (Fresnillo) Mine, Zac.	1,200.
Do.	do.	Minas de las Altas Pimerias, S.A. de C.V. (Goldcorp Inc., 100%)	El Sauzal Mine, Chih.	10,000.
Do.	do.	Fresnillo plc., 56%, and Newmont Mining Corp., 44%	La Herradura Mine, Son.	6,900.
Do.	do.	Luismin, S.A. de C.V. (Goldcorp Inc., 100%)	San Dimas Gold, Dgo. (two mines)	6,500.
Do.	do.	Gammon Lake de Mexico, S.A. de C.V. (Gammon Lake Resources Inc., 100%)	Ocampo Mine, Chih.	5,000.
Do.	do.	Minera Mexicana La Ciénega, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	La Cienega Mine, Dgo.	4,500.
Do.	do.	Animas Resources Ltd., 100%	Santa Gertrudis Mine, Son.	1,600.
Do.	do.	Cía. Minera El Cubo, S.A. de C.V. (Gammon Lake Resources Inc., 100%)	El Cubo Mine, Gto.	1,200.
Do.	do.	Pediment Gold Corp. (Pediment Gold Corp., 100%)	La Colorada Mine, Son.	800.
Do.	do.	Alamos Gold Inc., 100%	Mulatos Mine, Son.	4,700.
Do.	do.	Great Panther Silver Ltd., 100%	Guanajuato, Gto.	438.
Gold, refined	do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreon, Coah.	22,700.
Graphite		Grafitos Mexicanos, S.A. (Cummings Moore Graphite Co., 25%, and private Mexican, 75%)	Lourdes and San Francisco Mines, Son.	60.
Do.		Grafito Superior, S.A. de C.V. (Superior Graphite Co., 100%)	Covalmar, Santa Clara, and Rio Mayo Mines, and plant in Son.	25.
Gypsum		Cía. Occidental Mexicana, S.A. (private Mexican, 51%, and Domtar, Ltd., 49%)	Santa Rosalia on San Marcos Island, B.C.S.	2,500.
Iron ore		Consorcio Minero Benito Juárez Peña Colorada, S.A. de C.V. (ArcelorMittal Holdings AG, 50%, and Grupo Imsa S.A. de C.V. 50%)	Peña Colorada mine and pellet plant near Manzanillo, Col.	3,500.
Do.		Altos Hornos de Mexico, S.A. de C.V. (AHMSA) [Grupo Acerero del Norte, S.A. de C.V. (GAN), 78.9%]	La Perla Mine, Chih.; Hercules Mine, Coah.; and Cerro de Mercado Mine, Dgo.	5,000.
Do.		Siderúrgica Lázaro Cárdenas-Las Truchas, S.A. de C.V. (SICARTSA) (Grupo Villacero, 100%)	Ferrotepec, Volcan, and Mango deposits in Las Truchas project area and pellet plant, Mich.	2,350.
Do.		Hylsamex, S.A. de C.V. (Ternium S.A., 86.68%)	Cerro Nahuatl, Col. and Aquila Mine, Mich.	1,500.
Lead and zinc		Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A.B. de C.V., 90%)	Charcas, S.L.P.; San Martin, Zac.; Santa Eulalia, Chih.; Taxco, Gro.; Rosario, Sin.; Santa Barbara, Chih.; Velardena, Dgo; lead refinery at Monterrey, N.L.; and zinc refinery at S.L.P.	70 lead, mine; 110 refined zinc.
Do.		Industrias Peñoles, S.A. de C.V. (private Mexican, 100%)	Mines at La Encantada, Coah.; Fresnillo, Zac.; Naica, Chih.; Bismark, Son; Rey de Plata, Gro. (Industrias Peñoles S.A. de C.V., 51% and Dow Mining Co., 39%). Metallurgical complex at Torreon, Coah., with silver, lead, and zinc smelter and refineries operated by Met-Mex Peñoles (Industrias Peñoles S.A. de C.V., 100%)	180 refined lead, 240 refined zinc.

See footnotes at end of table.

TABLE 2—Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity	
Lead and zinc—Continued	Industrias Peñoles, S.A. de C.V. (private Mexican, 97%, and private United States, 3%)	Francisco I. Madero Mine, Zac.	100,000 zinc.	
Do.	Minera San Francisco del Oro, S.A. de C.V. (Empresas Frisco, S.A. de C.V., 100%)	San Francisco del Oro, near Hidalgo del Parral, Chih. Tayahua, Zac.	15 lead, 21 zinc.	
Manganese	Cía. Minera Autlán, S.A. de C.V. (Grupo Ferrominero, S.A. de C.V., 81.75%, and private Mexican, 18.25%)	Molango, Naopa, and Nonoalco Mines, Hgo.	600 ore and concentrate.	
Molybdenum	Mexicana de Cobre, S.A. (Grupo México, S.A.B. de C.V., more than 90%)	La Caridad Mine and molybdenum plant, Son.	11.	
Petroleum ³	thousand barrels per day	Petróleos Mexicanos, S.A. de C.V. (PEMEX) (Government, 100%)	Comalcalco, Poza Rica, Ver., and Gulf of Campeche, Cam., Districts	3,500.
Salt	Exportadora de Sal, S.A. (Fideicomiso de Fomento 51%, and Mitsubishi Corp., 49%)	Solar salt complex at Guerrero Negro, B.C.S.	6,000.	
Silver	kilograms	Fresnillo Plc. (Industrias Peñoles S.A. de C.V., 77.1%)	Proaño (Fresnillo) Mine, Zac.	1,100,000.
Do.	do.	Minera Mexicana La Ciénega, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	La Cienega Mine, Dgo.	65,800.
Do.	do.	Minera Bismark, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Bismark Mine, Chih.	7,000.
Do.	do.	Co. Minera Sabinas, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Sabinas Mine, Zac.	157,000.
Do.	do.	Minera Tizapa, S.A. de C.V. (Industrias Peñoles 51%; Dowa Holdings Ltd., 39%; Sumitomo Corp., 10%)	Tizapa Mine, Mex.	140,000.
Do.	do.	Minas Peñoles S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 50%)	Francisco I. Madero Mine, Zac.	63,000.
Do.	do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A.B. de C.V., 90%)	San Martin Mine, Sombrerete, Zac.; Taxco, Gro.; Charcas, S.L.P.; Santa Eulalia, Chih.; and refinery at Monterrey, N.L.	335,000.
Do.	do.	Pan American Silver Corp.	La Colorada Mine, Zac. and Alamo Dorado, Son.	200,000.
Do.	do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Torreón, Coah.	2,900,000 refinery.
Do.	do.	Mexicana de Cobre, S.A. de C.V. (Grupo México, S.A.B. de C.V., 100%)	La Caridad metallurgical complex, Son.	466,500.
Sodium sulfate	Química del Rey, S.A. de C.V. (Industrias Peñoles, S.A. de C.V., 100%)	Plant at Laguna del Rey, Coah.	620.	
Steel	Altos Hornos de Mexico, S.A. de C.V. (AHMSA) [Grupo Acerero del Norte, S.A. de C.V. (GAN), 78.9%]	Steelworks at Monclova, Coah.	3,316 steel, 3,800 pellet.	
Do.	Hylsamex, S.A. de C.V. (Ternium S.A., 86.68%)	Steel works and direct-reduction units at Monterrey, N.L., and Puebla, Pue.; pelletizing plant in Col.	3,100 steel, 1,500 pellet.	
Do.	DEACERO, S.A. de C.V. (private Mexican, 100%)	Steelworks at Saltillo, Coah., and Celaya, Gto.	1,450.	
Do.	Mittal Steel Lazaro Cardenas (Mittal Steel, 100%)	Facilities at Lazaro Cardenas, Mich.	5,300 steel, 4,000 pellet.	
Do.	Siderúrgica Lázaro Cárdenas-Las Truchas, S.A. de C.V. (SICARTSA) (Grupo Villacero, 100%)	Port Lazaro Cardenas, Mich.	2,350 steel, 1,850 pellet.	
Do.	Tubos de Acero de México, S.A. (private Mexican, 100%)	Veracruz, Ver.	1,000.	

See footnotes at end of table.

TABLE 2—Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity
Strontium (celestite)	Cía. Minera La Valenciana (private Mexican, 100%)	San Agustin Mine, Torreon, Coah.	50.
Sulfur	Petróleos Mexicanos, S.A. de C.V. (PEMEX)	Nationwide petroleum operations	890.
Tin ⁴	Fundidora Marni, S.A.	San Luis Potosi, S.L.P.	NA.
Do.	PIZUTO, S.A.	do.	NA.

Do., do. Ditto. NA Not available.

¹State abbreviations used in this table include the following: Baja California Norte (B.C.N.), Baja California Sur (B.C.S.), Campeche (Cam.), Chihuahua (Chih.), Coahuila (Coah.), Colima (Col.), Distrito Federal (D.F.), Durango (Dgo.), Guanajuato (Gto.), Guerrero (Gro.), Hidalgo (Hgo.), Jalisco (Jal.), Mexico (Mex.), Michoacan (Mich.), Morelos (Mor.), Nuevo Leon (N.L.), Oaxaca (Oax.), Puebla (Pue.), San Luis Potosi (S.L.P.), Sinaloa (Sin.), Sonora (Son.), Tabasco (Tab.), Veracruz (Ver.), Yucatan (Yuc.), and Zacatecas (Zac.).

²Solvent extraction-electrowinning.

³Petróleos Mexicanos, S.A. de C.V. operated six refineries with an installed capacity of 1.68 million barrels per day.

⁴Smelter output from mostly imported concentrates.