



2014 Minerals Yearbook

MEXICO

THE MINERAL INDUSTRY OF MEXICO

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In 2014, Mexico was the world's leading producer of silver, by weight, accounting for 19% of world production. The country also ranked second among the world's leading producers of fluorspar (accounting for 17% of world production); third among the world's leading producers of bismuth (7% of world production) and wollastonite (10% of world production); fourth among the world's leading producers of cadmium (6% of world production); and fifth among the world's leading producers of zinc (5% of world production). According to the World Steel Association, Mexico ranked 13th among the world's leading producers of steel and 11th among the world's leading importers of steel in 2014 (World Steel Association, 2015, p. 8, 26; Anderson, 2016; Flanagan, 2016; George, 2016; McRae, 2016; Tolcin, 2016a, b).

In 2014, Mexico's real gross domestic product (GDP) increased by 2.1% compared with that of 2013. Mineral and metal processing accounted for 9% of the industrial sector's GDP and 3% of the country's GDP in 2014. According to the U.S. Energy Information Administration, Mexico was one of the leading oil producers in the world and the fourth-ranked producer in the Americas, after the United States, Canada, and Brazil. In recent years, Mexico's oil production has been decreasing owing to declines in natural production at the Cantarell and other large offshore fields. In an effort to address the decreases in oil production, in 2013, the Government enacted constitutional reforms that ended the 75-year monopoly of the state-owned *Petróleos Mexicanos, S.A. de C.V.* (PEMEX), and opened the industry to foreign investment. The country was a significant partner in the United States energy trade, and in 2014, the United States received about 73% of Mexico's petroleum exports. Petroleum exports accounted for about 11% of the country's total exports in 2014 (Camara Minera de Mexico, 2015, p. 10, 134; U.S. Energy Information Administration, 2015; Secretaría de Economía, 2016a, b; Servicio Geológico Mexicano, 2016b, p. 12).

Minerals in the National Economy

The production value of the mineral and metal processing sector decreased by 2% in 2014, which was attributed to the decrease in the production of precious metals, the lower prices for metals on the international markets, and the depreciation of the Mexican peso against the U.S. dollar. Gold accounted for 27.0%, by value, of total mineral and metal processing production, followed by copper (20.9%), silver (19.5%), zinc (6.6%), coke (5.3%), iron ore (5.2%), lead and coal (2.8% each), molybdenum (2.4%), fluorite (1.4%), and other minerals (6.1%). In 2014, employment in the mineral sector increased by 2.5%, to 340,817 workers compared with 332,501 workers in 2013. Of these 340,817 workers, 38% worked in mining products (no metallic minerals); 29%, in the metals industry; 20%, in metallic minerals; 12%, in coal, graphite, and nonmetallic minerals;

and 1%, in salt (Camara Minera de Mexico, 2014, p. 140; 2015, p. 10–11, 134).

Investments in the mineral sector totaled \$4.9 billion in 2014, of which 27% was invested in new projects. From 2000 to 2014, the accumulated foreign direct investment (FDI) inflows in the mineral sector were about \$22.0 billion. In 2014, FDI inflows in the mineral sector were valued at \$2.2 billion, which accounted for about 10% of the total FDI inflows in the country. The mining of metallic minerals accounted for 96% of the mineral sector's FDI inflows in 2014 (Camara Minera de Mexico, 2015, p. 15; Secretaría de Economía, 2015a, p. 3–4, 6, 14).

In 2014, a total of 902 projects in Mexico received FDI. The State of Sonora accounted for 24% of the projects that received FDI, followed by Chihuahua (13%), Durango (11%), and Sinaloa (10%). Of the 902 projects in the country, about 70% were in the exploration stage, 11% were in production, and 5% were under development. Precious metals, particularly gold and silver, accounted for 580 of the projects, and polymetallic projects totaled 117. Copper and iron ore accounted for 123 and 51 projects, respectively, and the remaining projects involved a variety of mineral commodities. As of December 31, 25,267 mining concessions were registered, which accounted for about 13% of the country's total land area. The States of Chihuahua, Coahuila, Durango, Sonora, and Zacatecas together accounted for about 55% of the registered mining concessions (Servicio Geológico Mexicano, 2016a, p. 576, 578, 579; 2016b, p. 19–21).

Government Policies and Programs

The mineral sector is administered by the Secretaría de Economía [Ministry of Economy]. The Dirección General de Regulación Minera [General Department of Mining Regulation], which is part of the Secretaría de Economía, is the organization in charge of making revisions to the mining law and its regulations, as well as granting concessions and titles. The Servicio Geológico Mexicano [Mexican Geological Survey], which is part of the Secretaría de Economía, is responsible for generating and providing information for territorial planning and for facilitating exploitation of the country's natural resources. Mineral commodities are considered part of the national patrimony of Mexico under its Constitution. Article 27 deals with issues of ownership and exploitation of natural resources. The Ley Minera [Mining Law] became effective in 1992 and was subsequently modified and expanded in 1996 and again in April 2005, in June 2006, and on August 11, 2014. The Mining Law clarifies and spells out the legal framework for the exploration, production, and processing of the country's mineral resources. Neither oil and its derivatives nor radioactive materials are covered by this law. Under the law, mining concessions can be granted only by the Secretaría de Economía. 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. The Reglamento de la Ley Minera [Rules of the Mining Law], which was published in the Diario Oficial of the Mexican Congress in 2012, was modified in October 2014. The Reglamento de la Ley Minera regulates the granting and the administration of mining concessions (Camara de Diputados del H. Congreso de la Union, 2014c, p. 1, 3, 11, 27; 2014d, p. 1).

Mexico's energy sector is regulated by the Secretaria de Energia [Ministry of Energy] and the Comision Nacional de Hidrocarburos [National Hydrocarbons Commission]. At yearend 2013, the Government enacted constitutional reforms ending PEMEX's monopoly and opening the energy sector to foreign investment. On August 11, 2014, the new Hydrocarbons Law was published in the Diario Oficial of the Mexican Congress. Under the law, all hydrocarbons are still considered the property of the state. The law establishes that the Ministry of Energy, with technical assistance from the National Hydrocarbons Commission, is responsible for awarding allocations to PEMEX or any other state-owned company to explore for and to extract hydrocarbons. The reforms also allow for new exploration and production contract models, such as licenses, production-sharing, profit-sharing, and service contracts (Camara de Diputados del H. Congreso de la Union, 2014a, p. 1, 4, 8; U.S. Energy Information Administration, 2015).

As stipulated in the reform, PEMEX is allowed first refusal on developing the country's resources before private companies begin bidding, which is known as Round Zero. The purpose of Round Zero is to reach a balance between the resources that PEMEX operates and those the state manages. PEMEX must request that the Ministry of Energy allocate leases for exploratory areas and producing areas, according to its operational capabilities (Secretaria de Energia, 2014b, p. 3–4; U.S. Energy Information Administration, 2015).

The Foreign Investment Law was published in 1993 and amended most recently in 2014. The law regulates the degree and form of foreign investment in Mexico. Under the law, foreign investors seeking to obtain concessions for the exploration and exploitation of mines within the country, must first submit to the Secretaria de Relaciones Exteriores [Ministry of Foreign Affairs] a statement agreeing to the terms of Article 27 and then obtain the corresponding permit from the Ministry of Economy. The law also establishes that foreign investors may hold 100% of the capital stock of any Mexican corporation or partnership, except in those few areas expressly subject to limitations under the law (Camara de Diputados del H. Congreso de la Union, 2014b, p. 7; U.S. Department of State, 2015).

Production

In 2014, significant increases in the production of metals included estimated primary smelter copper (by 18%); estimated electrowon copper and refined bismuth (15% each); molybdenum (14%); manganese ore (gross weight) (12%); and ferromanganese and manganese ore (manganese content) (11% each). Production of asphalt increased by 28%; barite, by an estimated 22%; and coke (breeze), by 12%. Significant decreases in the production of industrial minerals included phosphate rock (by 25%); metallurgical-grade fluorspar

(by an estimated 14%); quartz (by 13%); and kaolin (by 10%). Decreases in the production of metals included iron ore (gross weight) and iron ore (iron content) (by 12% each); and decreases in the production of mineral fuels included jet fuel and other refinery fuel and losses (12% each). Data on mineral production are in table 1.

Structure of the Mineral Industry

In 2014, Mexico's lead, silver, and zinc producers included Fresnillo plc, Industrias Peñoles, S.A.B. de C.V., and Grupo Mexico, S.A.B. de C.V. PEMEX owned six refineries in the country—Cadereyta in the State of Nuevo Leon, Madero in the State of Tamaulipas, Minatitlan in the State of Veracruz, Salamanca in the State of Guanajuato, Salina Cruz in the State of Oaxaca, and Tula in the State of Hidalgo. These refineries had a combined installed capacity of about 1.7 million barrels per day (Mbbbl/d). Table 2 is a list of major mineral industry facilities.

According to the Secretaría de Economía, in 2014, a total of 276 companies were involved in 902 projects in Mexico that had received direct foreign investment. Of these companies, 187 were headquartered in Canada; 48, in the United States; 12, in China; 5, in Japan; 4 each, in Australia, the Republic of Korea, and the United Kingdom; 2 each, in India, Chile, and Spain; and 1 each, in Belgium, Brazil, Italy, Luxembourg, Peru, and the Philippines (Servicio Geologico Mexicano, 2016a, p. 576–577).

Mineral Trade

In 2014, the total value of Mexico's exports was about \$397.5 billion compared with about \$380.0 billion in 2013. The country's major export partner was the United States, which received 80% of Mexico's exports. The total value of Mexico's imports in 2014 was about \$400 billion compared with about \$381.2 billion in 2013. Its major import partners were the United States, which supplied 49% of Mexico's imports, and China (17%) (Secretaria de Economía, 2016b).

Mineral- and metal-processing exports decreased by about 8% to \$17.1 billion compared with \$18.5 billion in 2013. Gold accounted for about 28% of the mineral and metal processing exports, followed by copper (17%), silver (16%), lead (10%), iron ore (8%), and zinc (7%). Mineral and metal processing imports increased by 3% to \$8.6 billion compared with \$8.3 billion in 2013, and aluminum accounted for 28% of the mineral and metal processing imports, followed by iron ore (15%), copper (10%), and coal (9%). In 2014, crude oil exports totaled 1,142,000 barrels per day (bbl/d), and were valued at about \$35.9 billion compared with 1,189,000 bbl/d valued at about \$42.7 billion in 2013 (Camara Minera de Mexico, 2015, p. 131–133; Petróleos Mexicanos, S.A. de C.V., 2015c, d).

Mexico's exports to the United States were valued at about \$294.1 billion in 2014 compared with about \$280.6 billion in 2013. Crude oil accounted for \$27.7 billion of exports; nonmonetary gold, about \$3.1 billion; petroleum products, about \$1.3 billion; and fuel oil, about \$1.2 billion. Imports from the United States were valued at \$240.2 billion in 2014 compared with \$226.1 billion in 2013; these included nearly \$14.2 billion in petroleum products, \$6.2 billion in fuel oil, \$2.9 billion in

natural gas, and \$1.4 million in natural gas liquids (U.S. Census Bureau, 2015a, b).

Commodity Review

Metals

Copper.—In 2014, the State of Sonora was ranked first among the country's copper-producing States, accounting for about 78% of the tonnage produced, followed by the States of Zacatecas (9%) and San Luis Potosi (5%). Mexico's leading copper companies were, in order of tonnage, Grupo Mexico (which accounted for about 71% of the country's total copper production), Cobre del Mayo, S.A. de C.V. (9%), and Industrias Peñoles (5%) (Camara Minera de Mexico, 2015, p. 27, 119).

Grupo Mexico obtained most of its copper from the Buenavista del Cobre and La Caridad Mines, which are located in the State of Sonora. In 2014, production of copper at the Buenavista del Cobre Mine was 132,900 metric tons (t) compared with 115,800 t in 2013, and production at La Caridad Mine was 101,100 t compared with 96,900 t in 2013. Grupo Mexico continued with its \$3.4 billion investment program at the Buenavista del Cobre Mine; and after completion of the program, the company expected to increase copper production capacity by 175%. The investment program included a new copper and molybdenum concentrator plant, with an annual production capacity of 188,000 t of copper and 2,600 t of molybdenum, and a crushing and conveying system (Quebalix IV), which would have a crushing capacity of 80 million metric tons per year (Mt/yr) of leachable ore. The concentrator plant was expected to be completed in the third quarter of 2015, and the Quebalix IV system would be implemented in the fourth quarter of 2015. The investment program also included an ESDE III plant, which was completed during the year and had the capacity to produce about 120,000 t/yr of copper cathode (Camara Minera de Mexico, 2015, p. 35; Grupo Mexico S.A.B. de C.V., 2014; 2015, p. 6, 31, 33, 45–46).

Korea Resources Corp. held 90% interest in Minera y Metalurgica El Boleo S.A. P. I. de C.V. (MMB), which is located at Santa Rosalia in the State of Baja California Sur. The remaining 10% was held by Baja Mining Corp. of Canada. The Boleo project had an estimated mine life of about 22 years and was expected to begin production in 2015. The project had the capacity to produce about 51,000 metric tons per year (t/yr) of copper cathode (99.9% pure), 25,000 t/yr of zinc sulfate, and 1,700 t/yr of metallic cobalt. MMB planned to produce about 24,000 t of copper cathode, 8,000 t of zinc sulfate, and 600 t of metallic cobalt in 2015 (Minera y Metalurgica El Boleo S.A. P. I. de C.V., 2015).

Gold.—In 2014, Mexico's gold mine production decreased by 1.7% compared with that of 2013. The decrease in production was attributed to the suspension of operations at the Aranzazu Mine in the State of Zacatecas; the temporary suspension of production at Los Filos Mine in the State of Guerrero and at the Soledad-Dipolos Mine in the State of Sonora; the termination of operations at El Sauzal Mine in the State of Chihuahua; and the low output at the Mercedes, the Mulatos, and the Ocampo Mines in the State of Chihuahua. Gold production from the

State of Sonora accounted for about 30% of the country's total gold production followed by the States of Zacatecas (23%), Chihuahua (17%), Durango (11%), and Guerrero (7%). The country's leading gold companies were, in order of volume, Goldcorp Inc. of Canada (Peñasquito and Los Filos Mines), Fresnillo (La Herradura and La Cienega Mines), and Minera Frisco (El Coronel Mine) (table 1; Camara Minera de Mexico, 2015, p. 20–22).

In 2014, gold production from the Peñasquito Mine, which is located in the State of Zacatecas, increased by 41% to 16,096 kilograms (kg) from 11,447 kg in 2013. The company attributed the increase to higher gold ore grades. The company reported that gold production at the Peñasquito Mine was expected to be between 19,800 kg and 21,300 kg of gold in 2015. The increase in production was expected owing to the mining in the higher grade portion of the Peñasquito pit. During the year, the company continued to evaluate the potential for producing salable copper concentrate at the Peñasquito Mine, including the viability of leaching a pyrite concentrate from the zinc flotation tailings (pyrite leach). A feasibility study was underway and was expected to be completed by early 2016. (Goldcorp Inc., 2015, p. 3, 7, 28, 38, 142).

In March, Fresnillo resumed operations at La Herradura Mine, after operations had been suspended temporarily owing to the suspension of the company's explosives permits. In the same month, the company also started commercial production at its dynamic leaching plant (DLP). Gold production at La Herradura Mine increased slightly to 7,529 kg of gold in 2014 compared with 7,500 kg in 2013. The increase was attributed to the rampup of production at the mine and the DLP and to higher ore grades. As of December, total proven and probable reserves at La Herradura Mine were estimated to be 209.6 million metric tons (Mt) at an average grade of 0.79 g/t gold. In September, Fresnillo acquired the remaining 44% interest in Minera Penmont S. de R.L. de C.V. (Minera Penmont), which was a joint venture with Newmont Mining Corp. of the United States. Minera Penmont included La Herradura, the Noche Buena, and the Soledad-Dipolos Mines and the Centauro Deep and Mega Centauro development projects. Mega Centauro was expected to have a production capacity of about 7,900 kilograms per year (kg/yr) of gold and to be completed by 2018, and Centauro Deep was expected to have a production capacity of about 6,400 kg/yr and to be completed by 2019 (Camara Minera de Mexico, 2015, p. 22; Fresnillo plc, 2015, p. 26, 253–254).

New gold projects included the Morelos Norte (investment of \$725 million), which is located in the State of Guerrero and was owned by Torex Gold Resources Inc. of Canada, and Esperanza (\$114 million), which is located in the State of Morelos and was owned by Alamos Gold Inc. of Canada. Morelos Norte was expected to begin operation in 2015 and to have a production capacity of about 3,600 kg of gold. Esperanza was expected to begin operation in 2018 and to have an annual production capacity of about 2,900 kg of gold (Camara Minera de Mexico, 2015, p. 22).

Iron and Steel.—Iron ore production from the State of Michoacan accounted for about 29% of the country's total iron ore production followed by the States of Coahuila (20%) and Colima (16%). Leading iron ore producers included

ArcelorMittal Holdings AG of Luxembourg, Minera del Norte, S.A. de C.V. (a subsidiary of Altos Hornos de Mexico S.A.B. de C.V.), and Consorcio Minero Benito Juarez Peña Colorada S.A. de C.V. (Camara Minera de Mexico, 2015, p. 38).

In May, Minera del Norte began operations at its second underground mine (Teseo), which is located within its Hercules Unit, at an investment cost of about \$11.7 million. The Teseo Mine and the existing Prometeo underground mine were expected to prolong the exploitation of the high-grade hematitic ore. The mine life of Teseo, which is located in the State of Coahuila, was estimated to be 12 years. In 2014, Minera del Norte produced 3.6 Mt of iron concentrates (Altos Hornos de Mexico, S.A.B. de C.V., 2015, p. 12).

Lead and Zinc.—In 2014, lead production decreased by 1% compared with that of 2013. The State of Zacatecas was ranked first among the country's leading producer States and accounted for about 53% of the tonnage produced, followed by the States of Chihuahua (22%) and Durango (11%). Leading lead producers, by tonnage, were Goldcorp, which produced about 40% of the country's total lead production, Industrias Peñoles (26%), Fresnillo (14%), and Grupo Mexico (11%) (Camara Minera de Mexico, 2015, p. 31).

Zinc mine output increased by 2.7% in 2014 compared with that of 2013. The State of Zacatecas produced about 43% of the country's zinc production followed by the States of Chihuahua (18%), Durango (17%), and Mexico (7%). The country's leading zinc producer was Industrias Peñoles, which accounted for about 43% of the country's total zinc production. Industrias Peñoles produced zinc from the Velardeña Mine, which accounted for about 32% of the company's zinc production, and the Francisco I. Madero Mine (16%), the Tizapa Mine (15%), and the Bismark Mine (14%) (Camara Minera de Mexico, 2015, p. 29; Industrias Peñoles, S.A.B. de C.V., 2015, p. 28).

Molybdenum.—Grupo Mexico obtained most of its molybdenum output from the Buenavista del Cobre Mine and La Caridad Mine. The company began operations at its new molybdenum plant at Buenavista del Cobre in 2013; it had the capacity to produce about 2,000 t/yr of molybdenum. In 2014, however, the plant produced a record of 2,200 t of molybdenum (Grupo Mexico S.A.B. de C.V., 2015, p. 25, 35).

Silver.—The State of Zacatecas was ranked first among the country's silver-producing States and accounted for 41% of the tonnage produced, followed by the States of Chihuahua (17%), Durango (14%), and Sonora (6%). The country's leading silver producers were Fresnillo (which accounted for about 41% of the country's total silver production), Goldcorp (26%), and Industrias Peñoles (10%) (Camara Minera de Mexico, 2015, p. 24).

Fresnillo produced silver at its wholly owned Cienega, Fresnillo, and Saucito underground mines, which are located in the State of Zacatecas. In 2014, total silver production from Fresnillo was 1.1 million kg; the Fresnillo Mine accounted for about 50% of the company's total silver production, followed by Saucito (38%) and Cienega (10%). In 2014, silver production at the Fresnillo Mine decreased by 12% to 569,776 kg from 645,350 kg in 2013; the decrease was attributed to lower ore grades. As of December 31, measured and indicated mineral resources at the Fresnillo Mine were estimated to be 34.89 Mt

at an average grade of 385 grams per metric ton (g/t) silver, 0.76 g/t gold, 3.09% zinc, and 1.55% lead, and inferred mineral resources were estimated to be 31.31 Mt at an average grade of 319 g/t silver, 0.70 g/t gold, 2.47% zinc, and 1.25% lead. Proven and probable reserves were estimated to be 26.79 Mt at an average grade of 266 g/t silver, 0.64 g/t gold, 2.96% zinc, and 1.46% lead. Silver production at Saucito increased by 33% to 436,491 kg compared with 328,316 kg in 2013. The increase in production was attributed to the additional ore processed at the Saucito II expansion project, which included an underground mine and a beneficiation plant. The company began operations at Saucito II in the fourth quarter of 2014 and expected to ramp up production in 2015. Saucito II was expected to produce about 238,130 kg/yr of silver and about 990 kg/yr of gold at full capacity. Total production at Saucito, including Saucito II when it reached full capacity, was expected to average about 567,000 kg/yr of silver and about 2,130 kg/yr of gold. As of December 31, measured and indicated mineral resources at Saucito were estimated to be 11.59 Mt at an average grade of 393 g/t silver, 1.91 g/t gold, 3.21% zinc, and 1.75% lead, and inferred mineral resources were estimated to be 27.91 Mt at an average grade of 335 g/t silver, 1.04 g/t gold, 1.89% zinc, and 1.05% lead. Proven and probable reserves were estimated to be 9.23 Mt at an average grade of 389 g/t silver, 1.70 g/t gold, 3.10% zinc, and 1.71% lead (Fresnillo plc, 2015, p. 13, 49, 60, 249, 253–254).

Fresnillo also continued the development of its 100%-owned San Julian silver-gold project, which was expected to begin operations in the fourth quarter of 2015. San Julian is located in the San Julian District near the border between the States of Chihuahua and Durango. The project included an underground mine and the construction of two plants (a flotation plant and a DLP). Once at full capacity, San Julian was expected to produce an average of 292,000 kg/yr of silver and 1,250 kg/yr of gold (Fresnillo plc, 2015, p. 17, 71).

In June, GoGold Resources Inc. (GoGold) of Canada began the commissioning phase at its Parral tailings project, which is located in Hidalgo del Parral in the State of Chihuahua. The project covers an area of 141 hectares and hosted 21.3 Mt of tailings from 340 years of mining operations. As of 2013, mineral reserves at Parral were estimated to be 20.3 Mt at an average grade of 38.4 g/t silver and 0.31 g/t gold. GoGold expected to begin commercial production in 2015 and to have average annual production of about 34,000 kg of silver and 310 kg of gold (MDM Engineering Projects Ltd., 2013, p. 27; GoGold Resources Inc., 2015).

Golden Minerals Co. of the United States held 100% interest in the Velardeña properties, which included two underground mines (Velardeña and Chicago) and two processing plants. The Velardeña properties are located within the Velardeña mining district in the State of Durango and comprised 29 mineral concessions. The company began mining operations at the properties in July and processing material from the mines in November, after suspending operations in mid-2013 owing to the decline in the prices of precious metals. The Velardeña Mine includes five major vein systems—Roca Negra, San Mateo, San Juanes, Santa Juana, and Terneras. During 2014, the company mined at the Roca Negra, San Mateo, Santa Juana, and

Ternerás vein systems. The company reported that most of the silver and gold were contained in the lead concentrate and that all its mined material was processed through the sulfide plant. The company reported that a preliminary economic analysis and a technical report for Velardeña were underway and were expected to be completed in early 2015 (Golden Minerals Co., 2015, p. 7–8).

Industrial Minerals

Fluorspar was the most valuable of Mexico's nonmetallic mineral commodities in 2014, accounting for 20% of the value of nonmetallic minerals produced; salt was the second most valuable at 17%; followed by sodium sulfate, 11%; phosphate rock, 10%; silica sand, 9%; sulfur, 8%; dolomite, 7%; gypsum, 5%; and diatomite, 2% (Camara Minera de Mexico, 2015, p. 41).

Cement.—At yearend 2014, Elementia, S.A. de C.V. acquired the remaining 47% interest in ELC Tenedora Cementos, S.A.P.I de C.V. at a cost of about \$225 million. ELC Tenedora Cementos, which was a joint venture between Elementia and Lafarge, owned the El Palmar, the Tula, and the Vito cement plants, which are located in the State of Hidalgo and had a combined annual production capacity of about 2.0 Mt (Elementia, S.A. de C.V., 2015, p. 7, 58, 79).

Fluorspar.—Total production of fluorspar decreased by about 9% to 1.1 Mt in 2014 from with 1.2 Mt in 2013, and its value decreased by 8% in 2014 compared with that of the previous year. In 2014, the State of San Luis Potosí accounted for about 94% of output, followed by the State of Coahuila (6%). Mexichem, S.A.B de C.V., through its wholly owned subsidiaries Fluorita de México, S.A. de C.V. and Mexichem Fluor, S.A. de C.V., was the leading producer of fluorspar in the country. Fluorita de México operated La Sabina Mine, which is located in the State of Coahuila and had the capacity to produce about 100,000 t/yr of fluorspar, and Mexichem Fluor operated Las Cuevas Mine, which is located in the State of San Luis Potosí and had the capacity to produce about 1.2 Mt/yr of fluorspar (Camara Minera de Mexico, 2015, p. 42, 124–125; Mexichem, S.A.B de C.V., 2015, p. 24).

Phosphate Rock.—The leading phosphate rock producer in the country was Roca Fosforica de Mexico S.A. de C.V. (Rofomex), a subsidiary of Grupo Fertinal S.A. de C.V. In 2014, Rofomex produced about 1.46 Mt of phosphate rock concentrate, which was a decrease of about 16% compared with that of 2013. The company is located in San Juan de la Costa in the State of Baja California Sur (Camara Minera de Mexico, 2015, p. 43).

Salt.—Salt production increased by 8% to 10.3 Mt in 2014 compared with 9.5 Mt in 2013. The leading producer of salt in the country was Exportadora de Sal, S.A. de C.V., which produced about 9.0 Mt of salt in 2014. Exportadora de Sal, which was a joint venture between the Government (51% interest) and Mitsubishi Corp. of Japan (49%), was located at Guerrero Negro in the State of Baja California Sur and had the capacity to produce about 9.5 Mt/yr of salt (table 2; Camara Minera de Mexico, 2015, p. 43).

Sodium Sulfate.—Industrias Peñoles, through its subsidiary Industrias Magnelec, S.A. de C.V., was the sole producer of sodium sulfate in the country. In 2014, the company produced 637,141 t of sodium sulfate compared with 641,500 t in 2013. During the year, Industrias Peñoles completed the construction of a new plant (Planta II) within the Quimica del Rey plant, which is located at Laguna del Rey in the State of Coahuila. The new plant would have the capacity to produce about 150,000 t/yr of sodium sulfate, which would increase Quimica del Rey's total annual capacity to 780,000 t (Industrias Peñoles, S.A.B. de C.V., 2015, p. 1, 10, 51, 53).

Wollastonite.—Minera Roca Rodando, S. de R.L. de C.V. (a subsidiary of S&B Industrial Minerals S.A. of the United States) owned the Pilares Mine, which was the only mine in the country that produced wollastonite. In 2014, wollastonite production decreased by 5% to 54,579 t of compared with 57,302 t in 2013, and its value increased by 1.2% in 2014 compared with that of the previous year. Pilares is located at Hermosillo in the State of Sonora (tables 1 and 2; Camara Minera de Mexico, 2015, p. 110).

Mineral Fuels

Crude Petroleum and Natural Gas.—In 2014, PEMEX had 9,077 producing wells, 448 producing fields, and 258 offshore platforms. During the year, the company completed 535 wells, of which 511 were slated for development and 24 were slated for additional exploration. Of the 511 wells for development, 327 were located in the northern region of the country and 135 were located in the southern region. Proved crude oil reserves were estimated to be about 9.7 million barrels (Mbbbl), of which 62% consisted of heavy oil; 29%, light oil; and 9%, extra-light oil. About 72% of the proved crude oil reserves were located in offshore fields, and the remaining 28% were located onshore. Proved natural gas reserves were estimated to be about 433 billion cubic meters (reported as 15,291 billion cubic feet), of which 65% consisted of associated gas, and 35%, of nonassociated gas. About 56% of the proved natural gas reserves were located onshore and about 44% were located offshore (Petróleos Mexicanos, S.A. de C.V., 2015a, p. 3–4; 2015e, p. 16–17).

PEMEX reported that it had produced an average of 2,429,000 bbl/d of crude oil in 2014 compared with 2,522,000 bbl/d in 2013. Of these 2,429,000 bbl/d, 52% consisted of heavy crude oil; 36%, light crude oil; and 12%, extra-light crude oil. In 2014, the Cantarell and Ku-Maloob-Zaap fields, which are located in the northeastern marine region, accounted for about 51% of the country's crude oil production. The company reported that the decrease in crude oil production was attributed to decreases at the Burgos field, by 37%, and at the Aceite Terciario del Golfo field, by 26% (both fields are located in the northern region of the country), and at the Cantarell field, by 15%. Natural gas production increased by 2.5% in 2014 compared with levels in 2013 owing to a 5% increase in the production of associated gas. The northeastern marine region accounted for about 26% of the total natural gas production in 2014 (Petróleos Mexicanos, S.A. de C.V., 2015b, p. 54, 127; 2015e, p. 2–4, 18–19, 21).

In 2014, the total crude oil processed decreased by 6% to about 1.16 Mbb/d compared with 1.22 Mbb/d in 2013. The Salina Cruz refinery processed about 23% of PEMEX's total crude oil, followed by Tula (21%), Minatitlan (17%), Cadereyta (15%), Salamanca (14%), and Madero (10%). In 2014, the company reported significant decreases in crude oil processing at the refineries of Madero (by 14%), Salamanca (by 12%), and Minatitlan (by 8%) (Petróleos Mexicanos, S.A. de C.V., 2015e, p. 42).

In April, under the Round Zero, PEMEX requested 83% of Mexico's total proved and probable hydrocarbon reserves (2P) and 21% of the country's total prospective reserves. PEMEX reported that it would have enough 2P reserves to guarantee 15 years of production at current levels. On August 13, the Ministry of Energy announced the resolution of Round Zero and awarded PEMEX 100% of the 2P reserves that it requested (a total of 20,589 Mbb/d of oil equivalent) and 67% of the requested prospective resources (a total of 23,447 Mbb/d of oil equivalent) (Petróleos Mexicanos, S.A. de C.V., 2014a, p. 1; 2015b, p. 12).

In August, the Ministry of Energy also announced an estimate of the areas that it would be offering as part of the Round One process, which included onshore conventional fields, shallow waters, fields rich in extra-heavy oil, and the Chicontepec fields, as well as areas with conventional and unconventional prospective resources. About 169 blocks (109 for exploration and 60 for production) would be offered; they covered an area of about 28,500 square kilometers and represented an annual investment of about \$8.5 million from 2015 to 2018. Total prospective resources (exploration) amounted to 14,606 Mbb/d of oil equivalent and 2P reserves (extraction) amounted to 3,882 Mbb/d of oil equivalent. The Government expected to offer the fields and exploration areas in 2015 (Secretaria de Energia, 2014a, p. 1–2, 10).

Outlook

Mexico is expected to show an increase in the real GDP of 2.3% in 2015. Copper production is expected to increase in 2015 owing to the scheduled startup of the Boleo Mine and the expansion of the Buenavista del Cobre Mine. Gold and silver exploration continues, with several new projects slated to commence production within 3 to 5 years, and many other mines are also slated to reach their productive stages in 2015. The base-metals sector will likely profit from the development of these mines, as the majority of the mines are polymetallic projects. Investments in the mineral- and metal-processing sector are estimated to increase by 10% in 2015, of which 27% is expected to be investments in new projects. The United States and Canada are likely to continue to invest in the country's projects. Copper, gold, lead, silver, and zinc are likely to be the leading mining exports in 2015, and aluminum, coal, copper, and iron ore are likely to be the leading mining imports in 2015. The United States is likely to continue to be Mexico's principal trading partner in 2015. The end of PEMEX's monopoly and the opening of the mineral fuels sector to foreign investment is likely to increase oil and gas production and participation by the private sector (International Monetary Fund, 2015, p. 1; Secretaria de Economia, 2015b, p. 26, 28, 38, 40–44).

References Cited

- Altos Hornos de Mexico, S.A.B. de C.V., 2015, Reporte anual 2014 [Annual report 2014]: Coahuila, Mexico, Altos Hornos de Mexico S.A.B. de C.V., 91 p. (Accessed November 12, 2015, at http://www.ahmsa.com/Acero/Empresa/Financieros/informe_anual_2014_esp.pdf.)
- Anderson, C.S., 2016, Bismuth: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 36–37.
- Camara de Diputados del H. Congreso de la Union, 2014a, Ley de hidrocarburos [Hydrocarbons Law]: Mexico City, Mexico, Camara de Diputados del H. Congreso de la Union, 55 p. (Accessed November 6, 2015, at http://www.diputados.gob.mx/LeyesBiblio/pdf/LHidro_110814.pdf.)
- Camara de Diputados del H. Congreso de la Union, 2014b, Ley de inversion extranjera [Foreign investment law]: Mexico City, Mexico, Camara de Diputados del H. Congreso de la Union, 53 p. (Accessed November 6, 2015, at http://www.diputados.gob.mx/LeyesBiblio/pdf/44_110814.pdf.)
- Camara de Diputados del H. Congreso de la Union, 2014c, Ley minera [Mining law]: Mexico City, Mexico, Camara de Diputados del H. Congreso de la Union, 34 p. (Accessed November 6, 2015, at http://www.diputados.gob.mx/LeyesBiblio/pdf/151_110814.pdf.)
- Camara de Diputados del H. Congreso de la Union, 2014d, Reglamento de la ley minera [Regulation of the mining law]: Mexico City, Mexico, Camara de Diputados del H. Congreso de la Union, 51 p. (Accessed November 6, 2015, at http://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LMin_311014.pdf.)
- Camara Minera de Mexico, 2014, Informe anual 2014 [Annual report 2014]: Mexico City, Mexico, Camara Minera de Mexico, 217 p. (Accessed February 4, 2016, at <https://www.camimex.org.mx/index.php/secciones1/publicaciones/informe-anual/informe-anual-2014/>.)
- Camara Minera de Mexico, 2015, Informe anual 2015 [Annual report 2015]: Mexico City, Mexico, Camara Minera de Mexico, 229 p. (Accessed October 14, 2015, at <https://www.camimex.org.mx/index.php/secciones1/publicaciones/informe-anual/informe-anual-2015/>.)
- Elementia, S.A. de C.V., 2015, Reporte anual 2014 [Annual report 2014]: Mexico City, Mexico, Elementia, S.A. de C.V., 72 p. (Accessed November 10, 2015, at http://www.elementia.com/repository/reportesAnuales/esp_1440694494239.pdf.)
- Flanagan, D.M., 2016, Wollastonite: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 186–187.
- Fresnillo plc, 2015, Annual report 2014: London, United Kingdom, Fresnillo plc. (Accessed November 10, 2015, at <http://www.fresnilloplc.com/media/201302/fresnilloplcar14.pdf>.)
- George, M.W., 2016, Silver: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 152–153.
- GoGold Resources Inc., 2015, Parral tailings project: GoGold Resources Inc. (Accessed November 17, 2015, at <http://gogoldresources.com/properties/parral/>.)
- Goldcorp Inc., 2015, Annual report 2014: Vancouver, British Columbia, Canada, Goldcorp Inc., 149 p. (Accessed November 12, 2015, at http://s1.q4cdn.com/038672619/files/ar2014/_doc/Goldcorp_AR14_full.pdf.)
- Golden Minerals Co., 2015, 2014 annual report: Golden, Colorado, Golden Minerals Co., 90 p. (Accessed November 19, 2015, at <http://www.goldenminerals.com/pdfs/annual-reports/GoldenMinerals-2014-AR.pdf>.)
- Grupo Mexico S.A.B. de C.V., 2014, 2013 informe anual [2013 annual report]: Mexico City, Mexico, Grupo Mexico S.A.B. de C.V., 113 p. (Accessed March 15, 2016, at <http://www.grupomexico.com/files/InformeAnualEsp2013Completo.pdf>.)
- Grupo Mexico S.A.B. de C.V., 2015, 2014 informe anual [2014 annual report]: Mexico City, Mexico, Grupo Mexico S.A.B. de C.V., 67 p. (Accessed November 19, 2015, at <http://www.grupomexico.com/images/pdf/ReportesEsp/Informe%20Anual%20Grupo%20M%C3%A9xico%202014.pdf>.)
- Industrias Peñoles, S.A.B. de C.V., 2015, 2014 annual report: Mexico City, Mexico, Industrias Peñoles, S.A.B. de C.V., 157 p. (Accessed March 15, 2016, at <http://www.penoles.com.mx/wPortal/content/conn/UCM/path/Carpetas/www/English/Press%20Room/Annual%20Reports/PENOLES-2014-ANNUAL-REPORT.pdf;jsessionid=fz8hVLPfb6P2pnSY4BgMnfpvG7xtsSY11Q71cqvhP8JbLpn8IC3211983562992>.)
- International Monetary Fund, 2015, World economic outlook: Washington, DC, International Monetary Fund, October 26, 46 p. (Accessed November 19, 2015, at <http://www.imf.org/external/pubs/ft/weo/2015/02/pdf/text.pdf>.)
- McRae, M.E., 2016, Fluorspar: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 62–63.

- MDM Engineering Projects Ltd., 2013, National Instrument 43–101—Independent technical report on the Parral tailings project: Johannesburg, South Africa, MDM Engineering Projects Ltd., February 20, 277 p.
- Mexichem, S.A.B. de C.V., 2015, Reporte anual 2014 [Annual report 2014]: Tlalnepantla, Estado de Mexico, Mexichem, S.A.B. de C.v., 476 p. (Accessed November 4, 2015, at <http://www.mexichem.com/wp-content/uploads/2015/07/INFO-Anual-2014-CNBV-Final-1.pdf>)
- Minera y Metalurgica El Boleo S.A. P. I. de C.V., 2015, Minera y Metalurgica del Boleo obtiene su primera produccion de cobre [Minera y Metalurgica del Boleo obtains its first copper production]: Minera y Metalurgica El Boleo S.A. P. I. de C.V., January 26. (Accessed November 12, 2015, at <http://www.mboleo.com/noticias.aspx>.)
- Petróleos Mexicanos, S.A. de C.V., 2014a, Round zero: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., April, 20 p.
- Petróleos Mexicanos, S.A. de C.V., 2014b, Round zero resolution and round one updates: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., September, 2 p. (Accessed November 5, 2015, at <http://www.ri.pemex.com/files/content/No.%203%20Round%200%20&%20Round%201.pdf>.)
- Petróleos Mexicanos, S.A. de C.V., 2015a, Hydrocarbon reserves as of January 1, 2015: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., 21 p. (Accessed September 10, 2015, at http://www.pemex.com/en/investors/publications/Reservas%20de%20Hidrocarburos%20Archivos/Reservas_2015_i.pdf.)
- Petróleos Mexicanos, S.A. de C.V., 2015b, Memoria de labores 2014 [Annual report 2014]: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., 197 p. (Accessed November 4, 2015, at http://www.pemex.com/acerca/informes_publicaciones/Documents/memorias/completas/Memoria_de_Labores_2014.pdf.)
- Petróleos Mexicanos, S.A. de C.V., 2015c, Monthly petroleum statistics—Trade balance: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., 1 p. (Accessed September 10, 2015, at http://www.pemex.com/en/investors/publications/Indicadores%20Petroleros%20Archivos/ebalcomx_ing.pdf.)
- Petróleos Mexicanos, S.A. de C.V., 2015d, Monthly petroleum statistics—Value of crude oil exports: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., 1 p. (Accessed September 10, 2015, at http://www.pemex.com/en/investors/publications/Indicadores%20Petroleros%20Archivos/evalorexporta_ing.pdf.)
- Petróleos Mexicanos, S.A. de C.V., 2015e, Statistical yearbook 2014: Mexico City, Mexico, Petróleos Mexicanos, S.A. de C.V., 80 p. (Accessed November 4, 2015, at http://www.pemex.com/en/investors/publications/Anuario%20Estadstico%20Archivos/2014_full.pdf.)
- Secretaría de Economía, 2015a, Informe estadístico sobre el comportamiento de la inversión extranjera directa en México—Enero-Diciembre de 2014 [Statistical report on the behavior of foreign investment in Mexico—January-December 2014]: Mexico City, Mexico, Secretaría de Economía, 17 p. (Accessed September 10, 2015, at http://www.economia.gob.mx/files/comunidad_negocios/ied/enero_diciembre_2014.pdf.)
- Secretaría de Economía, 2015b, Industria minero metalurgica [Metallurgical mining industry]: Mexico City, Mexico, Secretaría de Economía, 55 p. (Accessed November 19, 2015, at http://www.economia.gob.mx/files/comunidad_negocios/industria_comercio/informacionSectorial/minero/prontuario_industria_minero_metalurgica.pdf.)
- Secretaría de Economía, 2016a, Balanza comercial de México año previo de entrada en vigor de lo TLC .Vs. 2014—Oil companies [Trade balance of Mexico previous year into force of the TLC Vs. 2014—Total]: Mexico City, Mexico, Secretaría de Economía, 55 p. (Accessed March 15, 2016, at http://www.gob.mx/cms/uploads/attachment/file/2520/SE_petroleras_2014_por_sector-pais.pdf.)
- Secretaría de Economía, 2016b, Balanza comercial de México año previo de entrada en vigor de lo TLC .Vs. 2014—Total [Trade balance of Mexico previous year into force of the TLC Vs. 2014—Total]: Mexico City, Mexico, Secretaría de Economía, 55 p. (Accessed March 15, 2016, at http://www.gob.mx/cms/uploads/attachment/file/2527/total_2014_por_sector-pais.pdf.)
- Secretaria de Energia, 2014a, Round 1: Mexico City, Mexico, Secretaria de Energia, p. 10.
- Secretaria de Energia, 2014b, Round zero: Mexico City, Mexico, Secretaria de Energia, April, p. 20 (Accessed November 6, 2015, at http://sener.gob.mx/webSener/rondacero/_doc/Round%20Zero.pdf.)
- Servicio Geologico Mexicano, 2016a, Anuario estadístico de la minería Mexicana 2015—Capítulo VI—Inversión de empresas con participación extranjera en México [Statistical yearbook of Mexican mining 2015—Chapter VI—Investment of companies with foreign participation in Mexico]: Mexico City, Mexico, Servicio Geologico Mexicano, 6 p. (Accessed March 16, 2016, at http://www.sgm.gob.mx/productos/pdf/CapituloVI_2015.pdf.)
- Servicio Geologico Mexicano, 2016b, Anuario estadístico de la minería Mexicana 2015—Summary of basic mining indicators [Statistical yearbook of Mexican mining—Investment of companies with foreign participation in Mexico]: Mexico City, Mexico, Servicio Geologico Mexicano, 40 p. (Accessed March 16, 2016, at http://www.sgm.gob.mx/productos/pdf/CapituloI_2015.pdf.)
- Tolcin, A.C., 2016a, Cadmium: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 42–43.
- Tolcin, A.C., 2016, Zinc: U.S. Geological Survey Mineral Commodity Summaries 2016, p. 192–193.
- U.S. Census Bureau, 2015a, U.S. exports from Mexico from 2005 to 2014 by 5-digit end-use code: U.S. Census Bureau. (Accessed September 10, 2015, at <http://www.census.gov/foreign-trade/statistics/product/enduse/exports/c2010.html>.)
- U.S. Census Bureau, 2015b, U.S. imports from Mexico from 2005 to 2014 by 5-digit end-use code: U.S. Census Bureau. (Accessed September 10, 2015, at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c2010.html>.)
- U.S. Department of State, 2015, 2015 investment climate statement—Mexico: U.S. Department of the State, May. (Accessed November 6, 2015, at <http://www.state.gov/e/eb/rls/othr/ics/2015/241661.htm>.)
- U.S. Energy Information Administration, 2015, Mexico—Analysis: U.S. Energy Information Administration Country Analysis Brief, April 24. (Accessed September 10, 2015, at <http://www.eia.gov/beta/international/analysis.cfm?iso=MEX>.)
- World Steel Association, 2015, Steel statistical yearbook 2015: Brussels, Belgium, World Steel Association, 30 p. (Accessed November 4, 2015, at <https://www.worldsteel.org/dms/internetDocumentList/bookshop/2015/World-Steel-in-Figures-2015/document/World%20Steel%20in%20Figures%202015.pdf>.)

TABLE 1
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2010	2011	2012	2013	2014
METALS					
Antimony ⁴	71	100	169	294	270 ^c
Bauxite	21,250	14,400	96,000	--	--
Bismuth, metal, refined	952	935	800	824	948
Cadmium, metal, refined	1,464	1,485	1,482	1,451	1,409
Copper: ^c					
Mine output, Cu content:					
Concentrates	184,000 ^r	297,000 ^r	342,000 ^r	317,000 ^r	327,000
Leaching, electrowon	86,000 ^r	147,000 ^r	158,000 ^r	163,000 ^r	188,000
Total	270,000 ^r	444,000 ^r	500,000 ^r	480,000 ^r	515,000
Metal:					
Smelter, primary	118,500 ^r	233,800 ^r	255,900 ^r	215,000 ^r	253,000
Refined:					
Primary	156,600 ^r	251,000 ^r	214,000 ^r	188,000 ^r	205,400
Secondary	5,000	5,000	5,000	5,000	5,000
Total	161,600 ^r	256,000 ^r	219,000 ^r	193,000 ^r	210,400
Gold:					
Mine output, Au content					kilograms
Metal, refined	72,596	88,648	102,802	119,774 ^r	117,771
do.	29,000	32,729	38,926	35,985	32,808
Iron and steel:					
Iron ore:					
Gross weight					thousand metric tons
Fe content ^c	13,998	12,806	14,915	18,840	16,628
do.	8,750 ^r	8,000 ^r	9,320 ^r	11,780 ^r	10,400
Metal:					
Pig iron	4,707	4,609 ^r	4,611 ^r	4,911	5,116
Direct-reduced iron	5,368	5,854	5,586 ^r	6,100	5,976
do.	10,075	10,463 ^r	10,197 ^r	11,011	11,092
Ferroalloys, electric arc furnace:					
Ferromanganese	81,019 ^r	73,683 ^r	61,845 ^r	60,675 ^r	67,506
Silicomanganese	134,471 ^r	139,048 ^r	161,221 ^r	157,855 ^r	164,852
do.	215,490 ^r	212,731 ^r	223,066 ^r	218,530 ^r	232,358
Crude steel	16,870 ^r	18,110 ^r	18,073 ^r	18,208	18,995 ^c
do.	14,809 ^r	15,793 ^r	16,269 ^r	15,713 ^r	16,000 ^c
Lead:					
Mine output, Pb content	192,062	223,717	238,091	253,361	250,462
Metal, refined: ^c					
Primary	142,000 ^r	132,000 ^r	129,000 ^r	121,000 ^r	119,000
Secondary	175,000 ^r	216,000 ^r	205,000 ^r	200,000 ^r	195,000
do.	317,000 ^r	348,000 ^r	334,000 ^r	321,000 ^r	314,000
Manganese ore: ⁶					
Gross weight	485,450 ^r	474,820	510,942 ^r	580,309 ^r	652,465
Mn content	174,761	170,935	188,294	211,559	235,686
Mercury, mine output, Hg content ^c	15	--	--	--	--
Molybdenum, mine output, Mo content	10,849	10,787	11,366	12,562	14,370
Silver:					
Mine output, Ag content	4,410,749	4,777,710	5,358,195	5,820,991 ^r	5,765,662
Metalurgical products, Ag content:					
Mixed gold and silver bars	572,901	817,981	923,056	1,322,059	1,091,439
do.	2,230,024	2,336,141	2,329,963	2,318,718	2,272,620
Metal, refined, primary					
Zinc:					
Mine output, Zn content	570,004	631,859	660,349	642,542	659,878
Metal, refined, primary	327,742 ^r	322,116 ^r	323,569 ^r	322,781 ^r	321,000

See footnotes at end of table.

TABLE 1—Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2010	2011	2012	2013	2014	
INDUSTRIAL MINERALS						
Barite	143,225	134,727	139,997	343,585 ^r	420,000 ^e	
Cement, hydraulic ⁷	thousand metric tons	34,503	35,400 ^r	36,184	34,612	35,000 ^e
Clays:						
Bentonite	590,998	563,795	956,224	617,632	618,000 ^e	
Common	9,111,988	7,721,040	7,700,000 ^e	7,948,840	7,950,000 ^e	
Fuller's earth	170,350	107,436	227,496	301,462	301,500 ^e	
Kaolin	120,094	120,003	163,148	379,110	342,917	
Diatomite	91,710	84,231	84,537	87,463	87,849	
Feldspar	398,849	382,497	380,441	164,484	150,726	
Fluorspar:						
Acid-grade	thousand metric tons	719	731	749	510	500 ^e
Metallurgical-grade	do.	348	475	487	700	600 ^e
Total	do.	1,067	1,206	1,236	1,210	1,100 ^e
Graphite, natural, amorphous ⁸	11,460 ^r	18,970 ^r	19,730 ^r	21,163 ^r	22,018	
Gypsum and anhydrite, crude (yeso)	3,559,579	3,560,000 ^e	4,692,510	5,090,863	5,495,594	
Magnesium compounds:						
Magnesia ⁹	84,200	85,700	88,400	86,000 ^r	85,500	
Magnesite	39,400	45,598	44,700	45,281 ^r	46,942	
Mica, all grades	160	--	160	160	160 ^e	
Nitrogen, N content of ammonia ¹⁰	738,978 ^r	708,564 ^r	771,858 ^r	1,136,004 ^r	1,089,150	
Perlite	31,779	31,779	29,950	27,200	27,200 ^e	
Phosphate rock	thousand metric tons	1,507 ^r	1,691 ^r	1,725 ^r	2,217 ^r	1,663
Salt, all types	do.	8,430	8,812	8,730	9,461	10,251
Sodium compounds, sulfate, natural, bloedite	620,000	630,500	638,000	641,500	637,141	
Stone, sand and gravel:						
Calcite, common	3,185,369	2,366,160	4,694,156	5,179,277	5,200,000 ^e	
Dolomite	1,499,744	2,785,314	2,111,114	8,756,485	8,277,102	
Limestone	thousand metric tons	64,678	54,344	55,725	52,289	52,300 ^e
Marble	2,495,649	4,431,447	3,820,517	3,563,699	3,600,000 ^e	
Quartz, quartzite, glass sand (silica)	2,607,650	2,542,143	3,592,813	2,937,949	2,548,336	
Sand	thousand metric tons	89,036	86,324	92,374	90,723	91,000 ^e
Gravel	do.	76,789	68,965	71,870	65,874	66,000 ^e
Strontium minerals, celestite	31,429	40,669	46,192	67,778	64,931	
Sulfur, elemental, byproduct: ¹⁰						
Of petroleum and natural gas	thousand metric tons	670 ^r	636 ^r	592 ^r	620 ^r	603
Talc	870	51,221	463,214	846,813	850,000 ^e	
Vermiculite	98	--	500	425	420 ^e	
Wollastonite	46,548	47,523	55,204	57,302	54,579	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Run of mine:						
Metallurgical	thousand metric tons	16,318	20,967	16,276	15,718	16,100 ^e
Steam	do.	11,247	13,718	13,656	13,065	13,435
Total	do.	27,565	34,685	29,932	28,783	29,540 ^e
Washed metallurgical coal	do.	4,767	5,061	4,903	4,613	4,733
Coke: ¹¹						
Metallurgical	do.	1,553	2,016	2,047	2,098	2,097
Breeze	do.	95	105	118	119 ^r	133
Total	do.	1,648	2,121	2,165	2,217 ^r	2,230
Gas, natural: ¹²						
Gross	million cubic meters	55,274 ^r	53,009 ^r	48,705 ^r	46,440 ^r	47,500 ^e
Marketable (dry)	do.	50,942 ^r	49,385 ^r	47,317 ^r	46,440 ^r	47,500 ^e

See footnotes at end of table.

TABLE 1—Continued
MEXICO: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2010	2011	2012	2013	2014	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum: ¹⁰						
Crude	thousand 42-gallon barrels	940,605 ^r	931,845 ^r	930,020	920,530 ^r	886,585
Condensate, natural gas liquids	do.	139,795 ^r	141,985 ^r	133,225 ^r	132,130 ^r	132,860
Total	do.	1,080,400 ^r	1,073,830 ^r	1,063,245 ^r	1,052,660 ^r	1,019,445
Refinery products:						
Liquefied petroleum gas	do.	9,308	7,811	9,198 ^r	9,198 ^r	9,636
Motor gasoline	do.	154,833	146,110	152,607 ^r	159,615 ^r	153,884
Jet fuel	do.	18,944	20,550	20,659 ^r	22,192 ^r	19,491
Distillate fuel oil, diesel	do.	105,668	99,937	109,354 ^r	114,391 ^r	104,609
Lubricants	do.	1,570	1,351	1,424 ^r	1,606 ^r	1,351
Residual fuel oil	do.	117,640 ^r	112,238	99,791 ^r	98,112 ^r	94,608
Asphalt	do.	9,089	9,527	8,432 ^r	6,826 ^r	8,724
Other, refinery fuel and losses	do.	11,571	13,834	20,915 ^r	27,631 ^r	24,346
Total	do.	428,623 ^r	411,358	422,380 ^r	439,571 ^r	416,649

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

¹Table includes data available through November 2, 2015.

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

³Sources: The Instituto Nacional de Estadística y Geografía and the Servicio Geológico Mexicano, Secretaría de Economía.

⁴Sb content of antimonial lead.

⁵Includes flat and long hot-rolled and seamless pipe products.

⁶Mostly oxide nodules; includes smaller quantities of direct-shipping carbonates and oxide ores for metallurgical and battery applications.

⁷Includes gray and white portland and masonry cement.

⁸Figures based on U.S. import data from the U.S. Census Bureau.

⁹Reported by Industrias Peñoles, S.A. de C.V. as the only major producer. Includes caustic, electromelt, hydroxide, and refractory.

¹⁰Source: Statistical Yearbook 2014 by Petroleos Mexicanos S.A. de C.V.

¹¹Includes coke made from imported metallurgical coal.

¹²Source: U.S. Department of Energy.

TABLE 2
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^c	
Antimony	United States Antimony Corp., 100%	San Jose (Wadley) Mines, S.L.P.	365.	
Barite	Baramin S.A. de C.V. (private Mexican, 100%)	Galeana, N.L.	NA.	
Do.	Barita de Santa Rosa, S.A. de C.V. (private Mexican, 100%)	Muzquiz, Coah.	256.	
Do.	Barita de Sonora, S.A. (Grupo Acerero del Norte, S.A. de C.V., 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.	
Bismuth	metric tons	Metalurgica Met-Mex Peñoles, S.A.B. de C.V. (Industrias Peñoles S.A.B. de C.V., 100%)	Torreón, Coah.	1,440.
Cement	CEMEX Mexico (Cementos Mexicanos, S.A.B. de C.V., CEMEX 100%)	Ensenada, B.C.N.; Torreón, 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.	29,300.	
Do.	Holcim Mexico S.A. de C.V. (Holcim Group, 100%)	Acapulco, Gro.; Apaxco, Mex.; Hermosillo; Son. Macuspana, Tab.; Orizaba, Ver.; Ramos Arizpe, Coah.; and Tecoman, Col.	12,200.	
Do.	Corporación Moctezuma, S.A.B. de C.V. (Cementos Molins S.A., 50%, and Buzzi Unicem SpA, 50%)	Apazapan, Ver.; Cerritos, S.L.P.; and Tepetzingo, Mor.	6,400.	
Do.	Cooperativa La Cruz Azul, S.C.L. (private Mexican, 100%)	Cruz Azul, Hgo.; Lagunas, Oax.	5,000.	
Do.	Grupo Cementos de Chihuahua, S.A. B. de C.V.	Chihuahua, Ciudad Juárez, and Samalayuca, Chih.	2,500.	
Do.	ELC Tenedora Cementos, S.A.P.I. de C.V. (Elementia, S.A. de C.V., 100%)	El Palmar, Tula, and Vito, Hgo.	2,000.	
Coal	Minera Carbonífera Río Escondido, S.A. [Altos Hornos de México (AHMSA), 100%]	Mina I, Mina II, and Tajo I at Nava and Piedras Negras, Coah.	6,500.	
Do.	Altos Hornos de México, S.A.B. de C.V. (Grupo Acerero del Norte, S.A. de C.V., 78.9%)	Mines at Coah. and coking plant at Monclova, Coah.	3,000.	
Do.	Carbonífera 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.	
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 at La Caridad, Son.	170 concentrates, 300 smelter, 25 SX-EW, ² 300 refinery.	
Do.	Mexicana de Cananea, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	Buenavista del Cobre Mine and SX-EW ² plant at Cananea, Son.	125 concentrates, 70 SX-EW. ²	
Do.	Cobre del Mayo S.A. de C.V. (Investure Group S. A. de C. V., 100%)	Piedras Verdes Mine and SX-EW ² plant, Son.	20 concentrates, 32 SX-EW. ²	
Do.	Cia. Minera La Parreña de C.V. (Industrial Peñoles, S.A.B. de C.V., 100%)	Milpillas Mine and SX-EW ² plant at Santa Cruz, Son.	45 SX-EW. ²	
Do.	Minera María S.A. de C.V. (Minera Frisco S.A.B. de C.V., 99.6%)	María Mine and SX-EW ² plant at Cananea, Son.	20 SX-EW. ²	
Do.	Red Tiger Mining Inc., 100%	Luz de Cobre Mine and SX-EW ² plant at San Antonio del Huerto, Son.	8 SX-EW. ²	
Ferroalloys	Compañía Minera Autlán, S.A.B. de C.V. (Grupo Ferrominero, S.A. de C.V., 54%)	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 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^c
Fluorspar		Mexichem Fluor, S.A. de C.V. (Mexichem, S.A.B. de C.V., 100%)	Las Cuevas Mine, Zaragoza, S.L.P.	1,200.
Do.		Fluorita de México, S.A. de C.V. (Mexichem, S.A.B. de C.V., 100%)	La Sabina Mine, Muzquiz, Coah.	100.
Gold, mine	kilograms	Minera Peñasquito S.A. de C.V. (Goldcorp Inc., 100%)	Peñasquito Mine, Zac.	14,200.
Do.	do.	Desarrollo Mineros San Luis S.A. de C.V. (Goldcorp Inc., 100%)	Los Filos Mines, Gro.	10,000.
Do.	do.	Fresnillo plc., 100%	La Herradura Mine, Son.	8,500.
Do.	do.	Minas de las Altas Pimerias, S.A. de C.V. (Goldcorp Inc., 100%)	El Sauzal Mine, Chih.	8,500. ³
Do.	do.	Minera Frisco S.A.B. de C.V., 100%	El Coronel Mine, Zac.	5,300.
Do.	do.	Primero Empresa Minera, S.A. de C.V. (Primero Mining Corp., 100%)	San Dimas, Dgo.	4,500.
Do.	do.	Agnico Eagle Mines Ltd., 100%	Pinos Altos Mine, Chih.	4,800.
Do.	do.	Alamos Gold Inc., 100%	Mulatos Mine, Son.	4,300.
Do.	do.	Timmins Gold Corp., 100%	San Francisco Mine, Son.	3,500.
Do.	do.	Minera Mexicana La Ciénega, S.A. de C.V. (Fresnillo plc., 100%)	La Cienega Mine, Dgo.	3,400.
Do.	do.	Ocampo Mining, S.A. de C.V. (Minera Frisco S.A.B. de C.V., 100%)	Ocampo Mine, Chih.	3,300.
Do.	do.	Yamana Gold Inc., 100%	Las Mercedes Mine, Son.	3,200.
Do.	do.	GoGold Resources Inc., 100%	Santa Gertrudis Mine, Son.	1,600.
Gold, refined	do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 100%)	Torreon, Coah.	53,900.
Graphite		Grafitos Mexicanos, S.A. de C.V., 100%	Lourdes, Topiyeca, and San Juan Mines, Son.	60.
Gypsum		Cía. Occidental Mexicana, S.A. de C.V. (private Mexican, 51%, and Domtar, Ltd., 49%)	Santa Rosalia on San Marcos Island, B.C.S.	2,500.
Iron ore		Altos Hornos de Mexico, S.A.B. de C.V. (Grupo Acerero del Norte, S.A. de C.V., 78.9%)	La Perla Mine, Chih.; Hercules Mine, Coah.; and Cerro de Mercado Mine, Dgo.	5,000.
Do.		Consorcio Minero Benito Juárez Peña Colorada S.A. de C.V. (ArcelorMittal Holdings AG, 50%, and Ternium S.A., 50%)	Peña Colorada Mine, Col.	4,500.
Do.		ArcelorMittal Mexico S.A. de C.V. (ArcelorMittal Holdings AG, 100%)	El Volcan Mine, Son.	3,600.
Do.		ArcelorMittal Las Truchas, S.A. de C.V. (ArcelorMittal Holdings AG, 100%)	Las Truchas Mine, Mich.	2,600.
Lead		Industrias Peñoles S.A.B. de C.V. (private Mexican, 100%)	Mines at Bismark, Chih.; Francisco I. Madero, Naica, Chih.; Sabinas, Dgo.	51.
Do.		Industrial Minera México, S.A. de C.V. (Grupo Mexico, S.A.B. de C.V., 90%)	Charcas, S.L.P.; Santa Barbara and Santa Eulalia, Chih.; and San Martin, Zac.	35.
Do.		Fresnillo plc (Industrias Peñoles, S.A.B. de C.V., 75%)	Mines at Fresnillo, Zac., La Cienega, Dgo; and Saucito, Zac.	38.
Do.		Minera San Francisco del Oro, S.A. de C.V. (Minera Frisco, S.A.B. de C.V., 99.6%)	San Francisco del Oro Mine, Chih.	13.
Do.		Minera Tayahua, S. A. de C. V. (Minera Frisco, S.A.B. de C.V., 89.9%)	Tayahua Mine, Zac.	10.
Do.		Minera Tizapa S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 51%; Dowa Mining Co., 39%; Sumitomo Corp., 10%)	Tizapa Mine, Mex.	10.
Do.		Metalurgica Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 100%)	Torreon, Coah.	180 refined lead.
Manganese		Cía. Minera Autlán, S.A.B. 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.

See footnotes at end of table.

TABLE 2—Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^c
Molybdenum		Mexicana de Cobre, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	La Caridad Mine and molybdenum plant, Son.	11.
Do.		Mexicana de Cananea, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	Buena Vista del Cobre Mine and molybdenum plant, at Cananea, Son.	2.
Petroleum	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.
Petroleum products	do.	do.	Cadereyta, N.L.; Madero, Tamps.; Minatitlán, Ver.; Salamanca, Gto.; Salina Cruz, Oax.; Tula de Allende, Hgo.	1,700.
Phosphate rock		Roca Fosforica de Mexico S.A. de C.V. (Grupo Fertinal S.A. de C.V., 100%)	San Juan de la Costa Mine, B.C.S.	NA.
Salt		Exportadora de Sal, S.A. de C.V. (Government, 51% and Mitsubishi Corp., 49%)	Solar salt complex at Guerrero Negro, B.C.S.	9,500
Silver, mine	kilograms	Fresnillo plc. (Industrias Peñoles S.A.B de C.V., 75%)	Fresnillo Mine, Zac.	1,100,000.
Do.	do.	Minera Peñasquito S.A. de C.V. (Goldcorp Inc., 100%)	Peñasquito Mine, Zac.	794,000.
Do.	do.	Fresnillo plc. (Industrias Peñoles S.A.B de C.V., 75%)	Saucito Mine, Zac	567,000.
Do.	do.	Industrial Minera México, S.A. de C.V. (Grupo México, S.A.B. de C.V., 90%)	Charcas, S.L.P.; San Martín Mine, Zac.; Santa Barbara Chih; Santa Eulalia, Chih.; and Taxco, Gro.	336,000.
Do.	do.	Pan American Silver Corp., 100%	La Colorada Mine, Zac. and Alamo Dorado Mine, Son.	283,000.
Do.	do.	Coeur Mexicana S.A. de C.V. (Coeur Mining, Inc., 100%)	Palmarejo Mine, Chih.	190,000.
Do.	do.	Primero Empresa Minera, S.A. de C.V. (Primero Mining Corp. 100%)	San Dimas Mine, Dgo.	170,000.
Do.	do.	Fortuna Silver Mines Inc., 100%	San Jose Mine, Oax.	125,000.
Do.	do.	Minera Mexicana La Ciénega, S.A. de C.V. (Fresnillo plc., 100%)	La Cienega Mine, Dgo.	114,000.
Do.	do.	Minera Tizapa S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 51%; Dowa Mining Co., 39%; Sumitomo Corp., 10%)	Tizapa Mine, Mex.	150,000.
Do.	do.	Co. Minera Sabinas, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 100%)	Sabinas Mine, Zac.	140,000.
Do.	do.	Golden Minerals Co., 100%	Velardeña, Dgo.	16,000.
Do.	do.	Argonaut Gold Inc., 100%	La Colorada Mine, Son.	10,000.
Silver, refined	do.	Metalurgica Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 100%)	Torreón, Coah.	3,350,000.
Sodium sulfate		Industrias Magnelec, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 100%)	Química del Rey plant, Laguna del Rey, Coah.	780.
Steel		ArcelorMittal Lazaro Cardenas S.A de C.V. (ArcelorMittal Holdings AG, 100%)	Facilities at Lazaro Cardenas, Mich.	5,300 steel, 4,000 pellet.
Do.		Altos Hornos de Mexico, S.A.B. de C.V. (Grupo Acerero del Norte, S.A. de C.V., 78.91%)	Steelworks at Monclova, Coah.	3,320 steel, 3,800 pellet.
Do.		Hylsa S.A. de C.V. (Ternium S.A., 88.72%)	Steel works and direct-reduction units at Monterrey, N.L., and Puebla, Pue.; pelletizing plants in Col. and El Encino, Jal.	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.		Tubos de Acero de México, S.A. (Teranis S.A., 100%)	Veracruz, Ver.	1,000.
Strontium (celestite)		Minas de Celestita, S.A. de C.V.	Octubre Mine, Coah.	NA.
Sulfur		Petróleos Mexicanos, S.A. de C.V. (PEMEX)	Nationwide petroleum operations	890.
Wollastonite		Minera Roca Rodando S. de R.L. de C.V. (S&B Industrial Minerals S.A.)	Pilares Mine, Hermosillo, Son.	58.

See footnotes at end of table.

TABLE 2—Continued
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^c
Zinc	Industrias Peñoles S.A.B. de C.V. (private Mexican, 100%)	Mines at Bismark, Chih.; Francisco I. Madero, Naica, Chih.; Sabinas, Dgo, and Velardeña, Dgo.	210.
Do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A.B. de C.V., 90%)	Charcas, S.L.P.; Santa Barbara and Santa Eulalia, Chih.; and San Martin, Zac.	130.
Do.	Fresnillo plc (Industrias Peñoles, S.A.B. de C.V., 75%)	Mines at Fresnillo, Zac.; La Cienega, Dgo; and Saucito, Zac.	48.
Do.	Minera Tayahua, S. A. de C. V. (Minera Frisco, S.A.B. de C.V., 89.9%)	Tayahua Mine, Zac.	40.
Do.	Minera Tizapa S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 51%; Dowa Mining Co., 39%; Sumitomo Corp., 10%)	Tizapa Mine, Mex.	38.
Do.	Minera San Francisco del Oro, S.A. de C.V. (Minera Frisco, S.A.B. de C.V., 99.6%)	San Francisco del Oro Mine, Chih.	23.
Do.	Metalurgica Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles S.A.B. de C.V., 100%)	Torreon, Coah.	270 refined zinc.
Do.	Industrial Minera México, S.A. de C.V. (IMMSA) (Grupo México, S.A.B. de C.V., 90%)	Zinc refinery at S.L.P.	105 refined zinc.

^cEstimated. 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.), Tamaulipas (Tamps.), Veracruz (Ver.), Yucatan (Yuc.), and Zacatecas (Zac.).

²Solvent extraction-electrowinning.

³Closed.