



# 2010 Minerals Yearbook

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## MEXICO

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# THE MINERAL INDUSTRY OF MEXICO

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Mexico's economy, in terms of the gross domestic product (GDP), was the second largest in Latin America after that of Brazil. The GDP of Mexico in 2010 was \$1.596 trillion, which was a 5.4% increase from that of 2009. Mexico's inflation rate was 4.2%, and the official unemployment rate was 5.4%, although underemployment, as reported by the U.S. Central Intelligence Agency, may have been as high as 25% (U.S. Central Intelligence Agency, 2011).

The mineral industry was among the most profitable economic sectors of the country and represented a major source of revenue for the Government. The continued world economic recovery and the subsequent increase in mineral demand led to a 40.2% increase in the value of mining production in 2010 compared with that of 2009. This change represented an increase of 14.3% in the mineral industry's contribution to Mexico's GDP. Employment in the mineral industry increased by 5.3% as a result of the creation of about 14,299 new jobs in the industry.

The leading mineral-rich areas where copper, gold, silver, and zinc (although not exclusively) were produced, 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 (Cámara Minera de México, 2011, p. 6; U.S. Central Intelligence Agency, 2011).

Mexico was a leading world producer of several mineral commodities. In 2010, the country was the world's leading producer of silver, the second ranked producer of fluor spar, 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 diatomite, lead, and molybdenum; the 6th ranked producer of cadmium; the 7th ranked producer of barite, graphite, and salt; the 8th ranked producer of manganese and zinc; the 11th ranked producer of feldspar, gold, and sulfur; the 12th ranked producer of copper ore, and the 14th ranked producer of iron ore and phosphate rock (Brooks, 2011a, b; Cámara Minera de México, 2011, p. 73; Carlin, 2011; Corathers, 2011; Guberman, 2011; Kostick, 2011; Miller, 2011; Polyak, 2011; Tolcin, 2011a, b).

## Minerals in the National Economy

The mineral industry was the third main source of foreign currency for the country after crude oil exports and remittances by Mexicans living abroad; the other main source was tourism. Crude oil production had consistently decreased for several years, although in 2008, Mexico's crude oil exports achieved their highest value owing to the increase in the price of crude oil in international markets. The mineral industry was a critical sector within the Mexican economy (Cámara Minera de México, 2011, p. 7–8).

Of the total mineral industry production in Mexico in 2010, gold accounted for a 25.4% share followed by silver (20.3%), copper (15.9%), zinc (9.9%), iron (5%), coke (4.9%), coal (4%),

molybdenum (3.3%), lead (3%), and other minerals (8.7%) (Cámara Minera de México, 2011, p. 8). In terms of value, the State of Sonora produced almost 22.97% of Mexico's total nonfuel mineral production in 2010. The State of Zacatecas produced 22.94%; Chihuahua, 14.05%, and Coahuila, 11.30%. The States of Durango and San Luis Potosi also contributed significantly to the value of nonfuel mineral production (Secretaría de Economía, 2011, p. 60–92).

## 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 (Cámara de Diputados del H. Congreso de la Unión, 2006, p. 1–33).

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

The mining sector is administered by the Secretaría de Economía, and the Dirección 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 Mexican resources is the Law of Foreign Investment, which regulates the degree and form of foreign investment in Mexico, and, in particular, in the natural resources sector—an area that was previously barred from foreign investment and ownership. This law was published in 1993 and has since 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 mining sector and the development and exploitation of geographic areas considered restricted by the Government (Cámara de Diputados del H. Congreso de la Unión, 2012).

The General Law of Ecological Balance and Environmental Protection (LGEEPA), which is the keystone of environmental legislation, was passed in 1988. Those environmental

responsibilities that had resided in various Government agencies were transferred to the Secretaría de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP) in 1994. In 2000, the agency became the Secretaría 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 provisions 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 2010 recovered from the general decrease in the levels of production of 2009. The production increases were led by ferromanganese (production of which increased by 92.9%) followed by marble and silicomanganese (58% each), fuller's earth (57.5%), kaolin (54%), dolomite (53%), refined gold (49.4%), lead (33.5%) graphite (29.8%), silver (24%) iron ore (19.9%), crude steel (19.7%), and zinc (16.4%), among others (table 1). Mineral commodities for which production decreased during the year included talc (production of which decreased by 97.4%), vermiculite (66.3%), gypsum and perlite (38% each), strontium (13%), and common clays (9.2%) (table 1; Secretaría de Economía, 2011, p. 218–542).

In 2010, crude oil production by *Petróleos Mexicanos S.A. de C.V.* (PEMEX), which was the state-owned oil monopoly, decreased slightly (by less than 1%) to about 940 million barrels in 2010. Gross natural gas production also decreased slightly, to 72,615 million cubic meters (table 1; *Petróleos Mexicanos S.A. de C.V.*, 2011, 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), *Empresas Frisco S.A. de C.V.* (Frisco), *Fresnillo plc.*, *Grupo Acerero del Norte, S.A. de C.V.* (GAN), *Grupo México, S.A.B. de C.V.* (Grupo México), *Industrias Peñoles S.A.B. de C.V.*, and *Cia. Minera Autlan, S.A. de C.V.*, whereas medium- and small-size companies produced many of the industrial minerals. State-owned PEMEX controlled the crude petroleum, petroleum refining, and natural gas production sector (table 2).

The Secretaría de Economía reported that, in 2010, a total of 286 foreign mining companies had direct foreign investments in Mexico in 757 projects. Of these companies, 210 had their central offices in Canada and 44 were headquartered in the United States; 8, in Australia; 6, in the United Kingdom; 4, in Japan; 3, in China; 2 each, in Korea, India and Peru; and 1 each in Belgium, Chile, Italy, Luxembourg, and the Netherlands. Precious metals, particularly gold and silver, were the primary targets for 452 of these projects. Polymetallic projects accounted for 133 of the projects; 95 were projects involving copper; 24 were iron projects; and the rest involved a variety of minerals. The State of Sonora produced 22.97% of the total value of mineral output in 2010; Zacatecas, 22.94%; Chihuahua, 14.02%; Coahuila, 11.30%; and the rest was produced in other States (Secretaría de Economía, 2011, p. 564–567).

## Mineral Trade

In 2010, Mexico was a net exporter of nonfuel minerals, in terms of value, registering a trade surplus of \$5.98 billion. This surplus was mostly because the country was a net precious minerals exporter in 2010, as it had been for the past several years, and its precious metals exports increased by 53.7% compared with those of 2009. The value of Mexico's total mineral production in 2010, excluding mineral fuels, was \$13.900 billion, of which 92% was metallic minerals and 8% was nonmetallic minerals (Cámara de Minería de México, 2011, p. 7–8).

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 amount of trade, Japan, the Republic of Korea, Germany, Canada, and Brazil (U.N. Comtrade, 2012).

The role of China in the mineral production of Mexico was mostly as a consumer; China had only three large investments in the Mexican mineral industry. China's influence as a destination for Mexican mineral exports, however, was considerable.

## Commodity Review

### Metals

**Copper.**—Grupo México announced that its *el Arco* project in the State of Baja California was on schedule and that once

production begins, the project would produce 190,000 metric tons per year (t/yr) in concentrates and cathodes of copper, and would also produce gold and molybdenum. Mexican copper production, in terms of volume, increased by 12% compared with that of 2009, and, in terms of value, by 44%.

In 2010, 94.5% of all copper production took place in the following four states: Sonora (66.7%), Zacatecas (14.9%), San Luis Potosi (8%), and Chihuahua (4.9%). The Cananea Mine, which is located in the State of Sonora, restarted production in June and was renamed Buenavista del Cobre S.A. de C.V. The owner, Grupo México, announced that the mine would be producing at 100% capacity by April 2011. La Caridad copper mine (also referred to as Nacozari), which was operated by Mexicana de Cobre S.A. de C.V. (as subsidiary of Grupo México) and was the main copper producing site in Mexico, produced 117,734 t of copper. Industrias Peñoles produced 21,768 t at its Milpillas Mine; Negociación Minera Santa María de la Paz y Anexas S.A. (NEMISA) produced 18,000 t in concentrates at its Santa María de La Paz unit in the State of San Luis Potosi; and Capstone Mining Corp. of Canada produced 16,117 t at its Cozamin Mine in the State of Zacatecas. Empresas Frisco S.A. de C.V. produced 8,826 t at its María Mine, which is located in the State of Sonora and 5,718 t at its Tayahua Mine, which is located in the State of Zacatecas (Cámara Minera de México, 2011, p. 17–18).

**Gold.**—In 2010, the value of gold production in Mexico surpassed the value of silver production as it had in 2009, and reached 25.4% of the total value of the mineral industry in Mexico. Mexico's gold mine output, in terms of gold content, was 72,596 kg, which was an increase of 41% compared with production in 2009, and the highest level of production ever for the country (table 1; Cámara Minera de México, 2011, p. 8, 12).

In 2008, Goldcorp Inc. of Canada became the leading producer of gold in Mexico. In 2010, the output from the company's mines accounted for 29% of Mexico's production. Goldcorp owned the Los Filos gold mine in the State of Guerrero, which produced 9.52 t of gold in 2010. It also owned the El Sauzal Mine in the State of Chihuahua, which produced 4.72 t (a decrease of 25.5% compared with that of 2009) and the San Dimas Mine in the State of Durango, which produced 1.66 t. Goldcorp sold the San Dimas Mine to Primero Mining Corp. of Canada in August. Goldcorp also owned the Peñasquito Mine in the State of Zacatecas, which increased production by 186% to 5.23 t. According to Goldcorp, although the Peñasquito Mine had started operations in May 2008, it did not reach full commercial production until February 2010. Goldcorp expected that the mine would begin producing at its full capacity of 10.88 t/yr by 2011. If this is the case, the Peñasquito Mine would be the largest gold mine, in terms of gold content production, in Mexico.

Fresnillo produced 5.06 t of gold at its La Herradura Mine in the State of Sonora and 3.52 t at its La Cienega Mine in the State of Durango. Gammon Gold Inc. produced 3.2 t of gold at its Ocampo Mine in the State of Chihuahua, and Alamos Gold Inc. of Canada produced 4.8 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 3.7 t of gold. For the year (its first full production year in Mexico),

Coeur D'Alene Mines Corp. of the United States reported that its Palmarejo Mine, which is located in the State of Chihuahua, produced 3.1 t (Cámara Minera de México, 2011, p. 13–14).

**Iron Ore and Iron and Steel.**—According to the Cámara Minera de México (CAMIMEX), Mexico does not have significant iron ore reserves; however, its production and reserves are sufficient to meet national demand (Cámara Minera de México, 2011, p. 22). In 2010, Mexico produced 14 million metric tons (Mt) of iron ore, which is 20% more than in 2009. 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; this trade was mostly done by private traders and mineral commodity consolidators, and most of the ore was shipped through the Port of Lazaro Cardenas in Michoacan and the Port of Manzanillo in Colima. The Federal Government expressed concern about possible illegal exports of the ore, and according to CAMIMEX, the Secretaría de Economía was taking steps to curb illegal trade, although what those steps were was not made clear (Cámara Minera de México, 2011, p. 22).

Crude steel production increased by 19.7% and pig iron production increased by 16.7% compared with production in 2009. Mexico was the 13th ranked producer of steel, by volume, in the world in 2010 with a production of 16.7 Mt. 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; Cámara Minera de México, 2011, p. 24; World Steel Association, 2011).

**Lead.**—In 2010, the output of lead mine production in Mexico increased by 33.5%, and primary metal production increased by 30%. According CAMIMEX, the total value of lead production in 2010 amounted to 78% more than in 2009. Mexico produced 4% of the world's total output of lead in 2010 (table 1; Cámara Minera de México, 2011, p. 19).

Goldcorp's Peñasquito Mine, was the leading lead mine in Mexico in terms of lead content production. In 2010, Peñasquito produced 43,904 t of lead.

Industria Peñoles continued to be a major producer of lead in Mexico with an output of 43,080 t in 2010 among all of its properties, which included the Naica Mine located in the State of Chihuahua. The Santa Barbara Mine, which was also located in Chihuahua and was owned by Grupo México, produced 13.73 t of lead in 2010 (table 1; Cámara Minera de México, 2011, p. 19–20).

**Molybdenum.**—Molybdenum production in the country increased in volume by 6.7% to a record of 10,849 t in 2010. In terms of value, the increase was 43% compared with that of 2009 owing to the increase in the volume of production and the increase in international prices. Molybdenum accounted for 3.3% of the total value of mineral production in Mexico in 2010 and was Mexico's eighth most valuable mineral commodity.

Grupo México 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; Cámara Minera de México, 2011, p. 8, 20–21).

**Silver.**—Mexico was the leading silver producer in the world in 2010, accounting for 17.5% of world silver production. Mexico's silver mine output was 4,411 t, which was a historic high for the country and represented an increase in production of 24% compared with that of 2009 (table 1).

The Fresnillo Mine, which is located in the State of Zacatecas, remained the richest silver mine in the world, producing 1,117 t in 2010 (an increase of 1.4% compared with that of 2009) and accounted for 28% of all silver produced in the country (Cámara Minera de México, 2011, p. 11). Goldcorp's Peñasquito Mine produced 434 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 208.4 t in 2010; La Colorada produced 111.9 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, La Parrila in the State of Durango, and San Martin in the State of Jalisco) produced a combined 203 t in 2010 (Cámara Minera de México, 2011, p. 15).

**Zinc.**—Production of zinc metal in Mexico increased by 3% in 2010 compared with that of 2009, and the level of zinc mine output increased by 16%. The total value of zinc production increased by 65% compared with that of 2009 (Cámara Minera de México, 2011, p. 19; Secretaría de Economía, 2012, p. 4).

Goldcorp's Peñasquito Mine produced 65,300 t of zinc in 2010 and became 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., became the second ranked producer of zinc in the country, producing 57,808 t in 2010. Industrias Peñoles' Bismarck Mine in Chihuahua and Francisco I. Madero Mine in Zacatecas produced 48,400 t and 42,600 t, respectively, which made them the third and fourth ranked zinc-producing mines in the country, respectively (Cámara Minera de México, 2011 p. 19).

### **Industrial Minerals**

Mexico was among the world's top ten producers of industrial minerals. The value of the country's production of industrial minerals in 2010 was about \$730 million (table 1; Secretaría de Economía, 2012, p. 2).

Based on the value of production, the following nonmetallic minerals had the largest increases in 2010, in order of increase: marble (58%), fuller's earth (57.5%), kaolin (54%), dolomite (53%), and graphite (23%). In terms of volume of output, celestite production dropped by 13% in 2010 compared with that of 2009, and gypsum, mica, and perlite production decreased by 38% each (table 1; Cámara Minera de México, 2011, p. 74).

The Rofomex phosphate rock mine, which is located in San Juan de la Costa in the State of Baja California Sur and is operated by Roca Fosforica de Mexico (a subsidiary of Grupo Fertinal S.A. de C.V.), was reactivated in 2007 and had showed an increase in production of phosphate rock of 1,962% in 2008 compared with that of 2007. By 2010, production had continued to increase but at a slower pace, recording an increase of 6%

in 2010 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; Cámara Minera de México, 2011, p. 137).

### **Mineral Fuels**

**Coal.**—Mexico's production of coal in 2010 totaled 27.56 Mt, which was an increase of 19.6% compared with that of 2009. The main companies that produced coal in Mexico were Carbonifera San Patricio S.A. de C.V., GAN, Grupo México, and Materiales Industrializados S.A. de C.V. (Minsa). The distribution of production among the main concession holders was as follows: GAN (84%), Minsa (13%), Grupo México (1.8%), Carbonifera San Patricio (about 1%), and the remainder, Energia y Minería del Noroeste S.A. de C.V. (table 1; Cámara Minera de México, 2011, p. 22).

**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 2010, however, these issues appeared to have been addressed, as the decreased production trend slowed; production was more than 940 million barrels, which was a decrease of less than 1%. Gross natural gas production also decreased by less than 1%, practically retaining its previous level of production at 72,615 million cubic meters (table 1; Petróleos Mexicanos S.A. de C.V., 2011, p. 4).

### **Outlook**

The year 2010 marked a clear recovery for the Mexican mineral industry, in particular the metals sector. This sector represented the most dynamic and profitable part of the mineral industry, just as it has traditionally been. Gold and silver exploration is set to continue, and new projects are slated to reach their productive stages in 2011, including the San Jose silver mine in the State of Oaxaca. Industrial minerals are expected to continue to play an important role in Mexico's exports and imports; however, as in previous years, their production and further investment in the industry still will depend directly on the world demand for these products.

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 Mexican Government expects the country's economic recovery to continue and that the economy will grow at its forecasted rate of 4% for 2011. The Government expects to continue with a controlled 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. Keeping the exchange rate stable is a priority of the Government, and it has been moderately successful in doing so, thus creating a stable currency base for Mexico's trade. A possible currency appreciation could affect the country's exports, however. 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.

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TABLE 1  
MEXICO: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2006	2007	2008	2009	2010
<b>METALS</b>					
Aluminum, metal, secondary <sup>c,3</sup>	600,000	600,000	600,000	600,000	600,000
Antimony <sup>4</sup>	778	414	380	74	71
Arsenic <sup>5</sup>	1,595	513	--	--	--
Bismuth:					
Mine output, Bi content <sup>6</sup>	1,186	1,170	1,132	854	982
Metal, refined	1,186	1,170	1,132	854	952
Cadmium:					
Mine output, Cd content	1,399	1,605	1,550	1,510	1,464
Metal, refined	1,396	1,605	1,550	1,510	1,464
Copper:					
Mine output, Cu content:					
By concentration or cementation	280,840	276,530	214,644 <sup>r</sup>	170,597	168,855
Leaching, electrowon	46,696	58,972	53,975	57,151	68,754
Total	327,536 <sup>r</sup>	335,502	268,619 <sup>r</sup>	227,748	237,609
Metal:					
Anode and blister, primary	260,200	222,600	200,200	169,000	192,600
Refined:					
Primary	373,400	345,904	308,000	255,700	272,600
Secondary <sup>e</sup>	6,000	6,000	6,000	5,000	5,000
Total	379,400	351,904	314,000	260,700	277,600
Gold:					
Mine output, Au content kilograms	38,961	43,710	50,365 <sup>r</sup>	51,393	72,596
Metal, refined do.	29,200	30,226	37,760	19,410	29,000
Iron and steel:					
Iron ore, mine output: <sup>7</sup>					
Gross weight thousand metric tons	10,983	10,916 <sup>r</sup>	11,688	11,677	13,998
Fe content do.	6,590	6,550 <sup>r</sup>	7,013	7,073	7,931
Metal:					
Pig iron do.	3,790	4,078	4,450	3,925	4,580
Direct-reduced iron do.	6,167	6,265	6,012 <sup>r</sup>	4,147	5,368
Total do.	9,957	10,343	10,462	8,072	9,948
Ferrous alloys, electric arc furnace: <sup>8</sup>					
Ferromanganese do.	62	70	97	42	81
Silicomanganese do.	97	109	114	85	134
Total do.	159	179	211	127	215
Crude steel do.	16,447	17,563	17,209 <sup>r</sup>	13,957	16,710
Rolled products <sup>9</sup> do.	14,473	14,985	14,174 <sup>r</sup>	12,994 <sup>r</sup>	14,491
Lead:					
Mine output, Pb content	135,025	137,133	141,173	143,838	192,062
Metal:					
Smelter:					
Primary <sup>10</sup>	117,315	89,838	91,364	85,411	110,980
Secondary <sup>e</sup>	110,000	110,000	110,000	110,000	110,000
Total <sup>e</sup>	227,000	200,000	201,364	195,411	220,980
Refined:					
Primary <sup>11</sup>	117,315	89,838	91,364	85,411	110,980
Secondary <sup>e</sup>	110,000	110,000	110,000	110,000	110,000
Total <sup>e</sup>	227,000	200,000	201,000	195,000	221,000
Manganese ore: <sup>12</sup>					
Gross weight <sup>e</sup>	346,000	423,000	471,964	329,400	485,447
Mn content	124,417	152,446	169,907	118,577	174,761
Mercury, mine output, Hg content <sup>e</sup>	15	15	15	15	15
Molybdenum, mine output, Mo content	2,519	6,491	7,811	10,166	10,849

See footnotes at end of table.

TABLE 1—Continued  
MEXICO: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2006	2007	2008	2009	2010	
METALS—Continued						
Silver:						
Mine output, Ag content	kilograms	3,028,395	3,135,430	3,236,312	3,553,841	4,410,749
Metallurgical products, Ag content:						
In copper bars	do.	272,432	238,755	154,266	104,922	--
Mixed gold and silver bars	do.	147,089	224,765	207,457	353,930	572,901
Metal, refined, primary	do.	1,749,144	1,665,618	2,101,454	1,845,029	2,230,024
Tin:						
Mine output, Sn content		-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--	--
Metal, smelter, primary		25	19	15	--	--
Zinc:						
Mine output, Zn content		468,924	452,012	453,588	489,766	570,004
Metal, refined, primary		279,734	321,932	305,188	313,044	322,508
INDUSTRIAL MINERALS						
Abrasives, natural <sup>13</sup>						
Barite		199,605	185,921	140,066	152,790	143,225
Cement, hydraulic <sup>14</sup>	thousand metric tons	40,362	40,670	37,139 <sup>r</sup>	35,160	34,503
Clays:						
Bentonite		435,273	613,895	374,933	511,429	590,998
Common		38,527,423	37,970,190	40,522,818	10,036,832	9,111,988
Fuller's earth		102,400	34,175	66,123	108,139	170,350
Kaolin		961,800	86,784	85,092	78,086	120,094
Diatomite		62,948	82,519	128,536	80,807	91,710
Feldspar		459,209	438,696	445,519	347,510	398,849
Fluorspar:						
Acid-grade	thousand metric tons	466	630	592	641	719
Metallurgical-grade	do.	470	303	466	405	348
Total	do.	936	933	1,057	1,046	1,067
Graphite, natural, amorphous		11,773	9,900	7,229	5,105	6,628
Gypsum and anhydrite, crude (yeso)		6,075,893	5,963,715	5,135,151	5,756,936	3,559,579
Lime, hydrated and quicklime <sup>c</sup>	thousand metric tons	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Magnesium compounds:						
Magnesite		33,000	33,900	43,053	34,700	39,400
Magnesia <sup>15</sup>		87,520	79,135	85,477	72,600	84,200
Mica, all grades		150	9,600	5,000	5,000	160
Nitrogen, N content of ammonia		486,624	624,720	736,512	861,034	824,373
Perlite		81,719	54,405	43,180	51,395	31,779
Phosphate rock <sup>16</sup>		7,500	14,100	290,728	426,547	452,220
Salt, all types	thousand metric tons	8,378	8,032	8,809	7,445	8,430
Sodium compounds: <sup>c</sup>						
Carbonate, soda ash, synthetic		290,000	290,000	290,000	290,000	290,000
Sulfate, natural, bloedite <sup>17</sup>		652,000	645,000	658,000	646,000	660,000
Stone, sand and gravel:						
Calcite, common		1,934,483	2,483,605	2,352,109	2,555,544	3,183,209
Dolomite		1,282,590	1,123,225	1,233,993	982,650	1,499,744
Limestone	thousand metric tons	69,822	62,600	64,857	62,000	64,678
Marble		4,404,288	3,547,081	2,495,649	2,800,512	4,431,447
Quartz, quartzite, glass sand (silica)		2,661,770	2,950,438	2,779,075	2,483,605	2,607,650
Sand	thousand metric tons	62,248	68,141	72,570	89,172	89,036
Gravel	do.	68,017	78,233	87,416	78,777	76,789
Strontium minerals, celestite		128,321	96,902	29,621	36,127	31,429
Sulfur, elemental, byproduct:						
Of metallurgy <sup>c</sup>	thousand metric tons	650	550	700	700	800
Of petroleum and natural gas	do.	1,074	1,026	1,041	1,114	992
Total <sup>c</sup>	do.	1,720	1,580	1,741	1,814	1,792
Talc		40,535	32,410	17,576 <sup>r</sup>	33,421	870
Vermiculite		177	102	132	291	98
Wollastonite		44,280	50,809	46,844	29,728	46,548

See footnotes at end of table.



TABLE 1—Continued  
MEXICO: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2006	2007	2008	2009	2010	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
<b>Coal:</b>						
<b>Run of mine:</b>						
Metallurgical	thousand metric tons	4,309	4,755	5,491	13,555	16,318
Steam	do.	6,573	7,132	10,403	9,496	11,247
Total	do.	10,882	11,887	15,894	23,051	27,565
Washed metallurgical coal <sup>c</sup>	do.	2,000	2,000	2,000	2,000	2,000
<b>Coke:<sup>18</sup></b>						
Metallurgical	do.	1,529	1,449	1,459	1,240 <sup>r</sup>	1,553
Breeze	do.	40	87	88	75 <sup>r</sup>	95
Total	do.	1,569	1,536	1,547	1,315 <sup>r</sup>	1,648
<b>Gas, natural:</b>						
Gross	million cubic meters	55,364	62,613	71,523	72,660	72,615
Marketable (dry)	do.	35,610	36,654	31,897 <sup>r</sup>	32,237	33,632
<b>Petroleum:</b>						
Crude	thousand 42-gallon barrels	1,188,440	1,124,930	1,019,080	949,365	940,240
Condensate, natural gas liquids	do.	155,855	144,175	133,590	135,050	137,605
Total	do.	1,344,295	1,269,105	1,152,670	1,084,415	1,077,845
<b>Refinery products:</b>						
Liquefied petroleum gas	do.	9,271	9,709	9,454	9,891	9,308
Motor gasoline	do.	166,513	166,586	164,506	172,097	154,833
Jet fuel	do.	23,652	24,200	23,360	20,841	18,944
Distillate fuel oil, diesel	do.	119,757	121,910	125,378	123,005	105,668
Lubricants	do.	1,862	1,898	1,862	1,533	1,570
Residual fuel oil	do.	118,698	110,048	105,376	115,413	117,530
Asphalt	do.	11,790	11,644	12,520	11,643	9,089
Other, refinery fuel and losses	do.	33,798	33,212	34,201	36,900	11,571
Total	do.	485,341	479,207	476,655	491,323	428,513

<sup>2</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through January 31, 2012.

<sup>2</sup>In 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.

<sup>3</sup>Primary production of aluminum ceased after the closing of Aluminios y Derivados de Veracruz (Aluder) because of high energy costs.

<sup>4</sup>Sb content of antimonial lead.

<sup>5</sup>Arsenic content of white arsenic.

<sup>6</sup>Refined metal. Bismuth content of impure smelter products is no longer reported.

<sup>7</sup>Iron ore pellets.

<sup>8</sup>Reported by Cámara Nacional del Hierro y del Acero.

<sup>9</sup>Includes flat, nonflat, and seamless pipe steel products.

<sup>10</sup>Lead content of impure bar, antimonial lead, and refined metal.

<sup>11</sup>Includes lead content of antimonial lead.

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

<sup>13</sup>The previous series, which was based on exports made up mostly of pumice stone and emery (a granular, impure variety of corundum), is believed to be incomplete. Available information is inadequate to make reliable estimates of output.

<sup>14</sup>Includes gray and white portland and masonry cement.

<sup>15</sup>Reported by Industrias Peñoles, S.A.B. de C.V. as the only major producer. Includes caustic, electromelt, hydroxide, and refractory.

<sup>16</sup>Includes only output used to manufacture fertilizers.

<sup>17</sup>Series reflects output reported by Industrias Peñoles, S.A.B. de C.V. plus an additional 40,000 metric tons of estimated output by other producers.

<sup>18</sup>Includes coke made from imported metallurgical coal.

TABLE 2  
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	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.B. 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 Zapotilco, 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.	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.
Do.	Minera Carbonífera 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 <sup>2</sup> plant, and rod plant at Nacozari de Garcia, Son.	350 smelter, 50 SX-EW, <sup>2</sup> 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 <sup>2</sup> plant at Cananea, Son.	29,200 mill, 33 SX-EW. <sup>2</sup>
Do.	Minera María S.A. de C.V. (Grupo Frisco, 100%)	Mine and SX-EW <sup>2</sup> plant at Cananea, Son.	20 SX-EW. <sup>2</sup>
Do.	Cobre de México, S.A. de C.V. (Grupo Conduxem)	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.
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. Alfíl, 51%, and Applied Industrial Minerals Corp., 49%)	Mines at La Encantada district and plant at Muzquiz, Coah.	150.

See footnotes at end of table.

TABLE 2—Continued  
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity
Gold, mine	kilograms	Fresnillo plc. (Industrias Peñoles, S.A.B. 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.B. de C.V., 100%)	La Cienega Mine, Dgo.	4,500.
Do.	do.	Animas Resources Ltd. (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., 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.B. de C.V., 100%)	Torreón, Coah.	22,700.
Graphite		Grafitos Mexicanos, S.A. (Cummings Moore Graphite Co. of, 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 Martín, 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.B. 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.B. de C.V., 51%, and Dowa Mining Co., 39%); metallurgical complex at Torreón, Coah., with silver, lead, and zinc smelter and refineries operated by Met-Mex Peñoles (Industrias Peñoles, S.A.B. de C.V., 100%)	180 refined lead, 240 refined zinc.
Do.		Industrias Peñoles, S.A.B. 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.

See footnotes at end of table.

TABLE 2—Continued  
MEXICO: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity
Molybdenum		Mexicana de Cobre, S.A. (Grupo México, S.A.B. de C.V., more than 90%)	La Caridad Mine and molybdenum plant, Son.	6.
Petroleum <sup>3</sup>	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.B. 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.B. de C.V., 100%)	La Cienega Mine, Dgo.	65,800.
Do.	do.	Minera Bismark, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 100%)	Bismark Mine, Chih.	7,000.
Do.	do.	Co. Minera Sabinas, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 100%)	Sabinas Mine, Zac.	157,000.
Do.	do.	Minera Tizapa, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 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.B. 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.	100,000.
Do.	do.	Met-Mex Peñoles, S.A. de C.V. (Industrias Peñoles, S.A.B. de C.V., 100%)	Torreon, 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.B. 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.
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 <sup>4</sup>		Fundidora Marni, S.A.	San Luis Potosi, S.L.P.	NA.
Do.		PIZUTO, S.A.	do.	NA.

Do., do. Ditto. NA Not available.

<sup>1</sup>State 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.).

<sup>2</sup>Solvent extraction-electrowinning.

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

<sup>4</sup>Smelter output from mostly imported concentrates.