



# 2006 Minerals Yearbook

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## ARGENTINA

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# THE MINERAL INDUSTRY OF ARGENTINA

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Argentina's mineral production has been dominated by industrial minerals. In the late 1990s, the country, which had been a modest producer of metals, began an effort to attract foreign investment in the mining sector to explore for and develop its metal mining. As a result, several large-scale operations have come onstream, and a number of other projects being developed are in the prefeasibility, feasibility, or construction stage.

In 2006, Argentina was a world ranked producer of boron, lithium, and strontium; it produced 15% of the total world production of boron, 12% of lithium (metal content), and 1.3% of strontium (strontium content in celestite). A number of mineral commodities, including cement and steel, were of regional significance (Kostick, 2008; Ober, 2008a, b).

## Minerals in the National Economy

Mineral exploration in Argentina reached a record-high level in 2006. Mining investment during the year reached an estimated \$1.3 billion, most of which was in prospecting and early exploration. Exploration in Argentina was led by Canadian companies (40.9%) followed by domestic (18.6%), Chinese (8.4%), United States (8.4%), and British companies (6.6%). In current dollars, the estimated value of mining production increased to \$3.15 billion in 2006 from \$1.89 billion in 2005 in large measure because of the opening of the Veladero gold mine. Direct employment in the mining sector in 2006 was estimated to be 37,000; this was a 20% increase from that of 2005 and a 74% increase from that of 2001 (Mining Press, 2007; Secretaría de Minería de la Nación, 2007a, b).

## Government Policies and Programs

In late 2006, the Governor of Mendoza vetoed legislation passed by the Provincial Congress that would have suspended exploration and mining permits pending a new environmental law. The Governor determined the law to be unconstitutional (Noves, 2006).

In November, the Senate approved a project to transfer the management of hydrocarbons for deposits within Provincial territory, including 12 miles from the coastline, from the Federal Government to the Provincial governments. Areas outside of the 12-mile zone from the coastline would continue to be managed by the Federal Government through Energía Argentina S.A. (Enarsa). This approval transferred to the Provinces the petroleum exploration and production concessions in its areas along with the authority over the transportation of hydrocarbons. In December, the project became law (Argentina Municipal, 2006; Rosario Net, 2006; Terra Networks S.A., 2006).

## Production

Argentina's production of metals in 2006 was mostly at about the same level as that of 2005. Exceptions included gold, which

increased by 58% owing to production from the Veladero Mine. Mine production of lead increased by 20%, and smelter and refinery production of primary lead increased by 14%. However, mine production of zinc declined slightly, whereas smelter production of primary zinc increased by 14%.

Production of construction minerals, including cement, common clay, gypsum, sand and gravel, and crushed stone, increased. Production of other industrial minerals was mixed. Production of barite, lime, nitrogen, perlite and strontium minerals increased significantly. Production of boron, sodium sulfate, and coke declined significantly (table 1).

## Structure of the Mineral Industry

The Secretaría de Minería de la Nación is the agency of the Government responsible for the mining sector, including the country's mineral policy, promoting the growth of the mineral sector, and creating the conditions to encourage investment in the area. It also has the authority to negotiate national and international agreements on behalf of the Government. As the Government entity to which the Servicio Geológico Argentino (SEGEMAR) reports, the Secretaría also is responsible for promoting geologic and mining studies with the purpose of planning the use of the mineral resources of the country. SEGEMAR is in charge of managing a variety of geological programs and services based on scientific studies. It coordinates and updates Argentina's geologic information, contributes to the discovery of resources, and offers technical assistance to the small- and medium-sized mining sectors.

The Dirección Nacional de Minería (DNDM) coordinates and develops Argentina's short- and long-term strategic mining plans and serves as an advisor to the Secretaría on technical and legal matters that affect the mining sector and is responsible for promoting activities to maintain dynamic small- and medium-sized mining sectors. The DNDM processes and disseminates all mining statistics.

The Provincial governments are responsible for awarding mineral concessions in accordance with the Federal Mining Code. They ensure that the mining companies adhere to environmental protection laws and apply Provincial rules and regulations.

In the early 1990s, only seven international mining companies explored for or produced minerals in Argentina. This number increased to 50 companies in 2003. In 2006, there were about 80 companies with more than 275 mining projects in Argentina (Secretaría de Minería de la Nación, 2006b; Argentina Mining S.A., 2007).

Some of the leading private mineral and manufacturing companies in the sector were Aluminio Argentino S.A.I.C. (ALUAR), Borax Argentina S.A., Cementos Loma Negra C.I.A.S.A., Cerro Vanguardía S.A., Cía. Minera Aguilar S.A. (a subsidiary of Glencore International AG of Switzerland), Cía. Minera Tea S.A.M.I.C.A.F., Cía. Sulfacid S.A.C.I.F., FMC

Minera del Altiplano S.A., Minera Alumbrera Ltd., and Minera Argentina Gold S.A. (a subsidiary of Barrick Gold Corporation of Canada) (table 2).

In Argentina, about 90% of the mineral production is by small- and medium-sized companies, which employ about 70% of the workforce and dominate the production of industrial minerals, including granite, lime, marble, and minerals for the fertilizer industry (Panorama Minero, 2005).

Production of petroleum and natural gas in Argentina is in the hands of the private sector although in 2004 the Government created a new state-owned company, Enarsa, to promote and participate in oil exploration and in the production and marketing of hydrocarbons and energy distribution. The company will work in joint ventures with private companies operating in Argentina. In addition, Enarsa manages the natural gas imports from Bolivia (Energía Argentina S.A., 2005; U.S. Energy Information Administration, 2007).

## Mineral Trade

Argentina's exports of goods totaled \$46.5 billion. The country's imports totaled \$34.2 billion. The increase of trade in most categories was a result of increased economic activity and higher demand.

Argentina's main trading partners were, in order of value, the countries of the Mercado Común del Cono Sur (MERCOSUR), the countries of the European Union, and the countries of the North American Free Trade Agreement (NAFTA). Individually, Brazil was Argentina's main trading partner. The United States received 8.9% of Argentina's exports and provided 12.5% of its imports, a slightly smaller contribution to Argentina's trade than that of 2005.

Exports of nonfuel minerals have increased significantly since 1991 when the value was only \$10 million. In 2006, the value of Argentina's mineral exports (excluding petroleum and natural gas) totaled \$2.8 billion. A large portion of this increase was owing to the production of copper, all of which was exported. The value of copper concentrate exported in 2006 was \$1.3 billion. Exports of manufactured goods of industrial origin totaled \$14.8 billion. Of this amount, metals (excluding precious metals) and their products accounted for \$2.5 billion; precious metals and precious stones accounted for \$560.7 million (almost four times the value of 2005); and ceramic products, dimension stone, and gypsum accounted for \$166.1 million. Exports of energy and fuels totaled \$7.8 billion; of this amount, crude petroleum accounted for \$2.4 billion (Ministerio de Economía y Producción, 2007).

Imports of minerals totaled \$1.4 billion. More than one-third of this total was for iron ore and concentrates, mostly from Brazil.

## Commodity Review

### Metals

**Copper.**—Production of copper in Argentina decreased slightly to 180,144 metric tons (t) in 2006 from 187,317 t in 2005. All copper was produced in Catamarca by Minera Alumbrera

Ltd., [owned by Xstrata plc (50%), GoldCorp Inc. (37.5%), and Northern Orion Resources Inc. (12.5%)] from its Bajo de la Alumbrera Mine. Three of Latin America's top 10 mining projects expected to come onstream within the next 10 years—Agua Rica, El Pachón, and Pascua-Lama (with Chile)—are copper projects in Argentina (Business News Americas, 2007).

In October, Northern Orion announced that the update to the 1997 feasibility study on its Agua Rica copper-gold-molybdenum property was completed. The study called for a 23-year open pit mine with an estimated copper production of about 135,000 metric tons per year (t/yr) of copper, about 3,900 kilograms per year (kg/yr) of gold, and more than 7,300 t/yr of molybdenum. Copper and gold production was expected to be higher during the first 10 years of the life of the mine when production will average 165,000 t/yr of copper, almost 4,200 kg/yr of gold, and 6,800 t/yr of molybdenum. The company planned to submit the environmental impact statement assessment in 2007; a decision on the permits was expected to take 8 to 10 months. Northern Orion estimated that, upon receipt of all permits, construction of the \$2 billion project would take 32 months (Northern Orion Resources Inc., 2006).

Xstrata, the new owner of El Pachón copper-molybdenum-gold project in San Juan, began a prefeasibility study on the property, which was expected to be completed in 2007. The project, which had been the property of Falconbridge Limited, became the property of Xstrata when the latter acquired Falconbridge. The viability of the project, which was located 5 kilometers from the Chilean border and had estimated resources of 722 million metric tons (Mt) of ore with 0.65% copper, 0.015% molybdenum, and 2.65 grams per metric ton (g/t) silver, seemed to depend greatly on the terms negotiated under the Argentina-Chile mining treaty (Xstrata plc, 2007a, b). Studies completed by Falconbridge in 2005 had envisioned an open pit operation with an average output of 100,000 t/yr of copper for a period of 23 years.

**Gold.**—Production of gold in Argentina increased by 58% to 44,131 kilograms (kg) from 27,904 kg in 2005. Catamarca was the leading producing Province for gold with 20,357 kg, most of which (more than 19,900 kg) was from the Bajo de la Alumbrera Mine. The second ranked producing Province was San Juan with 15,883 kg. The large increase of gold production in Argentina was owing to the increase from San Juan where the Veladero Mine, the only producer in that Province in 2006, completed its first year of full operation. Other producing Provinces were Santa Cruz and La Rioja. Most of the gold produced in Santa Cruz, which produced 7,383 kg and was the third ranked producing Province in Argentina, was from the Cerro Vanguardia Mine. A small amount of gold was produced from the Martha Mine (AngloGold Ashanti Ltd., 2007; Coeur d'Alene Mines Corp., 2007).

Since 1998, low-grade material from the Cerro Vanguardia has been stockpiled. In 2006, Cerro Vanguardia S.A. (92.5% owned by AngloGold Ashanti) began a prefeasibility study to evaluate the production of this material by heap-leaching. The feasibility study for this project was expected to be completed in 2007 (AngloGold Ashanti Ltd., 2007).

In 2006, Yamana Inc. acquired Viceroy Exploration Ltd. and its subsidiary Minas Argentinas S.A., which owned the

Gualcamayo gold project in San Juan. A project feasibility study for an open pit, heap leach operation was being prepared in 2006 and was expected to be completed in mid-2007. The company, however, anticipated the project to also include underground operations. Early plans called for Gualcamayo to begin production in 2008 with an output of about 6,200 kg/yr of gold (Yamana Gold Inc., 2007, p. 20).

**Iron and Steel.**—Production of iron (direct-reduced iron and pig iron) decreased slightly to about 4.4 Mt. Production of steel increased by almost 3%. The leading steel producer was Siderar S.A.I.C. (a subsidiary of Ternium S.A.). Siderar's plant had a production capacity of 2.6 million metric tons per year (Mt/yr). During the year, Siderar's production increased to 2.63 Mt, slightly exceeding its designed production capacity. The company's shipments during the year reached a new record-high level. Domestic shipments increased by 23% as the industrial and construction sectors of the national economy continued to grow. Siderar's steel exports decreased by almost 39% to 406,000 t (Siderar S.A.I.C., 2007, p. 1, 3).

Acindar S.A. was Argentina's second ranked producer of steel. Acindar became part of the new AcelorMittal Group in 2006. Acindar produced 1.44 Mt of steel, which was slightly more than its designed production capacity of 1.35 Mt/yr. This output was a 4% increase from that of 2005 and a historical high level. The company's shipments totaled about 1.39 Mt; of this amount, 87% went to the domestic market, and 13% was exported. Despite an increase of total shipments, exports decreased by about 34% (Acindar S.A., 2007).

**Molybdenum.**—Argentina did not produce molybdenum in 2006. However, plans called for Bajo de la Alumbrera Mine in Catamarca to begin production of molybdenum as early as 2007. Minera Alumbrera (the mine operator) announced that a molybdenum concentrator was being built, which would be completed in 10 months. The company expected to produce 4,400 kg of molybdenum concentrate that would be refined outside of the country. Another molybdenum plant was being planned for Argentina also in Catamarca as part of the Agua Rica copper-gold-molybdenum project. Output from this project would average about 7,200 kg/yr of molybdenum concentrate (Northern Orion Resources Inc., 2006; El Pregón Minero, 2007; Panorama Minero, 2007a).

**Silver.**—Production of silver in Argentina decreased by about 6% to 248,227 kg. By far, the leading producing Province was Santa Cruz with about 76% of the country's total. Jujuy, San Juan, Neuquen, and Catamarca (in decreasing order of output) were the other producing Provinces. Production in Santa Cruz and Neuquen decreased, but there was a significant increase in production from San Juan.

In 2006, the feasibility study and an amended report for the Pirquitas silver, tin, and zinc project in Jujuy were completed. In October, Silver Standard Resources Inc. (the owner of the Pirquitas project), through its subsidiary Sunshine Argentina Inc., announced that it had decided to bring the project to production. The project's proven and probable reserves of silver totaled 3.3 Mt, which included estimates of 400,000 t of tailings with 234 g/t silver from previous operations. Estimates called for a project with a mine life of 8.8 years. Project costs were expected to be \$146 million plus value-added tax. Production

of about 280,000 kg/yr of silver, 2,500 t/yr of tin, and 6,600 t/yr of zinc was expected from the project. Construction of the project was expected to take 21 to 24 months with construction beginning in the third quarter of 2007 and with the mill to be completed in the fourth quarter of 2008 (Silver Standard Resources Inc., 2006, 2007a, b).

During the year, Pan American Silver Corp. obtained full ownership of the Manantial Espejo project in Santa Cruz when it purchased the Compañía Minera Triton S.A by acquiring the 50% previously owned by Silver Standard Resources Inc. Pan American Silver began construction of the project, which was expected to produce about 128,000 kg/year of silver and 1,870 kg/yr of gold from surface and underground operations over the mine life of 8 years (Pan American Silver Corp., 2007, p. 2).

Work on the San José silver and gold project continued in 2006 in Santa Cruz after the feasibility study was completed in 2005. Finance for the underground project, which included the Huevos Verdes and the Frea areas, was obtained during the year. The mine, which had a 4.3-year life, was on schedule to begin production in 2007 with an expected output of about 97,000 kg/yr of silver and 1,900 kg/yr of gold (Minera Andes Inc., 2006, 2007).

### *Industrial Minerals*

**Cement.**—Cement production in Argentina continued to increase (17.6%), reaching 8.9 Mt in 2006. This increase was the smallest in 4 years since the country began to recover from the recession of the early 2000s. Although cement production had increased significantly beginning in 2003, production was still less than 55% of installed production capacity. In 2006, shipments were 8.9 Mt, of which 8.8 Mt went to the domestic market and only about 150,000 t was exported. Per capita consumption increased to 229 kg in 2006 from 194 kg in 2005. In Latin America, only Mexico and Chile, in decreasing order (data for Venezuela were unavailable), had higher per capita consumption in 2006 (Asociación de Fabricantes de Cemento Portland, 2007).

**Lime.**—The Government estimated that lime production in Argentina was about 1.5 Mt from Buenos Aires, Cordoba, Neuquen, and San Juan. A large portion of the output (3,200 t) was produced in San Juan. About 80% of the production was consumed domestically, and 20% was exported to countries within Latin America. The main importer of lime from Argentina was Chile (Secretaría de Minería de la Nación, 2006a).

### *Mineral Fuels and Related Materials*

**Natural Gas.**—Argentina ranked as the top producer of natural gas in Latin America followed closely by Mexico (BP p.l.c., 2007, p. 8). Despite being a net exporter of natural gas, Argentina imported natural gas from Bolivia and Venezuela. The two leading producing basins were the Neuquina and the Astral with 58% and 20% of the production, respectively. Neuquen accounted for the largest share of production (52%) (Secretaría de Energía, 2007a).

**Petroleum.**—Argentina was the fourth ranked producer of crude petroleum in Latin America (after Mexico, Venezuela,



and Brazil, in decreasing order) and the third ranked producer of crude petroleum in South America (after Venezuela and Brazil, in decreasing order) (BP p.l.c., 2007, p. 24). The country continued to be a net exporter of crude petroleum. Production, however, decreased by 1% from that of 2005 and by 15% from that of 2001. This continued a decreasing production trend that began in 1997 (with the exception of an increase in 2001). In 2006, four companies produced 72% of Argentina's crude petroleum. The leading producer was YPF S.A. with 39% of total production, followed by Pan American Energy LLC (Argentina) with 16%, Petrobrás Energía S.A. with 9%, and Chevron Argentina S.R.L. with 8% (Secretaría de Energía, 2007b).

During the year, Enarsa announced plans to construct a new 150,000 bbl/d refinery in Chubut. Enarsa invited most of the private petroleum companies in Argentina to participate in the construction of the refinery, which would be completed in 2 to 3 years. The cost of the refinery was estimated to be \$2.25 billion, of which the Government would provide \$600 million, and the remainder would be financed by private companies (Nación, La, 2006).

**Uranium.**—Changes in legislation in 1995 opened uranium exploration and production in Argentina to the private sector. In 2006, with the increase in the uranium price, there was an increase in uranium exploration activity in Argentina. Mega Uranium Ltd., a Canadian company, was exploring for uranium in Chubut. In late 2005, the company began fieldwork in Patagonia. In 2006, the company requested three new permits for exploration in an area of 300 square kilometers near the Sierra Cuadrada uranium deposit (Mega Uranium Ltd., 2006). Another company with uranium exploration permits in Argentina was UrAmerica PLC, a junior company from the United Kingdom with projects in Chubut and Salta. (UrAmerica PLC, 2007). Although Argentina produced no uranium in 2006, 8% of its energy requirements were met from the production of its two nuclear plants (Panorama Minero, 2007b).

## Outlook

The Government of Argentina expected investment in the mining sector to continue to increase in the near term, with investment in 2007 reaching \$2.9 billion (more than twice the total invested during 2006 and more than 15 times that of 2001). Some of the projects expected to bring most of the investment were Pascua-Lama (copper, gold, and silver), Gualcamayo (gold), Casposo (gold and silver), Agua Rica (copper, gold, and molybdenum), Pirquitas (silver, tin, and zinc), and Manantial Espejo (gold and silver). Construction of the Pascua Lama Project was estimated to cost \$1.5 billion during 2007-08. Investment in the Potasio Rio Colorado project was expected to be \$730 million. For the 10 years ending in 2010, mining investment in Argentina was expected to exceed \$6.2 billion (Mining Press, 2007; Secretaría de Minería de la Nación, 2007b).

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

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006	
<b>METALS</b>						
<b>Aluminum:</b>						
Primary	268,805	272,369	272,048	270,714	272,942	
Secondary <sup>c</sup>	16,000	16,000	16,000	16,000	16,000	
<b>Cadmium:</b>						
Mine output, Cd content	153	126	111	124	122	
Refined	--	25	39	3	6	
<b>Copper:</b>						
Mine output, Cu content	204,027	199,020	177,143	187,317	180,144	
Refined <sup>c</sup>	16,000	16,000	16,000	16,000	16,000	
Gold, mine output, Au content	kilograms	32,506	29,744	28,466	27,904	44,131
<b>Iron and steel:</b>						
<b>Metal:</b>						
Pig iron	thousand metric tons	2,180	2,402	2,392	2,644	2,481
Sponge iron (direct reduction)	do.	1,476	1,736	1,755	1,823	1,947
Total	do.	3,656	4,138	4,147	4,467	4,428
<b>Ferrous alloys, electric furnace:<sup>c</sup></b>						
<b>Ferrosilicomanganese</b>						
		5,000	5,000	24,000	25,000 <sup>2</sup>	25,000
<b>Ferrosilicon</b>						
		2,700	2,700	10,000	10,000 <sup>2</sup>	10,000
Total		7,700	7,700	34,000	35,000 <sup>2</sup>	35,000
Steel, crude	thousand metric tons	4,363	5,033	5,133 <sup>r</sup>	5,386 <sup>r</sup>	5,533
Semimanufactures <sup>3</sup>	do.	3,821	4,680	4,803 <sup>r</sup>	4,932 <sup>r</sup>	5,318
<b>Lead:</b>						
Mine output, Pb content		12,011	12,079	9,551	10,683	12,778
Smelter, primary		12,000 <sup>e</sup>	12,100 <sup>e</sup>	11,000 <sup>e</sup>	10,607 <sup>r</sup>	12,064
<b>Refined:</b>						
Primary		10,567	11,011	11,111	10,607 <sup>r</sup>	12,064
Secondary		33,000	30,300	48,000	35,000 <sup>e</sup>	37,000 <sup>e</sup>
Total		43,567	41,311	59,111	45,607 <sup>r</sup>	49,064
<b>Manganese</b>						
		--	--	--	1,800	--
Silver, mine output, Ag content	kilograms	125,865 <sup>r</sup>	133,917	172,387	263,766	248,227
Tin, refined		100	100	120	120 <sup>e</sup>	120 <sup>e</sup>
<b>Zinc:</b>						
Mine output, Zn content		37,325	29,839	27,220	29,839 <sup>r</sup>	27,220
<b>Metal, smelter:</b>						
Primary		38,699	39,221	35,300	37,227 <sup>r</sup>	42,584
Secondary		3,098	3,139	2,837	2,997 <sup>r</sup>	3,407
Total		41,797	42,360	38,137	40,224 <sup>r</sup>	45,991
<b>INDUSTRIAL MINERALS</b>						
Asbestos		155	166	267	260 <sup>r</sup>	299
Barite		3,048	6,934	2,762	3,355 <sup>r</sup>	6,276
Boron materials, crude		515,555	512,167	821,031	632,792	533,535
Cement, hydraulic	thousand metric tons	3,911	5,217	6,254	7,595	8,929
<b>Clays:</b>						
<b>Bentonite</b>						
Common		120,006	146,845	163,028	247,101 <sup>r</sup>	256,165
		1,506,146	1,682,158	2,348,895 <sup>r</sup>	5,843,587 <sup>r</sup>	6,898,614
<b>Kaolin</b>						
		13,865	19,219	39,072 <sup>r</sup>	54,903 <sup>r</sup>	49,619
<b>Diatomite</b>						
		23,314	35,518	26,912 <sup>r</sup>	34,045 <sup>r</sup>	38,543
<b>Feldspar</b>						
		82,642	90,857	125,684	151,307	170,728
<b>Fluorspar</b>						
		5,168	5,422	6,437 <sup>r</sup>	7,502 <sup>r</sup>	8,278
Gypsum, crude		365,556	489,804 <sup>r</sup>	836,298 <sup>r</sup>	1,073,286 <sup>r</sup>	1,202,812
Lime <sup>e</sup>		1,500,000	1,500,000	1,500,000	1,500,000	1,800,000
<b>Lithium:<sup>4</sup></b>						
<b>Carbonate</b>						
		906	2,850	4,970	7,300	8,240
<b>Chloride</b>						
		4,729	4,700	6,303	8,400	8,320

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006
<b>INDUSTRIAL MINERALS—Continued</b>					
Mica	1,770	1,894	2,518	4,101	6,223
Nitrogen, N content of ammonia	633,888 <sup>r</sup>	726,431 <sup>r</sup>	705,318 <sup>r</sup>	654,786 <sup>r</sup>	726,969
Peat, agricultural (turba)	8,208	8,782	9,110	11,452 <sup>r</sup>	15,119
Perlite	17,152	21,480	21,193	21,991	25,146
Phosphate rock:					
Gross weight	--	--	70	225	65
P <sub>2</sub> O <sub>5</sub>	--	--	21	67	20
Pumice	3,070	3,531	9,188	15,361 <sup>r</sup>	17,665
Salt	1,080,346	1,667,851	1,371,969	1,845,833 <sup>r</sup>	1,917,656
Sand and gravel:					
Sand:					
Construction	9,342,926 <sup>r</sup>	11,978,789	17,975,085 <sup>r</sup>	20,200,260 <sup>r</sup>	21,832,689
Silica sand (glass sand)	280,065	300,707	473,207 <sup>r</sup>	461,242 <sup>r</sup>	446,240
Gravel	4,663,947 <sup>r</sup>	6,567,223 <sup>r</sup>	10,752,425 <sup>r</sup>	10,078,471 <sup>r</sup>	10,832,689
Stone:					
Basalt	177,090	334,542	615,412	633,215 <sup>r</sup>	542,475
Calcareous:					
Calcite, nonoptical	85,299	91,270	104,960	49,700	57,800
Dolomite	278,361	318,913	437,290	346,537 <sup>r</sup>	392,681
Limestone	7,061,272 <sup>r</sup>	8,148,645 <sup>r</sup>	10,644,948 <sup>r</sup>	12,267,049 <sup>r</sup>	12,993,352
Crushed, unidentified	3,785,570 <sup>r</sup>	4,463,492 <sup>r</sup>	7,935,563 <sup>r</sup>	11,533,468 <sup>r</sup>	12,269,384
Marble, onyx, travertine	40,397	44,411	49,739 <sup>r</sup>	148,192 <sup>r</sup>	160,535
Flagstone	76,769 <sup>r</sup>	300,292 <sup>r</sup>	439,901 <sup>r</sup>	93,431 <sup>r</sup>	385,156
Granite, in blocks	40,450	48,156	54,950 <sup>r</sup>	62,215 <sup>r</sup>	71,395
Quartz, crushed	93,614	99,097	88,334	170,668	206,282
Quartzite, crushed	247,394	284,503	512,400 <sup>r</sup>	784,900 <sup>r</sup>	854,560
Rhodochrosite	22	24	109	118	79
Gemstones (agate, amethyst, and so forth) kilograms	1,250	43,288	50,599	72,009 <sup>r</sup>	12,168
Sandstone	21,313	3,612	25,980	69,001	22,452
Serpentine, crushed	826	950	1,200	1,500 <sup>r</sup>	1,725
Shell, marl	169,577	195,014	263,269	261,183 <sup>r</sup>	276,233
Tuff (tosca) thousand metric tons	2,721	3,129	3,920 <sup>r</sup>	4,213 <sup>r</sup>	5,193
Strontium minerals, celestite	2,595	4,300	6,727	7,233	19,822
Sulfates, natural:					
Magnesium (epsomite)	6,900	7,383	8,490	1,440	1,440 <sup>e</sup>
Sodium (mirabilite)	10,081	10,787	12,405	51,190	43,854
Talc and related materials:					
Pyrophyllite	2,341	4,525	12,594	8,470	9,340
Steatite <sup>c</sup>	300	300	300	300	300
Talc	1,643	1,699 <sup>r</sup>	7,620	12,603 <sup>r</sup>	13,773
Total	4,284	6,524 <sup>r</sup>	20,514	21,373 <sup>r</sup>	23,413
Vermiculite	1,050	1,124	1,293	1,403	1,585
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Asphalt and bitumen:					
Natural (asphaltite)	--	--	521	923	1,475
Byproduct of refinery	318,290	478,991	645,181	665,593	659,010
Coal, bituminous thousand metric tons	56	118	120	320	295
Coke, all types, including breeze do.	1,582	1,621	1,546	1,496	1,191
Gas, natural:					
Gross million cubic meters	45,770	50,576	52,317	51,329	51,646
Marketed do.	36,468	41,119	45,000 <sup>e</sup>	41,000 <sup>e</sup>	41,000 <sup>e</sup>
Natural gas liquids <sup>c</sup> thousand 42-gallon barrels	18,000	18,000	18,000	18,000	18,000

See footnotes at end of table.



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

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006	
<b>MINERAL FUELS AND RELATED MATERIALS—Continued</b>						
<b>Petroleum:</b>						
Crude	thousand 42-gallon barrels	275,355	270,336	254,202	242,743	240,492
<b>Refinery products:<sup>5</sup></b>						
Liquefied petroleum gas	do.	12,208	13,236	12,652	11,624	11,464
Motor gasoline	do.	55,825	55,378	53,828	53,642	54,319
Aviation gasoline	do.	--	(6)	--	22	--
Jet fuel	do.	10,826	8,949	9,560	9,980	9,385
Kerosene	do.	305	218	231	191	178
Distillate fuel oil	do.	71,045	75,835	76,969	74,386	79,884
Residual fuel oil	do.	11,628	12,551	15,276	18,026	22,498
Lubricants	do.	2,570	3,357	3,003	2,247	2,435
Other	do.	27,432	28,842	30,087	30,170	34,823
Total	do.	191,839	198,366	201,606	200,288	214,986

<sup>6</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>1</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through September 12, 2007.

<sup>2</sup>Reported figure.

<sup>3</sup>Hot-rolled semimanufactures only; excludes castings and cold-rolled semimanufactures produced from imported hot-rolled semimanufactures.

<sup>4</sup>New information was available from Argentine sources that prompted major revisions in how lithium production is reported.

<sup>5</sup>Excludes asphalt and coke production, which are reported separately.

<sup>6</sup>Less than 1/2 unit.

TABLE 2  
ARGENTINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>1</sup>
Aluminum		Aluminio Argentino S.A.I.C. (Government, 52.1%, and private, 47.9%)	Puerto Madryn, Chubut Province	275.
Boron		Borax Argentina S.A. (Rio Tinto Borax, 100%)	El Porvenir Mine and plant, Jujuy Province; Sije and Tincalayu Mines and plants, and Campo Quijano refinery, Salta Province	615. <sup>2</sup>
Do.		Procesadora de Boratos Argentinos S.A. (Ferro Corp., United States, and JEM Resources, Canada)	Loma Blanca, Jujuy Province; plant at Palpala, Jujuy Province	36.
Do. <sup>2</sup>		Ulex S.A. (private, 100%)	Pastos Grandes, Salta Province	2.
Do. (boric acid)		Norquímica S.A.	Salta Province	5.
Cement		Cementos Loma Negra C.I.A.S.A. (private, 100%)	Buenos Aires, Cordoba, Corrientes, Salta, Salta Juan, Mendoza, and Jujuy Provinces	6,000.
Do.		Cementos Avellaneda, S.A. (Corporación Uniland S.A. and C. Molins International S.A.)	La Caldera plant, San Luis Province; Olavarria plant, Buenos Aires Province	2,800, 220 lime.
Do.		Juan Minetti S.A. (Holcim Ltd., 100%)	Cordoba, Jujuy, and Mendoza Provinces	1,700.
Coal		Yacimientos Carbonífero Río Turbio S.A. (private, 100%)	Río Turbio, Santa Cruz Province	210.
Copper and gold <sup>3</sup>		Minera Alumbrera Ltd. (Xstrata plc, 50%; Golcorp Inc., 37.5%; Northern Orion Resources Inc., 12.5%)	Bajo de la Alumbrera Mine, Catamarca Province	200 Cu, 22,000 Au.
Gold and silver	kilograms	Cerro Vanguardia S.A. (AngloGold Limited, 92.5%, and Government of Santa Cruz Province, 7.5%)	Cerro Vanguardia Mine, Santa Cruz Province	100,000 Ag, 10,000 Au.
Do.	do.	Minera Argentina Gold (Barrick Gold Corporation, 100%)	Veladero Mine, San Juan Province	21,000 Au, Ag, NA.
Do.	do.	Yacimientos Mineros de Agua de Dionisio (Government, 100%)	Farallon Negro, Hualfin, and Belen, Catamarca Province	4,600 Au, 50,000 Ag.
Do.	do.	Small mines (private, 100%)	Jujuy Province	5,000 Ag.
Iron and steel		Siderar S.A.I.C. (Ternium S.A., 60.93%)	San Nicolas, Buenos Aires Province	2,600 steel, 1,100 pig iron.
Do.		Acindar S.A. (AcelorMittal Group, 65%)	Plant Nos. 1 and 3, Buenos Aires Province; Plant No. 2, near Rio Parana, Santa Fe Province	1,350 steel, 1,000 DRI.
Do.		Siderca S.A.I.C. (Techint Group)	Buenos Aires Province	900 steel, 670 DRI.
Lead and silver, refinery <sup>4</sup>		Cía. Minera Aguilar S.A. (Glencore International AG, 100%)	Refinería Aguilar, Palpala Industrial Park, Jujuy Province	15 Pb, 18,000 Ag.
Lead, silver, and zinc <sup>4</sup>		do.	Estacion Tres Cruces, El Aguilar, Jujuy Province	49,800 Ag, 24 Pb.
Lithium	metric tons	Minera del Altiplano S.A. (FMC Corporation)	Salar del Hombre Muerto, Salta Province	7,260 chloride, 11,350 carbonate.
Natural gas	million cubic meters	Repsol-YPF S.A.	Neuquen, Rio Negro, Salta, Santa Cruz, and Tierra del Fuego Provinces	18,000.
Petroleum	million 42-gallon barrels	do.	Chubut, Formosa, Jujuy, La Pampa, Mendoza, Neuquen, Rio Negro, Salta, Santa Cruz, and Tierra del Fuego Provinces	366.
Uranium, ore <sup>5</sup>		Empresa Nuclear Mendoza (subsidiary Nucleoeléctrica Argentina S.A.)	Sierra Pintada, San Rafael, Mendoza Province	160.
Zinc, refinery		Aguilar AR Zinc Group (Glencore International AG, 100%)	Rosario, Santa Fe Province	44.

NA Not available.

<sup>1</sup>Abbreviations used in this table for commodities include the following: Ag, silver; Au, gold; Cu, copper; DRI, direct-reduced iron; Pb lead.

<sup>2</sup>Crude minerals.

<sup>3</sup>Gold data reported in kilograms.

<sup>4</sup>Silver data reported in kilograms.

<sup>5</sup>Inactive.

