

# 2007 Minerals Yearbook

# **VENEZUELA**

### THE MINERAL INDUSTRY OF VENEZUELA

### By Alfredo C. Gurmendi

In 2007, the petroleum sector continued to be of central importance to the Venezuelan economy. The country is a cofounder of the Organization of the Petroleum Exporting Countries (OPEC) and an important player in the global crude oil market. Under the Venezuelan Constitution, the hydrocarbon and mineral resources belong to the Government.

The Ministerio del Poder Popular para el Petróleo y la Energía (MPE) (formerly the Ministerio de Energía y Minas) manages the natural gas and crude oil sectors. The hydrocarbon law, known as the Decree with Force of Organic Law on Hydrocarbons (Decree No. 1510 of November 2001), and Article 302 of the Constitution of 1999, reserve all primary hydrocarbon activities for the Government. The hydrocarbon law was amended in 2006 by the Partial Amendment Law to Decree 1510 with Force of Law, Organic Law of Hydrocarbons. Nonassociated gas (natural gas that is not produced simultaneously with crude oil) and downstream natural gas operations are excluded from the hydrocarbon law; they are regulated instead by the Decree with Rank and Force of Organic Law on Gaseous Hydrocarbons (Decree 310 of September 1999) and by the Regulation of the Law on Gaseous Hydrocarbons (Decree 840 of June 2000), as amended by the MPE's Resolution 244 of January 9, 2006.

The mining law (Decree No. 295 of September 5, 1999) establishes the rules for all mines and minerals (except hydrocarbons and some industrial minerals not found on Government lands) within Venezuelan territory. These rules influence the exploration, development, production, marketing, and transportation of minerals. The Ministerio del Poder Popular para las Industrias Básicas y Minería (MIBAM) is responsible for all matters related to mining operations. Mining is allowed by the Government, through concessions, or under production authorization issued to artisanal miners, mining cooperatives, and other small-scale mining operations. The General Regulation of the Mining Law (Decree No. 1234 of March 9, 2001) establishes terms, conditions, and administrative procedures in support of Decree No. 295. Most industrial minerals found on private lands continue to be governed by Articles 7 through 10 of the Mining Law of 1945 until the individual States establish regulations.

The Norms of Environmental Evaluation of Activities Susceptible to Degrade the Environment (Decree No. 1257 of 1996) establishes the Ministerio del Ambiente y de los Recursos Naturales (MARN). The law requires an environmental impact study for projects and operations in the areas of hydrocarbons and mining.

#### Minerals in the National Economy

Petroleum activity accounted for 12.2% of Venezuela's gross domestic product (GDP) in 2007 compared with 13.8% in 2006. This sector accounted for 90.4% of Venezuela's export revenues. Venezuela also accounted for 2.9% of the world's bauxite

output, 3% of alumina production, 1.7% of aluminum output, and 1.2% of nickel output (table 1; Banco Central de Venezuela 2008a; Bray, 2008a, b; Kuck, 2008).

In 2007, manufacturing accounted for 16.5% of the GDP; construction, 6.9%; and mining, 0.6%. In 2007, oil exports were valued at \$62.6 billion and accounted for 90.4% of the total value of all exported goods. In 2006, oil exports were valued at \$58.4 billion and accounted for 89.6% of the total value of all exported goods. The increase of 7.2% in the value of oil exports in 2007 compared with that of 2006 was owing to the increases in international oil demand and prices (Banco Central de Venezuela, 2008a, b).

Imports of all goods in 2007 were valued at \$45.5 billion compared with \$32.5 billion in 2006. Iron and steel products (especially oilfield tubular goods) accounted for about 1% of all imports. Rolled aluminum, construction materials (such as cement, glass, and stone), copper, and fertilizers also were significant mineral sector imports. Bitumen and petroleum coke formed the bulk of petroleum imports (Banco Central de Venezuela, 2008b).

#### **Production**

Production data for cement, gold, iron ore, and silica sand given in table 1 are estimated. Since 2003, natural gas production has been about 60 billion cubic meters per year, whereas crude petroleum production decreased by about 10% (table 1).

#### **Structure of the Mineral Industry**

The Government-owned mineral and industrial producer Corporación Venezolana de Guayana (CVG), its subsidiary companies, and the Instituto Nacional de Geología y Mina were units of MIBAM. Since 2005, the Government's Compañía Nacional de Industrias Básicas participated in production operations for such minerals as aluminum, iron ore, lime, natural gas, petroleum, steel, and sulfur.

Petróleos de Venezuela S.A. (PDVSA), which was the Government entity that was responsible for the development and management of the hydrocarbon sector, produced about 80% of the national output of crude oil. The Corporación Venezolana de Petróleo (CVP), which was a subsidiary of PDVSA, had managed the 32 operating service agreements (OSAs) with transnational oil companies and the 8 risk-profit-sharing agreements that accounted for about 20% of Venezuelan crude oil production in 2007. CVP also managed four strategic associations that produced and processed extra-heavy crude oil and accounted for about 10% of the total national output of petroleum.

In 2005, the Government of Venezuela had declared that the terms of the existing OSA contracts were illegal under the Constitution of 1999. The CVP subsequently initiated negotiations to restructure the OSA contracts, the profit-sharing

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agreements, and the strategic associations as joint ventures (Empresas Mixtas) in which, in most cases, the Government's interest would increase to 60%. Owing to the Venezuelan Government's nationalization drive, foreign investors, such as ENI S.p.A. of Italy, Statoil ASA of Norway, and Total S.A. of France, considered the abrogation of the contracts to be illegal and at yearend, were continuing with settlement negotiations. In 2007, ConocoPhillips Co. of the United States took the nationalization of its contract interest to arbitration. Exxon Mobil Corp, of the United States pursued legal action in the courts of the Dutch Antilles, the Netherlands, the United Kingdom, and the United States.

Multinational companies dominated the cement, nickel, and steel sectors. Many companies in the coal, fertilizer, iron, steel, and synthetic crude oil (processed heavy crude oil) were owned by joint ventures of the Government and the private sector. In 2007, Cabot Corp. of the United States increased its interest in the Valencia carbon black plant to 47.5% from 41%. The steel company Ternium S.A. of Luxembourg acquired 59.7% of the Siderúrgica del Orinoco C.A. (Sidor); the remainder was owned by CVG, 20.4%, and Sidor's employees, 19.9%. The effect of the potential Government actions related to Sidor on Ternium's financial position was not determinable in 2007 (table 2; Ternium S.A., 2008).

#### **Commodity Review**

#### Metals

Gold.—Much of the gold activity in Venezuela was located in the State of Bolivar. An official Government report on gold production was not available; private producers, however, reported the following—Hecla Mining Inc. of the United States reported that it produced about 2,706 kilograms (kg) of gold in 2007 compared with 4,977 kg of gold in 2006, which was a decrease of about 45.6%. Hecla continued to operate La Camorra Mine but closed La Isadora Mine owing to depletion. State-owned C.V.G. Compañía General de Minería C.A. (CVG Minerven) reported production of 4,030 kg of gold in 2007 compared with 3,842 kg of gold in 2006, which was an increase of almost 5%. CVG Minerven operated the Colombia and the Union Mines. Gold Fields Ltd. of South Africa reported that it produced 1,699 kg of gold in 2007 compared with 787 kg of gold in 2006, which was an increase of almost 116%; restoration of the Choco 10 Mine was completed to a level that enabled full use of the onsite infrastructure. Crystallex International Corp. of Canada produced about 1,035 kg of gold in 2007 compared with 1,403 kg of gold in 2006, which was a decrease of more than 26%. The gold was processed at the Revemin milling and carbon-in-leach processing plant; about 95% of the ore processed at the mill was from the open pits and the underground mine at Crystallex's Tomi concession. Crystallex also operated La Victoria open pit mine (Crystallex International Corp., 2008a; C.V.G. Compañía General de Minería C.A., 2008; Gold Fields Ltd., 2008; Hecla Mining Co., 2008).

Crystallex completed the feasibility study of Las Cristinas Mine in September 2003; the study was prepared by SNC Lavalin Engineers and Constructors Inc. (SNCL), which had also prepared the report Las Cristinas Development Plan 2005. Crystallex awarded the development of Las Cristinas to SNCL. Crystallex expected to commence gold production in the second half of 2009 at a base level of 20,000 metric tons per day of gold ore, which would amount to about 7,960 kg (256,000 troy ounces) per year of gold at a total cash cost of \$244 per ounce. Las Cristinas property is located in the Kilometro 88 area of the State of Bolivar (Crystallex International Corp., 2008b).

Other companies actively exploring for gold in Venezuela included Gold Reserve Inc. of the United States on the Brisas gold-copper and the Choco 10 gold properties; the joint venture of Mena Resources Inc. and Rusoro Mining Ltd. of Canada on the Lo Increible 6 and the Valle Hondo properties; Rusoro Mining on the Emilia and the San Rafael/El Placer projects; and ValGold Resources Ltd. of Canada, which was evaluating the Chicanan East and West, the Lo Increible 3, and the Vetas Vuelvan Caras properties held indirectly by Honnold Corp. of the British Virgin Islands. Problems with permits resulted in Triumph Gold Corp. attempting to dispose of its Guariche and Las Flores properties (Kenai Resources Ltd., 2007, p. 4).

#### Mineral Fuels and Related Materials

Coal and Uranium.—In 2007, Carbones del Guasare, S.A. used a truck-shovel system to access about 175 million metric tons (Mt) of coal reserves in the Guasare coal basin. The Paso Diablo coal mine, which is located in the State of Zulia, was owned by the Government-owned company Carbozulia, S.A. (49%), Peabody Energy Corp. of the United States (25.5%), and Anglo Coal (25.5%). Peabody marketed its share of the mine's production, which amounted to about 7.5 million metric tons per year (Mt/yr), to customers seeking high-Btu, low-sulfur thermal coal for electricity generation and pulverized coal injection to be used in the steel industry. The coal operation at the Mina Norte, which is located in El Brillante, Municipality Paez, State of Zulia, was mined by the joint-venture of Carbomar Corp. (64%) and Carbozulia, S.A. (36%) (Carbozulia, S.A., 2008; Peabody Energy Corp., 2008).

In 2007, the Government continued to express an interest in developing a coal-powered electricity-generating plant to supplement the national electricity grid, much of which was generated by hydroelectric plants. The Government had discussed the possibility of building a nuclear-powered electricity-generating plant with Argentina, Brazil, France, Iran, and Russia. France was willing to assist Venezuela develop a nuclear power program (International Herald Tribune, 2008). The agreement on minerals between Iran and Venezuela could involve the production and shipment to Iran of Venezuelan uranium to be produced eventually from unidentified deposits located in the jungle States of Amazonas and Bolivar, which are alleged to contain about 50,000 t of uranium reserves (Paxety, 2006). Russia and Venezuela were planning to sign a nuclear energy cooperation agreement and a 25-year intergovernmental cooperation agreement for oil, gas, and power generation by November 2008 (RIA Novosti, 2008).

**Natural Gas.**—In 2007, natural gas production remained at about the same level as that of 2006 (28,320 million cubic meters). According to the U.S. Energy Information

Administration (2008), Venezuela has the second ranked natural gas reserves (4.8 trillion cubic meters) in the Western Hemisphere behind the United States (6.1 trillion cubic meters). The petroleum sector consumed more than 70% of Venezuela's natural gas production in the form of reinjection to produce crude oil. In recent years, Venezuela had several natural gas projects planned or underway. The Antonio Recaurte 224-kilometer gas pipeline would connect western Venezuela to Colombia's Punta Ballenas gasfields (U.S. Energy Information Administration, 2008).

#### Outlook

The possible integration of the Caribbean, Central American, and South American economies would include the construction of infrastructure to deliver oil and natural gas throughout the region. Because Venezuela has the second largest reserves of crude petroleum in the Americas, such integration could give the country a significant advantage in marketing petroleum and natural gas in the region in the long term. The Government plans to encourage downstream domestic processing operations in the aluminum and steel industries. Historically, the country has exported crude aluminum and steel and imported value-added processed aluminum and finished steel products. The Government also plans to encourage additional development of hydrocarbon resources. The Government has proposed increasing its production of crude petroleum to 5.8 million barrels per day by 2012, subject to the OPEC production constraints; to build new crude oil refineries at Cabruta and Llanos de Barinas (Batalla de Santa Inés); and to build an asphalt plant at Caripito (Petróleos de Venezuela, S.A., 2008). Having reviewed the oil market outlook, including the overall demand/supply projections for 2008 (particularly the first and second quarters), however, the OPEC observed that market fundamentals have essentially remained unchanged, with the market continuing to be well supplied and commercial crude and product stocks remaining at comfortable levels. The Government plans to increase the natural gas supply to cover global demand. Much of current natural gas production, however, continues to be associated with crude oil production, and a significant proportion of produced gas is reinjected into oilfields to maintain reservoir pressure. Proposed natural gas projects include the development of the offshore nonassociated natural gas resources in the Plataforma Deltana area, which is located south of Trinidad and Tobago in the Atlantic Ocean; the development of natural gas resources in the Gulf of Venezuela and the State of Falcon; the construction of the Center West Interconnection Project gas pipeline; and the construction of the Gran Mariscal de Ayacucho industrial complex and the Mariscal Sucre LNG plant (Trenas, 2008).

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# $\label{eq:table 1} \textbf{TABLE 1} \\ \textbf{VENEZUELA: PRODUCTION OF MINERAL COMMODITIES}^{\textbf{I}}$

(Thousand metric tons unless otherwise specified)

Manimum	Commodity	2003	2004	2005	2006	2007
Marie   Sauxite   Sauxit	METALS					
	Aluminum:					
Metal primary, unalleyed   metric tons   601,200   623,540   615,070   610,000   610,000   600	Alumina	1,882	1,900	1,920 e	1,892	1,900 e
Montain content   Montain   Montai	Bauxite	5,446	5,842	5,900 e	5,928	5,500
Internation concentrative:	Metal, primary, unalloyed metric tons	601,290	623,540	615,070	610,000 e	610,000 e
Tom or and concentrate:	Gold, mine output, Au content kilograms	7,900 e	9,666	10,480 <sup>r</sup>	11,600 r	10,092
Serial Metal coment						
Metal content	Iron ore and concentrate:					
Methal direct-reduced roon	Gross weight	17,954	19,196	20,000 e	23,000 e	23,000 e
Ferroninganese   12,000	Metal content	11,936	12,669	13,000 e	15,200 e	15,200 e
Ferronickel	Metal, direct-reduced iron	6,645	7,800	8,900	8,400 e	8,400 e
Ferronickel	Ferroallovs: <sup>e</sup>					
Ferronickel         57,300         \$8,000         \$6,300         \$7,000         \$2,000           Siliconanganese         90,543 ³         20,000         20,000         35,000         30,000         30,000         30,000         30,000         30,000         30,000         30,000         30,000         30,000         30,000         30,000		12,000	15,000	15,000	15,000	15,000
Silicomanganese   30,632		57,300	58,000	56,300	57,000	57,000
Silicomanganese   30,632	Ferrosilicon <sup>2</sup>	90,543 3	92,000	92,000	92,000	92,000
Total         190,475° 3         200,000 198,000 199,000 199,000 5000 5000 5000 5000 5000 4,575° 4,900° 5,000 5000 5000 5000 3,400 3,500° 3,500° 3,500° 3,500° 5000 5000 5000 5000 3,400 3,500° 3,500° 3,500° 3,500° 5000 5000 5000 5000 3,500° 3,500° 3,500° 5000 5000 5000 5000 50000 5000 500	Silicomanganese	30,632 3				
Stock circule		190,475 <sup>3</sup>	200,000	198,000	199,000	199,000
Seminaudactures, hot-rolled	Steel, crude	3,930			4,900 e	
Lead, secondary, refined					3,500 e	
Nickel:						
Mine output, Ni content         do.         20,700         20,468         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         16,600 °         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         20,000 °         22,000 °         20,000 °         22,000 °         20,000 °	Zeud, seesmaar), reimed	20,000	20,000	20,000	20,000	20,000
Ferronickel, Ni content   do.   17,200   17,400   16,900   16,600   16,600   16,600   16,000   10,000   10,000   11,00		20.700	20.468	20,000 e	20.000 e	20,000 e
NDUSTRIAL MINERALS	1			*		
Amphibolite		17,200	17,100	10,700	10,000	10,000
Cement, hydraulie'         7,700         9,000         10,000         11,000         11,000           Clays, common         2,275         3,060         235         250 °         250 °           Daimond.''         11,080 °         44,000         46,000         45,000         45,000           Industrial         do.         23,710 °         60,000         69,000 °         70,000         70,000           Total         do.         23,710 °         60,000 °         69,000 °         70,000         70,000           Feldspar         149 °         176 °         202 °         200 °         200 °           Gypsum         5 °         4 °         6 °         7 °         7 °           Lime*         400 °         4		4			e	e
Clays, common         2,275         3,060         235         250 °         250 °           Diamond.°         Cerr         carats         11,080 ³         40,000         46,000         45,000         45,000           Industrial         do.         23,710 ³         60,000         69,000         70,000         70,000           Total         do.         34,790 ³         100,000         115,000         115,000         115,000           Gypsum         5         4         6         7         7°         7°           Lime*         400         400         400         400         400         400           Nitrogen, N content of ammonia         732         1,012         900         1,160 °         1,160 °           Phosphate rock:         752         8.5         110         115				10.000		
Diamond.   Carata						
Gem         carats         11,080 ³         40,000         45,000         45,000         70,000         70,000           Industrial         do.         23,710 ³         60,000         69,000         70,000         70,000           Total         do.         34,790 ³         100,000         115,000         115,000         115,000           Feldspar         149         1.76         202         200         200 °           Gysum         400         400         400         400         400         400         400           Nitrogen, N content of ammonia         732         1,012         900         1,160 °         1,160 °           Phosphate rock:         260         300         392         400 °         400 °           P2.0 s content °         250         30         392         400 °         400 °           P2.0 s content °         15         85         110         115         115           P2.0 s content °         15         26         30         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000         350,000 <td></td> <td>2,273</td> <td>2,000</td> <td>233</td> <td>230</td> <td>230</td>		2,273	2,000	233	230	230
Industrial   do.   23,710 3   60,000   69,000   70,000   70,000   Total   do.   34,790 3   100,000   115	_	11 080 <sup>3</sup>	40 000	46,000	45 000	45 000
Total			,	,		
Feldspar			· · · · · · · · · · · · · · · · · · ·			
Signate						
Lime <sup>c</sup> Nitrogen, N content of ammonia         400         400         400         400         400         Monitogen, N content of ammonia         400         400         400         400         Monitogen, N content of ammonia         400 cm         400 cm <th< td=""><td>*</td><td></td><td></td><td></td><td></td><td></td></th<>	*					
Nitrogen, N content of ammonia         732         1,012         900         1,160 °         1,160 °           Phosphate rock:         260         300         392         400 °         400 °           PyOs content °         75         85         110         115         115           Pyrophyllite °         32         32         32         30         30           Salt, evaporated °         metric tons         350,000         450,000         450,000<						
Phosphate rock:         260         300         392         400 °         400 °           P₂O₂ content°         75         85         110         115         115         115           P₂O₂ content°         32         32         32         32         30         30           Salt, evaporated°         metric tons         350,000         35						
Gross weight         260         300         392         400 °         400 °           P₂O₂ contente         75         85         110         115         115           Pyropyllitee         32         32         32         30         30           Salt, evaporatede         metric tons         350,000         550         750         750         750         150         250		,52	1,012	,,,,	1,100	1,100
P₂O₂ content <sup>c</sup> 75         85         110         115         115           Pyrophyllite <sup>c</sup> 32         32         32         30         30           Salt, evaporated <sup>c</sup> metric tons         350,000 <t< td=""><td></td><td>260</td><td>300</td><td>392</td><td>400 e</td><td>400 e</td></t<>		260	300	392	400 e	400 e
Natural gasoline   Natural gas						
Salt, evaporated	2 3					
Serpentinite, crushed   S50   S50						
Stone		<i>'</i>	*	,	*	,
Stone:		550	330	550	330	330
Dolomite						
Granite <sup>c</sup> 750         750         750         750         750           Limestone <sup>4</sup> 2,516         11,444         18,781         18,000 °         18,000 °           Sand and gravel         2,704         2,878         605         600 °         600 °           Silica sand <sup>4</sup> 625         943         207         500 °         500 °           Sulfur, petroleum byproducf <sup>e</sup> 560         800         800         800         800           MINERAL FUELS AND RELATED MATERIALS         60         60         60         60         60           Carbon black <sup>e</sup> 60         60         60         60         60           Coal, bituminous         7,034         8,107         7,195         7,459         7,457           Gas, natural:         Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °           Marketed         do.         30,875         31,687         34,000 °         28,500 °         28,500 °           Natural gas liquids:         Natural gas liquids:           Natural gas liquids:         9,232         11,362         13,027         13,572         13,600 °		E 1				
$ \begin{array}{ c c c c c } \hline Limestone^4 & 2,516 & 11,444 & 18,781 & 18,000 & 18,000 & \\ \hline Sand and gravel & 2,704 & 2,878 & 605 & 600 & 600 & 600 & \\ \hline Silica sand^4 & 625 & 943 & 207 & 500 & 500 & 500 & \\ \hline Sulfur, petroleum byproduct^6 & 560 & 800 & 800 & 800 & 800 & 800 \\ \hline \hline MINERAL FUELS AND RELATED MATERIALS & 60 & 60 & 60 & 60 & 60 & 60 \\ \hline Carbon black^6 & 60 & 60 & 60 & 60 & 60 & 60 & 60 & $			750	750	750	750
Sand and gravel         2,704         2,878         605         600 °         600 °           Silica sand <sup>4</sup> 625         943         207         500 °         500 °           Sulfur, petroleum byproduct°         560         800         800         800         800           MINERAL FUELS AND RELATED MATERIALS         60         60         60         60         60           Carbon black°         60         60         60         60         60           Coal, bituminous         7,034         8,107         7,195         7,459         7,457           Gas, natural:         Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °         56,000 °         800 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Silica sand <sup>4</sup> 625         943         207         500 °         500 °           Sulfur, petroleum byproduct°         560         800         800         800         800           MINERAL FUELS AND RELATED MATERIALS         60         60         60         60         60           Carbon black°         60         60         60         60         60         60           Coal, bituminous         7,034         8,107         7,195         7,459         7,457           Gas, natural:         Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °           Marketed         do.         30,875         31,687         34,000 °         28,500 °         28,500 °           Natural gas liquids:         Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °						
Sulfur, petroleum byproduct <sup>c</sup> 560         800         800         800         800           MINERAL FUELS AND RELATED MATERIALS         60 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<>						
MINERAL FUELS AND RELATED MATERIALS   60   60   60   60   60   60   60   6						
Carbon black°         60		560	800	800	800	800
Coal, bituminous         7,034         8,107         7,195         7,459         7,457           Gas, natural:         Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °           Marketed         do.         30,875         31,687         34,000 °         28,500 °         28,500 °           Natural gas liquids:         Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °						
Gas, natural:           Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °         56,000 °         56,000 °         56,000 °         56,000 °         28,500						
Gross         million cubic meters         61,027         57,398         67,000 °         56,000 °         56,000 °           Marketed         do.         30,875         31,687         34,000 °         28,500 °         28,500 °           Natural gas liquids:         Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °		7,034	8,107	7,195	7,459	7,457
Marketed         do.         30,875         31,687         34,000 °         28,500 °         28,500 °           Natural gas liquids:         Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °						
Natural gas liquids:           Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °				*		
Natural gasoline         thousand 42-gallon barrels         9,232         11,362         13,027         13,572         13,600 °           Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °		30,875	31,687	34,000 e	28,500 e	28,500 e
Liquid petroleum gas         do.         43,915         54,338         62,298         64,903         64,900 °           Total         do.         53,147         65,700         75,325         78,475         78,500 °						
Total do. 53,147 65,700 75,325 78,475 78,500 °						
	1 1					
		53,147	65,700	75,325	78,475	78,500 e

See footnotes at end of table.

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(Thousand metric tons unless otherwise specified)

Commodity		2003	2004	2005	2006	2007
MINERAL FUELS AND RELATE	ED MATERIALS—Continued					
Petroleum: <sup>5</sup>						
Crude	thousand 42-gallon barrels	1,025,508	933,305	936,225	916,515	920,000
Refinery products: <sup>e</sup>	-					
Liquefied petroleum gas	do.	5,355 <sup>3</sup>	6,682 3	5,500	7,000	7,000
Gasoline, motor	do.	52,374 <sup>3</sup>	131,929 <sup>3</sup>	75,000	85,000	85,000
Naphtha and other gasolines <sup>e</sup>	do.	40,157 <sup>3</sup>	60,000	60,000	60,000	60,000
Jet fuel	do.	25,955 <sup>3</sup>	29,412 3	32,000	32,000	32,000
Kerosene	do.	117 <sup>3</sup>	179	120	120	120
Distillate fuel oil	do.	96,108 <sup>3</sup>	109,555 <sup>3</sup>	109,000	109,000	109,000
Lubricants	do.	1,142 3	1,200	1,200	1,200	1,200
Residual fuel oil	do.	85,052 3	101,481 <sup>3</sup>	90,000	90,000	90,000
Asphalt	do.	5,402 3	5,500	5,500	6,000	6,000
Petroleum coke	do.	9,994 3	10,000	10,000	10,000	10,000
Paraffins	do.	241 3	250	250	250	250
For internal consumption	do.	24,809 3	30,000	30,000	30,000	30,000
Unspecified	do.	2,124 <sup>3</sup>	1,000	1,000	1,000	1,000
Gains and losses	do.	41,468 <sup>3</sup>	15,969 <sup>3</sup>	1,930	2,000	2,000
Total <sup>6</sup>	do.	390,298 3	503,000	422,000	434,000	434,000

<sup>&</sup>lt;sup>e</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. -- Zero.

 ${\it TABLE~2}$  VENEZUELA: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Thousand metric tons unless otherwise specified)

			Annual
Commodity	Major operating companies and major equity owners <sup>1</sup>	Location of main facilities	capacity
Alumina	C.V.G. Bauxilum C.A. (Corporación Venezolana de Guayana)	Ciudad Guayana, Bolivar State	1,800
Aluminum	C.V.G. Aluminio del Caroní, S.A. (Corporación Venezolana	do.	210
	de Guayana and others)		
Do.	C.V.G. Venezolana de Aluminio C.A. (Corporación	do.	430
	Venezolana de Guayana, 80%, and Showa Denko K.K., Kobe		
	Steel Ltd., Sumitomo Chemical Co. Ltd., Mitsubishi		
	Materials Corp., Mitsubishi Aluminum Co., and Marubeni		
	Corp., 20%)		
Bauxite	C.V.G. Bauxilum C.A. (Corporación Venezolana de Guayana,	Los Pijiguaos, Bolivar State	6,000
	100%)		
Cement	CEMEX Venezuela, S.A. C.A. (Cementos Mexicanos S.A. de	Barquisimeto, Lara State; Maracaibo, Zulia	4,600
	C.V., 100%)	State; Pertigalete, Anzoategui State; San	
		Cristobal, Tachira State	
Do.	LaFarge Venezuela (Lafarge Group, 56.2%)	La Vega, Miranda State, and San Cristobal,	1,750
		Tachira State	
Do.	Holcim (Venezuela) S.A. (Holcim Group, 50%)	Carupano, Sucre State, and San Sebastian de	2,200
		los Reyes, Aragua State	
Do.	C.A. Fábrica Nacional de Cementos (Lafarge Group, 46.13%)	Palmira and Ocumare del Tuy, Miranda State	1,330
Do.	Cementos Catatumbo (Lafarge Group, 23.32%)	Montellano, Zulia State	650
Do.	Cemento Andino	Curcas, Trujillo State	560
Coal	Carbones del Guasare, S.A. (Carbozulia S.A., 49%; Peabody	Paso Diablo, Zulia State, Guasare coal basin	8,000
	Energy Corp., 25.5%; Anglo Coal, 25.5%)		
Do.	Carbones de la Guajira, S.A. (InterAmerican Coal Holdings NV,	Mina Norte and Cachiri, Zulia State, Guasare	1,500
	64%, and Carbozulia S.A., 36%)	coal basin	
Ferronickel	Loma de Níquel C.A. (Anglo American plc, 91.4%)	Loma de Niquel, Aragua and Miranda States	18
See footnotes at end of table.			

See footnotes at end of table.

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<sup>&</sup>lt;sup>1</sup>Table includes data available through March 3, 2009.

<sup>&</sup>lt;sup>2</sup>Production of 75% silicon-content ferrosilicon.

<sup>&</sup>lt;sup>3</sup>Reported figure.

<sup>&</sup>lt;sup>4</sup>Excludes production under contract with the Government.

<sup>&</sup>lt;sup>5</sup>Includes condensate and bitumen for the production of Orimulsión®.

<sup>&</sup>lt;sup>6</sup>Excludes byproduct sulfur, which is reported in the industrial minerals portion of this table, but includes losses.

## ${\it TABLE~2--Continued}$ VENEZUELA: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Ferrosilicon	Ferroatlántica de Venezuela, S.A. (Ferroatlántica S.L., 80%,	Ciudad Guayana, Bolivar State	80
	and Corporación Venezolana de Guayana, 20%)		
Gold kilograms	Minera Hecla Venezolana C.A. (Hecla Mining Inc.)	Isladora and La Camorra Mines, El Callao, Bolivar State	5,000
Do. do.	C.V.G. Compañía General de Minería C.A. (C.V.G. Ferrominera Orinoco C.A., 66.77%, and Corporación Venezolana de Guayana, 33.23%)	Colombia and Union Mines. Caratal and El Peru plants, El Callao, Bolivar State	4,600
Do. do.	Promotora Minera de Venezuela (Gold Fields Ltd., 70%, and Ferrominera Orinoco C.A., 30%)	Choco-10 Mine, El Callao, Bolivar State	2,500
Do. do.	Crystallex de Venezuela C.A. (Crystallex International Corp., 100%)	Tomi Mine, El Callao, Bolivar State	1,500
Do. do.	Revemin (Crystallex de Venezuela C.A., 51%, and Corporación Venezolana de Guayana, 49%)	Remevin mill, El Callao, Bolivar State	1,500
Do. do.	El Callao Mining Corp. (Crystallex de Venezuela C.A., 80%)	La Victoria (Lo Increible), El Callao, Bolivar	200
Iron and steel:			
Iron:			
Direct-reduced	Siderúrgica del Orinoco C.A. (Cosorcio Siderúrgico Amazonia Ltd., 70%, and Corporación Venezolana de Guayana, 30%)	Ciudad Guayana, Bolivar State	4,600
Hot-briquetted	Complejo Siderúrgico de Guayana C.A. (Kobe Steel, 36.7%; C.V.G. Ferrominera, 17.4%; Tubos de Acero de México, S.A., 6.9%; Mitsui and Co. Ltd., Nissho Iwai Corp., Tomen Corp. and Shinsho Corp., 30.3%; International Finance Corp., 8.7%)	do.	1,000
Do.	Orinoco Iron (International Briquettes Holding, 100%)	Puerto Ordaz, Bolivar State	2,200
Do.	Venezolana de Prereducidos de Caroní (International Briquettes Holding, 100%)	do.	815
Iron ore	C.V.G. Ferrominera Orinoco C.A. (Corporación Venezolana de Guayana, 100%)	Cerro San Isidro, Los Barrancos, and Las Pailas, Bolivar State	25,000
Iron ore pellets	do.	Ciudad Guayana, Bolivar State	3,600
Do.	Siderúrgica del Orinoco C.A. (Cosorcio Siderúrgico Amazonia Ltd., 70%, and Corporación Venezolana de Guayana, 30%)	do.	7,000
Steel	do.	do.	4,000
Natural gas million cubic meters	Petróleos de Venezuela S.A. (Government, 100%)	Processing plants in Anzoategui, Monagas, and Zulia States	35,000
Nickel, Ni content of mine output	Loma de Níquel C.A. (Anglo American plc, 91.4%)	Loma de Niquel, Aragua and Miranda States	22
Nitrogen content of ammonia	Fertilizantes Nitrogenados de Oriente S.A. (Pequiven, 35%; Koch Industries, 35%; Snamprogetti International S.A., 20%; Empresas Polar, 10%)	Jose Industrial Complex, Anzoategui State	1,070
Do.	Pequiven (Petróleos de Venezuela S.A., 100%)	Petrochemical complexes in Zulia and Carabobo States	670
Petroleum:			
Crude <sup>2</sup> million 42-gallon barrels	Petróleos de Venezuela S.A. (Government, 100%)	Fields in Anzoategui, Apure, Falcon, Guarico, Monagas, and Zulia States	750
Do. do.	Joint ventures with Petróleos de Venezuela S.A. <sup>3</sup>	Various locations	150
Refinery products do.	Petróleos de Venezuela S.A. (Government, 100%)	Refineries in Amuay and Cardon, Falcon State; Bajo Grande, Zulia State; El Palito, Carabobo State; Puerto La Cruz and San Roque, Anzoategui State	475

Do., do. Ditto.

<sup>&</sup>lt;sup>1</sup>Reflects 2005 Government holding company structure and does not include the reorganization that took place after the formation of Compañía Nacional de Industrias Básicas.

<sup>&</sup>lt;sup>2</sup>Does not include extra-heavy crude processing (synthetic crude).

<sup>&</sup>lt;sup>3</sup>Includes crude petroleum production undertakings that formerly produced crude petroleum under operating service, risk-sharing, or profit-sharing agreements.