

# THE MINERAL INDUSTRY OF

# VENEZUELA

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Venezuela's gross domestic product (GDP) decreased by 0.7% in 1998 after an increase of 5.9% (revised) in 1997 (U.S. Embassy, Caracas, Venezuela, July 1999, p. 2). Inflation decreased to 29.9% from 37.6% in 1997 (U.S. Embassy, Caracas, Venezuela, July 1999, p. 6). Unemployment was 11%, a slight decrease from 1997 when it was 10.6% (revised) (U.S. Embassy, Caracas, Venezuela, 1999, p. 15). One of the main reasons for the slowdown of Venezuela's economy during the year was low petroleum prices and the resulting reduction of output. Venezuela's average export price decreased to \$10.57 per barrel, 35.2% lower than that of 1997.

The mining sector continued to contribute modestly to the economy, and petroleum continued to be the most important mineral commodity to the economy. The petroleum sector was the country's largest source of foreign exchange, contributing about 78% of the total exports, and was the Government's largest source of fiscal revenue (57%) and represented 26% of the GDP (Petroleum Economist, 1998).

Under the Venezuelan constitution, Venezuela's mineral and hydrocarbon resources belong to the nation, and the rights to explore and exploit these resources may be granted through concessions. The Venezuelan mining law, enacted in December 1944 and published in January 1945, regulates prospecting, exploration, mining concessions, and mineral claims. Legislation and resolutions have been enacted to modify specific items of the mining law. Resolution No. 115 of March 1990 modified issues of concessions and mining contracts (Latin America Mining Institute, 1993). Resolution No. 96-12-02 deals with the export of gold and requires 15% of the domestic gold production to be sold internally; gold exporters must be registered with the Central Bank. Decree No. 2.095 of 1992 regulates foreign investment and ensures equal treatment of foreign and domestic investors. Under the decree, the domestic and international private sectors may participate in the exploration and production of minerals, except iron ore, which is reserved for the Venezuelan Government, although iron reduction and steel production are open to the private sector (Labrador, 1997, p. 7).

El Ministerio de Energía y Minas [the Ministry of Energy and Mines (MEM)] is responsible for managing all mining and energy activities. In some instances, the MEM has granted mining concessions to regional Government entities, which, in turn, may lease these concession to the private sector. Unless found in Government land, nonmetallic minerals (for construction and ornamentals, excluding precious materials) are outside the purview of the MEM. Under Article 7 of the mining law, these minerals may be exploited as determined by the landowner without further formality (Labrador, 1997, p.

10).

In 1996, Decree No. 3.281, which gave Corporación Venezolana de Guayana (C.V.G.) the right to enter into contracts on gold and diamonds, was derogated. A proposal to change the mining law has been considered in recent years. In 1998, review of the proposed law continued, and efforts to enact the new law were unsuccessful.

The Ley Orgánica del Ambiente (Organic Environmental Law) deals with environmental control and the restoration of areas of mining activity. In addition to the MEM, the regional offices of El Ministerio del Ambiente y de los Recursos Naturales Renovables (the Ministry of the Environment and Renewable Natural Resources) must approve mining projects. For approval, companies must complete an environmental impact study (EIS) and a mining reclamation plan. Decree No. 1.257 of March 1996 specifies mining activities for which EIS's are required.

Presidential Decree 5.532, published in the Gaceta Oficial No. 36.463 on May 28, opened natural gas sector to private investment [Petróleos de Venezuela, S.A., June 4, 1998, El Gobierno Nacional emitió Decreto (National government publishes decree), accessed January 25, 2000, at URL [http://www.pdvsa.com/news/espanol/noticias\\_gasnatu2\\_es.html](http://www.pdvsa.com/news/espanol/noticias_gasnatu2_es.html)]. The decree allows participation of the private sector in the physical and chemical processing of methane and ethane and their transportation, storage, distribution, and marketing, including building and operating the necessary infrastructure. With the Decree, the Government of Venezuela sought to increase the use of natural gas in commercial, industrial, and residential areas.

Venezuela was an important producer of nonfuel mineral commodities in the Latin American region, although it held a modest ranking in world output. According to U.S. Geological Survey data, it was second in the production of primary aluminum and iron ore in Latin America (after Brazil), third in the production of bauxite and alumina (after Jamaica and Brazil), fourth in the production of cement and phosphate rock (after Brazil, Mexico, and Colombia) and steel (after Brazil, Mexico, and Argentina). After being the fourth largest producer of gold in Latin America in 1997, official production decreased significantly in 1998.

During the year, the production of many nonfuel mineral commodities decreased. (See table 1.) The largest decrease was in gold, for which output was only 7.2 metric tons (t) compared with 22.3 t in 1997. The only nonfuel mineral commodities that achieved production increases were bauxite, cement, kaolin, lime, phosphate rock, and sulfur. In mineral fuels, coal output increased by 19.7%.

Bauxite, alumina, and aluminum production in Venezuela was controlled by the Government through C.V.G., although the participation of international companies in alumina and aluminum was small. (See table 2.) During 1998, efforts to privatize 70% of the integrated aluminum operations owned by C.V.G. were unsuccessful. At yearend, the Government was seeking alternatives, one of which was to sell the operations separately. Initially, the bauxite, alumina, and aluminum operations and a carbon anode manufacturer were to be privatized as a single entity. By yearend, the Government was seeking alternatives, one of which was to sell the operations separately (Metals & Minerals Latin America, 1998). The Government announced that it would assume the debt held by the producers, estimated to be \$1.45 billion, this was reportedly one of the reasons why the attempt to sell the operations was unsuccessful (Metal Bulletin, 1998a).

The majority of gold production in Venezuela continued in areas delegated to C.V.G. (66.5%) and through C.V.G.-Compañía General de Minería de Venezuela C.A. (19.9%) (Ministerio de Energía y Minas, [undated], p. XXVII).

Production of iron ore is reserved for the Venezuelan Government. The iron ore industry was nationalized in 1975. The only producer in 1998 was C.V.G.-Ferrominera Orinoco C.A., a subsidiary of C.V.G., which began operations in 1976. Venezuela's largest iron and steel producer, Siderúrgica del Orinoco C.A. (SIDOR), was privatized at yearend 1997. In 1998, ownership of the iron and steel capacity was in the hands of the private sector. C.V.G. maintained a small interest in SIDOR. The Government through Ferrominera held minority interest in new direct-reduced iron (DRI) projects being constructed in Venezuela.

C.V.G.-Felsiven C.A., the ferrosilicon producer, was privatized in November (Mining Journal, 1998). The company was purchased by Ferroatlántica S.L. of Spain for \$16 million. Ferroatlántica planned to invest \$10 million between 1999 and 2002.

Five private companies produced cement in Venezuela. Venezolana de Cementos, the largest company, was owned by Cementos de México S.A. de C.V., one of the world's largest cement companies. Holderbank Management and Consulting Ltd. and Lafarge France, the other leading cement companies, held interests in Consolidada de Cementos C.A. and C.A. Fábrica Nacional de Cementos, the second and third largest cement companies in Venezuela, respectively.

Monarch Resources Ltd. operated La Camorra gold mine in El Dorado District, State of Bolívar. In 1998, production from La Camorra in about 1,590 kilograms (kg) (51,000 ounces) (Hecla Mining Company, 1999, Hecla agrees to acquire the assets of Monarch Limited, press release, accessed May 18, 1999, at URL [http://biz.yahoo.com/bw/990518/id\\_hecla\\_m\\_1.html](http://biz.yahoo.com/bw/990518/id_hecla_m_1.html)). This represented 22% of the total declared production for the year, a 67.5% decrease from the official production in 1997, which was attributed to lower reporting from small independent producers (Ministerio de Energía y Minas, [undated], p. XXVI). Bolivar Goldfields Ltd. produced about 941 kg (32,250 ounces) from its Tomi open pit mine in El Callao mining district, also in the State of Bolívar (Northern Miner, 1999). During 1998, Bolivar Goldfields Ltd. purchased

the 51% interest owned by Monarch in the Remevin mill, built in 1989 (Northern Miner, 1998b).

Las Cristinas, the gold joint-venture project between Placer Dome Inc. and C.V.G., was again delayed, this time by the low price of gold (Northern Miner, 1998a). Construction of the mine, one of the most visible gold projects in Latin America, was again put on hold after work had resumed shortly during midyear. Placer Dome has been involved with the project since 1990 when it won the rights to evaluate the deposit (Mining Journal, 1999). The company began exploring the property in 1992. The property was also involved in a legal ownership dispute brought by Crystallex International Corporation in 1997. In 1998, Venezuela's Supreme Court ruled that Crystallex's Inversora Mael C.A. did not have "status to assert ownership rights over the Cristina's 4 and 6 concessions" (Crystallex International Corporation, June 12, 1998, Crystallex responds to Venezuelan Supreme Court's decision regarding Cristinas 4 and 6, press release, accessed June 15, 1999, at URL [http://biz.yahoo/prnews/980612/crystallex\\_1.html](http://biz.yahoo/prnews/980612/crystallex_1.html)). The Court refused to proceed with the law suit.

In the November 4 Gazeta Oficial (Official Gazette) No. 36.574, the MEM published its approval for underground concession rights of the Albino1 property, Kilometer 88, Bolívar State, to Crystallex (Crystallex International Corporation, 1998a). Crystallex began exploration of the Albino property in the early 1990's and was producing small quantities of alluvial gold (sapolitic ore) from the property in 1998. Production from the first and second quarters of 1998 was 58 kg and 60 kg, respectively (Crystallex International Corporation, 1998b). Under Venezuela's 1944 mining law, different concessions were required for production of surface and underground minerals within the same property.

In expectation of the approval from the MEM, Crystallex began the engineering design and work leading to the transition from surface to underground mining. Construction was estimated to require 9 to 12 months (Crystallex International Corporation, 1998b). Production from the surface operation was suspended.

Venezuela was the second largest producer of iron ore in Latin America, after Brazil, the world's largest producer of DRI, and the third largest producer of steel in Latin America, after Brazil and Mexico. Production of iron ore decreased by 10.5% to 16.6 million metric tons (Mt). Production of DRI and crude steel also decreased. Plans for the expansion of Venezuela's iron and steel sector, however, continued. Ferrominera, which exported about 50% of its production, planned to incorporate concentration of ore to its production process so that lower grade reserves could be used along with its high-grade reserves (Chávarri, 1998). This would enable the company to accommodate the increased capacity in the iron and steel sector planned for the near future.

At yearend, the DRI plant of Complejo Siderúrgico de Guayana C.A. in the Matanzas complex, Ciudad Guayana, was inaugurated (Acero Latinoamericano, 1999). The hot-briquetted iron (HBI) Midrex plant with a capacity of 1 million metric tons per year was owned by Kobe Steel, Ltd., Ferrominera, Tubos de Acero de México S.A., a consortium of five Japanese firms, and International Finance Corp. The

output from the plant was for the export market. Investment for the project was \$256 million (Chávarri, 1998).

Ferrominera, in association with the private sector, was participating in two other DRI projects. Posven, using HyL III technology, had a planned capacity of 1.5 Mt and an estimated investment of \$378 million. Orinoco Iron, using FINMET technology, had a planned capacity of 2.2 Mt and an estimated investment of \$1.78 billion. With these new projects, the country's DRI capacity would reach about 10.5 Mt (Chávarri, 1998c).

Ferrominera signed an agreement with Kvaerner Metals of the United Kingdom to build and operate a 7-Mt-DRI-grade pelletizing plant in Puerto Ordáz, Bolívar State (Metal Bulletin, 1998c).

SIDOR, with a 3.6-Mt installed capacity for crude steel (78% of the country's total), was privatized in 1997. The new owners were planning to invest \$804 million in the company between 1998 and 2002 (Novegil, 1998). This investment would be used to double the plant capacity, to reduce costs, to improve quality and service to the customer, and to improve environmental measures. In addition, SIDOR planned to construct a new pelletizing plant in association with another company for a total investment of \$250 million. At yearend, however, plans for capital spending were put on hold when SIDOR was affected by the weak steel market (Metal Bulletin, 1999).

Production of HBI from Operaciones al Sur del Orinoco C.A., a Kobe Steel subsidiary, was stopped, and major maintenance work was begun in November because of market conditions (Metal Bulletin, 1998b). Siderúrgica Venezolana S.A.'s Venceprar, another HBI producer closed in October to do maintenance work.

Estimated production of cement increased slightly in 1998. Venezuela exported an estimated 40% of its production. Of that, about 60% of that was exported to the United States and about 30% went to the Caribbean and other Latin American countries.

Carbozulia S.A., a subsidiary of Petróleos de Venezuela S.A. (PDVSA), was the largest producer of coal from the Guasare coal basin in the State of Zulia. The company, in joint venture with RAG International Coal AG (formerly Ruhkohle Handel Inter) and Shell Coal International, owned Carbones del Guasare S.A., the company that operated the Paso Diablo and the Socuy mines. Paso Diablo was the largest coal mine in Venezuela. Carbozulia, in joint venture with Carbones del Mar S.A., a subsidiary of Evans Energy of the United States, also owned Carbones del Guajira S.A., the company that operated the Cachiri and the Mina Norte mines.

Production from Carbozulia's joint-venture mines produced 6.14 Mt in 1998. The Carbozulia joint ventures exported 5.9 Mt to Europe, and Latin America, and the United States.

In 1998, PDVSA continued with its long-term strategy to increase its share of world petroleum production, refining, and marketing by opening its exploration and production of petroleum to private domestic and foreign companies through a number of strategic associations, expanding its refining capacity outside of the country, and focusing on better use and development of its natural gas resources. One of the areas of

great development after the opening of the petroleum sector has been the Orinoco Belt, where Venezuela has the largest reserves of heavy and extra-heavy crude petroleum. In this area, PDVSA formed four strategic associations with international petroleum companies to produce synthetic light crude from the extra-heavy crude. The four projects, Cerro Negro, Hamaca, Petrozuata, and Sincor were scheduled to come into production between 2000 and 2003. Petrozuata, a joint venture between PDVSA and CONOCO Inc., scheduled for completion in October 2000, had a design capacity to produce 100,000 barrels per day (bbl/d) of synthetic crude. Cerro Negro, S.A. a joint venture of PDVSA through its subsidiary, PDVSA Cerro Negro, S.A. (41.67%); Mobil Corp. through its subsidiary Mobil Cerro Negro, Ltd. (41.67%); and Veba Oel AG (16.66%) was scheduled for completion in July 2001, and would produce 120,000 bbl/d of synthetic crude. Sincor, a joint venture of PDVSA (38%), Total Compagnie Française des Pétroles (47%), and Statoil A/S (15%), was scheduled for completion in February 2002 and would have a synthetic crude production capacity of 170,000 bbl/d. Hamaca, a joint venture of PDVSA (30%), Phillips Petroleum Co. (40%), and Texaco, (30%) with a capacity of 170,000 bbl/d, was scheduled for completion in January 2003 (Petróleos de Venezuela, S.A., 1999, PDVSA-Sincor-3 project information, Extra-heavy oil ongoing projects, accessed January 25, 2000, at URL <http://www.pdv.com/sincor-part-sale/presentation3.html>).

In June, Mobil Corp. and PDVSA announced that financing for \$600 million of the \$900 million required for the Cerro Negro synthetic petroleum project was obtained through a series of three bonds (Petróleos de Venezuela, S.A., June 19, 1998, Anunciaron Mobil y PDVSA concluyó financiamiento para proyecto Cerro Negro [Mobil and PDVSA announced conclusion of financing for the Cerro Negro Project], press release, accessed January 25, 2000, at URL [http://www.pdvsa.pdv.com/news/espanol/noticias\\_mobil1\\_es.html](http://www.pdvsa.pdv.com/news/espanol/noticias_mobil1_es.html)). In July, six banks financed the remainder (Petróleos de Venezuela, S.A., July 15, 1998, Strategic association in the Orinoco Belt—Cerro Negro bonds featured longest maturity for type of project, press release, accessed January 25, 2000, at URL [http://www.pdvsa.com/news/english/noticias\\_bonos\\_en.html](http://www.pdvsa.com/news/english/noticias_bonos_en.html)). Production from Cerro Negro was scheduled to begin at a rate of 60,000 bbl/d in 1999, with full production of 120,000 bbl/d in 2001. The crude produced by the Cerro Negro project was to be pipelined to an upgrading plant in the José industrial complex in Anzoátegui State. The synthetic crude would then be sent to PDVSA's and Mobil's Chalmette refinery in Louisiana, the United States.

At yearend 1998, Venezuela's proven reserves of crude and condensate were 76.1 billion barrels (Gbb), 68% of which was from heavy and super heavy crude (Petróleos de Venezuela, S.A., 1999, p. 12). This represented a 1.57% increase from the levels at the beginning of the year. Production capacity increased during the year by 1.6% to 3.821 million barrels per day (Mbb/d).

In April, Venezuela, which had aggressive plans for expansion of its petroleum production, decreased its output of crude petroleum to 3.17 Mbb/d from 3.73 Mbb/d in accord with the agreement reached at the beginning of the month between Organization of Petroleum Producing Countries

(OPEC) and non-OPEC producers as low petroleum prices continued. PDVSA notified its international clients of the reduction and declared force majeure, a clause in its supply contracts. The reduced level were expected to continue for the remainder of the year [Petróleos de Venezuela, S.A., April 8, 1998, Declarada fuerza mayor ante compradores internacionales (Force majeure declared on international buyers), accessed January 25, 2000, at URL [http://www.pdvsa.pdv.com/news/espanol/noticias\\_fmayor\\_es.html](http://www.pdvsa.pdv.com/news/espanol/noticias_fmayor_es.html)].

In May, a consortium formed by Chevron Corp., Statoil, Phillips, and Atlantic Richfield Co. began operating the LL652 oilfield northeast of Lagunillas field in Lago Maracaibo (Lake Maracaibo), State of Zulia (Petróleos de Venezuela, S.A., June 4, 1998, Opening strategy marches on, accessed January 25, 2000, at URL [http://www.pdvsa.com/news/english/noticias\\_consortio\\_en.html](http://www.pdvsa.com/news/english/noticias_consortio_en.html)). Under the contract with PDVSA awarded in 1997, the group will operate the field for 20 years as part of the third round of operating contracts. Expected production from the field was 115,000 bbl/d, or 500 million barrels during the term of the contract. Cost for the project was estimated to be \$2 billion. Total production from the field to 1998 was 198 million barrels of 36° API crude oil.

Also in May, PDVSA transferred the operation of the Boquerón field in Maturín, State of Monagas, to Union Texas Venezuela. Union Texas won the right to operate the field in the third round of operating contracts in June 1997. The 20-year, \$400 million agreement called for increased recovery by high pressure gas injection, drilling of 10 additional wells, and construction of infrastructure to support a production level of 60,000 bbl/d of 31° API petroleum. Production from the field was 8,100 bbl/d in 1998 [Petróleos de Venezuela, S.A., May 23, 1998, Bajo la modalidad de convenios operativos Union Texas Venezuela recibe campo Boquerón de PDVSA (Under an operating contract, Union Texas receives the Boquerón field from PDVSA), accessed January 25, 2000, at URL [http://www.pdvsa.com/news/espanol/noticias\\_uniont\\_es.html](http://www.pdvsa.com/news/espanol/noticias_uniont_es.html)].

In June, Pennzoil de Venezuela Corp., representing a consortium with Ehcopek Petróleo S.A., Nimir Petroleum Co. Ltd., Cartera Inversiones Petroleras II C.A., and Petróleos y Gas Inversiones C.A., signed an agreement with PDVSA to operate an area in the Lagunillas field. Investment for the 20-year production of the 42-kilometer (km) area B-2X.68/79 was \$337 million in capital and operating expenses. Pennzoil was expected to produce a maximum of 22,000 bbl/d. Pan Canadian Petroleum Ltd., also representing a consortium with Pennzoil and Petróleo y Gas Inversiones, signed a 20-year agreement to operate the B-2X.70/80 area adjacent to the Lagunillas and the Bachaquero fields. The 42-km area was expected to produce 20,000 bbl/d beginning in 2000 or 2001. This consortium was planning to invest \$298 million in the project (Petróleos de Venezuela, S.A., June 26, 1998, Pennzoil and Pan Canadian sign acts with PDVSA to operate on Lake Maracaibo, press release, accessed January 25, 2000, at URL [http://www.pdvsa.com/news/english/noticias\\_canada\\_en.html](http://www.pdvsa.com/news/english/noticias_canada_en.html)).

In November, the Government of Venezuela, through PDVSA, awarded a contract to an international consortium of El Paso Energy International of the United States, General Electric Capital Corp. of the United States, and Nissho Iwai

Corp. of Japan for the world's largest high-pressure gas-injection project to extend the economic life of the Santa Bárbara-Piritál oilfields in the State of Monagas, one of the largest oil and gas areas of the country. The estimated \$400 million project (Pigap II), scheduled to begin production in 2001, was designed to allow the extraction by secondary recovery of an additional 1.3 Gbbl barrels of condensate and light crude from the Santa Bárbara-Piritál area in a 40-year term. The international consortium will design, build, and operate the facilities for the initial 20 years of the project (Petróleos de Venezuela, S.A., November 3, 1998, Largest gas-injection project worldwide—PDVSA makes award at PIGAPII bid, press release, accessed January 25, 2000, at URL [http://www.pdvsa.pdv.com/news/english/noticias\\_pigapii2\\_en.html](http://www.pdvsa.pdv.com/news/english/noticias_pigapii2_en.html)).

Natural gas reserves were 4.16 trillion (in Spanish the term “billion” equals the term “trillion” in English, or  $10^{12}$ ) cubic meters (147 trillion cubic feet), of which 3.77 trillion cubic meters (133 trillion cubic feet) are of associated gas (Petróleos de Venezuela, S.A., 1999, p. 12).

PDVSA processed 1.056 Mbbbl/d in its domestic refineries, the highest level ever achieved by the company. Processing capacity at El Palito refinery in the State of Carabobo was increased to 131,000 bbl/d in 1998 from 120,000 bbl/d in 1997. The refinery, which began operating in 1960, made modifications in different plants, including the crude distillation and the catalytic cracking units. During the year, the first shipments of reformulated gasoline to the United States were made meeting the new U.S. Environmental Protection Agency standards [Petróleos de Venezuela, S.A., September 1, 1998, Refinería El Palito incrementa su capacidad de procesamiento (Processing capacity increased at El Palito refinery), accessed January 25, 2000, at URL [http://www.pdvsa.com/news/espanol/noticias\\_elpal\\_es.html](http://www.pdvsa.com/news/espanol/noticias_elpal_es.html)].

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TABLE 1  
VENEZUELA: PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity	1994	1995	1996	1997	1998	
<b>METALS</b>						
Aluminum:						
Alumina	1,551	1,661	1,701	1,730	1,700	
Bauxite	4,419	5,022	4,807	4,967	5,100	
Metal, primary, unalloyed	metric tons	585,445	629,828	629,263	633,836	584,690
Gold, mine output, Au content	kilograms	10,094	7,110	11,719	22,322	7,248
Iron and steel:						
Iron ore and concentrate	18,318	18,954	18,412	18,503 r/	16,553	
Metal, direct-reduced iron	4,803	5,099	5,380	5,258	4,926	
Ferroalloys:						
Ferromanganese e/	--	--	--	6 2/	10	
Ferrosilicomanganese	47	48	25	37	35	
Ferrosilicon 3/	41	50	63	60 e/	55 e/	
Total	88 r/	98 r/	88 r/	103 e/	100	
Steel, crude	3,524	3,568	3,941	4,019	3,700	
Semimanufactures, hot-rolled	2,390	3,080	3,100	3,100 e/	3,000 e/	
Lead, secondary, refined e/	metric tons	15,000 2/	16,000	16,000	16,000	
<b>INDUSTRIAL MINERALS</b>						
Amphibolite	50	66 r/	77	59 r/	42	
Cement, hydraulic	6,927	7,672	7,556	7,600 e/	7,867	
Clays:						
Kaolin	10	3 r/	8	5	169	
Other	2,434	3,380 r/	2,737	2,759 r/	2,446	
Diamond:						
Gem	carats	368,211 r/	232,185 r/	99,129	158,260	76,000 e/
Industrial	do.	214,311 r/	3,931 r/	72,887	89,948	50,000 e/
Total	do.	582,522 r/	236,116 r/	172,016	248,208	126,000
Feldspar	137	170 r/	205	160	158	
Gypsum	135	135 r/	57	80	72	
Lime	250 e/	250 e/	279	321 r/	378	
Nitrogen, N content of ammonia	505	600	605	612	522	
Phosphate rock	99	86 r/	148	291 r/	322	
Pyrophyllite e/	32	32	32	32	32	
Salt, evaporated e/	metric tons	400,000	350,000	350,000	350,000	350,000
Serpentine, crushed e/	550	550	550	550	550	
Stone, sand and gravel:						
Stone:						
Dolomite	300	300	225	204	200 e/	
Granite	264	236 r/	286 r/	400	314	
Limestone 4/	11,649 r/	12,189 r/	15,873	14,177 r/	13,670	
Sand and gravel	4,165	4,629 r/	3,660 r/	4,218 r/	3,681	
Silica sand 4/	141	598 r/	763	798 r/	611	
Sulfur, petroleum byproduct	158	180	250	319	425	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Carbon black e/	60	60	60	60	60	
Coal, bituminous	4,434	4,258 r/	4,181	5,284	6,324	
Gas, natural:						
Gross	million cubic meters	44,487 r/	48,891 r/	55,105 r/	59,771 r/	62,167
Marketed	do.	28,787 r/	32,129 r/	35,648 r/	36,901 r/	39,005
Natural gas liquids: e/ 5/						
Natural gasoline	thousand 42-gallon barrels	11,300	11,300	12,000	12,000	13,697 2/
Liquid petroleum gas	49,275 2/	50,000	55,000	55,000	53,074 2/	
Total	do.	60,575 2/	61,300	67,000	67,000	66,771 2/

See footnotes at end of table.

TABLE 1--Continued  
 VENEZUELA: PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity	1994	1995	1996	1997	1998
MINERAL FUELS AND RELATED MATERIALS--					
Continued					
Petroleum:					
Crude 6/ thousand 42-gallon barrels	955,351 r/	1,021,635 r/	1,088,850 r/	1,153,400 r/	1,215,120
Refinery products:					
Liquified petroleum gas do.	2,993 r/	3,358 r/	4,136 r/	5,026 r/	4,636
Gasoline, motor do.	69,095 r/	72,380 r/	66,173 r/	67,908 r/	70,956
Naphtha and other gasolines do.	50,480 r/	60,043 r/	65,697 r/	72,828 r/	72,964
Jet fuel do.	25,316 r/	31,295 r/	30,327 r/	31,069 r/	32,551
Kerosene do.	2,095 r/	2,285 r/	966 r/	1,175 r/	766
Distillate fuel oil do.	95,630 r/	104,281 r/	108,263 r/	121,300 r/	120,815
Lubricants do.	2,628 r/	2,482 r/	2,233 r/	2,051 r/	2,227
Residual fuel oil do.	94,754 r/	86,578 r/	83,960 r/	79,059 r/	80,957
Asphalt and bitumen do.	9,308 r/	10,001 r/	11,053 r/	11,618 r/	10,986
Petroleum coke do.	617	4,311	8,231	10,888	8,369
Parafins do.	190	204	47	201	190
Internal consumption do.	23,360	24,273	24,888	26,393	27,200
Unspecified do.	1,153 r/	1,788 r/	1,632 r/	1,993 r/	2,581
Losses	(3,796)	(6,132)	(3,916)	(8,362)r/	(8,140)
Total 7/	381,415 r/	409,411 r/	411,522 r/	439,871 r/	443,338

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1, 2000.

2/ Reported figure.

3/ Figures represent combined 45% silicon-content and 75% silicon-content production.

4/ Excludes production under contract with the government.

5/ From nonassociated gas only.

6/ Includes condensate and bitumen for the production of Orimulsión.

7/ Excludes byproduct sulfur, which is reported in the industrial minerals portion of this table.

TABLE 2  
VENEZUELA: STRUCTURE OF THE MINERAL INDUSTRY IN 1998

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina		C.V.G.-Bauxite C.A. (Government, 88.7%; Aluminio Suizo S.A., 11.3%)	Ciudad Guayana, Bolívar State	2,000.
Aluminum		Aluminio del Caroní S.A. (Government, 82%; Reynolds International, Inc., 8%)	do.	210.
Do.		Industria Venezolana de Aluminio C.A. (Government, 80%; six Japanese companies, 20%)	do.	430.
Bauxite		C.V.G.-Bauxilum C.A.	Los Pijiguaos, Bolívar State	6,000.
Cement		C.A. Venezolana de Cementos (Cementos Mexicanos S.A. de C.V., 100%)	Barquisimeto, Lara State; Maracaibo, Zulia State; Pertigalete, Anzoátegui State; San Cristóbal, Táchira State	3,880.
Do.		Consolidada de Cementos C.A. (Holderbank Management and Consulting Ltd., 50%)	Cumarebo, Falcón State; San Sebastián Carabobo State	2,280.
Do.		C.A. Fábrica Nacional de Cementos (Lafarge France, 46.13%)	Palmira; Ocumare del Tuy, Miranda State	1,330.
Do.		Cementos Catatumbo	Montellano, Zulia State	650.
Do.		Cemento Andino	Curcas, Trujillo State	560.
Coal		Carbones del Guasare S.A. (Carbones de Zulia S.A., 54.68%, RAG International Coal AG, 22.66%; Shell Coal International, 22.66%)	Paso Diablo, Zulia State, Guasare coal basin	5,500.
Do.		Carbones de la Guajira S.A. (Carbones del Mar S.A., 64%; Carbones de Zulia S.A., 36%)	Mina Norte and Cachirí, Zulia State, Guasare coal basin	500.
Ferrosilicon		Venezolana de Ferrosilicio C.A. (Ferroatlántica S.L., 80%)	Ciudad Guayana, Bolívar State	80.
Gold	kilograms	Revemin (Bolívar Goldfields, 51%; C.V.G., 49%)	El Callao, Bolívar State	900. 1/
Do.	do.	Crystallex de Venezuela C.A.	Albino mine, Kilometro 88, Bolívar State	1,500. 1/
Do.	do.	C.V.G.-Compañía General de Minería C.A. (Government, 100%)	El Callao, Bolívar State	3,500.
Iron ore		C.V.G.-Ferrominera Orinoco C.A. (Government, 100%)	Cerro San Isidro, Los Barrancos, and Las Pailas, Bolívar State	25,000.
Iron ore pellets		do.	Ciudad Guayana, Bolívar State	3,600.
Do.		Siderúrgica del Orinoco C.A. (SIDOR) (Amazonia Consortium, 70%, C.V.G. 30%)	do.	6,600.
Direct-reduced iron		do.	do.	3,700.
Do.		Complejo Siderúrgico De Guayana C.A. (Kobe Steel, 36.7%, G.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%; and International Finance Corp., 8.7%)	do.	1,000.
Nickel		Loma de Níquel S.A. (Minorco Group, 81.5%; Jordex Resources Inc., 7.5%, Corporación Caracas, 7.5%, International Finance Corp., 3.5%)	Loma de Níquel, Aragua and Miranda States	16,000.
Petroleum:				
Crude	million 42-gallon barrels	Petróleos de Venezuela, S.A. (Government, 100%)	Fields in Anzoátegui, Apure, Falcón, Guárico, Monagas and Zulia States	1,380.
Refinery products	do.	do.	Refineries in Amuay and Cardón in Falcón State, Puerto La Cruz and San Roque in Anzoátegui State, El Palito in Carabobo State, and Bajo Grande in Zulia State	434.
Steel		SIDOR (Amazonia Consortium, 70%, C.V.G., 30%)	Ciudad Guayana, Bolívar State	3,600.
Do.		Siderúrgica del Turbio C.A. (SIDETUR) (Siderúrgica Venezolana Sivensa S.A., 100%)	Antimano, Barquisimeto, and Casima	907.

1/ Mill capacity.