

THE MINERAL INDUSTRY OF SPAIN

By Harold Newman

Spain, whose land area includes a major portion of the Iberian Peninsula, is one of the most mineralized areas in Western Europe. The Iberian Pyrite Belt area is geologically very complex which allows more diverse possibilities for mineral resources. This area is considered the most significant mining district within the European Union (EU) and is an important source of nonferrous and precious metals.

The main polymetallic deposits from west to east are Tharsis, Scotiel, Rio Tinto, and Aznalcollar. Although Spain has a great diversity of deposits including metals, industrial minerals and coal, there are very few large mines, and mining activity was maintaining the downward trend of previous years.

Although the Government attempted to foster economic growth, it had to rationalize some of the Government-controlled industries. The coal and steel industries had to reduce production capacity in accordance with regulations governing Spain's acceptance into the EU.

The mineral industry operated in numerous regions throughout the country. The estimated value of Spanish mineral production in 1991, the latest year that full data were available, was about \$374 million. Fifty percent of this value was attributed to the mineral fuels sector; 10% to the metals sector; and 40% to the industrial minerals sector, including ornamental stone. The number of persons employed in the minerals resource sector in 1992, the latest date data were available, was reported to be 67,000.

Within the EU, Spain was the largest producer of mined lead and zinc and a major producer of pyrite; it also had the highest level of self-sufficiency with respect to mineral raw materials. However, production continued to be sparse and only copper ore, iron ore, and pyrite were significant. The mercury mines at Almadén, operated at lower levels in response to international market conditions. There was a small increase in the output of lead and zinc ores.

The industrial growth in the EU contributed to the demand for quarried mineral products from Spain. Quarried natural stone accounted for 16% of the value of Spanish mining. With the exception of coal, it was the most important mining sector in dollar value in the country. (*See table 1.*)

Liberalization of foreign trade flows proceeded quickly after Spain entered the EU. The differences between Spanish tariffs and EU Common Market external tariffs had been mostly eliminated. Table 2 shows the impact of selected classes of mineral commodities on Spain's balance of payments position in relation to the EU and the world.

Spain was a large importer of mineral fuels, and it was expected that this situation would continue as the demand for energy increased. About 15% of consumption was satisfied by imported coal. Spain received about 80% of its gas supplies from Algeria and Libya, with the remaining supply provided from domestic production.

The mineral industry was composed of state and private-owned entities. Minerals belonged to the state under an arrangement known as the "Regalian Principal." The Mining Law of July 19, 1944, as amended, and the Hydrocarbon Law of December 26, 1950, as amended, governed the mineral industry. The Ministry of Industry and Energy implemented the mineral laws, regulated the private sector, and managed most of the state-owned companies through the Instituto Nacional de Industria (INI), a state holding company. INI and Instituto Geologico y Minero are the principal Government mineral-resource agencies. (*See table 3.*)

Alumina and primary aluminum were produced almost entirely by the Industria Española del Aluminio S.A. (Inespal). INI is Inespal's major shareholder. Alumina Española S.A., a subsidiary near San Ciprian, produced alumina, primary aluminum in standard sheets and ingots, and special alloys. Inespal was reformed into a new holding company with four operating subsidiaries: Aluminio Español, Inespal Extrusion, Inespal Conversion, and Inespal Productos Planos.

Freeport-McMoRan Copper and Gold Inc. of the United States, was undertaking an expansion of the Huelva copper complex to increase smelter capacity from 150,000 metric tons per year (t/yr) to 270,000 t/yr. The refinery also would be expanded to increase the production of copper cathodes from 135,000 t/yr to 215,000 t/yr. The overall smelter and refinery expansions were scheduled to be completed by 1997 at an estimated cost of \$215 million.

The copper smelter was the second largest in Europe, and the complex was the only one in Spain that both transformed copper ore into raw copper and then refined the copper in an electrolysis plant.

RTZ Corp., of the United Kingdom, signed a letter of intent with Freeport-McMoRan to purchase a 25% interest in the Huelva operation. In addition, RTZ would acquire a 25% interest in Freeport-McMoRan's exploration program in Spain.

Almagrera S.A. announced the development of an open pit copper mine in the Province of Huelva. Reserves were

estimated by the company to be 5 million metric tons (Mt) of ore averaging 3% copper with byproduct zinc. The project, consisting of the mine, equipment, access roads, and processing plant, was estimated to cost \$22 million.

The company reported extraction of 247,000 metric tons (t) at the Migollas Mine with grades of 4.21% copper, 0.59% lead, and 1.2% zinc. Almagera also announced that, from 1995 onward, it planned to produce 377,000 t/yr of complex ore and 400,00 t/yr of copper bearing ore from its combined operations at Migollas and Sotiel Mines.

Navan Resources PLC of Ireland and Tolsa S.A. of Spain were a joint-venture gold exploration project in the Almería Province of southern Spain. Navan, with 80% interest, was participating as operator in the exploration of a 150-square-kilometer (km²) area. Concorde Minera S.A. was conducting investigations in the Province of Almería on the Nijar reserve, on behalf of the state. Concorde also was carrying out exploratory work in the Asturias area.

Compañía Andaluza de Minas S.A. (CAM) was the largest iron ore producer in Spain. The open pit operation produces about 3.3 Mt/yr from the Alquife deposit on the north side of the Sierra Nevada, approximately 80 km from Grenada. Iron ore mining in Spain was located almost totally at Alquife. Also, CAM operated a 90,000-dry-weight-ton-capacity shiploader at the Port of Almeira.

The Spanish steel industry maintained its efforts to adapt to the economic environment and realities of the Common Market in Europe. The industry was completely integrated into the EU except for some issues, such as an EU Commission request for a reduction in steelmaking capacity. This restructuring effort was expected to reduce Spanish steel capacity by 1.3 Mt with 10,000 jobs expected to be lost.

Corporacion de la Siderurgia Integral (CSI) and Sidenor were the two state companies that produced 50% of the country's steel, while 13 companies were in the private sector. A majority of these were scrap-based minimills. CSI was composed of Spain's two largest integrated steel producers, Empresa Nacional Siderurgia S.A. and Altos Hornos de Vizcaya. CSI was charged with developing the future strategy of the two companies to reduce production costs and improve productivity.

Outokumpu Minera Española S.A. was doing exploration work on lead and zinc in the Cantabria, León, and Huelva areas. Also, Austriana de Zinc, at Reocín, and Navan Ltd., at Mazarrón, were carrying out investigations.

Spain was the only mercury producer in the EU in 1995. Work continued on Minas de Almadén y Arrayanes S.A.'s (MAYASA) Las Cuvas Mine at Almadén, in southern Spain. The new mine, which began limited production in 1995, contained estimated reserves of 140,000 t of ore at a grade of 5% mercury.

Asturiana de Zinc S.A. was the largest refined zinc producer in the EU and accounted for approximately 4% of the world's zinc production. Asturiana's San Juan de Nieva smelter had a capacity of 320,000 t/yr. The company's

Reocín Mine and Exminesa's Rubiales Mine supplied most of the feed concentrates. Asturiana was investigating areas near the Reocin Mine attempting to develop additional reserves.

It was reported that a large number of civil construction projects were awaiting tenders, which would indicate a positive area for growth. Cementos Mexicanos S.A. purchased Valenciana de Cementos S.A., one of the country's largest producers, for an estimated \$1.7 billion. This represented the largest and first really significant acquisition in Spain by a North American cement producer.

Kaolin deposits occur in two different geological environments in Spain. One is a hydrothermal alteration of Pre-Hercynian granites in the northwestern part of Spain. The other source in eastern Spain was derived from the weathering of crystalline rocks of Lower Cretaceous age. These two areas in the country were estimated to have produced more than 400,000 t/yr of kaolin and have resulted in Spain becoming one of the more important kaolin producers in western Europe.

Explotaciones Ceramicas Españolas S.A. (ECESA) and Caolins de Vimianzo S.A. (CAVASA) are two of the largest kaolin producers in Spain. ECESA produced about 90,000 t/yr from its operations at Burela de Cabo, Lugo Province, and CAVASA produced about 100,000 t/yr from its operations at Vimianzo, Cap Finisterre, and Galicia Province. Both companies produced ceramic, fiberglass, and paper-grade kaolin. ECESA also produced a range of kaolins for porcelain and earthenware.

Spain was the world's largest producer of slate, and, along with Greece, Italy, and Portugal, provided a significant volume of the world's supply of granite and marble. Increased infrastructure construction led to a growing importance of aggregates, and the ornamental rock sector continued to enjoy a steady demand.

The dominant lime producer was Calcinor S.A. and its numerous associates. Together, these producers have a capacity approaching 600,000 t/yr of burnt lime. Other producers included Tuledas Asturias S.A., which produced about 1,000 t/d exclusively for the steel industry, and Calcopu S.A., which produced lime used in the mining and production of copper, iron, steel, and building materials.

Minera San Albin S.A. (SMSA) was conducting exploration drilling on the Alto Eugenia Hill wollastonite deposit in Colmenar Viejo. SMSA estimated that 3.5 Mt of calcite-garnet-wollastonite ore had been delineated, with an estimated wollastonite content of 900,000 t.

Plans to develop the project reportedly ran into difficulty with the local community. The people of Colmenar Viejo were against the project owing to its being perceived as a potential hazard to local water supplies and its close proximity to the Virgen de los Remedios hermitage, which was attracting tourists.

Desarrollo de Recursos Geologicos (DRG) carried out an exploration program on its Illustacion wollastonite project

near the Spain-Portugal border. The company reported that it had defined a deposit greater than 20 Mt in size with an average grade of 35% wollastonite. DRG was looking for a joint-venture partner to participate in the project. Other than in Finland, little or no natural wollastonite was produced in Europe.

Spain is endowed with reserves of anthracite and bituminous coal and lignite, and was the third largest anthracite-bituminous coal producer in the EU. In the past, domestic production had provided the coal requirements of the power generation industries. About 97% of the coal produced was consumed domestically in thermoelectric plants.

About one-third of Spain's coal needs was imported, and future plans called for increased coal usage in the electric generating industry. More coal was expected to be imported because Spanish coal, particularly lignite, has a high sulfur content. Imported coal, mainly from South Africa, comprised about 15% of consumption and was expected to reach 30% by the end of this century. Compliance with environmental legislation would require significant investments by most companies to utilize domestic lignite in operations.

The number one coal producer was the Government-owned company Hulleras del Norte S.A.(Hunosa), and the number one lignite producer was the 65% Government-owned company Empresa Nacional de Electricidad S.A.(Endesa). The Government-owned company Empresa Nacional Carbonifera del Sur S.A. (Encasur), also produced coal. The largest private sector coal producer was Sociedad Hullera Vasco Leonesa.

Under its Future Plan, Hunosa was reducing output, closing less profitable mines, concentrating on the most profitable deposits, and reducing its payroll in an attempt to lower its production costs. Endesa started up its new Corta Gargello open pit mine in Andorra. Encasur's two new open pit mines, Espiel and Cabeza de Vaca, were operational in 1995.

The EU and the Government were negotiating the future of the coal industry of Spain. The EU maintained that Spain should close at least one-half of its mines because the cost of national coal was often as much as six times the price of imported coal. Coal production in Spain was considered by the EU to be inefficient because the cost of coal at yearend was \$253 t as compared with the average price of EU coal of about \$77 t.

The Government maintained that, while coal reserves are abundant, mining conditions were difficult because of narrow seams of coal with many faults and a high ash content. Therefore, coal was more expensive than that imported from Poland or South Africa. This issue was not expected to be resolved quickly.

The energy contribution of domestic natural gas historically had been small, contributing only 3% of the country's energy requirements. The Spanish Government's National Energy Plan (PEN) has indicated that natural gas

was expected to furnish 5% of Spain's energy requirements in the 1990's. There have been significant gas discoveries, and the country has embarked on a drilling program to bring these resources to market. The Gaviota Field in the Cantabrian Sea and the Marisma onshore field provided most of Spain's natural gas. It was estimated that these resources could provide about 2 billion cubic meters (m³/yr) of natural gas per year.

A new pipeline would initially deliver 1.3 billion m³/yr of natural gas from the Algerian gas fields via Morocco. This volume would reportedly increase to 2.8 billion m³/yr by the late 1990's. The 2,000-km-long by 1.2 meter diameter pipeline, expected to be operational in late 1996, would cross the Strait of Gibraltar and enter Spain at a point still to be determined.

Spain had very little domestic crude petroleum production, which accounted for a small percentage of the country's requirements. Casablanca, an offshore oilfield, and Ayoluengo, an onshore field, were the only two producing fields. There has been little effort to discover new reserves since two U.S. companies, Amoco Inc. and Chevron Inc., withdrew from Spanish exploration in 1989.

Empresa Nacional del Uranio was proceeding with the construction of a uranium concentrate plant to increase capacity at Saelices el Chico in the Province of Salamanca. The capacity of the plant would be increased from the existing 254 t/yr to 950 t/yr of U₃O₈ and was expected to be in operation by yearend 1995. The project, estimated to cost \$40 million, was being subsidized by the EU through the Salamanca Regional Development Organization.

The Spanish National Railways operated on 13,500 km of 1.668-m-gauge track and 1,820 km of 1-m-gauge track. This was different from the 1.435-m-gauge track used throughout most of Europe. Most of the 150,000 km of highways are paved. However, only a small portion are limited-access divided highways. Infrastructure improvements were one of the Government's priorities. The main ports are Barcelona, Bilbao, Cadiz, Cartagena, Gijon, Huelva, and Tarragona.

The mineral-resource base in Spain has not been fully exploited, and this mineral-resource-rich country was expected to continue to contribute these resources for the continued development of Spain and the EU. There was an appreciable amount of minerals exploration work being carried out in various areas.

Within the Pyrite Belt, the discovery of complex sulfide deposits at Aguas Teñidas, Concepción, and Cerro Colorado have reached the stage of economic viability studies. The gold exploration program by Rio Narcea Gold Mines of Canada is probably the largest in Western Europe. It involves a total of 1,100 square kilometers of mining concessions and investigation permits located on the gold-bearing belts at Rio Narcea, Navelgas, Oscos, and Salave west of Asturias. Rio Narcea has acquired all the concessions and permits which belonged to the Spanish subsidiary of Anglo American Corp.

TABLE 1
SPAIN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995 e/
METALS					
Aluminum:					
Bauxite	-- r/ e/	3,900	--	--	--
Alumina 2/	1,003,000	959,100	1,060,000	1,000,000	1,000,000
Metal:					
Primary	355,100	359,022	364,256	338,106	361,100 3/
Secondary	72,000 e/	96,500	99,700	98,000	103,500
Cadmium metal	344	361 r/	365 r/	387 r/	350
Copper:					
Mine output, Cu content	8,322	9,432	3,518	4,940	33,359 3/
Metal:					
Blister: e/					
Primary	111,100	110,000	135,800	141,600	134,300
Secondary	38,000	37,000	44,800	46,800	47,100
Total	149,100	147,000	180,600	188,400	181,400
Refined:					
Primary	124,900	134,325	180,600	141,600	117,100
Secondary	65,000	44,775	180,600	46,800	47,100
Total	189,900	179,100	361,200	188,400	164,200
Gold, mine output, Au content kilograms	7,421	6,572	6,083	5,852	3,256 3/
Iron and steel:					
Iron ore and concentrates (including byproduct concentrate),					
Fe content thousand tons	1,763	1,641	1,109	2,086	1,982 3/
Metal:					
Pig iron do.	5,397	5,076	5,394	5,447	5,128
Ferrous alloys, electric furnace do.	150 e/	145 e/	117	70	125
Steel:					
Crude do.	12,933	12,295	12,646	13,547	13,975
Castings and forgings do.	170 e/	160 e/	165	175	175
Total	13,103 e/	12,455 e/	12,811	13,722	14,150
Semimanufactures do.	10,991	10,753	11,563	12,103	12,000
Lead:					
Mine output, Pb content	44,385 e/	37,000	25,300	23,573	30,000
Metal: e/					
Primary	110,000	62,000	62,400	70,400	70,000
Secondary	59,000	58,000	61,000	75,000	85,000
Mercury: Metal kilograms	52,000 r/ e/	-- r/ e/	64,300	393,000	1,497,000
Silver, mine output, Ag content do.	182,000 r/ e/	191,000	192,418	195,754	200,000
Tantalum minerals (tin byproduct): e/					
Gross weight do.	8,000	8,000	6,000	5,000	5,000
Ta content do.	2,000	2,000	1,500	1,200	1,200
Tin:					
Mine output, Sn content	12	7	2	5	2
Metal, primary e/	1,670	2,230	2,000	2,000	2,000
Titanium dioxide e/	30,000	30,000	25,000	20,000	20,000
Uranium, mine output, U ₃ O ₈ content	223	187	215	301	300
Zinc:					
Mine output, Zn content	261,300 r/ e/	204,655	170,200	150,422	172,000
Metal, primary and secondary	262,000 r/ e/	352,000	328,000	298,700	321,500
INDUSTRIAL MINERALS					
Barite	5,200 r/ e/	6,190	6,000 r/ e/	6,000	5,000
Bromine e/	300	250	200	200	200
Cement, hydraulic, other than natural thousand tons	27,582	24,615	22,878	25,131	26,423 3/
Clays:					
Attapulgit e/	72,900	87,300	85,000	85,000	80,000
Bentonite e/	150,000	150,000	150,000	150,000	150,000
Kaolin, washed	413,000	305,000	148,000	290,000	300,000
Other e/ thousand tons	10,000	10,000	13,000	13,650	25,300
Diatomite and tripoli	60,000	36,000	38,000	40,000	40,000
Feldspar	214,000	247,000	239,000	250,000	225,000
Fluorspar:					
Acid-grade	107,000	94,000	82,000	97,000	96,000
Metallurgical-grade	5,000 e/	2,960	5,000	10,000	15,000
Total	112,000 e/	96,960 e/	87,000	107,000	111,000
Gypsum and anhydrite, crude thousand tons	7,210	6,760 r/	7,250	7,300	7,500
Kyanite, andalusite, related materials e/	3,600	3,600	3,000	3,500	3,500

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995 e/	
INDUSTRIAL MINERALS--Continued						
Lime, hydrated and quicklime e/	thousand tons	1,200	1,200	1,200	1,000	1,000
Magnesite:						
Calcined		136,000 e/	133,032	131,000	135,000	150,000
Crude		445,000 e/	400,000 e/	400,000	400,000	400,000
Mica		300 e/	250 e/	250	250	200
Nitrogen, N content of ammonia	thousand tons	557	479	354	360	400
Pigments, mineral: e/						
Other		8,600	7,910	8,000	8,000	7,000
Red iron oxide		20,000	18,000	16,000	16,000	15,000
Potash, K ₂ O equivalent		585,200 r/	593,605	660,900	683,700	680,000
Pumice e/		800,000	800,000	700,000	700,000	700,000
Pyrite, including cuprous, gross weight	thousand tons	1,358	862	722	746	750
Salt:						
Rock, including byproduct from potash works	do.	3,172	2,710	2,510	2,850	2,800
Marine and other	do.	900 e/	965	900	850	900
Sand and gravel, silica sand e/ 4/	do.	2,200	2,180	2,200	2,000	2,000
Sepiolite		392,000 e/	400,000 e/	400,000	375,000	375,000
Sodium compounds, n.e.s.:						
Soda ash, manufactured	thousand tons	500 e/	500 e/	500	500	500
Sulfate: Natural						
Glauberite, Na ₂ SO ₄ content		450,000 e/	482,000	260,000 e/	350,000	350,000
Thenardite, Na ₂ SO ₄ content		250,000 e/	189,000	158,000 e/	250,000	250,000
Manufactured e/		150,000	150,000	150,000	150,000	150,000
Stone: Calcareous e/						
Chalk	thousand tons	400	659	500 e/	400	500
Dolomite	do.	4,000	4,380	4,500	4,400	4,500
Limestone	do.	115,000	175,000	160,000	145,600	36,500
Marble	do.	2,210	1,990	2,130	2,132	2,370
Marl	do.	5,000	3,960	4,000	4,000	4,000
Basalt	do.	2,500	3,000	4,480	4,500	4,500
Granite	do.	1,150	980	1,170	1,338	1,380
Ophite	do.	2,000	1,750	2,500	3,000	2,500
Phonolite	do.	750	700	500	500	500
Porphyry	do.	700	958	500	500	500
Quartz	do.	900	991	1,600	1,500	1,500
Quartzite	do.	700	1,332	1,000	1,000	1,000
Sandstone	do.	1,800	1,700	1,600	1,500	1,500
Serpentine	do.	400	811	400	400	400
Other	do.	30,000	30,000	30,000	30,000	30,000
Strontium minerals: e/						
Gross weight		75,000	65,000	50,000	50,000	50,000
Sr ₂ O ₄ content		29,000	18,000	12,000	12,000	12,000
Sulfur:						
S content of pyrites	thousand tons	546	406	327	350	350
Byproduct: e/						
Of metallurgy	do.	252	258	250	250	250
Of petroleum	do.	105	90	100	100	100
Of coal (lignite) gasification	do.	2	2	2	2	2
Total e/	do.	905	756	679	702	700
Talc and steatite e/		70,000	70,000	65,000	65,000	65,000
MINERAL FUELS AND RELATED MATERIALS						
Coal (marketable):						
Anthracite	thousand tons	5,640	6,180	6,050	6,000	6,000
Bituminous	do.	15,500	12,400	13,300	12,000	12,000
Lignite	do.	19,600	18,700	17,457	15,499	14,807
Total	do.	40,740	37,280	36,807	33,499	32,807
Coke, metallurgical e/	do.	3,140	2,940	3,000	3,000	3,000
Gas, natural (marketed)	million cubic meters	1,290	1,220	633	197	383
Peat e/		75,000	70,000	70,000	70,000	70,000
Petroleum:						
Crude	thousand 42-gallon barrels	7,620	7,818	6,376	5,879	4,900
Refinery products:						
Liquefied petroleum gas	do.	20,000 e/	21,541	18,600	19,848	20,000
Naphtha	do.	15,000 e/	22,040	19,600	19,006	18,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		1991	1992	1993	1994	1995 e/
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum: Refinery products--Continued:						
Gasoline, motor	do.	80,000 e/	84,499	79,300	84,388	85,000
Jet fuel	do.	30,000 e/	25,899	24,500	29,192	30,000
Kerosene	do.	29,000 e/	26,404	25,100	29,249	30,000
Distillate fuel oil	do.	110,000 e/	122,128	114,000	121,695	120,000
Residual fuel oil	do.	92,000 e/	121,188	97,900	94,912	95,000
Other e/	do.	30,000	30,000	30,000	30,000	30,000
Refinery fuel and losses e/	do.	12,000	12,000	12,000	12,000	12,000
Total e/	do.	418,000	465,699	421,000	440,290	440,000

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1996.

2/ Reflects aluminum hydrate.

3/ Reported figure.

4/ Includes sand obtained as a byproduct of feldspar and kaolin production.

TABLE 2
SPAIN: 1994 BALANCE OF PAYMENTS, SELECTED MINERAL COMMODITIES 1/

(Thousand dollars)

Mineral commodity	Exports to EU	Imports from EU	Net gain or (loss)	Exports to the world	Imports from the world	Net gain or (loss)
Crude industrial minerals:						
Feldspar	12,928	2,623	10,305	14,674	7,060	7,614
Magnesite	196	286	(90)	388	475	(87)
Slate	1,472	12	1,460	1,684	44	1,640
Other	181,149	136,673	44,476	277,057	368,404	(91,347)
Total	195,745	139,594	56,151	293,803	375,983	(82,180)
Metalliferous ores:						
Copper	21	20,191	(20,170)	3,689	365,903	(362,214)
Lead	4,253	5	4,248	6,147	119	6,028
Tin	--	78	(78)	--	749	(749)
Zinc	6,828	1,502	5,326	15,220	79,150	(63,930)
Other (including waste and scrap)	104,310	718,956	(614,646)	177,516	1,264,585	(1,087,069)
Total	115,412	740,732	(625,320)	202,572	1,710,506	(1,507,934)
Nonmetallic mineral manufactures						
	294,461	97,940	196,521	604,060	182,599	421,461
Metals:						
Iron and steel	1,682,099	1,902,037	(219,938)	3,173,507	2,350,435	823,072
Mercury	177	67	110	1,938	848	1,090
Other nonferrous metals	951,245	870,814	80,431	1,218,486	1,302,001	(83,515)
Total	2,633,521	2,772,918	(139,397)	4,393,931	3,653,284	740,647
Mineral fuels	720,401	984,819	(264,418)	1,583,641	8,661,077	(7,077,436)

1/ Table prepared by Harold Willis, International Data Unit.

TABLE 3
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY OF 1995

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Alumina Española S.A.	Alumina plant at San Ciprián, Lugo	1,000
Aluminum	Aluminio Español S.A.	Electrolytic plant at San Ciprián, Lugo	180
Do.	Industria Española del Aluminio, S.A.	Electrolytic plant at Avilés	100
Do.	do.	Electrolytic plant at La Coruña	25
Do.	Aluminio de Galicia S.A.	Electrolytic plant at Sabiñánigo	78
Do.	do.	do.	14
Coal:			
Anthracite	Antracitas Gaiztarro S.A.	Mines at María and Paulina	2,000
Do.	Antracitas de Gillón S.A.	Mines near Oviedo	2,000
Do.	Antracitas del Bierzo S.A.	Mines near León	1,000
Bituminous	Hulleras del Norte S.A. (Hunosa)	Various mines and plant	3,300
Do.	Hulleras Vasco Leonesa S.A.	Santa Lucia Mine, Leon	2,000
Do.	Minas de Figaredo S.A.	Mines near Oviedo	1,000
Do.	Nacional de Carbon del Sur (Encasur)	Rampa 3 and San Jose Mines, Cordoba	200
Lignite	Empresa Nacional de Electricidad (Endesa)	As Pontes Mine, and Andorra Mine, La Coruña	15,000
Barite	Minas de Baritina S.A. (Kali-Chemie of Germany, 100%)	Mine and plant in Espiel area, Córdoba	50
Cement	Approximately 36 cement companies, of which the largest is-- Asland S.A.	54 plants, including 5 (Asland) plants, of which the largest ones are plants at Puerto de Sagunto, Valencia, and at Villaluenga de la Sagra, Toledo	44,000 (6,000) 2,000 2,000
Copper:			
Metal	Rio Tinto Minera S.A. (Freeport McMoRan Inc., 65%; Ercros Group, 35%)	Smelter at Huelva	85
Do.	do.	Electrolytic refinery at Huelva	105
Do.	Industrias Reunidas de Cobre	Smelter at Asua-Bilbao	30
Do.	Electrolítico y Metales S.A.	Fire and electrolytic refinery at Asua-Bilbao	36
Ore	Rio Tinto Minera S.A. (Freeport McMoRan Inc., 65%, Ercros Group, 35%)	Mines and plant at Ariertero, near Santiago de Compostela, Galicia	12
Do.	do.	Corta Atalay opencast mine, Cerro Colorado opencast mine and plant, and Alfredo underground mine--all in Rio Tinto area	30
Fluorspar, ore	Fluoruros S.A. (Bethelhem Steel Corp., 49%)	Plant at Caravia, near Colunga	400
Do.	do.	Opencast mines at San Lino and Val Negro, and underground mine at Eduardo, near Caravia--all in Asturias	350
Do.	do.	Plant at Collada, Gijón Mines at Veneros Sur and Corona, Gijón	200
Iron ore	Compañía Andaluza de Minas S.A. (Mokta, 62%)	Mine at Alquife, Granada	4,000
Do.	Altos Hornos de Vizcaya S.A. (U.S. Steel, 25%)	Nine mines in Province of Vizcaya	4,000
Do.	Compañía Minera Siderúrgica de Ponferrada S.A.	Eight mines in Province of León	3,000
Do.	Minera del Andévalo S.A.	Opencast mine at Coba, Huelba	2,000
Lead:			
Metal	Sociedad Minera y Metalúrgica de Peñarroya de España, S.A. (Peñarroya, France, 98%)	Smelter at Cartagena, Murcia Refinery at Cartagena, Murcia	60 60
Do.	Compañía La Cruz, Minas y Fundaciones de Plomo S.A.	Smelter at Lineares, Jaén Refinery at Lineares, Jaén	40 40
Do.	Tudor S.A.	Secondary smelter at Saragoza	16
Do.	Ferroaleaciones Españolas, S.A.	Secondary smelter at Medina del Campo	12
Do.	Derivados de Minerales y Metales	Secondary smelter at Barcelona	5
Ore	Sociedad Minera y Metalúrgica de Peñarroya España S.A. (Peñarroya, France 90%)	Opencast mine at Montos de Los Azules, near Unión, Murcia	25
Do.	Andaluza de Piritas S.A. (APIRSA)	Opencast mine at Aznalcóllar, Sevilla	21
Do.	Exploración Minera Internacional España S.A. (EXMINESA)	Underground mine at Rubiales, Lugo	16
Magnesite	Magnesitas de Rubián S.A.	Plants at Zubiri	100
Do.	do.	Mines and plant near Sarria, south of Lugo	220
Mercury	flasks Minas de Almadén y Arrayanes S.A., (Government 100%)	Mine and smelter at Almadén	70000
Petroleum:			
Crude	barrels per day Chevron S.A.	Oilfield at Casablanca	300
Refined	do. Repsol Petróleo S.A.	Refineries at Escombreras	200,000
Do.	do. do.	Puertollano	14,000
Do.	do. do.	Tarragona	260,000

TABLE 3--Continued
 SPAIN: STRUCTURE OF THE MINERAL INDUSTRY OF 1995

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum--Continued				
Refined	barrels per day	Refinería de Petróleos del Norte S.A. (Petronor)	Refinery at Somorrostro	240,000
Do.	do.	Compañía Española de Petróleos S.A.	Refinery at Santa Cruz de Tenerife	160,000
Do.	do.	Petroleos del Mediterraneo S.A. (Petromed)	Refinery at Castellón de la Plana	120,000
Do.	do.	Compañía Iberica Refinadora de Petróleos S.A. (Petroliber)	Refinery at La Coruña	140,000
Potash, ore		Potasas de Navarra S.A.	Mines and plant near Pamplona	300
Do.		Minas de Potasas de Suria S.A.	Mines at Suria	1000
Do.		Unión Explosivos Rio Tinto S.A.	Mines at Balsareny/Sallent and Cardona	2000
Pyrite		Compañía Española de Mines de Tharsis	Mines and plants at Tharsis and Zarza, near Seville	1,300
Do.		do.	Plant at Huelva	600
Do.		Rio Tinto Minera S.A. Unión Explosivos (Rio Tinto, 75%; Rio Tinto Zinc, 25%)	Mines and plant at Rio Tinto, near Seville	900
Sepiolite		Tolsa S.A.	Mine and plant at Vicalvaro, near Toledo	100
Do.		Silicatos-Anglo-Ingleses S.A.	Mine and plant at Villegas near Madrid	200
Steel		Empresa Siderúrgica S.A. (Ensidesa), (Government, 100%)	Plants at Avilés, Veriña, and Mieres in Oviedo, and Moreda, Gijón	6,000
Do.		Altos Hornos de Viscaya S.A. (U.S. Steel, 20%)	Ironworks and steelworks at Sestao, Bilbao	1,500
Uranium, U3O8	metric tons	Empresa Nacional del Uranio (Enusa), (Government, 100%)	Mines and plant near Ciudad Real	500
Zinc:				
Metal		Asturiana de Zinc S.A.	Electrolytic zinc plant at San Juan de Nieva	200
Ore		do.	Reocin mines and plants near Torrelavega, Santander	500
Do.		Andaluza de Piritas S.A. (APIRSA)	Open pit mine at Aznalcóllar Sevilla	3500
Do.		Exploración Minera Internacional España S.A. (EXMINESA)	Underground mine at Rubiales, Lugo	500
Do.		Sociedad Minera y Metalúrgica de Penarroya-Espana S.A.	Mines and plants at Montos de los Azules y Sierra de Lujar, San Agustín	200