

# THE MINERAL INDUSTRY OF

# SPAIN

By Harold R. Newman

Spain, which has some of the most mineralized territory in Western Europe, was a significant European producer of nonferrous and precious metals. The main polymetallic deposits, from west to east, included Tharsis, Scotiel, Rio Tinto, and Aznalcollar. In terms of value of metallic and nonmetallic minerals and quarry products, Spain was a leader among the European Union (EU) countries. Consequently, Spain had one of the highest levels of self-sufficiency with respect to mineral raw materials among the EU members. Of the approximately 100 mineral products mined, only about 18 were produced in significant quantities—bentonite, copper, fluorspar, glauconite, iron, lead, magnetite, mercury, potassic and sepiolitic salts, pyrites, quartz, refractory argillite, sea and rock salt, tin, tungsten, and zinc.

Production of many metallic minerals in Spain was insufficient to meet domestic demand, so these must be imported. For most nonmetallic minerals, however, production far exceeded domestic consumption, and thus surpluses were exported. The economic development of certain regions, such as the Basque country and Asturias, was based on their mineral wealth, and mining continued to be an important current and potential source of income in these and other areas.

Privatization of the Spanish mining industry continued and was the subject of protest at a number of mining operations throughout the country because of employment issues.

With a few exceptions, the year was marked by a decline in output of mineral products. (See table 1.) Of the major metals, the only commodity with a significant increase in metal production was copper. Mine production of copper continued at about the same level as that of 1996. Production of gold, iron ore, lead, silver, and zinc decreased; total refined copper production increased; and lead metal output dropped slightly. Mine production of zinc rose slightly. Primary aluminum metal production stayed about the same. The mercury mines at Almaden operated at low production levels, with production dropping significantly from 1996. Environmentally driven international pressures to reduce mercury content in finished products and lack of demand continued to impact production.

Among industrial minerals, fluorspar production remained nearly constant, and magnesite and potash production decreased. Quarried mineral products, particularly quarried stone, accounted for a significant share of the value of all mineral production in Spain. In mineral fuels and related materials, natural gas output declined.

Table 2 shows the relation of selected classes of mineral commodities on Spain's balance of payments in relation to the EU and the world.

Trade flows were liberalized after Spain joined the EU, and the

differences between Spanish tariffs and EU Common Market tariffs were significantly reduced. The only commodities in which Spain was a net exporter to other EU countries in 1996, thereby reducing its trade deficit, were lead, mercury, nonmetallic mineral manufactured products, slate and other crude industrial minerals, and zinc. With respect to rest-of-world trade, Spain was a net exporter of lead, mercury, nonmetallic mineral manufactured products, and slate. (See tables 3 and 4.)

Spain was one of the larger coal producers in the EU, with 26.5 million metric tons per year (all types). Coal reserves are abundant but difficult to mine. Consequently, cost of production was higher, making Spanish coal less competitive than that of many other countries. The leading producer of soft coal was Huelleras del Norte S.A. (Hunosa), and the leading producer of lignite was Empresa Nacional de Electricidad S.A. (Endesa). The country continued to be a large importer of mineral fuels. Spain's production of crude oil was limited.

The mineral industry comprised a mix of state and privately owned companies. Minerals belong to the state under an arrangement known as the "Regalía Principal." The Mining Law of July 19, 1944, as amended, and the Hydrocarbon Law of December 26, 1950, govern the mineral industry. The Ministry of Industry and Energy implement the mineral laws, regulate the private sector, and manage most of the state-owned companies through the Instituto Nacional de Industria (INI), a state holding company. INI and Instituto Geológico y Minero are the principal Government mineral-resource agencies. (See table 5.)

Alumina and primary aluminum were produced almost entirely by the Industria Española del Aluminio S.A. (Inespal). Inespal was a holding company with four operating subsidiaries—Aluminio Español S.A., Inespal Extrusión S.A., Inespal Conversión S.A., and Inespal Productos Planos S.A. INI was Inespal's major shareholder. Alúmina Española S.A., a subsidiary near San Ciprián, produced alumina, primary aluminum in standard sheets and ingots, and special alloys.

Copper was mined, mainly at the deposits in Sotiel and Migollas in Huelva, by Navan Resources Ltd. (Almagrera) and by Boliden Apirsa at Aznalcollar (Los Frailes deposit) near Seville.

Expansion of Atlantic Copper Holdings S.A.'s copper refinery in Huelva to 270,000 metric tons per year (t/yr) was completed in 1997 (Engineering and Mining Journal, 1997).

Rio Tinto Minera S.A.'s Spanish exploration subsidiary, Riomin Exploraciones S.A., was continuing feasibility studies on its Las Cruces copper mineralization discovery in Andalucía. The Las Cruces deposit is located about 15 kilometers north of Seville within the Iberian Pyrite belt. Riomin identified an estimated 15 million metric tons (Mt) of predominantly chalcocite ore grading about 6% copper. Also identified was about 1 Mt of gold-bearing

(gossan) mineralization containing about 6.5 grams (g/t) per ton of gold. An additional 25 Mt of 3% grade copper and complex polymetallic mineralization containing lead, precious metals, and zinc has been identified (Mining Engineering, 1997).

Gold was being sought in Asturia, northeastern Spain, by Rio Narcea Gold Mines, Ltd., which acquired concessions and permits that previously belonged to the Spanish subsidiary of Anglo American Corp.

Navan Resources Ltd. inaugurated its new polymetallic (copper, lead, and zinc) Aguas Teñidas Mine near Huelva in November 1997. Aguas Teñidas was the first underground operation to be developed in Spain in several years. The operation was expected to be fully operational by 2000 and will supply Navan's nearby Almagrera mill and concentrator with 800,000 t/y to 1 million metric tons per year (Mt/yr) of ore. Navan acquired the mill and concentrator, along with three mines, Sotiel, Sotiel Este, and Miggollas, in June 1997. The mines were said to be largely marginal, low grade, and high cost and to have received little investment in the recent past. Navan was developing 5-year investment plans for the mines to increase tonnage and make the operations more cost effective (Metal Bulletin, 1997a).

The Narcea Gold exploration program was believed to be the largest in Western Europe, involving a total of 1,261 square kilometers (km<sup>2</sup>) available for mining concessions and investigation permits and 4,200 km<sup>2</sup> available for prospecting licences located on the gold-bearing belts of Navelgas, Oscos, Rio Narcea, and Salavé.

Mining development was continuing on Narcea Gold's El Valle project. The El Valle project was scheduled to began annual production at 3,000 kilograms (kg) in the first quarter of 1998. A total of 32,127 meters was drilled at 189 locations, raising reported estimated reserves to 63 million grams of gold in 14.7 Mt of ore with an average grade of 4.1 g/t gold.

Three planned open pits contain an estimated 23,045 kg of recoverable gold. Total resources were estimated to be 65,300 kg, excluding resources in the "Black Skarn" deposit, a zone of major copper-gold-silver mineralization located at depth at El Valle (Rio Narcea Gold Mines, Ltd., June 1997, Rio Narcea project, accessed November 6, 1997, at URL <http://www.rionarcea.com/news/>).

The principal producer of iron ore was Compañía Andaluza de Minas S.A. (CAM), which worked its open pit mine at Marzuesado (Granada). Mining was halted in October 1996, and the mine remained inactive at yearend 1997.

Negotiations were underway with six Spanish companies for the sale of 15% of the shares in the state-owned Aceralia steel company. Aceralia was formerly known as Corporacion Siderúrgica Integral (CSI). The companies involved were Aristrain S.A., Gonvarri S.A., Alfonso Gallardo, Megasa S.A., and Marcial Ucin. The Spanish Government said that it would sell this stake to Spanish companies before selling the rest on the stock market. Arbed of Luxembourg had previously purchased 35% of CSI in July 1997 (Metal Bulletin, 1997b).

Production at Boliden's Aznalcollar Mine outside Seville terminated at yearend. However, production started at the nearby Los Frailes, one of the biggest open pit mines in Europe, making Boliden, its operator, one of the largest zinc producers in the world. Ore production at Los Frailes was estimated to be

approximately 4 Mt/yr (accessed November 7, 1997, at URL <http://www.trellgroup.se/trellgroup/boliden/LOSFRAILES.html>).

Los Frailes was closed in early 1998 after a large toxic spill. A waste reservoir ruptured and sent sludge into a nearby river. The spill poisoned some of the areas around the edges of Donana National Park, Europe's largest nature reserve. Boliden was undertaking remedial actions and safety requirements in order to restart operations as soon as possible.

The Banesto Group sold a 24.7% stake in Asturiana de Zinc S.A. (Azsa), the world's fourth-largest zinc producer, to Glencore, a Swiss trading group. The deal, worth about \$78.4 million, gave Glencore effective control of the Spanish mining and metals group. The withdrawal from Azsa marked the virtual completion of Banesto's disinvestment from nonbanking interests (Burns, 1997).

Bruno SA, which concentrated on supplying celestite to major producers of strontium carbonate in Europe, was developing a new plant for the processing of celestite at its Monteive quarry operation. The company was also installing new laboratory equipment to prepare celestite for the oil industry to be used in oil and water-based drilling.

Spanish cement production continued to rise from the 1993 low. Cement and clinker exports continued to rise in 1996 to 6.2 Mt; of that total, 2.4 Mt was clinker shipments (International Bulk Journal, 1997).

Through its Spanish subsidiary, Financiera y Minera SA, Ciments Francais proposed a merger with Cementos Molins to create a larger and more powerful cement group with annual sales of about \$400 million. The proposal was rejected by stockholders. Ciments Francais, with a 39.1% interest in Cementos Molins, was the principal external stockholder (52%) of the family-owned company (Industrial Minerals, 1997a).

Caustic calcined grades of magnesite was produced in Spain for nonrefractory markets, and crude magnesite was produced from deposits at Eugui, Navarra, and used to make magnesia-based refractory bricks. Output of both has been trending upward in the 1990's. The increase in crude magnesite production was a reflection of the improvements in the steel industry where refractory bricks are used to line furnaces.

The joint venture project of Gwalia Consolidated Ltd. and Desarrollo de Recursos Geologicos stopped any further work on its wollastonite exploration. The project was shelved owing to a failure to produce a commercially viable feasibility study (Industrial Minerals, 1997b).

Erkimia of Barcelona and the Government-owned Minas de Almadén y Arrayanes were planning to increase production of strontium carbonate. A new process was being tested at a 400-t/yr pilot plant. At full scale, 2,000 t/yr would be produced at a plant in Cartagena. The operating company for the project will be Quimica del Estroncio in which Minas de Almadén was the major shareholder. Minas de Almadén was also the world's leading mercury producer (Industrial Minerals, 1997c).

Production of coal by Endesa declined from that of 1996. All Spain's coal production was used for the generation of electricity. The Government signed an agreement with coal industry trade unions that was expected to cut about 30% of the work force and public funding in the next 7 years. According to the plan, 7,000

jobs out of the current 24,400 jobs will be lost, and there will be progressive cuts in public aid. The Government stated that the plan will cover the necessary restructuring of the mining sector while meeting EU requirements and reducing taxpayers costs of sustaining the sector. The Government expected that as much as \$2.3 billion could be set during the next several years to provide redevelopment aid for northern coal mining regions. A European Coal and Steel Community treaty, set to expire in 2002, allowed Spain to continue subsidies, but called for the country to liberalize its coal market, and to reduce aid and production in this sector. That these conditions had not been met was a source of controversy within the EU (Coal Age, 1997).

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Instituto Geológico y Minero  
Rio Rosas, 23  
28003 Madrid, Spain  
Ministerio de Industria y Energía  
Doctor Fleming, 7  
28036 Madrid, Spain

TABLE 1  
SPAIN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>METALS</b>					
Aluminum:					
Alumina 2/	1,060,000	1,070,600	1,070,580	1,094,797	1,100,000
Metal:					
Primary	364,256	338,106	361,100	361,829	359,904 3/
Secondary	99,700	103,500	106,975	153,837	154,000
Cadmium metal	365	387	397	307	324 3/
Copper:					
Mine output, Cu content	3,518	4,940	22,614	37,510	37,800
Metal:					
Blister: e/					
Primary	135,800	141,600	134,300	248,500	288,900 3/
Secondary	44,800	46,800	47,100	22,400	23,800 3/
Total	180,600	188,400	181,400	270,900	312,700 3/
Refined:					
Primary	180,600	141,600	117,100	210,000	228,710 3/
Secondary	180,600	46,800	47,100	54,000	63,300 3/
Total	361,200	188,400	164,200	264,000	292,010 3/
Gold, mine output, Au content	kilograms	6,083	5,852	4,131	2,763 r/ 3/
Iron and steel:					
Iron ore and concentrates (including byproduct concentrate),					
Fe content	thousand tons	1,109	2,086	960	588
Metal:					
Pig iron	do.	5,394	5,447	5,128	4,127
Ferroalloys, electric furnace	do.	117	70	125	141 r/
Steel:					
Crude	do.	12,646	13,547	13,975	12,038
Castings and forgings	do.	165	175	121	123
Total		12,811	13,722	14,096	12,161
Semimanufactures	do.	11,563	12,103	13,175	11,647
Lead:					
Mine output, Pb content		25,300	23,573	30,077	23,826
Metal: e/					
Primary		62,400	70,400	--	--
Secondary		61,000	69,600 r/	80,000 r/	86,000 r/
Mercury, metal	thousand kilograms	64	393	1,497	862 r/
Silver, mine output, Ag content	do.	192,418	195,754	123,615	65,878
Tantalum minerals (tin byproduct): e/					
Gross weight	do.	6,000	5,000	--	--
Ta content	do.	1,500	1,200	--	--
Tin:					
Mine output, Sn content	do.	2	5	2	2
Metal, primary e/		2,000	2,000	1,589	1,200
Titanium dioxide e/		25,000	20,000	20,000	18,000
Uranium, mine output, U <sub>3</sub> O <sub>8</sub> content		215	301	420	424
Zinc:					
Mine output, Zn content		169,892 r/	150,422	172,468 r/	140,100 e/
Metal, primary and secondary e/		341,600 r/	298,700	354,000	360,800 r/
<b>INDUSTRIAL MINERALS</b>					
Barite		17,656	28,037	28,600	28,000
Bromine e/		200	200	200	100
Calcium carbonate e/		1,500	1,600	1,600	1,750
Cement, hydraulic, other than natural	thousand tons	22,878	25,131	26,423	25,157
Clays:					
Attapulgit e/		85,000	85,000	94,266	94,000
Bentonite e/		150,000	150,000	172,265	172,000
Kaolin, washed		148,000	290,000	316,074	315,000
Other e/	thousand tons	13,000	13,650	25,300	15,000
Diatomite and tripoli		38,000	40,000	28,271	30,000
Feldspar		239,000	250,000	379,284	415,000 r/

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>INDUSTRIAL MINERALS--Continued</b>					
<b>Fluorspar:</b>					
Acid-grade	82,000	97,000	108,205	109,085	110,000
Metallurgical-grade	5,000	10,000	10,206	7,441	10,000
Total	87,000	107,000	118,411	116,526	120,000
Gypsum and anhydrite, crude	7,250	7,300	7,495	7,500	7,500
thousand tons					
Kyanite, andalusite, related materials e/	3,000	3,500	2,000	2,000	2,500
Lime, hydrated and quicklime e/	1,200	1,000	1,500	1,500	1,500
thousand tons					
<b>Magnesite:</b>					
Calcined	131,000	135,000	150,000 e/	150,000 e/	170,000
Crude e/	400,000	400,000	491,397	490,000	500,000
Mica e/	250	250	200	200	200
Nitrogen, N content of ammonia	354	452 r/	453 r/	466 r/	497 /3
thousand tons					
<b>Pigments, mineral: e/</b>					
Ocher	8,000	8,000	7,000	8,000	8,000
Red iron oxide	16,000	16,000	15,000	15,000	15,000
Potash, K <sub>2</sub> O equivalent	660,900	683,700	759,923	680 r/	605 3/
Pumice e/	700,000	700,000	700,000	700,000	600,000
Pyrite, including cuprous, gross weight	722	746	875	1,042 r/	993 3/
thousand tons					
<b>Salt:</b>					
Rock, including byproduct from potash works	2,510	2,850	2,215	2,400	2,200
do.					
Marine and other	900	850	1,471	1,500	1,400
do.					
Sand and gravel, silica sand e/ 4/	2,200	2,000	5,105 r/ 3/	5,300 r/	5,800
do.					
Sepiolite e/	400,000	375,000	375,000	400,000	375,000
<b>Sodium compounds, n.e.s.:</b>					
Soda ash, manufactured e/	500	500	500	500	500
thousand tons					
<b>Sulfate, natural:</b>					
Glauberite, Na <sub>2</sub> SO <sub>4</sub> content	260,000 e/	350,000 e/	637,525	630,000	600,000
Thenardite, Na <sub>2</sub> SO <sub>4</sub> content	158,000 e/	250,000	176,600	175,000	175,000
Manufactured e/	150,000	150,000	150,000	100,000	125,000
<b>Stone, calcareous: e/</b>					
Chalk	500	400	136	140	150
thousand tons					
Dolomite	4,500	4,400	4,608	5,100 r/	5,400
do.					
Limestone	1,600	1,450	2,326	2,400	2,500
do.					
Marble	2,130	2,132	1,978	2,460 r/ 3/	2,880
do.					
Marl	4,000	5,000	5,145	5,200	8,500
do.					
Basalt	4,480	4,500	1,195	1,200	1,400
do.					
Granite	1,170	1,338	1,800	2,000	2,000
do.					
Ophite	2,500	2,500	2,165	2,200	2,200
do.					
Phonolite	500	600	677	650	650
do.					
Porphyry	500	500	783	800	800
do.					
Quartz	1,600	1,500	1,445	1,500	1,500
do.					
Quartzite	1,000	2,000	2,255	2,200	2,400
do.					
Sandstone	1,600	1,500	2,629	2,600	2,500
do.					
Serpentine	800	900	979	900	900
do.					
Other	600	600	619	600	600
do.					
<b>Strontium minerals: e/</b>					
Gross weight	50,000	50,000	106,000	100,000	100,000
Sr <sub>2</sub> O <sub>4</sub> content	12,000	12,000	99,000	94,000	94,000
<b>Sulfur:</b>					
S content of pyrites	327	350	403	479	480
thousand tons					
<b>Byproduct: e/</b>					
Of metallurgy	250	250	250	250	250
do.					
Of petroleum	100	100	100	100	100
do.					
Of coal (lignite) gasification	2	2	2	2	2
do.					
Total sulfur e/	679	702	755	831	832
do.					
Talc and steatite e/	65,000	65,000	112,000	100,000	100,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal (marketable):					
Anthracite thousand tons	6,050	6,756	6,275	6,487	6,678 3/
Bituminous do.	13,300	12,000	11,425	11,262	7,200
Lignite do.	17,457	15,499	10,776	9,604	12,577 3/
Total do.	36,807	34,255	28,476	27,353	26,455
Coke, metallurgical e/ do.	3,000	3,000	2,438	2,410	2,500
Gas, natural (marketed) million cubic meters	633	197	422	466	178 3/
Peat e/	70,000	70,000	70,000	50,000	60,000
Petroleum:					
Crude thousand 42-gallon barrels	6,376	5,879	4,747	3,759	2,766 3/
Refinery products:					
Liquefied petroleum gas do.	18,600	19,848	21,019	17,655	16,000
Naphtha do.	19,600	19,006	12,900	19,797	18,000
Gasoline, motor do.	79,300	84,388	82,544	83,113	83,000
Jet fuel do.	24,500	29,192	32,064	33,504	33,000
Kerosene do.	25,100	29,249	12,555	581	600
Distillate fuel oil do.	114,000	121,695	124,097	129,080	128,000
Residual fuel oil do.	97,900	94,912	80,366	73,213	74,000
Other e/ do.	30,000	30,000	52,696	50,624	50,000
Refinery fuel and losses e/ do.	12,000	12,000	13,531	12,026	12,000
Total e/ do.	421,000	440,290	431,772	419,593	414,600

e/ Estimated. r/ Revised.

1/ Table includes data available through September 1997.

2/ Reflects aluminum hydrate.

3/ Reported figure.

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

TABLE 2  
 SPAIN: BALANCE OF PAYMENTS, SELECTED MINERAL COMMODITIES IN 1996 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)
<b>Crude industrial minerals:</b>						
Feldspar	\$2,469	\$3,624	(\$1,155)	\$3,527	\$11,258	(\$7,731)
Magnesite	6	234	(228)	919	1,321	(402)
Slate	4,227	2	4,225	4,893	31	4,862
Other	265,539	176,818	88,721	398,362	441,770	(43,408)
Total	272,241	180,678	91,563	407,701	454,380	(46,679)
<b>Metalliferous ores:</b>						
Copper	2,487	422,983	(420,496)	21,649	503,180	(481,531)
Lead	5,802	15	5,787	9,909	159	9,750
Zinc	15,849	6,172	9,677	21,772	128,351	(106,579)
Other (including waste and scrap)	149,930	350,359	(200,429)	248,229	1,368,880	(1,120,651)
Total	174,068	779,529	(605,461)	301,559	2,000,570	(1,699,011)
Nonmetallic mineral manufactures	448,283	167,415	280,868	860,383	320,858	539,525
<b>Metals:</b>						
Iron and steel	2,225,577	2,907,797	(682,220)	3,679,626	3,664,190	15,436
<b>Magnesium, metal including alloys:</b>						
Unwrought	20	3,592	(3,572)	20	5,246	(5,226)
Semimanufactures	150	673	(523)	173	1,110	(937)
Total	170	4,265	(4,095)	193	6,356	(6,163)
Mercury	684	735	(51)	2,684	1,006	1,678
Other nonferrous metals	1,290,076	1,283,023	7,053	1,651,474	1,708,119	(56,645)
Total, metals	3,516,507	4,195,820	(679,313)	5,333,977	5,379,671	(45,694)
Mineral fuels	818,930	1,306,846	(487,916)	2,525,495	11,093,929	(8,568,434)

1/ Table prepared by Glenn J. Wallace, International Data Unit.

TABLE 3  
SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
<b>METALS</b>			
<b>Akali and alkaline-earth metals:</b>			
Alkali metals	45	(2/)	India 4; Portugal 1; unspecified Asia 40.
Alkaline-earth metals	1	--	All to Canada.
<b>Aluminum:</b>			
Ore and concentrate	2,451	--	Portugal 1,698; Italy 453; France 299.
Oxides and hydroxides	440,021	--	Netherlands 110,856; Russia 85,986; United Kingdom 73,099.
<b>Metal including alloys:</b>			
Scrap	5,130	90	France 1,841; Netherlands 855; Germany 697.
Unwrought	137,279	48	Italy 34,203; Portugal 24,207; Netherlands 20,760.
Semimanufactures	180,098	23,786	Italy 36,959; France 27,308; United Kingdom 15,447.
Antimony, metal including alloys, all forms	44	--	Germany 26; Mexico 8; France 5.
Bismuth, metal including alloys, all forms	27	6	Belgium-Luxembourg 18; Czech Republic 1; Portugal 1.
Cadmium, metal including alloys, all forms	380	--	Netherlands 375; France 5.
<b>Chromium:</b>			
Ore and concentrate	1,126	--	Portugal 1,063; France 21; Morocco 21.
Oxides and hydroxides	524	--	Italy 144; France 52; Portugal 46.
Metal including alloys, all forms	584	--	France 420; United Kingdom 30; Portugal 25.
<b>Cobalt:</b>			
Ore and concentrate	4	--	Mainly to France.
Oxides and hydroxides	24	--	Portugal 10; Italy 5; Netherlands 5.
Metal including alloys, all forms	49	8	Republic of Korea 15; Netherlands 12; Philippines 9.
<b>Columbium and tantalum:</b>			
Ore and concentrate 3/	14	6	Netherlands 6; Portugal 2.
Tantalum metal including alloys, all forms	10	--	France 5; Germany 5.
<b>Copper:</b>			
Ore and concentrate	81,981	--	Russia 26,980; Japan 20,459; China 17,524.
<b>Metal including alloys:</b>			
Scrap	39,750	194	Germany 11,993; Italy 5,551; France 5,447.
Unwrought	116,836	3,394	United Kingdom 33,664; Italy 29,950; France 27,848.
Semimanufactures	104,367	381	Italy 37,378; Portugal 27,564; France 10,660.
Germanium, metal including alloys, all forms	value, thousands \$66	--	All to Israel.
<b>Gold:</b>			
Waste and sweepings	do. \$100	\$23	Germany \$38; Switzerland \$24; Venezuela \$13.
Metal including alloys, unwrought and partly wrought	kilogram 15,201	1,345	Portugal 7,703; United Kingdom 5,563; Italy 518.
<b>Iron and steel:</b>			
<b>Ore and concentrate:</b>			
Excluding roasted pyrite	975,353	11,000	Netherlands 418,492; United Kingdom 342,398; France 150,923.
Pyrite, roasted	198,896	--	Greece 126,058; Israel 40,730; Lebanon 23,913.
<b>Metal:</b>			
Scrap	21,381	1	France 13,996; Italy 2,626; Portugal 1,655.
Pig iron, cast iron, related materials	1,590	191	Cuba 727; France 173; Germany 108.
<b>Ferroalloys:</b>			
Ferrochromium	717	81	Portugal 309; France 154; Cuba 152.
Ferromanganese	22,174	926	Germany 7,980; Italy 5,470; United Kingdom 1,590.
Ferronickel	1	--	All to Portugal.
Ferrosilicomanganese	54,685	2,888	Germany 13,904; Italy 10,299; Portugal 7,181.
Ferrosilicon	3,278	6	Portugal 2,260; United Kingdom 500; France 431.
Silicon metal 4/	10,781	1,175	United Kingdom 4,218; France 3,684; Italy 713.

See footnotes at end of table.

TABLE 3--Continued  
 SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS--Continued			
Iron and steel--Continued:			
Metal--Continued:			
Ferroalloys--Continued:			
Unspecified	602	--	Portugal 325; Netherlands 65; Cuba 59.
Steel, primary forms	245,137	3,272	France 95,686; Italy 63,962; India 18,059.
Semimanufactures:			
Flat-rolled products:			
Of iron or nonalloy steel:			
Not clad, plated, coated	827,165	22,670	France 155,219; Portugal 92,999; Italy 74,812.
Clad, plated, coated	627,616	75,862	France 104,531; United Kingdom 93,144; Italy 67,466.
Of alloy steel	value, thousands \$750,215	\$117,466	Germany \$125,038; Italy \$109,991; France \$87,615.
Bars, rods, angles, shapes, sections	tons, thousands 2,751	220	Portugal 488; France 280; United Kingdom 205.
Rails and accessories	11,850	377	Germany 2,273; Argentina 1,819; Thailand 1,482.
Wire	174,863	2,119	France 65,451; Portugal 35,751; Iran 20,217.
Tubes, pipes, fittings	459,966	22,904	France 90,489; Portugal 62,383; Italy 31,365.
Lead:			
Ore and concentrate	41,501	--	France 13,131; Italy 11,141; Morocco 5,380.
Oxides	2,760	--	Portugal 621; Egypt 380; Saudi Arabia 300.
Metal including alloys:			
Scrap	1,734	--	France 1,682; Austria 49; Portugal 9.
Unwrought	4,992	--	Portugal 4,661; Argentina 62; Cyprus 42.
Semimanufactures	value, thousands \$757	--	Netherlands \$459; Turkey \$127; United Kingdom \$83.
Magnesium, metal including alloys:			
Scrap	do. \$76	--	All to United Kingdom.
Unwrought	2	--	Finland 1; Portugal 1.
Semimanufactures	23	1	France 18; Germany 3; Morocco 1.
Manganese:			
Ore and concentrate, metallurgical-grade	2,854	--	France 1,472; Brazil 400; United Kingdom 357.
Oxides and hydroxides	164	--	Portugal 78; Cuba 45; Poland 20.
Metal including alloys, all forms	1,563	--	Norway 498; Germany 269; Italy 266.
Mercury	549	14	Hong Kong 121; Netherlands 53; Germany 46.
Molybdenum:			
Ore and concentrate, roasted	2	--	All to Italy.
Metal including alloys:			
Unwrought, including waste and scrap	value, thousands \$48	--	Germany \$39; France \$4; Portugal \$3.
Semimanufactures	do. \$451	\$5	Germany \$105; France \$82; Brazil \$60.
Nickel:			
Ore and concentrate	10	--	Morocco 5; Cuba 3; Portugal 2.
Matte and speiss	7	--	All to Portugal.
Metal including alloys:			
Scrap	302	--	United Kingdom 127; Belgium-Luxembourg 69; Netherlands 49.
Unwrought	41	--	Netherlands 30; Portugal 6; United Kingdom 4.
Semimanufactures	162	5	Germany 47; United Kingdom 38; Italy 35.
Platinum-group metals:			
Waste and sweepings	value, thousands \$6,874	--	All to United Kingdom.
Metal including alloys, unwrought and partly wrought	do. \$5,353	\$39	Germany \$2,360; France \$1,989; United Kingdom \$602.
Silver, metal including alloys, unwrought and partly wrought	do. \$36,059	\$111	Germany \$9,805; Portugal \$9,336; France \$6,875.
Tin, metal including alloys:			
Scrap	28	--	Belgium-Luxembourg 24; France 4.
Unwrought	value, thousands \$823	--	Italy \$334; Portugal \$178; Germany \$177.
Semimanufactures	99	(2/)	Italy 75; Cuba 9; Mexico 8.

See footnotes at end of table.

TABLE 3--Continued  
 SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS--Continued			
Titanium:			
Ore and concentrate	171	(2/)	Portugal 117; Morocco 31; Cuba 21.
Oxides	7,301	--	Canada 6,235; Malaysia 601; Libya 80.
Metal including alloys:			
Unwrought, including waste and scrap	61	--	Israel 20; Netherlands 16; Malta 7.
Semimanufactures	302	(2/)	United Kingdom 93; Brazil 52; Italy 41.
Tungsten:			
Ore and concentrate	11	11	
Metal including alloys:			
Unwrought, including waste and scrap	11	--	Finland 7; France 1; unspecified Asia 3.
Semimanufactures	9	--	Hungary 7; Belgium-Luxembourg 1; Germany 1.
Uranium and thorium, uranium metal including all forms			
	value, thousands	\$3	-- Unspecified countries \$3.
Zinc:			
Ore and concentrate	14	6	Netherlands 6; Portugal 2.
Oxides	2,702	--	France 1,847; Portugal 571; Italy 115.
Scrap	2,251	--	France 975; Italy 555; Belgium-Luxembourg 208.
Unwrought	198,139	83,465	Netherlands 48,965; France 31,271; Italy 12,339.
Semimanufactures 5/	value, thousands	\$622	-- Portugal \$364; Cuba \$78; France \$45.
Zirconium:			
Ore and concentrate	3,027	--	United Arab Emirates 525; United Kingdom 500; Tunisia 427.
Metal including alloys, semimanufactures	90	--	Singapore 47; Tunisia 20; United Arab Emirates 14.
Other:			
Ores and concentrates	28,876	--	Portugal 16,777; Germany 11,963; Italy 87.
Oxides and hydroxides	26,457	37	France 24,253; Netherlands 749; Italy 479.
Ashes and residues	77,852	39	Belgium-Luxembourg 67,312; France 5,506; Portugal 2,284.
Base metals including alloys, all forms	22	--	All to Portugal.
Metalloids 6/	36	--	United Kingdom 18; Germany 6; Cuba 5.
Precious metals, n.e.s.:			
Ores and concentrates	kilograms	26,250	-- All to Hungary.
Waste and sweepings	do.	9,353	-- Belgium-Luxembourg 7,763; France 1,239; Thailand 326.
INDUSTRIAL MINERALS			
Abrasives, n.e.s.:			
Natural, corundum, emery, pumice, etc.	3,062	8	Germany 1,414; Italy 715; Portugal 340.
Artificial corundum	1,676	--	Italy 1,388; Portugal 135; Denmark 70.
Dust and powder of precious and semiprecious stones including diamonds	value, thousands	\$732	-- Portugal \$461; Brazil \$191; Belgium-Luxembourg 430.
Grinding and polishing wheels and stones	7,331	73	Germany 1,343; France 868; Portugal 565.
Asbestos, crude	625	--	Cuba 338; Mauritania 220; Israel 47.
Barite and witherite	64,381	--	United Kingdom 26,547; Venezuela 20,796; Algeria 4,808.
Boron:			
Crude natural borates	3,269	--	Italy 1,172; Portugal 755; Tunisia 508.
Oxides and acids	3,372	--	Italy 3,210; France 85; Portugal 64.
Bromine, fluorine, iodine	40	--	Germany 36; France 1; Philippines 1.
Cement	tons, thousands	6,206	1,755 Algeria 780; Ghana 772; Cote d' Ivoire 343.
Chalk	44,735	--	Germany 12,122; France 6,429; Italy 1,014.
Clays, crude:			
Bentonite	12,466	--	Portugal 5,496; Japan 2,548; France 2,391.
Kaolin	137,994	4	Italy 51,485; Germany 25,417; Finland 19,220.
Unspecified	14,376	--	United Kingdom 40,553; Netherlands 29,616; Germany 25,013.

See footnotes at end of table.

TABLE 3--Continued  
 SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
INDUSTRIAL MINERALS--Continued			
Cryolite and chiolite	5	--	Portugal 4; United Kingdom 1.
Diamond, natural:			
Gem, not set or strung	value, thousands \$1,105	--	Belgium-Luxembourg \$798; Andorra \$218; Italy \$61.
Industrial stones	do. \$665	--	Belgium-Luxembourg \$472; United Kingdom \$102; Germany \$65.
Diatomite and other infusorial earth	2,122	--	France 810; Italy 424; Sweden 181.
Feldspar	29,809	--	Portugal 16,757; Italy 6,866; Morocco 3,846.
Fertilizer materials:			
Crude, n.e.s.	26,190	--	Andorra 7,304; Italy 6,949; Portugal 5,817.
Manufactured:			
Ammonia	12,334	--	Morocco 10,292; Iran 1,062; Thailand 524.
Nitrogenous	440,556	--	Netherlands 135,000; Germany 82,089; France 76,591.
Phosphatic	2,412	--	Portugal 1,092; Mexico 412; Saudi Arabia 192.
Potassic	715,780	--	France 521,374; Italy 50,562; Belgium-Luxembourg 28,078.
Unspecified and mixed	255,628	22	Italy 70,877; Portugal 52,689; France 46,205.
Fluorspar	19,897	--	United Kingdom 14,935; Netherlands 4,143; Portugal 529.
Graphite, natural	126	--	Portugal 63; Venezuela 33; Morocco 22.
Gypsum and plaster	tons, thousands 2,470	508	United Kingdom 562; Denmark 243; Sweden 209.
Lime	36,492	--	France 22,000; Portugal 8,785; Equatorial Guinea 1,740.
Magnesium compounds:			
Magnesite, crude	1,385	--	Saudi Arabia 1,345; Cuba 22; France 18.
Oxides and hydroxides	132,013	100	France 50,462; United Kingdom 39,063; Netherlands 9,482.
Mica:			
Crude including splittings and waste	1,218	--	United Kingdom 994; Italy 92; Germany 47.
Worked including agglomerated splittings	132	(2/)	Germany 81; France 18; Austria 10.
Nitrates, crude	4,440	--	Venezuela 4,248; Ghana 185; Portugal 7.
Phosphates, crude	49	--	United Kingdom 20; Portugal 9; Morocco 3.
Pigments, mineral, iron oxides and hydroxides, processed	16,341	1,374	Italy 2,908; United Kingdom 1,255; France 1,163.
Potassium salts, crude	9,465	--	All to Portugal.
Precious and semiprecious stones other than diamond:			
Natural	value, thousands \$553	\$1	Poland \$93; Germany \$87; Thailand \$80.
Synthetic	do. \$1,733	\$86	Portugal \$545; Switzerland \$472; Thailand \$163.
Pyrite, unroasted	26,090	--	Turkey 26,083; Argentina 4; Morocco 3.
Salt and brine	896,043	159,525	Norway 170,008; France 167,530; United Kingdom 100,466.
Sodium compounds, n.e.s.:			
Soda ash, manufactured	187,037	--	Italy 34,469; Brazil 33,070; France 27,351.
Sulfate, manufactured	560,800	--	Italy 89,719; United Kingdom 72,215; France 60,483.
Stone, sand and gravel:			
Dimension stone:			
Crude and partly worked	638,056	11,131	Italy 240,642; Portugal 59,376; Gibraltar 28,433.
Worked	834,183	42,383	France 245,027; Germany 156,627; Hong Kong 62,561.
Dolomite, chiefly refractory-grade	168,847	--	United Kingdom 132,719; Germany 7,350; France 5,730.
Gravel and crushed rock	418,398	--	Andorra 213,110; Portugal 170,843; Gibraltar 23,624.

See footnotes at end of table.

TABLE 3--Continued  
 SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
<b>INDUSTRIAL MINERALS--Continued</b>			
Stone, sand and gravel--Continued:			
Limestone other than dimension	276,837	--	Belgium-Luxembourg 133,730; Ghana 50,000; Togo 45,000.
Quartz and quartzite	492,424	--	Norway 416,013; Canada 43,391; France 14,068.
Sand other than metal-bearing	713,697	--	Andorra 418,064; Italy 177,978; Portugal 85,708.
Sulfur:			
Elemental:			
Crude including native and byproduct	29,533	--	Portugal 9,368; France 7,182; Italy 6,761.
Colloidal, precipitated, sublimed	652	--	Mainly to France.
Dioxide	1,490	--	Portugal 1,327; Sweden 110; United Kingdom 49.
Sulfuric acid	391,779	39,901	Turkey 100,901; Portugal 62,358; France 46,664.
Talc, steatite, soapstone, pyrophyllite	39,583	--	Belgium-Luxembourg 24,316; Italy 6,187; Portugal 5,293.
Vermiculite, perlite, chlorite	1,542	--	France 1,088; Italy 316; Andorra 74.
Other:			
Crude	tons, thousands	1,206	(2/) Belgium-Luxembourg 394; France 268; Germany 239.
Slag and dross, not metal-bearing		78,468	-- Portugal 68,320; France 4,967; Cuba 1,952.
<b>MINERAL FUELS AND RELATED MATERIALS</b>			
Asphalt and bitumen, natural		20,703	-- Portugal 14,757; Andorra 4,329; Senegal 1,480.
Carbon black		21,676	4 United Kingdom 6,542; France 5,416; Italy 5,195.
Coal:			
Anthracite		180	180
Bituminous		223	-- Portugal 204; Andorra 19.
Briquets of anthracite and bituminous coal		11	-- All to Morocco.
Coke and semicoke		94,597	-- France 38,570; United Kingdom 11,619; Morocco 8,701.
Gas, natural: Liquefied	value, thousands	\$1	-- All to Portugal.
Peat including briquets and litter		3,912	-- Germany 2,335; France 995; Turkey 320.
Petroleum:			
Crude	value, thousands	\$12	-- Cuba \$6; France \$5; Tunisia \$1.
Refinery products:			
Liquefied petroleum gas		171,829	-- Morocco 76,336; Portugal 30,728; Senegal 27,021.
Gasoline	tons, thousands	2,607	460 France 317; Netherlands 313; Belgium-Luxembourg 304.
Mineral jelly and wax		35,102	-- Portugal 6,791; France 3,925; Morocco 3,565.
Kerosene and jet fuel	tons, thousands	2,459	-- Nigeria 155; United Kingdom 85; unspecified countries 1,927.
Distillate fuel oil	do.	1,718	-- Morocco 321; France 242; unspecified countries 417.
Lubricants		330,500	44 India 70,801; Portugal 45,820; United Kingdom 23,295.
Residual fuel oil	tons, thousands	5,137	925 Gibraltar 1,019; Italy 447; unspecified countries 1,554.
Bitumen and other residues		577,441	61,805 Portugal 185,925; France 115,964; Italy 62,846.
Bituminous mixtures		10,044	-- Portugal 4,064; Netherlands 2,087; France 1,226.
Petroleum coke		38,008	-- Portugal 13,641; United Kingdom 11,097; Germany 6,915.

1/ Table prepared by Glenn J. Wallace.

2/ Less than 1/2 unit.

3/ May include vanadium.

TABLE 3--Continued  
SPAIN: EXPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

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4/ May include high-purity silicon.

5/ Includes dust, flakes, and powders.

6/ Reported under SITC item number as "selenium, tellurium, phosphorus, arsenic, etc."

Source: United Nations Statistical Office (microfiche).

TABLE 4  
SPAIN: IMPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources		
		United States	Other (principal)	
<b>METALS</b>				
<b>Akali and alkaline-earth metals:</b>				
Alkali metals	75	(2/)	Ireland 32; United Kingdom 15; France 12.	
Alkaline-earth metals	146	1	Russia 70; France 39; Netherlands 18.	
<b>Aluminum:</b>				
Ore and concentrate	tons, thousands	2,457	--	Guinea 2,366; Greece 42; China 32.
Oxides and hydroxides		39,912	170	Germany 18,439; France 15,612; Netherlands 3,007.
<b>Metal including alloys:</b>				
Scrap		41,781	1,903	France 13,612; Portugal 6,912; Russia 5,855.
Unwrought		127,594	280	Russia 58,130; France 12,777; Norway 8,392.
Semimanufactures		125,146	2,888	Germany 29,971; Italy 24,338; France 23,577.
Antimony, metal including alloys, all forms		1,179	--	China 1,089; Netherlands 33; Viet Nam 20.
Beryllium, metal including alloys, all forms	value, thousands	\$12	--	All from Italy.
Bismuth, metal including alloys, all forms		191	(2/)	Germany 81; United Kingdom 60; Belgium-Luxembourg 30.
Cadmium, metal including alloys, all forms		13	--	Germany 11; Italy 2.
<b>Chromium:</b>				
Ore and concentrate		8,696	(2/)	South Africa 7,143; Turkey 1,036; Netherlands 195.
Oxides and hydroxides		3,471	(2/)	United Kingdom 1,438; Russia 565; Germany 542.
Metal including alloys, all forms		299	(2/)	Russia 112; Germany 73; China 23.
<b>Cobalt:</b>				
Ore and concentrate		31	--	Finland 30; Belgium-Luxembourg 1.
Oxides and hydroxides		540	--	Belgium-Luxembourg 224; Finland 181; Netherlands 60.
Metal including alloys, all forms		190	9	Belgium-Luxembourg 75; United Kingdom 53; France 24.
<b>Columbium and tantalum:</b>				
Ore and concentrate 3/	value, thousands	\$1	--	All from United Kingdom.
Tantalum metal including alloys, all forms		6	(2/)	United Kingdom 5.
<b>Copper:</b>				
Ore and concentrate		736,576	10,824	Indonesia 460,761; Chile 128,146; Portugal 100,000.
Matte and speiss including cement copper		78	--	France 76; Germany 1; Portugal 1.
<b>Metal including alloys:</b>				
Scrap		59,273	2,509	France 13,406; Germany 9,530; Argentina 9,102.
Unwrought		41,419	36	Belgium-Luxembourg 13,831; Chile 7,238; France 4,836.
Semimanufactures		159,563	1,957	France 42,957; Italy 34,355; Germany 26,557.
Germanium, metal including alloys, all forms	value, thousands	\$130	--	Belgium-Luxembourg \$107; Israel \$23.
<b>Gold:</b>				
Waste and sweepings	do.	\$1,144	--	All from Portugal.
Metal including alloys, unwrought and partly wrought	kilograms	28,213	971	United Kingdom 21,480; Sweden 2,065; Germany 1,244.
<b>Iron and steel:</b>				
<b>Ore and concentrate:</b>				
Excluding roasted pyrite	tons, thousands	6,106	--	Brazil 3,872; Mauritania 870; Australia 559.
Pyrite, roasted		465	--	Belgium-Luxembourg 248; Italy 216.
<b>Metal:</b>				
Scrap	tons, thousands	4,480	67	France 1,416; United Kingdom 1,393; Netherlands 419.
Pig iron, cast iron, related materials		614,332	1,322	Russia 331,022; Sweden 129,542; Venezuela 51,587.
<b>Ferroalloys:</b>				
Ferrochromium		146,344	--	South Africa 96,396; Zimbabwe 12,252; Finland 9,507.
Ferromanganese		18,364	--	France 10,310; Norway 5,707; South Africa 1,668.
Ferronickel		28,043	--	New Caledonia 10,362; Indonesia 7,307; Greece 4,352.
Ferrosilicochromium		5,719	--	Zimbabwe 3,648; China 1,997; Germany 74.
Ferrosilicomanganese		21,563	--	Norway 13,813; China 3,827; France 2,801.
Ferrosilicon		33,346	641	Norway 18,222; Macedonia 3,405; Brazil 3,300.
Silicon metal 4/		3,649	(2/)	Russia 1,455; China 1,219; Norway 409.
Unspecified		12,661	41	France 2,651; Brazil 1,617; United Kingdom 1,404.
Steel, primary forms		412,995	27,868	Brazil 126,586; Mexico 79,493; Russia 65,490.

See footnotes at end of table.

TABLE 4--Continued  
 SPAIN: IMPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Sources	
			United States	Other (principal)
METALS--Continued				
Iron and steel--Continued:				
Metal--Continued:				
Steel, primary forms--Continued:				
Flat-rolled products:				
Of iron or nonalloy steel:				
Not clad, plated, coated	tons, thousands	2,625	69	France 861,668; Germany 330,387; United Kingdom 281,299.
Clad, plated, coated		976,643	10,282	France 308,965; Germany 253,410; United Kingdom 121,935.
Of alloy steel		231,201	313	France 80,753; Germany 58,915; Belgium-Luxembourg 25,504.
Bars, rods, angles, shapes, sections		817,222	297	Italy 215,471; United Kingdom 174,361; Germany 80,179.
Semimanufactures:				
Rails and accessories		8,888	6	Germany 1,797; Belgium-Luxembourg 1,525; France 1,524.
Wire		74,842	56	Belgium-Luxembourg 16,994; Italy 14,815; Portugal 12,635.
Tubes, pipes, fittings		469,907	477	Italy 129,951; Germany 99,671; France 81,588.
Lead:				
Ore and concentrate		197	--	Morocco 193; France 3; Germany 1.
Oxides		3,301	10	Portugal 2,667; Italy 415; Peru 140.
Metal including alloys:				
Scrap		3,532	--	Portugal 2,766; Tunisia 307; Morocco 284.
Unwrought		63,436	--	Morocco 23,830; Bulgaria 15,844; France 11,805.
Semimanufactures	value, thousands	\$3,876	--	France \$2,272; United Kingdom \$673; Ireland \$621.
Magnesium, metal including alloys:				
Unwrought		1,206	--	France 345; Russia 227; Netherlands 171.
Semimanufactures		241	(2/)	Hungary 72; Switzerland 64; Italy 46.
Manganese:				
Ore and concentrate, metallurgical-grade		402,092	4	South Africa 222,008; Brazil 78,724; Ghana 30,355.
Oxides and hydroxides		1,045	--	Brazil 483; South Africa 258; Norway 124.
Metal including alloys, all forms		2,054	--	China 1,502; United Kingdom 193; Mexico 80.
Mercury		299	--	Italy 140; Germany 59; Belgium-Luxembourg 42.
Molybdenum:				
Ore and concentrate:				
Roasted		2,442	321	Chile 1,924; Belgium-Luxembourg 100; Netherlands 91.
Unroasted		47	--	United Kingdom 46; South Africa 1.
Metal including alloys:				
Unwrought, including waste and scrap		33	4	Germany 18; United Kingdom 10; France 1.
Semimanufactures		19	3	Austria 11; Germany 3; United Kingdom 1.
Nickel:				
Ore and concentrate		28	--	Mainly from the Netherlands.
Matte and speiss		86	--	Canada 77; Cuba 8; France 1.
Metal including alloys:				
Scrap		376	--	Portugal 343; France 28; Brazil 2.
Unwrought		10,796	44	Russia 2,922; Australia 2,096; Canada 2,032.
Semimanufactures		3,246	137	Netherlands 1,318; Germany 987; Italy 300.
Platinum-group metals:				
Waste and sweepings	value, thousands	\$1,623	--	Brazil \$660; France \$398; Chile \$284.
Metal including alloys, unwrought and partly wrought	do.	\$13,599	--	United Kingdom \$5,956; Germany \$2,023; Switzerland \$2,022.
Silver:				
Ore and concentrate	do.	\$4,802	\$190	Indonesia \$2,761; Morocco \$1,160; Chile \$691.
Metal including alloys, unwrought and partly wrought	do.	\$59,949	\$1,948	France \$25,901; Italy \$12,609; United Kingdom \$6,125.
Tin:				
Ore and concentrate		66	--	All from Nigeria.

See footnotes at end of table.

TABLE 4--Continued  
 SPAIN: IMPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
METALS--Continued			
Tin--Continued:			
Metal including alloys:			
Scrap	81	--	France 80; Portugal 1.
Unwrought	25,869	229	Malaysia 21,486; China 1,497; Germany 595.
Semimanufactures	value, thousands	\$3,603	\$37 France \$1,397; United Kingdom \$958; Germany \$799.
Titanium:			
Ore and concentrate	138,171	--	Australia 134,954; South Africa 1,278; Finland 801.
Oxides	9,532	44	Saudi Arabia 2,622; Australia 2,143; China 1,083.
Metal including alloys:			
Unwrought, including waste and scrap	1,107	112	Germany 559; Russia 197; Ukraine 42.
Semimanufactures	358	181	Italy 76; Germany 46; United Kingdom 19.
Tungsten:			
Ore and concentrate	6	--	All from Israel.
Metal including alloys:			
Unwrought, including waste and scrap	59	(2/)	Netherlands 26; China 15; France 7.
Semimanufactures	40	14	France 19; Germany 3; Netherlands 3.
Uranium and thorium, metal including all forms:			
Uranium	value, thousands	\$1	\$1
Thorium	do.	\$22	-- Canada \$14; United Kingdom \$5; Germany \$3.
Zinc:			
Ore and concentrate	521,113	20,939	Canada 279,824; Morocco 103,763; Peru 60,106.
Oxides	26,952	58	France 10,508; Italy 5,228; Portugal 3,758.
Metal including alloys:			
Scrap	319	--	France 123; Portugal 100; Italy 73.
Unwrought	11,853	--	Belgium-Luxembourg 7,438; Italy 3,200; France 710.
Semimanufactures 5/	4,140	4	France 1,692; Germany 955; Belgium-Luxembourg 835.
Zirconium:			
Ore and concentrate	83,582	160	South Africa 48,187; Australia 28,234; Germany 2,268.
Metal including alloys:			
Unwrought, including waste and scrap	100	--	Mainly from Belgium-Luxembourg.
Semimanufactures	33	8	Germany 25.
Other:			
Ores and concentrates	292	--	Germany 88; Austria 86; France 31.
Oxides and hydroxides	5,746	1,016	Germany 1,770; France 1,161; United Kingdom 424.
Ashes and residues	104,641	16,572	France 26,171; Italy 17,465; Australia 16,498.
Base metals including alloys, all forms	value, thousands	\$107	\$9 Switzerland \$30; Germany \$29; United Kingdom \$18.
Metalloids 6/	323	11	China 145; United Kingdom 104; Germany 10.
Precious metals, n.e.s.:			
Ores and concentrates	kilograms	13,073	169 Indonesia 12,511; Chile 243; Hungary 150.
Waste and sweepings	do.	86,529	72,600 Portugal 11,822; Brazil 1,980; France 105.
INDUSTRIAL MINERALS			
Abrasives, n.e.s.:			
Natural: Corundum, emery, pumice, etc.	1,765	45	Turkey 526; Germany 372; Greece 355.
Artificial corundum	17,003	278	France 4,174; Cambodia 3,710; China 2,512.
Dust and powder of precious and semiprecious stones including diamonds	value, thousands	\$15,763	\$671 Belgium-Luxembourg \$5,915; Ireland \$5,374; Germany \$2,615.
Grinding and polishing wheels and stones	5,916	17	Italy 2,023; Germany 1,319; France 839.
Asbestos, crude	27,030	9	Canada 15,450; Zimbabwe 6,721; Russia 3,362.
Barite and witherite	10,429	--	Morocco 6,500; Germany 2,025; China 1,297.
Boron:			
Crude natural borates	93,935	--	Turkey 81,530; Argentina 12,306; Belgium-Luxembourg 96.
Oxides and acids	15,776	11,541	Turkey 2,575; Italy 620; France 446.
Bromine, fluorine, iodine	820	50	Germany 369; Netherlands 136; Belgium-Luxembourg 77.
Cement	tons, thousands	3,608	(2/) Turkey 1,549; Greece 1,026; Romania 400.
Chalk	4,635	2	France 4,245; Portugal 339; Germany 45.

See footnotes at end of table.

TABLE 4--Continued  
 SPAIN: IMPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
INDUSTRIAL MINERALS--Continued			
Clays, crude:			
Bentonite	38,940	4,001	Greece 11,870; Italy 11,035; France 7,704.
Kaolin	434,099	6,938	United Kingdom 244,312; Turkey 54,871; France 54,367.
Unspecified	48,303	3,588	France 12,499; South Africa 12,333; United Kingdom 7,682.
Diamond, natural:			
Gem, not set or strung	value, thousands \$23,205	--	Belgium-Luxembourg \$17,279; Israel \$2,721; India \$1,480.
Industrial stones	do. \$2,270	--	Belgium-Luxembourg \$1,139; Ireland \$583; United Kingdom \$262.
Diatomite and other infusorial earth	4,218	1,419	France 1,802; Portugal 902; Italy 70.
Feldspar	215,198	--	Turkey 133,060; France 46,811; Canada 15,098.
Fertilizer materials:			
Crude, n.e.s.	14,984	504	Israel 4,057; Italy 3,230; France 3,143.
Manufactured:			
Ammonia	610,784	--	Ukraine 223,159; Russia 70,594; United Kingdom 53,921.
Nitrogenous	tons, thousands 1,401	(2/)	Belgium-Luxembourg 251; Netherlands 206; Germany 193.
Phosphatic	129,843	39	Lebanon 44,407; Morocco 23,409; Tunisia 15,248.
Potassic	357,341	--	Israel 117,082; Jordan 95,230; Canada 72,407.
Unspecified and mixed	892,844	4,964	Belgium-Luxembourg 135,320; Poland 113,885; Norway 113,009.
Fluorspar	8,762	--	China 5,699; Mexico 2,978; France 85.
Graphite, natural	4,728	208	China 1,747; Canada 936; Germany 759.
Gypsum and plaster	27,241	2,114	Morocco 20,565; France 2,973; Portugal 916.
Lime	3,606	54	France 2,521; Portugal 426; Belgium-Luxembourg 386.
Magnesium compounds:			
Magnesite, crude	3,098	--	Turkey 1,500; Australia 686; Italy 496.
Oxides and hydroxides	82,845	5,683	China 40,307; Italy 8,238; Netherlands 7,703.
Mica:			
Crude including splittings and waste	1,880	51	India 775; France 494; Germany 218.
Worked including agglomerated splittings	184	--	India 47; Belgium-Luxembourg 31; Switzerland 31.
Nitrates, crude	8,622	--	Chile 7,556; Belgium-Luxembourg 701; Norway 251.
Phosphates, crude	tons, thousands 2,108	--	Morocco 1,779; Togo 175; Algeria 73.
Pigments, mineral, iron oxides and hydroxides, processed	15,078	91	Germany 6,805; China 3,495; France 1,693.
Precious and semiprecious stones other than diamond:			
Natural	value, thousands \$7,790	\$114	Thailand \$3,384; India \$1,182; Brazil \$943.
Synthetic	do. \$5,764	\$2	Japan \$1,860; Germany \$1,370; France \$741.
Pyrite, unroasted	149	--	Germany 77; Italy 48; Austria 24.
Quartz crystal, piezoelectric	value, thousands \$1,902	--	Japan \$1,860; Italy \$36; France \$4.
Salt and brine	21,906	6	Israel 14,289; France 4,343; Netherlands 1,732.
Sodium compounds, n.e.s.:			
Soda ash, manufactured	133,809	94,262	Bulgaria 19,738; Turkey 6,746; Portugal 4,380.
Sulfate, manufactured	2,646	--	Germany 1,605; France 404; Belgium-Luxembourg 347.
Stone, sand and gravel:			
Dimension stone:			
Crude and partly worked	532,703	5,600	Brazil 111,376; Morocco 91,607; Italy 69,437.
Worked	87,367	43	Italy 45,510; Portugal 25,374; Greece 3,288.
Dolomite, chiefly refractory-grade	5,613	3	France 2,225; Germany 1,360; Norway 789.
Gravel and crushed rock	328,548	--	Morocco 294,693; Portugal 11,915; Italy 11,646.
Limestone other than dimension	2	--	All from the Netherlands.
Quartz and quartzite	1,560	(2/)	Germany 626; India 332; France 254.
Sand other than metal-bearing	513,955	125	Morocco 381,839; France 52,744; Portugal 21,890.
Sulfur:			
Elemental:			
Crude including native and byproduct	62,222	--	France 57,737; Italy 4,272; Portugal 155.
Colloidal, precipitated, sublimed	271	(2/)	France 235; United Kingdom 21; Italy 8.

See footnotes at end of table.

TABLE 4--Continued  
 SPAIN: IMPORTS OF MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
INDUSTRIAL MINERALS--Continued			
Sulfur--Continued:			
Dioxide	4,970	--	Sweden 2,633; Italy 2,025; France 158.
Sulfuric acid	115,678	26	Italy 43,737; Portugal 19,372; Norway 11,924.
Talc, steatite, soapstone, pyrophyllite	38,162	578	France 25,739; China 6,523; Belgium-Luxembourg 1,051.
Vermiculite, perlite, chlorite	47,402	--	Greece 28,465; Turkey 10,000; South Africa 4,856.
Other:			
Crude	503,180	1,306	Andorra 469,841; Germany 9,161; Italy 5,603.
Slag and dross, not metal-bearing	136,629	--	Germany 46,047; France 38,632; Norway 17,549.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	5,580	363	Portugal 5,155; Mexico 25; United Kingdom 25.
Carbon black	67,360	792	France 332,511; Ukraine 223,667; Portugal 110,886.
Coal:			
Anthracite	282,449	--	Netherlands 105,462; South Africa 67,815; United Kingdom 26,661.
Bituminous	tons, thousands 6,177	2,108	South Africa 1,943; Australia 885; Colombia 613.
Briquets of anthracite and bituminous coal	37	--	Russia 21; Germany 16.
Lignite including briquets	154	--	France 131; Germany 23.
Unspecified	tons, thousands 5,668	1,520	South Africa 2,796; Indonesia 1,223; Colombia 107.
Coke and semicoke	462,402	28,173	China 238,310; Poland 71,805; Russia 35,775.
Gas, natural:			
Gaseous	tons, thousands 1,080	--	Norway 890; Algeria 190.
Liquefied	do. 5,816	--	Algeria 4,151; Libya 940; United Arab Emirates 693.
Peat including briquets and litter	124,736	30	Germany 78,019; Estonia 10,941; Netherlands 10,646.
Petroleum:			
Crude	tons, thousands 51,955	163	Nigeria 9,911; Saudi Arabia 8,059; Iran 6,508.
Refinery products:			
Liquefied petroleum gas	do. 1,183	(2/)	Algeria 349; Saudi Arabia 293; United Kingdom 237.
Gasoline	do. 2,097	(2/)	Algeria 768; Italy 388; Greece 185.
Mineral jelly and wax	35,997	3,154	China 14,700; France 123,475; United Kingdom 117,472.
Kerosene and jet fuel	158,637	(2/)	Netherlands 41,367; United Kingdom 21,948; Italy 21,548.
Distillate fuel oil	tons, thousands 3,017	35	Italy 948; Russia 806; United Kingdom 583.
Lubricants	142,120	1,870	France 41,370; Italy 28,289; Portugal 15,132.
Residual fuel oil	tons, thousands 1,328	(2/)	Russia 559,185; France 192,621; Italy 116,093.
Bitumen and other residues	323,739	96,223	France 65,425; Belgium-Luxembourg 64,955; Portugal 46,251.
Bituminous mixtures	671	--	France 320; United Kingdom 156; Germany 96.
Petroleum coke	tons, thousands 2,691	2,362	Venezuela 159; United Kingdom 95; Aruba 24.

1/ Table prepared by Glenn J. Wallace.

2/ Less than 1/2 unit.

3/ May include vanadium.

4/ May include high-purity silicon.

5/ Includes dust, flakes, and powders.

6/ Reported under SITC item number as "selenium, tellurium, phosphorus, arsenic, etc."

Source: United Nations Statistical Office (microfiche).

TABLE 5  
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY OF 1997

(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. (Inespal)	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	Atlantic Copper Holding S.A. (Freeport MacMoRan Inc., 65%; Ercros Group, 35%)	Refinery at Huelva	270
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-Bilboa	36.
Ore, metal content	Atlantic Copper Holding, S.A. (Freeport MacMoRan Inc., 65%, Ercros Group, 35%)	Mines and plant at Ariertero, near Santiago de Compostela, Corta Atalay open pit mine, Cerro Colorado open pit mine and Alredo underground mine, in Rio Tinot area	12. 30.
Do.	Navan Resources Ltd.	Migolas and Sotiel areas	6.
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 Carav--all in Asturias	350.
Do.	do.	Plant at Collada, Gijón Mines at Veneros Sur and Corona, Gijón	200.
Gold	kilograms Rio Narcea Gold Mines, Ltd.	Belmonte de Miranda, Asturias	3,750.
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	70,000

TABLE 5--Continued  
 SPAIN: STRUCTURE OF THE MINERAL INDUSTRY OF 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:				
Crude	barrels per day	Chevron S.A.	Oilfield at Casablanca	300.
Refined	do.	Repsol Petróleo S.A.	Refineries at Escombreras	00,000.
Do.	do.	do.	Puertollano	14,000.
Do.	do.	do.	Tarragona	60,000.
Do.	do.	Refinería de Petróleos del Norte S.A. (Petronor)	Refinery at Somorrostro	40,000.
Do.	do.	Compañía Española de Petróleos S.A.	Refinery at Santa Cruz de Tenerife	60,000.
Do.	do.	Petroleos del Mediterraneo S.A. (Petromed)	Refinery at Castellón de la Plana	20,000.
Do.	do.	Compañía Iberica Refinadora de Petróleos S.A. (Petroiber)	Refinery at La Coruña	40,000.
Potash, ore		Potasas de Navarra S.A.	Mines and plant near Pamplona	300.
Do.		Minas de Potasas de Suria S.A.	Mines at Suria	1,000
Do.		Unión Explosivos Río Tinto S.A.	Mines at Balsareny/Sallent and Cardona	2,000
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.		Río Tinto Minera S.A. Unión Explosivos (Río Tinto, 75%; Río Tinto Zinc, 25%)	Mines and plant at Río 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, Gijón, Mieres, and Veriñ in Oviedo	6,000.
Do.		Altos Hornos de Vizcaya 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. (Azsa)	Electrolytic zinc plant at San Juan de Nieva	200.
Ore		do.	Reocin mines and plants near Torrelavega, Santander	500.
Do.		Andaluzía de Piritas S.A. (APIRSA)	Open pit mine at Aznalcóllar, Seville	3,500.
Do.		Exploración Minera Internacional España S.A. (EXMINESA)	Underground mine at Rubiales, Lugo	500.
Do.		Sociedad Minera y Metalúrgica de Penarroja-Espana S.A.	Mines and plants at Montos de los Azules y Sierra de Lujar, San Agustín	200.