



2006 Minerals Yearbook

SPAIN

THE MINERAL INDUSTRY OF SPAIN

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In 2006, Spain was a significant European producer of such mineral commodities as cement (seventh after China, India, the United States, and others), fluorspar (sixth after China, Mexico, Mongolia, and others), gypsum (second after the United States), and industrial sand and gravel (sixth after the United States, Slovenia, Germany, Austria, and France) (Dolley, 2007; Founie, 2007; Miller, 2007; van Oss, 2007).

Spain occupies about 85% of the Iberian Peninsula and has some of the most mineralized territory in Western Europe, including the volcanic-hosted massive sulfide (VMS) deposits of the Iberian Pyrite Belt (IPB) of southern Spain. The IPB stretches from Seville in southern Spain to south of Lisbon in Portugal. The Belt comprises a series of Late Devonian to Mid-Carboniferous age rocks and is dominated by a thick Lower Carboniferous volcanic occurrence referred to as the Volcanic Sedimentary Sequence (VS). The VS is overlain by a southwest-prograding turbiditic sequence which, toward the south, is in turn overlain by a cover of Tertiary and Quaternary alluvial sediments. Within the VS, at least 80 VMS deposits are thought to exist. The IPB alone was estimated to have yielded 1.7 billion metric tons of sulfides. The main polymetallic deposits include the Aznalcollar, the Lomero-Poyatos, the Rio Tinto, the Scotiel, and the Tharsis. In Spain, Cambridge Mineral Resources plc (CMR) owns 100% of its local subsidiary, Recursos Metallicos SA, which holds mining licenses over the Lomero-Poyatos auriferous polymetallic massive sulfide deposit with the right to production. The licenses are valid for 45 years (Cambridge Mineral Resources plc, 2007; Encyclopedia of the Nations, 2007).

Minerals in the National Economy

Spain was the fifth ranked economy in the European Union (EU) and the world's 15th ranked exporting country. The country has a long history of mining and has attracted interest from many major mining companies for gold and base metal prospecting, exploration, development, and production. International mineral investment has been encouraged by several important factors, including the highly prospective geology of the IPB in the south and the gold discoveries at the Boinas, the Carles, and the El Valle deposits in the Rio Narcea Belt in the north. International mineral investment interest has been encouraged by the country's transparent legislative framework, positive fiscal environment for the extraction of natural resources, well-developed infrastructure and skilled workforce, long mining tradition, track record of successful exploration and mine development, and the availability of nonrefundable Government grants for both exploration and mine development (Cambridge Mineral Resources plc, 2007; Federation of International Trade Associations, 2007).

Spain's economy has become diversified and increasingly service-based since joining the EU. Spain's international economic profile has grown appreciably in recent years. The share of foreign trade in Spain's gross domestic product (GDP)

was about 55% in 2006. Spain's top three export partners were France, Germany, and Portugal. Its top three import partners were Germany, France, and Italy. The Government moved to decentralize powers to the regions and liberalize the economy by instituting a privatization program, labor market reform, and measures designed to increase competition in selected markets and make the country's economy more market oriented. Spain was fully integrated into European institutions, qualifying for the European Monetary Union. These actions allowed the country to restore confidence in the Government's macroeconomic management and created conditions for lower inflation and interest rates. Inflation was 3.5% in 2006 compared with 4.1% in 2005. For 2006 as a whole, Spain's real GDP growth was 3.9% compared with 3% in 2005. The mining and mineral processing industries represented almost 1% of the GDP in 2006. Spain had a population of more than 45 million inhabitants in 2006; the total labor force was 19.2 million; of this total, services represented 65.1%; industry, 29.7%; and agriculture, 5.2%. The minerals sector employed 57,000, or about 1% of the industry total of 5.7 million. Despite Spain's strong economic growth, significant risks remained, including the country's continued loss of competitiveness and a decline in EU structural funds and foreign direct investment (Sociedad Estatal de Participaciones Industriales, 2006, p. 33-34; U.S. Central Intelligence Agency, 2007; U.S. Department of State, 2007).

Government Policies and Programs

Minerals are owned by the state under an arrangement known as the *Regalía Principal*. The Mining Law of July 21, 1973, and the Hydrocarbon Law of October 7, 1998, governs the mineral industry. The Dirección General de Política Energética y Minas implements these mineral laws. Law 20 of June 5, 2006, modified the Finance Regime of the Sociedad Estatal de Participaciones Industriales (SEPI), a state-owned holding company with mining as one sector in its portfolio. In the minerals sector, SEPI was concerned mainly with the state-owned companies Hulleras del Norte, S.A. (HUNOSA), which produced coal; Minas de Almadén y Arrayanes, S.A. (MAYASA), which produced mercury; and Enusa Industrias Avanzadas, S.A. (ENUSA), which produced nuclear power. The Instituto Geológico y Minero de España (IGME) is the principal Government mineral-resource agency. IGME offers assistance in the fields of geology and mining to the private and public sectors through the production of maps and scientific publications (Sociedad Estatal de Participaciones Industriales, 2006, p. 26; Federation of International Trade Associations, 2007).

Production

Data on mineral production are provided in table 1. Primary aluminum metal production decreased to 349,000 metric tons (t) in 2006 from 394,200 t in 2005. Production of mined copper

content increased to 8,700 t from 7,900 t in 2005, and refined copper production decreased to 263,700 t from 284,200 t in 2005. Gold mine production remained about the same level as that of 2005. Lead and mined zinc decreased in the past few years owing to closures of the Aznalcollar, the Reocin, the Rubiales, the Sotiel, and the Tharsis Mines. Mine production of nickel increased to 6,400 t from 5,380 t in 2005. Quarried mineral products, particularly quarried stone, accounted for a significant share of the mineral production in Spain. Spain was a leading producer of natural sodium sulfate, and slate and strontium minerals, and an important processor of domestic and imported raw materials. In 2006, Spain's domestic energy production consisted of nuclear (56.3%), coal (22.5%), hydropower (7.9%), petroleum (0.5%), natural gas (0.2%), and others (12.6%). Spain's energy consumption sources were nuclear (49.1%), coal (19.5%), hydropower (6.9%), petroleum (0.4%), natural gas (0.2%), and others, including renewable energies (23.9%) (Ministerio de Industria, Turismo y Comercio, 2006, p. 31; 2007, p. 15).

Structure of the Mineral Industry

Table 2 is a list of Spain's leading mineral industry facilities. Spain's accession to the EU in January 1986 required the country to open its economy to trade and investment, modernize its industrial base, improve infrastructure, and revise economic legislation to conform to EU guidelines. Spain followed the U.S.-EU mutual recognition agreements in its application of nontariff regulations and conformity assessments procedures. The mineral industry was made up of a mix of state-owned companies, joint ventures of state and the private sector, and privately owned companies. In terms of the value of mine output of metallic and nonmetallic minerals and quarry products, Spain was one of the leading EU countries. In 2002, Spain's legislature abolished state and private monopolies, and the Government continued with its program of liberalization in 2006. The liberalization of the electricity and natural gas sectors and the loosening of labor market regulations were accomplished faster than required by the EU. Some of Spain's regional governments, such as Andalusia, Asturias, and Cataluña, have expressed interest in the development of mineral resources in their geographic areas as well (Sociedad Estatal de Participaciones Industriales, 2006, p. 10-11, 26; Encyclopedia of the Nations, 2007).

Commodity Review

Metals

Alumina and Aluminum.—Alumina and primary aluminum were produced almost entirely by Alcoa Inespal S.A. (a subsidiary of Alcoa Inc. of the United States) both for domestic consumption and for export. Alcoa Inespal was a holding company with two primary aluminum plants and three flat-rolled sheet and extrusions plants. Alúmina Española S.A., which was located near San Ciprian, was Alcoa's only European producer of alumina and alumina hydrates.

Copper.—Inmet Mining Corp. of Canada announced that it had completed the acquisition of a 70% interest in Las Cruces

copper project, and that a wholly owned subsidiary, Leucadia National Corp., would retain the remaining 30% interest. Las Cruces is a high-grade volcanic massive sulfide copper deposit located on the eastern edge of the IPB about 15 kilometers (km) northwest of Seville. The project had estimated proven and probable copper reserves of 17.6 million metric tons (Mt) grading 6.2% copper. The mine had a production capacity of 72,000 metric tons per year (t/yr) of copper cathode, and the projected life of the mine was 15 years (2008 to 2022). All construction and development activities pertaining to the Las Cruces mill and open pit mining were expected to be completed by the first part of 2008 (Inmet Mining Corp., 2007).

Ormonde Mining plc of Ireland is a mineral exploration and development company focused on Spain, with the objective of developing mining projects and taking them into production. Ormonde's main project is La Zarza copper-gold project in southern Spain where a prefeasibility study for the development of an underground mining operation was completed in September 2006 and a follow-on bankable feasibility study was being carried out (Ormonde Mining plc, 2007a).

Gold.—CMR's Lomero-Poyatos gold deposit was reported to contain estimated reserves of 3.71 Mt at grades of 3.26 grams per metric ton (g/t) gold, 27.9 g/t silver, 0.87% copper, 1.57% lead, and 1.16% zinc. Ormonde sought to build a mid-size suite of projects in Spain that would be focused primarily on gold. The Salomon project, which was located in northwest Spain, was the most advanced project and contained an estimated 20,000 kilograms (kg) of inferred resources of gold. Ormonde's objective was to establish mining operations that could produce copper, gold, and silver. Projects included the Salamanca, the Salamon, the Tracia, and the Trives gold projects and the La Zarza gold-copper project which was situated within a mining concession in the IPB in southwest Spain. Ormonde was earning a 70% interest in the La Zarza gold-copper project by providing €1.8 million (\$2.2 million) during a 3-year period under an option agreement with the property owner, Nueva Tharsis S.A.L. La Zarza deposit had been mined formerly for pyrite (iron sulfide only), contained copper, gold, and silver mineralization as well (Cambridge Mineral Resources plc, 2007; Ormonde Mining plc, 2007a, b).

Iron and Steel.—Spain produced 17.8 Mt of crude steel in 2006, which was about the same level as that of 2005. Compañía Española de Laminación S.L. (Celsa) produced about 2.2 million metric tons per year (Mt/yr) of steel in 2006. Celsa produced plain rounds and rebar, wire rod, flat bars, squares, angles, structural sections, and electro-welded mesh. Heat lamination of billets was carried out in three mills, each with its own specifications. One mill produced corrugated round rods and rolls; a second mill produced flat bars, squares, angular and round rods, and light sections; and a third mill produced thick structural sections (Compañía Española de Laminación S.L., 2007). Sidenor Industrial, S.L. (Sidenor), which was a leading producer of special steels in Spain, was planning to start producing stainless steel by expanding its existing electric arc furnace at its works in Basauri, northern Spain. Sidenor was Spain's leading special long-products, forgings, and molded parts group as well. A joint venture of Gerdau Group of Brazil, Santander Group of Spain, and executives of Sidenor signed a

€443.8 million (\$556 million) agreement to acquire the entire capital stock of Sidenor. The investment would allow Gerdau to enter the strategic EU market and provide it with access to large international automobile makers (Sidenor Industrial, S.L., 2007).

Mercury.—Until 2004, MAYASA at Almaden was a leading producer of liquid mercury metal. Almaden is located about 200 km south of Madrid in the Province of Ciudad Real in the Brown Mountain range. Almaden produced about 7.5 million flasks (34.5 kg each), or 258,750 t of mercury metal. That output was 2.5 times higher than the Idria Mine in Slovenia and 4 times higher than the Monte Amiata Mine in Italy, which were the second and third leading producers of mercury, respectively. In recent years, trade of mercury has decreased because of its alleged toxicity, and mine production was virtually paralyzed. The last available estimate of mercury production was 250 t in 2004 (table 1; Las Minas de Almadén y Arrayanes S.A., 2007).

Nickel.—Rio Narcea Gold Mines Ltd.'s (RNG's) Aguablanca Mine consisted of an open pit, an onsite processing mill, and a potential underground mine. The initial open pit mine life was estimated to be 10.5 years based on the mineral reserves of 15.7 Mt of ore containing 0.66% Ni, 0.46% Cu, 0.47 g/t platinum-group metals (PGM), and 0.13 g/t Au. The assumptions of the feasibility study contemplated an annual production of approximately 8,165 t (18 million pounds) of nickel; 6,350 t (14 million pounds) of copper; and 620 kg (20,000 ounces) of PGM. In early January 2003, Rio Narcea secured an offtake agreement with Glencore International AG of Switzerland for the sale of 100% of the annual concentrate production at the mine until the year 2010. The concentrate would be trucked from Aguablanca to the Ports of Huelva or Sevilla for shipment. The nickel sulfide flotation plant was designed to treat 1.5 Mt/yr of ore with a potential expansion to treat 1.8 Mt/yr. The Aguablanca copper-gold-nickel-PGM deposit in southwestern Spain was defined by more than 45,000 meters (m) of drilling. Formed by three zones of magmatic sulfide mineralization, the deposit occurs in a gabbro-norite intrusive along the north contact of the Santa Olalla granodiorite complex. Pyrrhotite, pentlandite, and chalcopyrite make up the dominant sulfide mineralization (Rio Narcea Gold Mines Ltd., 2007).

Silver.—Spain's silver production remained at about the same level as that of 2005. Ormonde reported that it had entered into an agreement with Polar Mining Oy (a Finnish subsidiary of Dragon Mining NL), which would allow Ormonde to acquire a 50% interest in the Valiña silver project in Lugo Province, northern Spain. Ormonde planned to focus on the potential for an open pit mine with a high-grade resource. Limited previous drilling returned a best interval of 6 m at grades of 451 g/t silver and 1.7 g/t gold, including 1 m at grades of 2,020 g/t silver and 5.8 g/t gold. Anomalous levels of antimony, gold, lead, and silver occur in soil samples for over a strike length of 1.1 km. Ormonde's initial work program would entail metallurgical testing designed to investigate the possibility of producing a concentrate containing antimony, gold, and silver for direct sale to a smelter. According to the report of April 24, 2006, La Zarza deposit's ore reserves contained copper (84,900 t), gold (486,100 ounces), and silver (6.9 million ounces) (Ormonde Mining plc, 2007a).

Tungsten.—Ormonde was evaluating the Barruecopardo high-grade tungsten deposit in the Salamanca area of western Spain, with the objective of assessing the continuity of the high-grade mineralization and to establish if the project would support an underground mining operation that uses a gravity concentration process. Ormonde would also assess the volume, grade, and rate of recovery of the tungsten contained in the dumps and tailings. The Barruecopardo Mine, which closed in the early 1980s, was the largest tungsten mine in Spain that produced a high-quality tungsten concentrate from an open pit operation. It was one of Europe's leading tungsten operations at the time that it was closed. Recent sampling by Ormonde confirmed the presence of gold with the tungsten, and the company planned to evaluate that resource as well (Ormonde Mining plc, 2007a).

Zinc.—Spain's zinc output increased slightly to 502,800 t in 2006 from 501,400 t in 2005. Asturiana de Zinc S.A. continued production at its San Juan de Nieva Castillon plant. Asturiana's core business was the refining and production of zinc metal, mainly zinc ingots. The San Juan de Nieva plant, which had a capacity of 500,000 t/yr of zinc metal was the leading single zinc smelter in the world and was also one of the world's lowest cost operations (Asturiana de Zinc S.A., 2007).

Industrial Minerals

Barite.—Spain's barite output remained at about the same level as that of 2005. Minerales y Productos Derivados S.A. (Minersa) was a main supplier of drilling grade material. Minersa continued to operate a surface mine and plant at Vera.

Cement.—Spain's cement output decreased slightly to 50 Mt in 2006 from 50.3 Mt in 2005. Cementos Portland Valderrivas planned to boost its white cement production rate from 700 metric tons per day (t/d) to 900 t/d while achieving a significant emission reduction by converting its El Alto plant near Madrid. The conversion would include the integration of a calciner into the existing preheater, the installation of a new rotary kiln drive, and replacement of the clinker cooler (Polysius AG, 2007).

Clays.—Spain, whose reserves of sepiolite in the Tagus Basin represent a 70% of the world's reserves, maintained its world leadership in sepiolite production. The largest deposit was thought to be in excess of 15 Mt. The Tolsa Group based in Toledo, Spain, was the discoverer of sepiolite, which is a very light mineral with a very high capacity of absorption; it is used in a variety of products and applications (Grupo Tolsa, 2007). **Fluorspar.**—Minersa was Europe's leading fluorspar producer owing to its three deposits in the Province of Asturias in northern Spain. The Emilio, the Jaimina, and the Moscona underground mines produced a combined 420,000 t/yr of crude fluorspar.

Potash.—Iberpotash S.A. was a 100% owned subsidiary of Dead Sea Works Ltd., which was a leading producer of potash and an important potash resource in Western Europe. Iberpotash mined sylvinite and sylvite ore from the Cataluña deposit in the Suria area.

Mineral Fuels and Other Sources of Energy

Spain has limited energy resources; thus, the country was strongly dependent upon imports of energy. It had no major oilfields; only one natural gas field, which was located offshore; and coal mines that contained mainly low-quality coal. In 2006, proven petroleum reserves were estimated to be 150 million barrels; natural gas reserves, 72 million cubic meters; and coal reserves, 530 Mt. Spain's refinery capacity was almost 1.4 million barrels per day (BP p.l.c., 2007; U.S. Energy Information Administration, 2007).

Spain's production of crude oil and natural gas remained at about the same level as that of 2005. Spain imported about 99% of its crude oil mainly from Russia (15%); Mexico (14.7%); Saudi Arabia (12.7%); and Libya (12.2%). Almost all of Spain's natural gas production came from one offshore field, Poseidon, which was operated by Repsol YPF S.A. The country imported 60% of its natural gas from Algeria. Spain was the fifth ranked electricity market in the EU. The country produced 229 billion kilowatts of electricity and consumed 218.4 billion kilowatts. The largest share of electricity generation came from conventional thermal plants (52.3%), hydroelectricity (25.2%), nuclear (14.9%), and other renewables (7.6%). Electricity consumption had grown considerably and was straining the electricity infrastructure; several major blackouts were attributed to supply shortages or transmission grid malfunction (U.S. Energy Information Administration, 2007).

Coal.—Spain's coal production decreased to 18.4 Mt in 2006 from 19.4 Mt in 2005. Coal continues to be Spain's most plentiful indigenous energy source, but its cost of production was high, which made Spanish coal less competitive than that of many other countries. Spain's attempts to modernize and restructure its coal industry caused a decline in total coal production but has not led to decreased production costs. Private companies produced most of the coal in the country, although the leading producer of bituminous coal was Government-owned HUNOSA Group and the leading producer of lignite was Empresa Nacional de Electricidad S.A. (International Energy Agency, 2007; Ministerio de Industria, Turismo y Comercio, 2007, p. 17).

Renewable Energy.—In Europe, Germany and Spain continued to attract the majority of investments in wind power. In 2006, these two countries represented 50% of EU's wind power growth, and the leading European countries with wind power installations were Germany [2,233 megawatts (MW)], Spain (1,587 MW), France (810 MW), Portugal (694 MW), and the United Kingdom (634 MW) (European Wind Energy Association, 2007).

Outlook

Spain is a significant European producer of such mineral commodities as cement, coal, copper, gold, silver, and zinc. Several gold, nickel, tungsten, and base metal projects are undergoing feasibility studies and most of them are focused on the Iberian Pyrite Belt. According to the Encyclopedia of the Nations (2007), the IPB is a focus of interest for mining companies and it is a prime target for exploration activities

because of past successes in discovering large VMS deposits and possible increased production of copper, gold, nickel, silver, and sepiolite in Spain. Owing to Spain's dependence on imported energy, more attention is likely to be directed toward biofuels, clean coal, and renewable energy investments (López de Sillanes, 2007). The Government is expected to continue with its privatization and liberalization efforts in the mineral industry. More than 80% of Spain's mining production is industrial minerals and rocks, and this is expected to continue. Production of coal could eventually be phased out despite ongoing EU subsidies to maintain it. These subsidies are, however, expected to be eliminated by 2010.

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TABLE 1
SPAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006 ^c	
METALS						
Aluminum:						
Alumina ^{c, 2}	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	
Metal:						
Primary	380,100	389,100	397,500	394,200 ^r	349,000 ³	
Secondary	242,600	245,000	245,000	242,600 ^r	242,600 ³	
Total	622,700	634,100	642,500	636,800 ^r	591,600 ³	
Copper:						
Mine output, Cu content	1,248	643	1,448	7,900 ^r	8,700 ³	
Metal:						
Blister:						
Primary	281,300	290,300 ^r	224,300	284,200	263,700 ³	
Secondary	16,700	20,000	14,100	10,000	10,000	
Total	298,000	310,300 ^r	238,400	294,200 ^r	274,000	
Refined:						
Primary	271,500	293,000 ^r	208,241	267,300	255,400 ³	
Secondary	36,700	14,000	35,000	35,000	35,000	
Total	308,200	307,000 ^r	243,241	302,300 ^r	290,000	
Germanium oxide, Ge content ^c	kilograms	5,000	5,000	5,000	5,000	
Gold, mine output, Au content	do.	5,158	5,362	5,248 ⁴	5,300 ^r	5,300 ³
Iron and steel, metal:						
Pig iron	thousand metric tons	3,978	3,645	4,036 ^r	4,200	4,200
Ferroalloys, electric furnace	do.	175	175	175	180	180
Steel:						
Crude	thousand metric tons	16,358	16,287	17,684	17,800	17,800
Hot rolled ^c	do.	15,000	14,000	15,000	15,000	15,000
Lead:						
Mine output, Pb content		6,171	1,765	--	--	--
Metal, secondary		116,000	99,100	105,600	110,000	110,100 ³
Mercury, mine output, Hg content		727	500	250	--	--
Nickel, Ni content of concentrate		--	--	(4)	5,380	6,400 ⁵
Silver, mine output, Ag content	kilograms	3,409	2,246	3,583	3,600	3,600
Tin, mine output, Sn content ^c	do.	267	247 ³	231 ³	--	--
Uranium, mine output:						
U content		315	170	170	--	--
U ₃ O ₈ content		372	200	200	--	--
Zinc:						
Mine output, Zn content		69,926	15,100	--	--	--
Metal, primary and secondary		502,400	519,900	525,100 ^r	501,400	502,800 ³
INDUSTRIAL MINERALS						
Barite, BaSO ₄		52,494	44,660	40,776	37,000 ^c	37,000
Cement, hydraulic	thousand metric tons	42,417	44,747 ^r	45,593	50,347	50,000 ³
Clays:						
Attapulgitite		22,918	18,975	20,796	20,000 ^c	20,000
Bentonite		123,457	103,174	156,760	105,000 ^c	105,000
Kaolin, washed		419,483	450,000	437,990	450,000 ^c	450,000
Other ^c	thousand metric tons	15,000	15,000	15,000	15,000	15,000
Diatomite and tripoli		53,558	52,700	33,799	34,000 ^c	34,000
Feldspar		538,407	600,000	552,507	580,000 ^c	580,000
Fluorspar, CaF₂ content:						
Acid-grade		131,155	129,195	135,505	133,495	139,500 ³
Metallurgical-grade		10,279	10,503	10,186	10,500	10,500
Total		141,434	139,698	145,691	143,995	150,000
Gypsum and anhydrite, crude	thousand metric tons	11,218	11,500	12,534	13,000 ^c	11,500

See footnotes at end of table.

TABLE 1--Continued
 SPAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006 ^c
INDUSTRIAL MINERALS--Continued					
Lime, hydrated and quicklime ^e thousand metric tons	1,800	1,800	1,800	1,818 ³	2,000 ³
Magnesite, calcined ^e	150,000	150,000	150,000	150,000	150,000
Mica	11,786	11,800	7,825	10,000	10,000
Nitrogen, N content of ammonia thousand metric tons	415	432	404	400	400
Pigment, mineral:					
Ocher	140,000	174,153	138,050	140,000 ^e	140,000
Red iron oxide ^e	4,500	5,404 ³	1,734 ³	1,500	1,500
Potash, K ₂ O equivalent	481,329	594,355	590,000 ^e	575,000 ^e	580,000
Pumice	701,528	711,898	553,210	600,000 ^f	600,000
Pyrite, plus cuprous, gross weight ^e thousand metric tons	100	--	--	--	--
Salt:					
Rock, including byproduct from potash works do.	2,560 ^e	2,563	2,657	3,200 ^f	3,200
Marine and other do.	1,334	1,400	1,336	1,350 ^e	1,400
Sand and gravel, silica sand ⁶ do.	95,768	105,000	113,948	135,000 ^e	135,000
Sepiolite, meerschaum	733,134	690,395	851,647	800,000 ^e	800,000
Sodium compounds, n.e.s.: ^e					
Soda ash, manufactured thousand metric tons	500	500	500	500	500
Sulfate, natural:					
Glauberite, Na ₂ SO ₄ content	754,945 ³	815,560 ³	944,971 ³	9,500,000	9,500,000
Thenardite, Na ₂ SO ₄ content	160,000	200,000	165,030 ³	165,000	165,000
Manufactured	125,000	125,000	125,000	125,000	125,000
Stone:					
Chalk ^e thousand metric tons	876	920	1,063 ³	1,000	1,000
Dolomite do.	11,537	12,000	14,489 ^f	15,000 ^e	15,000
Limestone ^e do.	236,411 ³	248,000	265,694 ³	270,000	270,000
Marble, ornamental do.	5,230	5,000	2,245	2,620	2,600
Marl ^e do.	10,000	10,000	10,356 ³	10,000	10,000
Basalt ^e do.	3,400	3,400	5,094 ³	5,000	5,000
Granite, ornamental ^e do.	1,200	1,412 ³	2,471 ³	2,500	2,500
Ophite ^e do.	2,800	2,800	3,874 ³	4,000	4,000
Phonolite do.	1,761	2,000 ^e	1,729	1,800 ^e	1,800
Porphyry do.	1,971	2,100 ^e	1,139	1,100 ^e	1,100
Quartz ^e do.	2,000	2,000	1,139 ³	1,100	1,100
Quartzite do.	2,784	2,900 ^e	2,873	2,800 ^e	2,800
Sandstone do.	2,246	2,400 ^e	3,608	3,400 ^e	3,400
Slate do.	828	837	1,429	1,200 ^e	1,200
Other ^e do.	900	900	900	900	900
Strontium minerals, Sr ₂ O ₄ content	171,293	152,383	192,942	188,000 ^e	188,000
Sulfur, byproduct: ^e					
Metallurgy thousand metric tons	544	500	500	500	500
Petroleum do.	140	150	150	115 ^f	100
Coal (lignite) gasification do.	1	1	1	1	1
Total do.	685	651	651	616 ^f	601
Talc and steatite ^e	115,000	115,000	107,892 ³	100,000	100,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, marketable:					
Anthracite thousand metric tons	9,752 ^f	9,386 ^f	8,923 ^f	8,553 ^f	8,354 ³
Bituminous do.	3,557 ^f	3,181 ^f	3,426 ^f	3,214 ^f	3,223 ³
Lignite do.	8,726 ^f	7,981 ^f	8,147 ^f	7,587	6,822 ³
Total do.	22,035 ^f	20,548 ^f	20,496 ^f	19,354 ^f	18,399 ³
Coke, metallurgical do.	2,628	2,500	2,500	2,500	2,500
Gas, natural, marketed thousand cubic meters	553,156	550,000 ^e	370,019	330,000 ^e	330,000

See footnotes at end of table.

TABLE 1--Continued
 SPAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006 ^c	
MINERAL FUELS AND RELATED MATERIALS--Continued						
Peat ^e	55,302 ³	55,000	57,229 ³	60,000	60,000	
Petroleum:						
Crude	thousand 42-gallon barrels	2,427	2,404	1,913	1,261	1,300
Refinery products:						
Liquefied petroleum gas	do.	35,164	33,234	33,072	33,698	33,700
Naphtha ^e	do.	26,069 ³	25,000	25,000	25,000	25,000
Gasoline, motor	do.	74,035	76,431	87,797	87,593	87,600
Jet fuel	do.	28,944	24,456	21,688	21,224	21,200
Kerosene	do.	15,965	15,942	16,000	16,000 ^e	16,000
Distillate fuel oil	do.	149,759	111,676	112,000	112,000 ^e	112,000
Residual fuel oil	do.	68,085	60,353	55,730	57,294	57,300
Other	do.	80,483	79,461	80,000 ^e	80,000 ^e	80,000
Refinery fuel and losses	do.	25,146	27,631	26,000	26,000 ^e	26,000
Total	do.	503,650	454,184	457,000 ^e	459,000 ^e	459,000

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to total shown. ^fRevised. -- Zero.

¹Table includes data available through March 2007. Source: Ministerio de Industria, Turismo y Comercio—Secretaría General de Energía, 2007.

²Reflects aluminum hydrate.

³Reported figure.

⁴The Aguablanca operation of Rio Narcea Gold Mines Ltd. was commissioned in December 2004.

⁵Reported by World Metal Statistics, May 2007.

⁶Includes sand obtained as a byproduct of feldspar and kaolin production.

TABLE 2
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Alumina	Alúmina Española S.A. (Alcoa Inc.)	Alumina plant at San Ciprian, Lugo	1,000
Aluminum	do.	Electrolytic plant at San Ciprian, Lugo	230
Do.	Alcoa Inespal S.A. (Alcoa Inc.)	Electrolytic plant at Aviles	85
Do.	do.	Electrolytic plant at La Coruña	85
Barite	Minerales y Productos Derivados S.A. (Minersa)	Mine and plant at Vera, Almeria	100
Bentonite	Süd-Cheme España SL	Mine and plant at Yuncos, Toledo	150
Cement	Of which:	Including:	44,000
Do.	Ashland S.A.	Puerto de Sagunton, Valencia	2,000
Do.	do.	Villaluenga de la Sagra, Toledo	2,000
Do.	do.	3 other plants	2,000
Do.	35 other companies	49 other plants	38,000
Coal:			
Anthracite	Antracitas Gaiztarro S.A.	Mines at Maria and Paulina	2,000
Do.	do.	Mines near Oviedo	2,000
Do.	Antracitas del Bierzo S.A.	Mines near Leon	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 S.A. (Endesa)	As Pontes Mine, and Andorra Mine, La Coruña	15,000
Copper:			
Metal	Atlantic Copper S.A. (Freeport MacMoRan Copper & Gold Inc., 100%)	Refinery at Huelva	270
Do.	do.	Electrolytic refinery at Huelva	105
Do.	Industrias Reunidas de Cobre	Smelter at Asua-Bilbao	30
Do.	Elmet SL	Smelter and electrolytic refinery at Berango, Vizcaya	60
Ore, metal	Atlantic Copper S.A. (Freeport MacMoRan Copper & Gold Inc., 100%)	Mines and plant at Ariertero near Santiago de Compostela	12
Do.	do.	Alfredo underground mine in Rio Tinto area	30
Do.	Minas de Rio Tinto S.A.	Cero Colorado open pit mine	20
Dunite	Pasek España S.A.	Mines and plant at Landoy, Ortigueira	1,500
Fluorspar, ore	Minerales y Productos Derivados S.A. (Minersa)	Plant at Torre, Asturias	150
Do.	do.	Underground mines at Emilio, Jaimina, and Moscona, Asturias	420
Gold	kilograms Rio Narcea Gold Mines, Ltd.	El Valle and Carles Mines, Asturias	3,750
Lead:			
Metal	Española del Zinc S.A.	Refinery at Cartagena, Murcia	50
Do.	Compañía La Cruz, Minas y Fundaciones de Plomo S.A.	Smelter at Lineares, Jaen	40
Do.	do.	Refinery at Lineares, Jaen	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 de España S.A. (Peñarroya, France, 90%)	Opencast mine at Montos de Los Azules	25
Do.	Andaluz de Piritas S.A.	Mine at Aznalcollar (closed 2001)	21
Do.	Exploración Minera Internacional España S.A. (EXMINESA)	Underground mine at Rubiales, Lugo	16
Magnesite	Magnesitas Navarras S.A.	Mine at Eugui, plant at Zubiri	600
Do.	Magnesitas de Rubián S.A.	Plant at Monte Castel	70
Mercury	thousand flasks Minas de Almadén y Arrayanes S.A. (Government, 100%)	Mines and smelter at Almaden	7,500
Nickel, metal	Rio Narcea Gold Mines Ltd.	Aguablanca Mine, Extremadura	8

TABLE 2--Continued
 SPAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Petroleum:				
Crude	42-gallon barrels per day	Chevron S.A.	Oilfield at Casablanca	300
Refined	do.	Repsol YPF S.A.	Refinery at Escombreras	200,000
Do.	do.	do.	Refinery at Puertollano	14,000
Do.	do.	do.	Refinery at Tarragona	260,000
Do.	do.	Refinería de Petróleos del Norte S.A. (Petronor)	Refinery at Somorrostro	240,000
Do.	do.	Compañía Española de Petróleos S.A. (Cepsa)	Refinery at Santa Cruz de Tenerife	160,000
Do.	do.	Petroleos del Mediterraneo S.A. (Petromed)	Refinery at Castellon de la Plana	120,000
Do.	do.	Compañía Iberica Refinadora de Petróleos S.A. (Petroliber)	Refinery at La Coruña	140,000
Potash, ore		Iberpotash S.A. (Dead Sea Works Ltd.)	Mines and plants at Suria near Barcelona	850
Pyrite		Compañía Española de Mines de Tharsis	Mines and plants at Tharsis and Zarza (closed)	1,300
Do.		do.	Plant at Huelva	600
Do.		Rio Tinto Minera S.A. (Rio Tinto plc, 75%, and Rio Tinto Zinc, 25%)	Mines and plant at Rio Tinto (closed 2001)	900
Sepiolite		The Tolsa Group	Mine and plant at Vicalvaro near Madrid	100
Do.		Silicatos-Anglo-Ingleses S.A.	Mine and plant at Villecas near Madrid	200
Sodium sulfate		Crimidesa S.A.	Mine and plant at Cerezo de Rio, Burgos	600
Steel		Aceralia Corporación Siderúrgica (Arbed S.A., 35%)	Plants at Aviles, Gijon, Sagunto, and Sestao	8,000
Do.		Compañía Española de Laminación S.L. (Celsa Group, 100%)	Plant at Barcelona	2,600
Do.		Sidenor Industrial, S.L. (Sidenor) (Gerdau Group, 50%, and Santander Group, 50%)	Plant at Basauri	2,500
Strontium		Solvay Minerales S.A.	Mines and plant at Escuzar, Granada	85
Do.		Bruno S.A.	Mine and plant at Montevides, Granada	50
Uranium, U ₃ O ₈	metric tons	Empresa Nacional del Uranio (Enusa) (Government, 100%)	Mines and plant near Ciudad Real	500
Zinc:				
Metal		Asturiana de Zinc S.A. (Xstrata plc, 100%)	Electrolytic zinc plant at San Juan de Nieva Castillon	500
Do.		Española del Zinc S.A.	Electrolytic plant at Cartagena	50
Ore		Asturiana de Zinc S.A. (Xstrata plc, 100%)	Reocin mines and plants (closed 2003)	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 Agustin	200