



2016 Minerals Yearbook

SPAIN

THE MINERAL INDUSTRY OF SPAIN

By Meralis Plaza-Toledo

Spain is located on the Iberian Peninsula, an area that contains a variety of metallic and industrial mineral deposits. In 2016, Spain was the world's top producer of celestite (a strontium mineral), accounting for 44% of the world's production. Spain also accounted for 19% of the world's production of fuller's earth (clay). In addition, Spain was also a leading producer of bentonite, coal, copper, feldspar (2.5% of world production), fluor spar (2.2% of world production), gypsum (2.6% of world production), magnesite, nickel, potassium salts, and slate. In 2016, Spain's real gross domestic product (GDP) had a growth rate of 3.3% (Crangle, 2018; Instituto Nacional de Estadística, 2018; Singerling, 2018a, b; Tanner, 2018; West, 2018).

Minerals in the National Economy

In 2015 (the latest year for which data were available), Spain had 2,853 active production sites, including mining and quarrying sites for industrial minerals and energy products and 6 metal mines. The main metallic ores produced were copper, lead, nickel, tungsten, and zinc, with a value of \$791 million.¹ The industrial minerals produced included celestite, magnesite, potassium salts, sodium sulfate (glauberite and thenardite), special clays, and others, and had a value of \$876 million. The total value of mining production was \$3.3 billion, representing a 1.7% decrease compared with that of 2014. As of 2015, Spain employed 29,097 people in its mineral industry (Ministerio de Industria, Energía, Turismo y Agenda Digital, 2017, p. 6, 16; 2018).

Government Policies and Programs

The Mining Law of July 21, 1973, and the Hydrocarbon Law of October 7, 1998, govern and regulate Spain's mineral and energy industries. The Ministerio de Industria, Energía y Turismo (MIET) [Ministry of Industry, Energy and Tourism] is a department of the General State Administration created by the Royal Decree of February 10, 2012. The MIET is responsible for proposing and implementing Government policies on energy, telecommunications, tourism, and industrial development. The Secretaría de Estado de Energía [Secretary of State for Energy], which is a subunit of the MIET, is responsible for the development of energy and mining policies. The Instituto Geológico y Minero de España (IGME) [Geological and Mining Institute of Spain], which is a subunit of the Ministerio de Economía y Competitividad [Ministry of Economy and Enterprise], is the principal Government mineral resource agency. Created by the Royal Decree of July 12, 1849, IGME is an autonomous body responsible for researching mineral raw materials by studying and characterizing rocks and mineral deposits of potential economic interest. The IGME also

participates in environmental mine planning, recovery, and remediation processes.

In 2016, through Royal Decree 415/2016, the MIET was restructured into the Ministerio de Energía, Turismo y Agenda Digital [Ministry of Energy, Tourism, and Digital Agenda]. The Ministry's main goal is to strengthen the analysis and evaluation capacities of the department's competence sectors and the execution of the Government's policy on energy, tourism, and telecommunications. The Ministry has the following three divisions: the Secretary of State for Energy, the Secretary of State for the Information Society and the Digital Agenda, and the Secretary of State for Tourism (Agencia Estatal Boletín Oficial del Estado, 2016).

Production

In 2016, mineral commodity production in Spain was estimated to be similar to that of 2015. Significant estimated increases included mine production of lead (206%), copper (39%), and zinc (30%), and silicon metal (25%). Significant estimated decreases in production included secondary copper smelter production (33%), mine production of tungsten (22%), and mine production of gold (11%). Production data for selected mineral commodities are in table 1.

Structure of the Mineral Industry

The mineral industry of Spain was composed of domestic private companies and international companies that had direct investments in Spanish companies or subsidiaries. Table 2 is a list of the major mineral industry facilities.

Mineral Trade

In 2016, Spain's total exports and imports amounted to \$275 billion and \$299 billion, respectively. Spain's leading export partners were France (which received \$42.6 billion of Spain's exports), Germany (\$31.8 billion), Italy (\$22.5 billion), the United Kingdom (\$21.2 billion), and Portugal (\$20.1 billion). In 2016, the United States' total imports from Spain were valued at \$13.4 billion compared with \$14.1 billion in 2015, of which crude petroleum, fuel oil, and other petroleum products accounted for about \$1.1 billion; iron and steel products, about \$155 million; and aluminum and bauxite, copper, tin, zinc, and other nonferrous metals, for about \$41 million. In terms of exports from the United States to Spain, crude petroleum, fuel oil, and petroleum products were valued at about \$633 million; nonferrous metals, about \$160 million; iron and steel mill products, \$39 million; and aluminum and copper, \$37 million (Instituto Nacional de Estadística, 2017, p. 32; Observatory of Economic Complexity, The, 2018; U.S. Census Bureau, 2018a, b).

¹Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US\$) at an annual average exchange rate of EUR 0.9057=US\$1.00.

Commodity Review

Metals

Copper.—In February 2016, Atalaya Mining Plc (Atalaya) of Cyprus started commercial operations at the Proyecto Riotinto open pit copper mine in southern Spain. Atalaya mined 7.75 million metric tons (Mt) of copper ore at an average grade of 0.49% copper in 2016. The total ore processed during the year was 6.5 Mt. As of 2016, proven and probable reserves were 153 Mt (0.45% copper) containing 680,000 metric tons (t) of copper. The plant's capacity was 9.5 million metric tons per year and the plant had a projected mine life of 16 years (Atalaya Mining Plc, 2018).

In January 2016, Lundin Mining Corp. (Lundin) of Canada ceased operations at the Aguablanca nickel and copper mine, citing a collapse in prices for nickel and copper. In November 2016, Lundin transferred all its shares to Valoriza Minería, which was a subsidiary of Grupo Sacyr of Spain (Lundin Mining Corp., 2017).

Zinc.—The mining operation Minas de Aguas Teñidas (MATSA) was a joint venture between Mubadala Investment Co. of the United Arab Emirates and Trafigura Group Pte Ltd. of Singapore. The operation was composed of the Aguas Teñidas Mine, the Sotiel Mine, and the Magdalena Mine, and it started production in 2016. These mines produced copper, lead, and zinc concentrates. In 2016, MATSA produced 483,106 t of mineral concentrate, of which 62.2% was copper concentrate; 33.5%, lead concentrate; and 4.3%, zinc concentrate (Minas de Aguas Teñidas S.A.U., 2017, p. 1; Trafigura Group Pte Ltd., 2018).

Industrial Minerals

Clay and Shale.—In 2016, Tolsa Group S.A. (Tolsa) was a company that specialized in the extraction and processing of attapulgite bentonite and sepiolite clays. Attapulgite and sepiolite clays are considered special clays due to their unusual crystal fibrous structure. This property allows these clays to have a high absorption capacity and a wide range of industrial applications. As of 2016, the Tolsa Mine in Madrid had an estimated total capacity of 600,000 metric tons per year (t/yr). A national assessment of reserves and resources has not been performed; however, preliminary studies suggest reserves of more than 30 Mt of attapulgite and more than 67 Mt of sepiolite. About 52 Mt of the sepiolite reserves are located in the Province of Madrid (Alvarez and others, 2011; Instituto Geológico y Minero de España, 2017).

Lithium.—Infinity Lithium Corporation Ltd. (formerly Plymouth Minerals Ltd.), in a joint venture with Valoriza Minería S.A., was developing the San Jose-Valdeflores lithium tin project in the Extremadura Region of Spain. In the 1990s, Tolsa had performed a drilling program at the San Jose project as well as detailed metallurgical work to produce a feasibility study that included a process flowsheet to produce salable lithium carbonate with good recoveries. As of 2016, Infinity planned to conduct drilling at the site to bring the deposit estimate into compliance with Joint Ore Reserves Committee (JORC) standards. It was expected that the San Jose lithium tin

project would be developed by open pit methods with the ore being treated and refined onsite to produce battery-grade lithium carbonate (Infinity Lithium Corporation Ltd., 2018).

Strontium.—As of 2016, two celestite (SrSO_4) mines in Spain were in operation, making Spain a notable producer of strontium concentrates. Solvay Minerales S.A. operated a mine at Escuzar in Granada Province in southern Spain. Celestite obtained from this mine had a concentration of 35% to 50% and it can reach more than 90% after passing a concentration process. Celestite reserves at Escuzar were estimated to be 1 Mt, and the resources, 12 Mt. The mine life was estimated to be 7 years at the current rate of extraction. Canteras Industriales S.L. owned the Aurora Mine located in Montevives in Granada Province. The Aurora Mine was an open pit mine that produced celestite concentrate of 95% SrSO_4 . As of 2016, the Aurora Mine had estimated reserves of 4 Mt (Instituto Geológico y Minero de España, 2017; Ministerio de Industria, Energía, Turismo y Agenda Digital, 2017; Grupo Minero Aurora, 2018; Solvay S.A., 2018).

Mineral Fuels and Related Materials

Coal.—The depletion of hydrocarbon deposits and the progressive closing of coal mines in Spain have resulted in a downward trend in energy production for more than a decade. Coal was mainly used as fuel to produce electricity, and most of the coal consumed in the country was imported. As of 2015 (the latest year for which data were available), the Spanish coal industry companies had a total of 2,795 employees located in five Provinces: Asturias, Ciudad Real, Leon, Palencia, and Teruel. The last update of the National Inventory of Coal Resources, which was prepared by the Ministry of Industry and Energy in 1992, estimated that the total resources of coal were 4,874 Mt, of which 3,306 Mt was coal and anthracite; 1,214 Mt were subbituminous coal (black lignite), and 354 Mt was brown lignite (Instituto Geológico y Minero de España, 2017).

Uranium.—Berkeley Resources Ltd. of Australia (Berkeley), through its subsidiary Berkeley España S.A., owned 100% of the interests in the Salamanca project, which included the Alameda, the Gambuta, and the Retortillo deposits. In July 2016, Berkeley published the results of a definitive feasibility study and reported that the project could produce an average of 2,200 t/yr of uranium during a 10-year period. The total mineral resource for the Salamanca project was estimated to be 82.6 Mt at an average grade of 514 parts per million uranium oxide (U_3O_8) (Berkeley Resources Ltd., 2018).

Outlook

Spain's geographical position and wide geologic diversity are very favorable factors with regard to the strength of its mineral industry. Spain's GDP is expected to grow by 3.1% in 2017, driven mostly by consumption and investment. Industrial minerals will likely continue to play a significant role in Spain's mineral industry. Coal mining will likely continue to face significant challenges. New mining projects as well as expansion of current ones are expected to contribute to the economic development of Spain's mineral industry (Instituto Nacional de Estadística, 2017, 2018).

References Cited

- Agencia Estatal Boletín Oficial del Estado, 2016, Documento BOE-A-2016-10167: Madrid, Spain, Agencia Estatal Boletín Oficial del Estado. (Accessed March 29, 2018, at https://www.boe.es/diario_boe/txt.php?id=BOE-A-2016-10167.)
- Alvarez, A., Santaren, J., Cubillo, E., and Aparicio, P., 2011 Current industrial applications of palygorskite and sepiolite: Developments in Clay Science, v. 3, Elsevier, p. 281–298. (Accessed March 29, 2018, at https://www.researchgate.net/publication/236672967_Current_Industrial_Applications_of_Palygorskite_and_Sepiolite.)
- Atalaya Mining Plc, 2018, Proyecto Riotinto [Riotinto project]: Atalaya Mining Plc. (Accessed March 29, 2018, at <http://atalayamining.com/riotinto-copper-mine/>.)
- Berkeley Resources Ltd., 2018, Salamanca project: Berkeley Resources Ltd. (Accessed March 29, 2018, at <https://www.berkeleyenergia.com/salamanca-project-overview/mineral-resources/>.)
- Crangle, R.D., Jr., 2018, Gypsum: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 74–75.
- Grupo Minero Aurora, 2018, Yacimiento: Grupo Minero Aurora. (Accessed March 29, 2018, at http://minasdemontevive.es/?page_id=16.)
- Infinity Lithium Corporation Ltd., 2018, Lithium: Infinity Lithium Corporation Ltd. (Accessed March 29, 2018, at http://www.plymouthminerals.com/index.php?option=com_content&view=article&id=73&Itemid=89.)
- Instituto Geológico y Minero de España, 2017, Panorama minero 2016: Instituto Geológico y Minero de España. (Accessed March 29, 2018, at <http://www.igme.es/PanoramaMinero/PMLin.htm>.)
- Instituto Nacional de Estadística, 2017, España en cifras 2017 [Spain in figures 2017]: Madrid, Spain, Instituto Nacional de Estadística, 53 p. (Accessed March 29, 2018, at http://www.ine.es/ss/Satellite?L=es_ES&c=INEPublicacion_C&cid=1259924856416&p=1254735110672&pagename=ProductosYServicios%2FPYSLayout¶m1=PYSDetalleGratuitas.)
- Instituto Nacional de Estadística, 2018, Producto interior bruto (PIB) [Gross domestic product (GDP)]: Madrid, Spain, Instituto Nacional de Estadística. (Accessed March 29, 2018, at http://www.ine.es/prensa/pib_tabla_cne.htm.)
- Lundin Mining Corp., 2017, Lundin Mining announces 2016 production results: Toronto, Ontario, Canada, Lundin Mining Corp. press release, January 12. (Accessed March 29, 2018, at <http://www.marketwired.com/press-release/lundin-mining-announces-2016-production-results-tsx-lun-2188245.htm>.)
- Minas de Aguas Teñidas, S.A.U., 2017, MATSA produce un 42% más de concentrado de mineral en 2016 [MATSA produces 42% more mineral concentrate in 2016]: Minas de Aguas Teñidas S.A.U. press release, February 10, 2 p. (Accessed March 29, 2018, at <https://www.matsamining.com/media/3759/matsa-2016-production-data-press-release.pdf>.)
- Ministerio de Industria, Energía, Turismo y Agenda Digital, 2017, Estadística minera de España 2015 [Mining statistics of Spain 2015]: Madrid, Spain, Ministerio de Industria, Energía, Turismo y Agenda Digital, 464 p. (Accessed August 14, 2018, at <http://www.mincotur.gob.es/energia/mineria/Estadistica/20151/ESTADISTICA%20MINERA%20ESPA%C3%91A%202015.pdf>.)
- Ministerio de Industria, Energía, Turismo y Agenda Digital, 2018, Minería y explosivos [Mining and explosives]: Madrid, Spain, Ministerio de Industria, Energía, Turismo y Agenda Digital. (Accessed August 14, 2018, at <http://www.mincotur.gob.es/energia/mineria/Paginas/Index.aspx>.)
- Observatory of Economic Complexity, The, 2018, España: The Observatory of Economic Complexity. (Accessed March 29, 2018, at <https://atlas.media.mit.edu/es/profile/country/esp/>.)
- Singerling, S.A., 2018a, Fluorspar: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 60–61.
- Singerling, S.A., 2018b, Strontium: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 158–159.
- Solvay S.A., 2018, Centros de trabajo [Work centers]: Solvay S.A. (Accessed March 29, 2018, at <https://www.solvay.es/es/solvay-in/locations/Escuzar.html>.)
- Tanner, A.O., 2018, Feldspar and nepheline syenite: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 58–59.
- Trafigura Group Pte Ltd., 2018, Trafigura Mining Group: Trafigura Group Pte Ltd. (Accessed March 29, 2018, at <https://www.trafigura.com/about-us/structure/trafigura-mining-group/>.)
- U.S. Census Bureau, 2018a, U.S. exports to Spain by 5-digit end-use code 2008–2017: U.S. Census Bureau. (Accessed March 29, 2018, at <https://www.census.gov/foreign-trade/statistics/product/enduse/exports/c4700.html>.)
- U.S. Census Bureau, 2018b, U.S. imports from Spain by 5-digit end-use code 2008–2017: U.S. Census Bureau. (Accessed March 29, 2018, at <https://www.census.gov/foreign-trade/statistics/product/enduse/imports/c4700.html>.)
- West, D.N., 2018, Clays: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 48–49.

TABLE 1
SPAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity	2012	2013	2014	2015	2016
METALS					
Aluminum:					
Alumina	1,500,000 ^c	1,573,000 ^r	1,520,000 ^{r, c}	1,630,000 ^{r, c}	1,580,000
Aluminum metal, primary	230,000 ^c	235,000 ^c	350,000 ^{r, c}	350,000 ^{r, c}	350,000
Copper, Cu content:					
Mine production, concentrate	32,300 ^r	37,800 ^r	34,800 ^r	41,700 ^{r, c}	58,000
Leaching, electrowon	67,700	69,300	71,100	70,000 ^c	73,600
Refinery production:					
Primary, other	250,500 ^r	213,500 ^r	274,300 ^r	278,300 ^r	281,600
Secondary	88,300 ^r	68,200 ^r	73,100 ^r	71,600	74,200
Smelter production, blister:					
Primary	270,000	212,000	285,000 ^r	286,000 ^r	292,300
Secondary	25,000 ^c	12,300 ^{r, c}	8,700 ^{r, c}	6,900	4,600
Gold, mine production, Au content ^c kilograms	1,530	1,870	2,020 ^r	1,800	1,600
Iron and steel:					
Pig iron thousand metric tons	3,081	3,949	3,958	4,450	4,114
Raw steel do.	16,639 ^r	14,252 ^r	14,249	14,845	13,616
Lead:					
Mine production, Pb content	3,763	2,200 ^{r, c}	1,200 ^{r, c}	1,600 ^{r, c}	4,900 ^c
Refinery production, secondary	160,000 ^c	157,000 ^c	166,000 ^c	165,000 ^{r, c}	166,000 ^c
Manganese: ^c					
Ferromanganese	79,800	107,000	133,000	126,000	126,000
Silicomanganese	148,000	136,000	129,000	134,000	134,000
Nickel, mine production, concentrate, Ni content	2,398	7,574	8,631	7,208 ^r	-- ²
Silicon:					
Ferrosilicon ^c	68,600	80,500	80,000 ^r	80,000	80,000
Silicon metal ^c	27,200	29,200	14,000 ^r	24,000 ^r	30,000
Silver, mine production, Ag content kilograms	31,054 ^r	27,979 ^r	27,306 ^r	27,287 ^r	26,099
Tin, smelter production, secondary ^c	10	10	10	10	10
Tungsten, mine production, concentrate, W content	542	510	822 ^r	835	650 ^c
Zinc:					
Mine production, Zn content	28,634	30,428	26,756	49,216 ^r	64,000 ^c
Smelter production:					
Primary	489,455	490,488	491,331	493,765 ^r	500,000 ^c
Secondary ^c	31,500	30,500	35,700	36,200	30,000
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	15,939	13,736	14,587	15,000 ^c	15,000 ^c
Clay and shale:					
Bentonite	96,605	112,887	113,000 ^r	113,000 ^r	113,000 ^c
Common clay thousand metric tons	8,288	7,314	7,811	8,646	8,700 ^c
Fuller's earth:					
Attapulgit	23,537	25,439	25,400 ^r	25,400 ^r	25,400
Sepiolite	622,372 ^r	599,852 ^r	555,581	524,915 ^r	524,000 ^c
Kaolin, crude	247,000	247,000	247,000	247,000	247,000 ^c
Refractory ^c	189,000	385,000	516,000	460,000	460,000
Diatomite	60,777 ^r	53,713 ^r	53,700 ^r	50,000	50,000 ^c
Feldspar, mine production	530,238	592,908	533,328	558,273 ^r	550,000 ^c
Fluorspar, CaF ₂ content:					
Acid grade	98,374	94,467	118,000 ^r	120,000	120,000
Ceramic grade	6,699	5,200	5,000 ^r	5,000 ^r	5,000
Metallurgical grade	2,250	4,320	3,000 ^c	5,000 ^r	5,000
Gypsum, including anhydrite, crude thousand metric tons	6,360	7,125	7,000	7,000	7,000
Iron oxide pigments	16,500	16,400	16,000	16,000	16,000 ^c
Lime ^c	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000

See footnotes at end of the table.

TABLE 1—Continued
SPAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity	2012	2013	2014	2015	2016
INDUSTRIAL MINERALS—Continued					
Magnesite, crude	274,551 ^r	275,000 ^r	275,000 ^r	275,000 ^r	300,000
Mica	3,518	3,462	4,049 ^r	4,000 ^r	4,000
Nitrogen, ammonia, N content	810,000 ^r	790,000 ^r	810,000 ^r	840,000 ^r	840,000 ^c
Potash, K ₂ O content	632,000 ^c	711,000 ^c	685,000 ^c	690,000 ^c	670,000
Pumice and related materials	194,655	195,000 ^c	195,000 ^c	195,000 ^c	200,000 ^c
Salt:					
Rock	thousand metric tons	2,786	2,902	2,900	2,900 ^c
Sea, including evaporated	do.	1,323	1,376	1,400	1,400 ^c
Soda ash, Na ₂ SO ₄ content:					
Glauberite	1,276,130	1,329,514	1,315,043	1,306,586	1,310,000 ^c
Thenardite	175,726	234,353	268,205	245,372	245,000 ^c
Stone, sand, and gravel:					
Silica, mine production:					
Quartz	thousand metric tons	1,023	949	900	900 ^c
Quartzite	do.	2,082	2,058	2,000	2,000 ^c
Unspecified	do.	3,416	3,400	3,400 ^c	3,400
Stone, crushed:					
Basalt	do.	1,281	1,055 ^r	1,302 ^r	1,478 ^r
Chalk	do.	645	662 ^r	658 ^r	692 ^r
Dolomite	do.	6,926	4,889 ^r	4,859 ^r	6,795 ^r
Granite	do.	10,713 ^r	8,874 ^r	8,516 ^r	9,042 ^r
Limestone	do.	89,332	89,300	90,000	90,000 ^c
Marble	do.	1,754	1,382	1,300	1,300 ^c
Marl	do.	5,581	4,473 ^r	5,121 ^r	5,294 ^r
Sandstone	do.	1,382	1,385	1,400	1,400 ^c
Stone, dimension:					
Porphyry	do.	1,468	922 ^r	992 ^r	645 ^r
Slate	do.	336	377	400	400 ^c
Stone, size and shape unspecified:					
Ophite	do.	1,520	1,141 ^r	1,898 ^r	2,067 ^r
Phonolite	do.	619	309 ^r	548 ^r	582 ^r
Strontium, celestite	96,688	90,972	90,000 ^r	90,000 ^r	90,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, marketable:					
Anthracite	thousand metric tons	3,910	2,543	1,263	1,127
Bituminous	do.	2,275	1,827	1,344	610 ^r
Natural gas	thousand cubic meters	64,751	56,664	26,214 ^r	11,590
Peat, horticultural use		61,379	91,806	91,000	91,000 ^c
Petroleum:					
Crude	thousand 42-gallon barrels	1,069	2,665	2,336	1,708 ^r
Refinery production:					
Gasoline	do.	61,578	63,728	61,687	61,700 ^c
Kerosene	do.	65,968	66,687	68,620	6,900 ^c
Lubricant	do.	1,155	1,337	1,400	1,400 ^c
Naphtha	do.	2,614	2,836	2,800	2,800 ^c
Petroleum coke	do.	16,998	18,932	19,000	19,000 ^c
Total	do.	148,000	153,500	153,500	91,800 ^r

^cEstimated. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through February 22, 2018. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Lundin Mining Corp. reported that the Aguablanca Mine closed in 2016.

TABLE 2
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Alumina	Alumina Española, S.A. (Alcoa Inc., 60%, and Alumina Ltd., 40%)	Refinery at San Ciprian, Lugo Province	1,500
Aluminum	Alcoa Inespal S.A. (AISA) (Alcoa Inc., 100%)	Smelter at Aviles, Asturias Province	93
Do.	do.	Smelter at La Coruña, Galicia Province	87
Do.	do.	Smelter at San Ciprian, Lugo Province	228
Cement	A.G. Cementos Balboa S.A. (Grupo Alfonso Gallardo)	Alconera, Badajoz Province	1,600
Do.	Cementos Cosmos S.A. (Votorantim Group)	Pontevedra, Lugo Province	650
Do.	do.	Toral de los Vados, Leon Province	1,600
Do.	Cemex España Operaciones, S.L.U. (Cemex S.A.B. de C.V.)	Alcanar, Tarragona Province	2,100
Do.	do.	Alicante, Alicante Province	1,400
Do.	do.	Buñol, Valencia Province	1,300
Do.	do.	Castillejo, Toledo Province	1,730
Do.	do.	Lloseta, Balearic Islands	700
Do.	do.	Morata de Jalon, Zaragoza Province	1,400
Do.	Cementos Lemona S.A. (CRH plc, 98.86%)	Lemona, Biscay Province	1,250
Do.	Cementos Molins Industrial, S.A.U. (Cementos Molins, S.A.)	Sant Vicenc dels Horts, Barcelona Province	1,780
Do.	Cementos Portland Valderrivas, S.A.	Alcala de Guidaira, Seville Province	1,450
Do.	do.	Venta de Baños, Palencia Province	815
Do.	do.	Mataporquera, Cantabria Province	830
Do.	Cementos Tudela Veguín, S.A. (Masaveu Group)	Carreño, Oviedo, Asturias Province	2,400
Do.	do.	La Robla, Leon Province	850
Do.	do.	Tudela Veguín, Oviedo, Asturias Province	200
Do.	Holcim (España), S.A. (Holcim Ltd.)	Carboneras, Almeria Province	1,500
Do.	do.	Gardor, Almeria Province	1,000
Do.	do.	Jerez de la Frontera, Cadiz Province	1,000
Do.	do.	Yeles, Toledo Province	975
Do.	Lafarge Cementos S.A.U	Montcada i Reixac, Barcelona Province	900
Do.	do.	Sagunto, Valencia Province	1,700
Do.	do.	Villaluenga de la Sagra, Toledo Province	2,350
Do.	FYM - HeidelbergCement Group (Italcementi Group)	Añorga, Gipuzkoa Province	1,050
Do.	do.	Arrigorriaga, Biscay Province	1,100
Do.	do.	Malaga, Malaga Province	1,500
Coal	Alto Bierzo S.A. (Grupo Lamelas Vitoria)	Various mines	NA
Do.	Carbonar, S.A.	Mines at Vega de Rengos, Asturias Province	NA
Do.	Carbones Arlanza S.L	Minas at Solita y Bravo	NA
Do.	Carbones del Puerto S.A.	Mines at Esmeralda	NA
Do.	Carbones San Isidro y Maria S.L.	Mines at San Isidro	NA
Do.	Cia General Minera de Teruel S.A.	Mines at Elvira	NA
Do.	Coto Minero Catabrico S.A.	Mines at Coto, Cantabrico and Unica	NA
Do.	Empresa Nacional de Electricidad S.A.	As Pontes Mine, and Andorra Mine, A Coruña	NA
Do.	Empresa Carbonifera del Sur, Encausar, S.A.	Mine at Puertollano	NA
Do.	Hijos de Baldomero Garcia S.A (Grupo Lamelas Vitoria)	Mines at Villablino, Leon Province	NA
Do.	Hulleras del Norte S.A. (HUNOSA)	Various mines and plant	NA
Do.	La Carbonifera del Ebro S.A.	Mines at Sant Jordi	NA
Do.	Minera Catalano Aragonesa S.A.	Mines at Ariño	NA
Do.	Sociedad Anonima Hulleras Vasco-Leonesa S.A.	Santa Lucia Mine, Leon Province	NA
Do.	Union Minera del Norte, S.A.	Various mines	NA
Copper:			
Metal	Atlantic Copper S.A. (Freeport MacMoRan Copper & Gold Inc., 100%)	Smelter at Huelva Province	330
Do.	Cobre Las Cruces, S.A. (First Quantum Minerals Ltd., 100%)	Refinery at Seville Province	72
Do.	Elmet S.L.U. (Metallo Chimique N.V.)	Smelter at Berango, Biscay Province	96
Do.	Atalaya Mining Plc	Proyecto Riotinto, Huelva	9.5

See footnotes at end of table.

TABLE 2—Continued
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity ^e
Copper:—Continued					
Mine output, Cu content		Cobre Las Cruces, S.A. (First Quantum Minerals Ltd., 100%)		Las Cruces Mine at Seville Province	210
Do.		Minas de Aguas Teñidas, S.A.U. (MATSA) (Mubadala Development Co., 50%, and Trafigura Group Pte Ltd., 50%)		Mines and plant at Almonaster la Real, Huelva Province	30
Dunite		Pasek España S.A.U		Mines and plant at Landoy, Ortigueira, La Coruña Province	1,000
Fluorspar		Minerales y Productos Derivados S.A. (MINERSA)		Mine and plant at Ribadesella, Asturias Province	140
Do.		Minera Orgiva SL		Mine at Lujar, Granada Province	NA
Gold, mine output, kilograms	Au content	Kinbauri España, S.L.U. (Orvana Minerals Corp., 100%)		El Valle-Boina and Carles Mines, Asturias Province	2,000
Lead, mine output, Pb content		Minas de Aguas Teñidas, S.A.U. (MATSA) (Trafigura Mining Group)		Mines and plant at Almonaster la Real, Huelva Province	7
Magnesite		Magnesitas Navarras S.A. (Groupe Roullier, 40%, and Grecian Magnesite S.A., 40%)		Mine at Eugui, plant at Zubiri, Navarra Province	170
Do.		Magnesitas de Rubián S.A.		Plant at Monte Castelo	70
Nickel, mine output, Ni content		Río Narcea Recursos, S.A. (Lundin Mining Corp., 100%)		Aguablanca Mine, Extremadura Region ¹	8
Petroleum:					
Crude	42-gallon barrels per day	Repsol S.A.		Oilfield at Albatros	NA
Do.	do.	do.		Oilfield at Poseidon Norte and Sur	NA
Do.	do.	do.		Oilfields at Angula, Boqueron, Casablanca, and Rodaballo	NA
Do.	do.	Repsol S.A.,100%		Oilfield at Lubina	2,500
Do.	do.	Repsol S.A., 68.67%		Oilfield at Montanazo	2,500
Refined	do.	BP p.l.c., 100%		Castellon refinery, Iberia	110,000
Do.	do.	Compañía Española de Petróleos S.A [International Petroleum Investment Co., 100%]		Refinery at Gibraltar-San Roque, Cadiz Province	245,000
Do.	do.	do.		Refinery at La Rabida, Huelva Province	194,000
Do.	do.	do.		Refinery at Tenerife, Santa Cruz de Terenife Province	92,000
Do.	do.	Refinería de Petróleos del Norte S.A. [Repsol S.A., 85.98%]		Refinery at Muskiz, Biscay Province	245,000
Do.	do.	Repsol S.A.		Refinery at A Coruña Province	120,000
Do.	do.	do.		Refinery at Cartagena, Murcia Province	220,000
Do.	do.	do.		Refinery at Puertollano, Cuidad Real Province	150,000
Do.	do.	do.		Refinery at Tarragona Province	186,000
Potash, ore		Iberpotash S.A. (ICL Chemical Ltd.)		Mine and plant at Suria and Balsareny, Barcelona Province	1,000
Sepiolite		Grupo Tolsa S.A.		Mine and plant in Madrid Province	600
Do.		Minería y Tecnología de Arcillas (Grupo SAMCA)		Mines at Zaragoza Province	120
Silver	kilograms	Kinbauri España, S.L.U. (Orvana Minerals Corp., 100%)		El Valle-Boina/Carles Mines, Asturias Province	7,400
Sodium sulfate		Grupo Industrial Crimidesa S.L.		Mine and plant at Cerezo de Rio Tiron, Burgos Province	700
Steel		ArcelorMittal Corp.		Plants at Aviles and Gijon, Asturias Province; Sagunto, Valencia Province and Sestao, Biscay Province	8,000
Do.		Compañía Española de Laminacion S.L. (Celsa Group,100%)		Plant at Barcelona Province	2,500
Do.		Corporación Gerdau Sidenor S.A. (Sidenor) (Gerdau Group, 50%)		Plant at Basaur, Biscay Province	2,500
Do.		do.		Plant at Reinosa, Cantabria Province	NA
Do.		do.		Plant at Azkoitia, Gipuzkoa Province	NA
Do.		do.		Plant at Vitoria, Alava Province	NA

See footnotes at end of table.

TABLE 2—Continued
SPAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Strontium		Solvay Minerales S.A.	Mines and plant at Escuzar, Granada Province	90
Do.		Canteras Industriales S.L.	Mine and plant at Montevives, Granada Province	50
Tungsten, mine output, W content	metric tons	Daytal Resources Spain S.L. (Almonty Industries Inc.)	Los Santos Mine, Salamanca Province	1,000
Zinc:				
Metal		Asturiana de Zinc S.A. (Glencore plc, 100%)	Electrolytic zinc plant at San Juan de Nieva, Castrillon, Asturias Province	511
Mine output, Zn content		Minas de Aguas Teñidas, S.A.U. (MATSA) (Mubadala Investment Co., 50%, and Trafigura Group Pte Ltd., 50%)	Mines and plant at Almonaster la Real, Huelva Province	58

^cEstimated. Do., do. Ditto. NA Not available.

¹Lundin Mining Corp. reported that the Aguablanca Mine closed in 2016.