

# 2016 Minerals Yearbook

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## GREECE

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# THE MINERAL INDUSTRY OF GREECE

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The mineral industry of Greece held leading positions globally in the production of bentonite, huntite, perlite, and pumice. In 2016, Greece was the world's 2d-ranked perlite producer, 3d-ranked pumice producer, 4th-ranked bentonite producer, 9th-ranked magnesite producer (not including the United States), and 10th-ranked bauxite producer. The country accounted for 30% of world perlite output; pumice, 5%; and bentonite, 4%. Greece was the sole European Union (EU) member state that produced nickel and ferronickel from its own laterite deposits (table 1; Ministry of Environment & Energy, 2015, p. 11; Bennett, 2018; Bray, 2018a, b; Crangle, 2018; West, 2018).

Greece has substantial nonfuel mineral deposits. These include deposits of such metals as bauxite, copper, gold, iron ore, magnesite, nickel, silver, and zinc and such industrial minerals as bentonite, feldspar, gypsum, huntite, kaolin, limestone, perlite, and pumice. In 2016, Greece held the world's second-largest reserves of perlite, seventh-largest reserves of magnesite, and seventh-largest reserves of bauxite (Bennett, 2017; Bray, 2017a, b; Tzeferis, 2017).

## Minerals in the National Economy

Greece's real gross domestic product (GDP) decreased by 0.2% in 2016 compared with that of 2015; the nominal GDP was \$185.3 billion<sup>1</sup> in 2016. Mineral extraction and processing made up about 3% of the country's GDP in 2016. During the year, mining and quarrying contributed 0.41% in gross value added; manufacture of base metals, 1.06%; manufacture of fabricated metal products, 0.85%; manufacture of nonmetallic mineral products, 0.59%; and manufacture of coke and refined petroleum products, 0.35% (Hellenic Statistical Authority, 2017b, p. 28–30; 2017c).

Industrial production in Greece increased by 2.3% in 2016, and manufacturing output, by 4%. Total mining and quarrying output decreased by 14.8% in 2016. Mining of metallic ores increased by 7%, and extraction of crude petroleum and natural gas, by 138.8%, whereas coal and lignite mining decreased by 29.7%. The manufacture of nonmetallic mineral products increased by 14.2%; of fabricated metal products, by 9.6%; of base metals, by 6%; and of coke and refined petroleum products, by 7.4% (Bank of Greece, 2017, p. 23).

## Production

In 2016, mineral industry output varied across commodities. The production of crude petroleum increased by 139%; natural gas, by 95%; treated attapulgite clay, by 93%; silica, by 88%; huntite, by 48%; salt, by 30%; crude (raw) steel, by 27%; cement and steel semimanufactures, by 26% each; zinc, by

23%; gypsum, by 20%; sulfur, by 19%; limestone, by 18%; marble, by 14%; and pumice, by 13%. Gold output decreased by 82%; crude attapulgite clay, by 58%; nitrogen (N content of ammonia), by 37%; lignite coal, by 29%; pozzolan (santorin earth), by 24%; crude bentonite, by 21%; and processed bentonite, by 15% (table 1; Ministry of Environment & Energy, 2017).

## Structure of the Mineral Industry

Most mineral companies were privately owned. Government ownership was limited primarily to coal and nickel. The Government held a 55.2% stake in LARCO G.M.M. S.A., which was a leading nickel producer and the largest ferronickel producer in Europe in terms of output, and a 34.12% stake in Public Power Corp. S.A.-Hellas (PPC), which was Greece's leading lignite producer and electricity-generation company (table 2; European Commission, 2016; Public Power Corporation S.A.-Hellas, 2017b).

In 2016, a total of 369 enterprises were active in the mining sector. Of these enterprises, 4 companies were engaged in the extraction of lignite and crude petroleum; 4, in the mining of nonferrous metals; 206, in the quarrying of ornamental and building stone, chalk, gypsum, limestone, and slate; 147, in the mining of clay (including kaolin) and the operation of sand and gravel pits; and 8, in the mining of chemical and fertilizer mineral commodities (Hellenic Statistical Authority, 2017b, p. 77).

## Mineral Trade

Mineral fuels, lubricants, and related materials was the leading export goods category, accounting for about 27% of total exports in 2016. Crude materials, including mineral commodities, accounted for about 4% of total exports. Greece's mineral industry was highly export oriented, with exports accounting for about 65% of total mineral commodity sales. The primary exported mineral commodities were alumina, aluminum, bauxite, bentonite, caustic magnesite, marble, nickel, and pumice. Mineral fuels, lubricants, and related materials was also the leading import goods category, accounting for about 22% of total imports, and they were valued at \$47 billion in 2016. Crude materials, including mineral commodities, accounted for about 4% of total imports (Tzeferis, 2017; Hellenic Statistical Authority, 2017a, p. 10–11).

## Commodity Review

### Metals

**Bauxite and Alumina and Aluminum.**—In 2016, the production of bauxite and aluminum increased slightly, by 1% each, and that of alumina, by 2%. Greece continued to be

<sup>1</sup>Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US\$) at an annual average exchange rate of EUR0.94 =US\$1.00 for 2016.

a leading bauxite producer in Europe, with output of about 1.85 million metric tons (Mt). European Bauxites S.A. and Elmin Bauxites S.A. were two of the three leading producers of bauxite in Greece; since 2015, these companies had been subsidiaries of Kerneos S.A. of France, which was the leading global calcium aluminate cement producer. By yearend, Imerys S.A. of France, which was a leading global producer of industrial minerals, announced its plan to acquire Kerneos in 2017 (Kerneos S.A., 2015; Elmin Bauxites S.A., 2016; Imerys S.A., 2016, p. 6).

**Gold, Lead, Silver, and Zinc.**—Hellas Gold S.A., which was a subsidiary of Eldorado Gold Corp. of Canada, operated the Stratoni lead, silver, and zinc mine. In 2016, Hellas Gold produced 48,394 metric tons (t) of lead, silver, and zinc concentrate at Stratoni, which was 20% more than in 2015; the increase was owing to increased mill throughput and a higher zinc grade. Ore grades were 6.1% lead and 10.2% zinc in 2016. During the year, the company was in the process of refurbishing the Olympias Mine (gold, lead, silver, and zinc) and the Skouries Mine (copper and gold) and evaluating the development of the Perama Hill gold and silver deposit. Hellas Gold conducted prefeasibility, feasibility, and basic engineering studies of the Skouries underground mine and tailings facilities, setting an annual production target of 4,350 kilograms (kg) of gold and 30 t of copper starting in 2019. The company put the Perama Hill project on care-and-maintenance status pending receipt of an environmental impact assessment (EIA) permit (Eldorado Gold Corp., 2017, p. 24–29; 2018b).

In 2016, Hellas Gold's gold production continued to be entirely from tailings retreatment at the Olympias Mine; tailings treatment at the mine concluded at the end of the first quarter. The company processed 87,350 t of tailings at Olympias and produced only 86 kg of gold—both amounts of which were substantially lower than in 2015. The grade of the tailings was 2.47 grams per metric ton gold (Eldorado Gold Corp., 2017, p. 24–25; 2018a, c).

**Iron and Steel.**—Greece produced about 1.16 Mt of continuously cast crude steel from electric arc furnaces (EAF) and an estimated 1.10 Mt of steel products in 2016. The country exported 990,000 t of semifinished and finished steel products in 2016. Greece also exported 595,000 t of long products, 194,000 t of tubular products, 109,000 t of ingots and semimanufactured products, and 88,000 t of flat products, as well as 17,000 t of scrap steel (World Steel Association, 2017, p. 1, 5, 17, 31, 53, 59, 64, 74, 107).

**Nickel.**—Greece was the sole EU-member state that produced nickel and ferronickel from its own laterite deposits. LARCO mined sedimentary-type nickel laterite deposits at the Kastoria Mine and the Neo Kokkino Mine. In 2016, LARCO extracted 2.45 Mt of nickeliferous laterite ore compared with 2.34 Mt in 2015. The Government was in the process of evaluating possible privatization or closure of the company owing to its ongoing financial losses and outstanding debts. In April, the European Commission (EC) referred Greece to the European Court of Justice for failure to comply with the EC decision in 2014 that had ordered the recovery of incompatible state aid from LARCO; a verdict was expected by yearend 2017 that could substantially affect the company's future operations

(European Commission, 2016; Energy Press, 2017; Ministry of Environment & Energy, 2017).

## *Industrial Minerals*

**Clay (Bentonite) and Shale and Perlite.**—In 2016, Greece produced about 883,000 t of crude bentonite and 683,000 t of processed bentonite. Perlite output was about 921,000 t of crude and 397,000 t of screened. In 2016, Imerys reported that it had already achieved operational synergies and cost savings with the acquisition of S&B Industrial Minerals in 2015. With the acquisition, Imerys became Greece's and Europe's leading producer of bentonite products, including binders for foundry, sealing solutions, additives for drilling, and functional additives, and the leading global producer of continuously cast fluxes for steel and wollastonite, including additives for polymers and paints (Imerys S.A., 2016, p. 6; 2017, p. 2, 3, 11; Ministry of Environment & Energy, 2017).

**Cement.**—Greece's cement sector consisted of three integrated cement companies with a total installed production capacity of 15.1 million metric tons per year (Mt/yr) in seven plants. Capacity utilization was about 44% in 2016. Heracles General Cement S.A., which was a subsidiary of LafargeHolcim Ltd. of Switzerland, was the leading cement producer in Greece; it had a production capacity of 7.1 Mt/yr of cement. TITAN Group, which was the leading cement producer in southeastern Europe, was the second-ranked producer in Greece and had a total capacity of 6.98 Mt/yr. Halyps Cement S.A., which was acquired by HeidelbergCement Group of Germany in 2016, had a production capacity of 1 Mt/yr (table 2; International Cement Review, 2017, p. 152–153).

In 2016, Heracles undertook a modernization program at the 4.9-Mt/yr-capacity Volos plant to boost its competitiveness and exports. The modernization included upgrading the kiln to improve productivity and increase alternative fuel use, performing new electrical installations, and relocating one of the plant's main fans (International Cement Review, 2017, p. 153).

**Magnesium Compounds (Magnesite).**—In 2016, Greece produced 397,940 t of crude magnesite ore, 89,780 t of caustic-calcined magnesite, and 20,840 t of dead-burned magnesite. The country's production of huntite was 23,220 t (Ministry of Environment & Energy, 2017).

Grecian Magnesite S.A., which was the leading producer and exporter of caustic-calcined magnesite in Europe as well as in Greece, operated mines in Chalkidiki on the Halkidiki Peninsula. The Chalkidiki deposits consisted of three main active concessions—Yerakini 20 and 22, which covered an area of 7 square kilometers (km<sup>2</sup>); Ormilias 15 and 16, 10 km<sup>2</sup>; and Kastri 21, 23 km<sup>2</sup>. The company's total production capacity was about 200,000 metric tons per year (t/yr) of calcined products and 50,000 t/yr of basic monolithic refractories. In the first quarter of 2016, Grecian Magnesite expanded its caustic calcined magnesite processing plant in Chalkidiki with the installation of a new 60-metric-ton-per-day grinding facility dedicated to the processing of caustic-calcined magnesite with product fineness of 40 to 400 micrometers. Production capacity of ground end products was expected to increase from 18,000 t/yr to 40,000 t/yr (Grecian Magnesite, S.A., 2015, 2017).

**Coal.**—Lignite coal constituted Greece’s primary mineral fuel output and provided 49% of the energy used for electricity generation in Greece in 2016. Greece was the fourth-ranked producer of lignite in the EU after Germany, Poland, and Czechia in 2016. Lignite was extracted primarily by PPC from its mines in Megalopolis and West Macedonia for use by the company’s powerplants. In 2016, the company’s lignite output decreased to 32.6 Mt from 45.4 Mt in 2015. There was no mining of anthracite coal in Greece; consumption was very low and was mainly for industrial purposes. In 2016, anthracite coal imports were about 300,000 t, which was unchanged from imports in 2015 (Euracoal, 2017, p. 7–9; Public Power Corporation S.A.-Hellas, 2017a).

**Petroleum and Natural Gas.**—Greece’s production of crude petroleum and natural gas increased substantially in 2016. Kavala Oil S.A. (a subsidiary of Energean Oil & Gas S.A.) remained the only hydrocarbons producer in Greece. The company reported 50 million barrels (Mbbbl) of proven plus probable petroleum reserves onshore and offshore Greece. In 2016, the company produced 3,177 barrels per day (bbl/d) of crude petroleum from its Prinos offshore oilfield, which was a 151% increase from that of 2015, and 263 bbl/d of oil from its Prinos North offshore oilfield. Prinos’s remaining proven plus probable reserves were 17.8 Mbbbl of petroleum and 82.1 million cubic meters of natural gas, and Prinos North’s proven plus probable reserves were 3.3 Mbbbl of petroleum and 161,400 cubic meters of natural gas. In 2016, Energean was granted a 25-year exploration license in Katakolo, which is an offshore petroleum field that had 10.5 Mbbbl of proven plus probable reserves, and continued with the development of the Epsilon offshore petroleum field, which had 18.4 Mbbbl of proven plus probable reserves. The company also held a 40% stake in the Ioannina onshore petroleum exploration block that was operated by Repsol Exploracion S.A. of Spain. Repsol was the first international petroleum and natural gas company to enter Greece’s upstream hydrocarbon sector (Papamichalopoulos, 2017, p. 225; Energean Oil & Gas S.A., 2018a–c).

## Outlook

Greece is expected to remain a globally significant producer of bentonite, perlite, and pumice and a regionally significant producer of aluminum, lignite, and nickel. Exports of aluminum, bauxite, bentonite, and perlite may increase further as the country’s leading producers are integrated into the global supply and sales networks of their new owners. The production of nickel and ferronickel is likely to decrease owing to LARCO’s anticipated restructuring. Gold and silver production may cease if Eldorado Gold is unable to obtain the requisite operating permits for its refurbished mines. Petroleum and natural gas production are projected to continue their upward trajectory with Energean’s development of new onshore and offshore hydrocarbon fields.

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TABLE 1  
GREECE: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016
<b>METALS</b>					
Aluminum:					
Bauxite	1,816,000	1,844,000	1,872,710	1,831,660	1,847,700
Alumina, Al <sub>2</sub> O <sub>3</sub> equivalent	784,400	811,600	813,500	806,500	820,800
Metal, primary	165,046	169,457	173,160	179,420	181,680
Chromite, mine production:					
Gross weight	1,300 <sup>e</sup>	--	--	--	--
Crude ore, Cr <sub>2</sub> O <sub>3</sub> content	576	--	--	--	--
Gold, mine production, Au content kilograms	--	567	503	465	86
Iron and steel:					
Crude steel thousand metric tons	1,247	1,030	1,022	910	1,158
Products, semimanufactured do.	1,155	985	965	875	1,100 <sup>e</sup>
Iron ore, mine production:					
Gross weight	2,306,000	2,220,790	2,317,000	2,340,000 <sup>r</sup>	2,209,000
Fe content	571,000	550,000	574,000	580,000 <sup>r</sup>	547,000
Lead, mine production, Pb content	13,100 <sup>r</sup>	13,000 <sup>r</sup>	11,800 <sup>r</sup>	9,200 <sup>r</sup>	9,000 <sup>e</sup>
Magnesite:					
Caustic-calcined	54,500	61,120	70,660	86,800	89,780
Crude ore	360,080	314,770	360,270	383,230	397,940
Dead-burned	22,800	30,500	26,010	20,220	20,840
Huntite	24,200	15,200	5,340	15,660	23,220
Nickel:					
Mine production, laterite ore, Ni content thousand metric tons	22	19	21	20	20 <sup>e</sup>
Ferronickel:					
Gross weight	96,435 <sup>r</sup>	88,910 <sup>r</sup>	94,950 <sup>r</sup>	89,130 <sup>r</sup>	89,100
Ni content	18,632 <sup>r</sup>	16,890	18,481 <sup>r</sup>	17,113 <sup>r</sup>	17,071
Silver, mine production, Ag content kilograms	39,759 <sup>r</sup>	39,028 <sup>r</sup>	35,785 <sup>r</sup>	25,170 <sup>r</sup>	25,000 <sup>e</sup>
Zinc, mine production, Zn content	22,585 <sup>r</sup>	22,262 <sup>r</sup>	22,658 <sup>r</sup>	14,936 <sup>r</sup>	18,419
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic thousand metric tons	5,005 <sup>r</sup>	5,990 <sup>r</sup>	5,560 <sup>r</sup>	5,290 <sup>r</sup>	6,680
Clay and shale:					
Bentonite, processed	730,000	730,000	850,000	807,550	682,590
Bentonite, crude	1,235,105	1,000,000	1,011,480	1,123,320	883,220
Fuller's earth, attapulgite:					
Crude	19,800	32,400	45,000	107,740	44,720
Treated	9,200	10,300	14,670	18,730 <sup>r</sup>	36,060
Kaolin	6,268 <sup>r</sup>	--	--	--	--
Feldspar, mine production	33,800 <sup>r</sup>	--	--	--	--
Gypsum, including anhydrite	700,000	760,000	664,290	649,280	777,990
Nitrogen, ammonia, N content	87,700	105,300	118,900	119,400	75,100
Perlite:					
Crude	876,396	890,000	985,328 <sup>r</sup>	890,670	921,410
Screened	450,000	435,000	507,340	376,670	396,840
Pumice and related materials:					
Pozzolan, santorin earth	285,000	266,000	270,000	153,070	117,010
Pumice	386,000 <sup>r</sup>	420,000	429,870	580,960	658,880
Salt, all types	191,970	189,500	146,402	121,537	158,020
Stone, sand, and gravel:					
Silica, mine production	7,000	10,000	--	75,320	141,550
Stone, crushed:					
Limestone	13,368	15,268	18,109	21,632	25,500
Marble thousand metric tons	1,331 <sup>r</sup>	1,498 <sup>r</sup>	1,600 <sup>r</sup>	1,664 <sup>r</sup>	1,890
Stone, size, and shape, unspecified:					
Calcium carbonate	380,000	345,000	414,000	384,000	380,000 <sup>e</sup>
Olivinite	20,000	16,400	25,410	23,020	24,890
Sulfur, S content, mixed sulfide ore, byproduct	227,197	230,000	220,000	155,000	185,000

See footnotes at end of table.

TABLE 1—Continued  
GREECE: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016
MINERAL FUELS AND RELATED MATERIALS					
Coal, lignite thousand metric tons	62,368	55,000	50,411	46,308	32,675
Natural gas thousand cubic meters	6,402	5,415	5,062	4,379	8,555
Petroleum:					
Crude <sup>3</sup> thousand 42-gallon barrels	689	513	514	533	1,272
Refinery production: <sup>3</sup>					
Distillate fuel oil do.	57,700	60,700	71,400	77,800 <sup>r</sup>	87,800
Gasoline do.	39,000	35,700	39,500	39,200 <sup>r</sup>	40,700
Jet fuel do.	14,100	18,800	17,700	16,400 <sup>r</sup>	15,000
Kerosene do.	47	--	8	8 <sup>r</sup>	9
Liquefied petroleum gas do.	7,300	7,800	8,500	8,200 <sup>r</sup>	9,000
Naphtha do.	11,400	8,200	11,900	13,200 <sup>r</sup>	14,000
Residual fuel oil do.	34,200	36,500	40,500	38,000 <sup>r</sup>	45,000
Total do.	163,700	167,700	189,500	192,800 <sup>r</sup>	211,500

<sup>c</sup>Estimated. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through February 26, 2018. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>In addition to the commodities listed, copper, dolomite, lignite briquets, manganese, and crude construction materials may have been produced in Greece, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Converted to barrels from metric tons.

TABLE 2  
GREECE: 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
Alumina, Al <sub>2</sub> O <sub>3</sub>		Aluminium of Greece S.A. (Mytilineos Holdings S.A., 53%)	Agios Nikolaos, Boeotia area	820
Aluminum		do.	do.	180
Barite, BaSO <sub>4</sub>		Imerys S.A.	Mines at Adamas, Milos Island	NA
Bauxite		European Bauxites S.A. (Kerneos S.A.)	Mines at Amfissa and Distomon, plants at Phocis and Itea	2,000
Do.		Delphi-Distomon S.A. (Mytilineos Holdings S.A.)	Mines at Amfissa and Distomon	650
Do.		Elmin Bauxites S.A. (Kerneos S.A.)	Mines at Aga Marina, Lamia	500
Bentonite:				
Crude		Mediterranean Bentonite Co. S.A. (Industria Chimica Mineraria S.p.A.)	Surface mines on Milos Island	20
Do.		Mykobor Mining Co. S.A. (Silver & Baryte Ores Mining Co. S.A.)	Mines at Adamas, Milos Island	300
Do.		do.	Plants at Adamas, Milos Island	200
Do.		Imerys S.A.	Mines at Adamas, Milos Island	600
Processed		do.	Plant at Voudia Bay, Milos Island	400
Cement		Halyps Cement S.A. (HeidelbergCement Group)	Paralia Aspropyrgos plant, Athens	1,000
Do.		Heracles General Cement S.A. (LafargeHolcim Ltd.)	Plant at Volos	4,900
Do.		do.	Plant at Milaki, South Evia	2,200
Do.		TITAN Cement Co. S.A. (TITAN Group)	Kamari plant, West Attica	2,900
Do.		do.	Drepano Achaia plant, Patras	1,900
Do.		do.	Salonica plant, Salonica	1,650
Do.		do.	Elefsis plant, Athens area	400
Do.		do.	Elefsis white cement plant, Athens area	130
Chromite		Financial-Mining-Industrial and Shipping Corp. (FIMISCO)	Tsingeli Mine, Volos	25 <sup>1</sup>
Coal, lignite		Public Power Corp. S.A.-Hellas (PPC) (Government, 34.12%; Hellenic Republic Asset Development Fund, 17%; PPC Pension Funds, 3.81%; other investors, 45.07%)	Megalopolis and West Macedonia Mines	65,000
Ferroalloys, ferronickel, Ni content		Larco G.M.M. S.A. (Government, 55.2%; National Bank of Greece, 33.4%; Public Power Corp. S.A.-Hellas (PPC), 11.4%)	Larymna metallurgical plant	25
Gold, Au in concentrate	kilograms	Hellas Gold S.A. (Eldorado Gold Corp., 100%)	Olympias Mine, Halkidiki Peninsula	1,600
Gypsum		Lava Mining and Quarrying Co. S.A.	Altsi, Crete Island	500
Do.		TITAN Cement Co. S.A. (TITAN Group)	do.	280
Huntite and (or) hydromagnesite		Microfine S.A.	Mines in Kozani Basin	100
Lead, Pb in concentrate		Hellas Gold S.A. (Eldorado Gold Corp., 100%)	Olympias Mine, Halkidiki Peninsula	16
Do.		do.	Stratoni Mine, Halkidiki Peninsula	22
Magnesite, concentrate		Grecian Magnesite S.A. (GM)	Mine and production facilities at Chalkidiki on Halkidiki Peninsula and in Yerakini	250
Do.		Terna Magnesite (Terna Mag) (Gek Terna Group)	Gerorema Mine, Euboea island	100
Manganese, battery-grade MnO <sub>2</sub>		Eleusis Bauxite Mines Mining, Industrial and Shipping S.A. [National Bank of Greece (OAE)]	Nevrokopi, Drama	10
Natural gas	thousand cubic meters per day	Hellenic Petroleum S.A.	Prinos offshore gasfield and oilfield, east of Thassos Island	25 <sup>e</sup>
Do.	do.	Kavala Oil S.A. (Energean Oil & Gas S.A.)	South Kavala gasfield, east of Thassos Island	NA
Nickel, ore		LARCO G.M.M. S.A. [Government, 55.2%; National Bank of Greece, 33.4%; Public Power Corp. S.A.-Hellas (PPC), 11.4%]	Agios Ioannis Mine, Evia Mine, at Neo Kokkino near Larymna; and Kastoria Mine, near Albanian border	2,500
Do.		do.	Larymna smelter, nears Athens	2,500
Nitrogen, N content of ammonia		Phosphoric Fertilizers S.A.	Nea Karvall	150

See footnotes at end of table.



TABLE 2—Continued  
GREECE: 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
Perlite		Imerys S.A.	Mines on Milos Islands; plant at Piraeus	650
Do.		Otavi Minen Hellas S.A. (Otavi Minen AG)	Milos Island	150
Petroleum:				
Crude	42-gallon barrels per day	Kavala Oil S.A. (Energean Oil & Gas S.A.)	Prinos offshore oilfield, east of Thassos Island	3,200 <sup>e</sup>
Do.	do.	do.	Prinos North offshore oilfield, east of Thassos Island	300 <sup>e</sup>
Refined	do.	Hellenic Petroleum S.A.	Aspropyrgos	115,000
Do.	do.	do.	Eleusis	120,000
Do.	do.	do.	Thessaloniki	92,000
Do.	do.	Motor Oil (Hellas) Corinth Refineries S.A.	Aghii Theodori, Corinth	163,000
Pozzolan (Santorin earth)		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Xylokeratia, Milos Island	600
Do.		TITAN Cement Co. S.A. (TITAN Group)	do.	300
Pumice		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Yali Island	1,000
Silica, quartz (microcrystalline)		do.	Adamas, Milos Island	150 <sup>2</sup>
Silver, Ag in concentrate	kilograms	Eldorado Gold Corp.	Olympias Mine, Halkidiki Peninsula	1,200
Steel, crude		Hellenic Halyvourgia	Volos plant	1,000
Do.		Sidenor Steel Products Manufacturing S.A.	Thessaaloniki and Almyros plants	2,800
Do.		Halyvourgiki S. A.	Eleusis plant	1,200
Do.		Hellenic Steel Co. S. A.	Thessaloniki plant	1,000
Steel products		Corinth Pipeworks S.A. (CPW)	Thisvi plant, Viotia, nears Athens	800
Stone, marble, slab and tile	cubic meters	Aghia Marina Marble Ltd.	Various areas of northern Greece	NA
Do.		Michelakis Marble S.A.	Kavala	NA
Do.		Gourlis Group	Quarries at Levadia, Neurokopi, and Tiseo	NA
Zinc, mine, Zn in concentrate		Hellas Gold S.A. (Eldorado Gold Corp., 100%)	Olympias Mine, Halkidiki Peninsula	25
Do.		do.	Stratoni Mine, Halkidiki Peninsula	45

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Not active since 2013.

<sup>2</sup>Not active since 2012.