

THE MINERAL INDUSTRY OF

GREECE

By Harold R. Newman

The mineral industry, consisting of the mining sector, the industrial minerals sector, and the metal processing sector, was a small but important part of the national economy. In 2000, about 60% of the mineral industry's production was handled by five mining companies. In terms of production, bauxite was the most important of Greek mineral commodities. Other important commodities were chromite, nickel, and zinc. Aluminum was produced from domestic sources of bauxite and alumina and was important in the domestically integrated metals' sector. The steel produced was mostly from imported scrap. Greece was the largest producer of bauxite, magnesium, nickel, and perlite in the European Union (EU) (table 1).

The industrial mineral sector was more important, in terms of value of production, in the national economy than was the metal sector. Production of mineral commodities in Greece was closely tied to the export market. Exports of minerals, such as bauxite, bentonite, nickel, and perlite, made up a major share of total revenues. About 50% of the country's mineral production was being exported. A relatively small industrial base, lack of adequate investment in the past, and the distance from the EU market have restricted the export potential of the country. The emerging Balkan markets, however, could offer opportunities for export growth. Greece is the only Balkan country that is member of the EU (U.S. Department of State, 2002, p. 9).

Because northern Greece was thought to contain a significant amount of exploitable mineral resources, it received the most attention in exploration activities. In 2001, most activities were directed toward gold. Only a few foreign companies had invested in Greek mines. Of these, TVX Hellas S.A. (an affiliate of TVX Gold Inc. of Canada) bought the Kassandra Mines assets; United Kingdom-based Microfine S.A. operated mines that extracted hundite/hydromagnesite, which is unique for its flame-retardant properties; and German-based Otavi Minen Hellas S.A. operated perlite mines. Selected companies with major equity owners are listed in table 2.

Environmental concerns are the responsibility of the Ministry of Environment, Town Planning, and Public Works. The Government takes an active role in environmental protection. The general laws enacted by the Government include law 1360/76 (Siting Arrangement and Environment), Presidential Executive Order 1180/81, and law 1650/86 (Environmental Protection); these formed the basis of the active legislative framework. To comply with EU Order 88/609 concerning emission limitations, the Government executed Ministry Decision 58751/2370/15.4.93, which included the limits of the main pollutants from electric powerplants.

The only producer of primary aluminum in Greece Aluminium de Grèce S.A. (subsidiary of Pechiney of France) was concerned about the availability of a stable energy supply. Owing to increased electricity demand, the country's energy

resources were under strain, particularly during the summer months. The 162,000-metric-ton-per-year (t/yr) St. Nicolas smelter near Delphi required 230 kilowatthours of electricity. The smelter produces aluminum ingots, T-bars, billets, and slabs. When the power agreement that guaranteed Aluminium de Grèce uninterrupted power supply expires in 2006, the problem may become more acute. The company was considering options that included building its own thermal powerplant (Lauchlan, 2001).

Bauxite mining and processing continued into 2001. Delphi-Distomon S.A. (Aluminium de Grèce's bauxite mining subsidiary) produced about 1 million metric tons per year (Mt/yr). Although the bauxite ore has an average alumina content of 53%, it also has a high silica content which makes it hard to process. The company maintained its refinery's production of 750,000 t/yr by mixing the local ore with other bauxite. The St. Nicolas smelter used 350,000 t/yr of the alumina produced, and the rest was exported to Europe (Lauchlan, 2001).

Silver & Baryte Ores Mining Co. S.A.'s (S&B) operations (formerly owned by Bauxites Parnasse Mining Co. S.A.) continued in the Itea area with most of the production exported. S&B's bauxite deposits are of karst/Mediterranean type and consist of three bauxite horizons. The upper diaspore horizon and the middle boehmite horizon were mined by open pit and underground methods. Run-of-mine bauxite was transported 30 kilometers (km) to the plant where it was crushed, screened, sorted, and blended to meet the specific needs of customers. Delphi-Distomon continued to produce bauxite, which was sold to Aluminium de Grèce's operation at Distomon (Industrial Minerals, 2001c).

Eleusis Bauxite Mines, S.A. (Elbaumin) produced bauxite from two mines in Lamia; however, Elbaumin's assets were sold to private interests. Whether they would continue with bauxite production was unclear (Industrial Minerals, 2001b).

The Kassandra Mines assets, which included the Stratoni mines and mill, Olympias Mine and mill, and the Skouries deposit, were owned by Hellenic Chemical Products and Fertilizer Co. and have produced arsenopyrite-gold, lead, silver, and zinc concentrates for more than 30 years. The assets were bought by TVX Hellas in 1996 to exploit the refractory gold ores in the arsenopyrite stockpiles and the surface tailings by incorporating pressure oxidation technology into the ore-processing phase at a recovery plant to be built at the Olympias site.

In 2001, Stratoni produced about 80% more metals, 54,000 kilograms (kg) of silver, 30,600 metric tons (t) of zinc, and 28,700 t of lead, than in 2000. At this rate of production, estimated reserves were considered to be sufficient for 4 years. Skouries, which is a porphyry deposit with an estimated 130

million metric tons (Mt) of ore at a grade of 0.9 gram per metric ton (g/t) of gold and 0.6% copper, was to be developed later. No permits for Skouries had been obtained at yearend (McDougal, 2001).

Greenwich Resources plc of the United Kingdom intended to increase its interest in the Sappes gold project to 100%. Sappes was owned by Danae Resources NL of Australia (51%) and Greenwich (49%). Initial planning involved a plant that could treat 290,000 t/yr of ore during a minimum life of 5 years. Estimated proven and probable reserves total 1.3 Mt at an average grade of 16.3 g/t. Owing to Government and local environmental concerns, cyanide extraction will not be used in the metallurgical process; consequently, the anticipated recovery rate would be 81% compared with the 94% that would be expected by using a cyanide process. A large amount of free gold in the ore body can be recovered by gravity methods (Mining Journal, 2001).

General Mining & Metallurgical Co. S.A. (Larco) completed a major investment in its ferronickel capacity. The company had its smelting operations and some of its mining activities near the small town of Larymna on the Gulf of Evvia and, from this site, derived its more familiar name—Larco. Three of its five electric furnaces have been upgraded, and capacity should rise from 18,000 t/yr to 22,000 t/yr of contained nickel by 2002; this would correspond to about 80,000 t/yr to 100,000 t/yr of nickel ferroalloy. Larco has three main nickel mining areas—Agios Ioannis (underground), Evvia (open pit), and Kastoria (open pit)—and processes about 2 Mt/yr of ore and another 0.5 Mt/yr of consumables, such as lignite and coal. The ore is a lateritic type of deposit and is part of a belt of mineralization that extends from Turkey to Albania. The ore grade ranges from 1.0% to 1.5% nickel. Around 80% to 85% of the ore is mined from open pit operations. The few remaining underground mines were expected to close in about 3 years. Reserves have been estimated to last 40 years (Karpel, 2001).

As part of a \$75 million modernization that began in 1998, Sidenor S.A. (which is not related to the Spanish minimill of the same name) was close to full production at its Volos plant in Thessaloniki. Narrow strip production was underway, and other parts of the project were continuing. Upgrades were made to a 600,000-t/yr-capacity melt shop that was commissioned in 2001. A wide range of products was available from the 500,000-t/yr-capacity four-strand billet caster rolling mill; the mix can be adjusted according to market requirements. Greek construction is dominated by reinforced concrete, and Sidenor maintained a 33% share of the domestic rebar market in 2000. Sidenor claimed that its reinforcing steel had superior ductility as an antiseismic feature. This was an important consideration because of the seismic activity in the region (Metal Bulletin Monthly, 2001b).

Greece has limited natural gas and petroleum resources, but its Mediterranean location makes it conveniently close to several important producing regions, such as the Caspian area, the Middle East, and North Africa. Corinth Pipeworks (CPW) was initially established to produce spiral-welded pipe for water transport; the oil and gas sector, however, has become its prime focus.

CPW's plant at Corinth has two spiral submerged arc weld (SAW) lines with a capacity of 55,000 t/yr to produce pipe from

559 to 2,032 millimeters (mm) in diameter and wall thickness of 4.8 to 14 mm in lengths of up to 12 meters (m). A longitudinal electric resistance welding (ERW) line with a 190,000-t/yr capacity can produce pipe from 114.3 to 533.4 mm in diameter and from 4 to 12.7 mm in wall thickness in lengths up to 16 m (Metal Bulletin Monthly, 2001a).

CPW expected increased demand for line pipe because it is the best and safest way of transporting oil and gas. Starting in 1998, the company undertook a \$120 million 3-year investment program to set up two new state-of-the-art pipe mills, a 380,000-t/yr longitudinal ERW line and a 300,000-t/yr SAW line at Thisvi. The ERW line can produce line pipe and casing from 219 to 609.6 mm in diameter, 4 to 20 mm in thickness, and lengths of up to 18 m. The SAW line produces pipe from 610 to 2,540 mm in diameter, from 6 to 25 mm in thickness, and in lengths of up to 18 m (Metal Bulletin Monthly, 2001a).

In the industrial minerals sector, Hellenic Mineral Mining Co. S.A. continued asbestos mining operations at the mines at Zidani near Kozani. Most of the various grades of asbestos fibers produced were exported. The fibers are suitable for mixed applications, such as asbestos cement pipes and roofing applications.

Greece was the second largest world producer of bentonite after the United States (Virta, 2002). Bentonite is extracted from Milos Island by open pit mining. Mykobar Mining Co. S.A. and S&B were the major producers and accounted for almost all Greek bentonite production. Mykobar's facility had the capacity to produce about 300,000 t/yr, and S&B's facility, 600,000 t/yr. Bentonite's major applications were cat litter, civil engineering applications, drilling mud, foundry applications, and iron ore pelletizing.

Lava Mining & Quarrying Co. S.A. specialized in industrial minerals—gypsum from the island of Crete, pozzolan from Milos, and pumice from the island of Yali.

Huntite/hydromagnesite is a magnesium-containing compound that is a source for mineral flame retardants. The commercially used deposits are located in northern Greece where the Kozani basin holds several million metric tons of reserves. The deposits normally consist of physical blends of the two minerals huntite and hydromagnesite in varying ratios. The levels of impurities are very low. Huntite is not as effective a fire retardant as hydromagnesite, although it is very efficient in non-fire-retardant applications, such as replacement and extender of titanium dioxide or rheology modifier in plastisols and sealants (Industrial Minerals, 2001d).

Grecian Magnesite S.A. was a leading magnesite producer in the western world. Its open pit mine was at Yerakini in northern Greece. After mining, the material was processed, beneficiated, and fed into rotary or shaft kilns for conversion to caustic or dead-burned magnesia. Grecian Magnesite was the world's largest producer of caustic calcined magnesia as well as a leading supplier of dead-burned magnesite, refractory masses, and raw magnesia (Industrial Minerals, 2001a).

In 2001, the Greek marble industry continued to play a leading role in the international dimension stone market as a result of marble production in almost all areas of the country, variety of uses, and many colors (ash, black, brown, green, pink, red, and multicolored). The marble industry was active in the quarrying, processing, and sale of blocks and finished

products.

S&B continued production of natural zeolite in northern Greece. The operation produces five grain sizes of clinoptilolite, which has a high cation exchange capacity owing to its honeycomb crystalline structure.

The Public Power Corporation (PPC) was the major producer of lignite, which was the predominant fuel in electricity generation in Greece. Lignite reserves were estimated to be 2,900 Mt (U.S. Energy Information Administration, 2001¹).

Most PPC lignite is produced from the Ptolemais-Amyntaion Basin with lesser amounts from the Megalopolis Basin.

Hellenic Petroleum SA (the state-controlled energy corporation) started construction of a 230-km pipeline to the refinery it acquired near Skopje, Macedonia. The \$100 million pipeline, which was due to be completed in 2002, was the first big infrastructure project to get underway in the Balkans since the end of the Kosovo conflict. The pipeline would have the capacity to carry 2.5 Mt/yr of crude oil from a storage depot in Thessaloniki to the Okta refinery outside Skopje. Also, the Bulgarian, the Greek, and the Russian Governments were discussing the possibility of a plan to construct a pipeline between Alexandroupolis, Bulgaria, and Burgas, Russia. The 302-km pipeline would allow Russia to export crude oil through the Mediterranean Sea without transiting Turkey's Bosphorus and Dardanelles Straights. Greece produced negligible amounts of natural gas and imported 80% of its requirements from Russia and 20% from Algeria (U.S. Energy Information Administration, 2001§).

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¹A reference that includes a section twist (§) is found in the Internet Reference Cited section.

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Major Source of Information

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Ministry of Development
Directorate of Raw Materials Mineral Policy, Section A
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TABLE 1
GREECE: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1997	1998	1999	2000	2001 e/
METALS					
Aluminum:					
Bauxite	1,876,600	1,823,000	1,882,505	1,990,500	1,990,000
Alumina, Al ₂ O ₃	615,700	625,000 e/	625,590	667,141	660,000
Metal:					
Primary	132,600	145,900	159,900 r/	167,507	165,000
Secondary e/	3,000	3,000	3,000	3,000	3,000
Chromite, run-of-mine e/	12,000	12,000	12,000	12,000	12,000
Iron and steel:					
Iron ore and concentrate, nickeliferous					
Fe content e/	700,000	700,000	600,000	575,000	575,000
Ni content	18,419	16,985	16,050	19,535	16,000
Metal:					
Steel, crude	1,016,000	1,109,000	951,000	1,088,000	1,000,000
Ferrous alloys, ferronickel, gross weight	70,440	60,020	59,545	81,662	80,000
Ni content	17,600	15,005	12,964	17,470	17,000
Lead, mine output, Pb content	19,300 e/	18,000 e/	22,001	18,235	27,700
Manganese:					
Ore, crude: e/					
Gross weight	12,067 4/	10,000	990	10,000	10,000
Mn content	2,600	2,500	353	350	350
Concentrate:					
Gross weight e/	2,910	2,910	345	350	350
Mn content	1,440	1,440	149	150 e/	150
Nickel, metal, Ni content of ferronickel	17,610	15,005	13,462	15,920 r/	16,870 4/
Silver, mine output, Ag content kilograms	45,000 e/	45,000	45,771	37,145	36,000
Tin, metal, secondary e/	150	200	--	-- 4/	--
Zinc, mine output, Zn content by analysis	17,800 e/	29,100	19,619	16,900	20,000
INDUSTRIAL MINERALS					
Asbestos: e/					
Ore	4,038,076 4/	4,000,000	--	-- 4/	--
Processed, fibers	63,294 4/	50,000 e/	--	-- 4/	--
Barite:					
Ore, crude e/	905 4/	800	500	500	500
Concentrate	742	600 e/	367	300 e/	300
Cement, hydraulic e/ thousand tons	14,982 4/	14,757 r/	14,365 r/	15,463 r/	15,000
Clays:					
Bentonite:					
Crude	942,555	950,000 e/	1,049,657	1,150,000 e/	1,150,000
Processed	572,718	750,000 e/	186,716	200,000 e/	200,000
Kaolin: e/					
Crude	60,000 4/	60,000	64,931 4/	65,000	65,000
Processed	300	300	300	300	300
Feldspar e/	65,000	65,000	78,500 4/	95,000	95,000
Gypsum and anhydrite	662,640	600,000 e/	686,416	750,000 e/	700,000
Magnesite:					
Crude	623,050	650,000 e/	495,144	500,000 e/	500,000
Dead-burned	86,260	70,000 e/	39,965	45,000 e/	40,000
Caustic-calcined	116,775	125,000 e/	117,817	120,000 e/	120,000
Huntite, crude e/	19,422 4/	18,000	18,000	18,000	18,000
Nitrogen, N content of ammonia	82,700 e/	177,600	119,697	121,200	57,000
Perlite:					
Crude	695,917	600,000	777,898	600,000 e/	600,000
Screened	500,714	500,000	435,431	360,000 e/	360,000
Pozzolan (Santorin earth)	766,750	750,000	934,933	950,000 e/	900,000
Pumice	841,646	850,000	885,000	860,000 e/	850,000
Salt, all types e/	150,000	150,000	176,867	180,000	180,000
Silica	95,730	90,000	126,000	125,000 e/	125,000
Sodium compounds: e/					
Carbonate	750	750	750	750	750
Sulfate	6,000	5,000	5,000	5,000	5,000

See footnotes at end of table.

TABLE 1--Continued
GREECE: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1997	1998	1999	2000	2001 e/
INDUSTRIAL MINERALS--Continued					
Stone:					
Dolomite	90,000 e/	90,000	90,000	90,000 e/	90,000
Marble	200,000 e/	200,000	178,199	200,000 e/	200,000
Flysch	90,000 e/	80,000	80,000	80,000 e/	80,000
Quartz, processed	7,500 e/	6,500	6,500	6,500 e/	6,500
Sulfur: e/					
S content of pyrites	10,000	9,500	9,500	9,600	9,500
Byproduct:					
Natural gas	52,000	55,000	55,000	60,000	55,000
Petroleum	7,600	7,500	7,500	8,000	7,500
Total	69,600	72,000 r/	72,000	77,600	72,000
Zeolite e/	3,000	4,000	3,000	3,000	3,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Lignite	56,375	60,400	61,861	65,000 e/	60,000
Lignite briquets e/	50,000	50,000	34,000	34,000	35,000
Coke, gashouse e/	15,000	14,000	--	--	--
Gas:					
Manufactured, gasworks e/	15	15	15	15	15
Natural	43	40 e/	21	36 e/	36
Natural gas plant liquids e/	350	350	350	350	350
Petroleum:					
Crude	3,380	2,363 r/	1,200 r/ e/	2,093 r/	2,000
Refinery products:					
Liquefied petroleum gas	5,000 e/	5,000 e/	6,415	8,886	9,000
Gasoline	30,000 e/	30,000 e/	27,243	31,943	30,000
Naphtha	4,500 e/	4,500 e/	7,480	8,806	9,000
Mineral jelly and wax	15 e/	15 e/	14	28	28
Jet fuel	12,000 e/	12,000 e/	15,152	16,696	17,000
Kerosene	150 e/	150 e/	62	70	70
Distillate fuel oil	26,000 e/	26,000 e/	36,300	42,127	42,000
Refinery gas	2,000 e/	2,000 e/	2,891	3,416	3,500
Lubricants	1,000 e/	1,000 e/	1,239	1,120	1,200
Residual fuel oil	36,000 e/	36,000 e/	41,532	50,017	50,000
Bitumen	1,500 e/	1,500 e/	2,491	3,133	3,200
Petroleum coke	500 e/	500 e/	721	897	900
Other	400 e/	400 e/	154	462	500
Refinery fuel and losses	5,500 e/	5,500 e/	5,922	7,126	7,000
Total	125,000 e/	125,000 e/	147,616 r/	174,727	173,000

e/ Estimated. r/ Revised. -- Zero.

1/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

2/ Table includes data available through March 2002.

3/ In addition to the commodities listed, other crude construction materials are produced, but no basis exists for estimation of production.

4/ Reported figure.

TABLE 2
GREECE: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Aluminium de Grèce S.A. (Pechiney of France, 60%)	Distomon, Boeotia area	640
Aluminum	do.	do.	150
Asbestos	Hellenic Mineral Mining Co. S.A.	Mines at Zidani, near Kozani	100
Barite, BaSO ₄	Silver & Baryte Ores Mining Co. S.A. (Eliopoulos-Kyriakopoulos Group)	Milos Island	1
Bauxite	do.	Mines at Fokis, plants at Fokis and Itea	2,000
Do.	Eleusis Bauxites Mines, S.A. (Elbaumin)	Mines near Drama, Itea, and Fthiotis-Fokis	300
Do.	do.	Plants in Aghia Marina, Drama, and Itea	400
Do.	Delphi-Distomon S.A.; Hellenic Bauxites of Distomon S.A. (Aluminium de Grèce S.A.)	Open cast mines at Delphi-Distomon area	500
Bentonite:			
Crude	Mediterranean Bentonite Co. S.A. (Industria Chimica Mineraria S.p.A., Italy)	Surface mines on Milos Island	20
Do.	Mykobar Mining Co. S.A. (Sliver & Baryte Ore Mining Co. S.A.)	Mines at Adamas, Milos Island	300
Do.	do.	Plants at Adamas, Milos Island	200
Do.	Silver & Baryte Ores Mining Co. S.A. (Eliopoulos-Kyriakopoulos Group)	Mines at Adamas, Milos Island	600
Processed	do.	Plant at Vouidia Bay, Milos Island	400
Cement	Halkis Cement Co. S.A. (Blue Circle Industries plc, 72.65%)	Micro-Vathi plant, west-central Euboea Island	3,000
Do.	Halyps Cement S.A. (Ciments Français, France)	Paralia Aspropyrgou plant, Athens	800
Do.	Heracles General Cement Co. S.A. (Blue Circle Industries plc, 54.48%)	Plant at Milaki	1,900
Do.	do.	Plant at Volos	4,600
Do.	Titan Cement Co. S.A.	Elefsis plant, Athens area	400
Do.	do.	Kamari plant, Boeotia	2,600
Do.	do.	Patras plant, northern Peloponnesus	1,900
Do.	do.	Salonica plant, Salonica	1,650
Chromite	Financial-Mining-Industrial and Shipping Corp. (FIMISCO) (IRO)	Tsingeli Mines and plant near Volos	25
Ferroalloys, ferronickel, Ni content	General Mining & Metallurgical Co. S.A. (Larco) (IRO)	Lárimna metallurgical plant	25
Gold, Au in concentrate kilograms	TVX Hellas S.A. (TVX Gold Inc., Canada)	Kassandra Mines, Olympias	5,000
Gypsum	Lava Mining & Quarrying Co. S.A.	Altsi, Crete Island	500
Do.	Titan Cement Co. S.A.	do.	280
Hunite/hydromagnesite	Microfine S.A.	Mines in Kozani Basin	100
Lead, mine, Pb in concentrate	TVX Hellas S.A. (TVX Gold Inc., Canada)	Kassandra Mines (Olympias, Stratoni), northeastern Chalkidiki	30
Lignite	Public Power Corporation (Government)	Aliveri Mine, Euboea Island	420
Do.	do.	Megalopolis Mine, central Peloponnesus	7,000
Do.	do.	Ptolemais Mine, near Kozani	28,000
Magnesite, concentrate	Viomagn-Fimisco Ltd. (Violignit S.A., 65%; Alpha Ventures, 35%)	Mines at Gerorema, Kakavos, and Mantoudhi, northern Euboea Island	250
Do.	Grecian Magnesite S.A.	Mine and plant at Yerakini, Chalkidiki	200
Manganese, (battery-grade MnO ₂)	Eleusis Bauxite Mines Mining, Industrial and Shipping S.A. [National Bank of Greece (OAE)]	Nevrokopi, Drama	10
Natural gas million cubic meters per day	Public Petroleum Corporation (Government)	Prinos offshore gasfield and oilfield, east of Thasos Island	125
Nickel, ore	General Mining & Metallurgical Co. S.A. (Larco) (IRO)	Agios Ioannis Mines near Larymna	500
Do.	do.	Mines at Euboea Island	2,500
Nitrogen, N content of ammonia	Phosphoric Fertilizers S.A.	Nea Karvall	150
Perlite	Silver & Baryte Ores Mining Co. S.A. (Eliopoulos-Kyriakopoulos Group)	Mines on Kos and Milos Islands	300
Do.	Otavi Minen Hellas S.A. (Otavi Minen AG, Germany)	Plant at Pireaus	150
Do.	Bouras Co.	Milos Island	50
Petroleum, refined			
42-gallon barrels per day	Hellenic Aspropyrgos Refinery S.A.	Aspropyrgos	95,000
Do.	do.	Motor Oil (Hellas) Corinth Refineries S.A.	140,000
Do.	do.	Petrola Hellas S.A.	100,000
Do.	do.	Eleusis	76,000
Pozzolan (Santorin earth)	Thessaloniki Refining Co. A.E.	Thessaloniki	
	Lava Mining & Quarrying Co. S.A. (Heracles General Cement Co. S.A.)	Xylokeratia, Milos Island	600
Do.	Titan Cement Co. S.A.	Do.	300

TABLE 2--Continued
GREECE: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Pumice	Lava Mining & Quarrying Co. S.A. (Heracles General Cem Yali Island Co. S.A.)		100
Quartz	do.	Adamas, Milos Island	150
Steel, crude	Halyvourgia Thessalias S.A. (Manassis Bros. and Voyatzis S.A., 65%; National Investment Bank for Industrial Development, 35%)	Steelworks at Volos	1,500
Do.	Halyvourgiki, Inc.	Steelworks at Eleusis	1,200
Do.	Hellenic Steel Co.	Steelworks at Thessaloniki	1000
Do.	Corinth Pipeworks	Steelworks at Thisvi	680
Do.	Sidenor S.A. (also known as Halivourgia Voriou Ellados S.A.)	Steelworks at Volos	600
Do.	do.	Stellworks at Corinth	245
Zeolite	Silver & Baryte Mining Co. S.A. (Eliopoulos-Kyriakopoulos Group)	Mine at Pandalofos, plant at Ritsona	100
Zinc, mine, Zn in concentrate	TVX Hellas S.A. (TVX Gold Inc., Canada)	Kassandra Mines (Olympias and Stratoni), northeastern Chalkidiki	30