THE MINERAL INDUSTRY OF

AUSTRIA

By Jozef Plachy[1]

Mining activities, excluding industrial minerals, in Austria continued to decline in 1994 due to the high cost of production and competition from neighboring countries. Despite the decline, the mineral industry contributed about 0.7% to the gross domestic product.

Government Policies and Programs

Faced with mounting losses, the Austrian Government closed all its metalliferous mines except the iron ore mine at Erzberg, discontinued the operation of unprofitable smelters, and sold off shares in many foreign operations. It also reorganized its corporate structure to expedite privatization.

Production

In 1994, Austria's 480 mines employed about 14,000 people and supplied about one-third of the country's consumption. The total production of industrial minerals increased in 1994, mainly due to the inclusion of new sand and gravel mines in the production data. *(See table 1.)*

Trade

While the volume of Austria's imports of mineral commodities, excluding energy, was about twice as large as its exports, the value was about the same. As a relatively energy-poor country, Austria relies heavily on imports. The value of exported energy in 1994 was only about 10% of imports. Most of the trade was with other European countries, primarily Germany.

Structure of the Mineral Industry

A small and diminishing portion of the Austrian mineral industry is still under government ownership. The ownership is exercised through a state holding company named Osterreichische Industrieholding Aktiengesellschaft (OIAG), a subsidiary of the Ministry of Industry and Transport. OIAG is divided into Austria Metall AG (AMAG) and Osterreichische Bergbauholding AG (OBAG). Salinen Austria AG, the only salt producer in Austria, is a subsidiary of the Ministry of Finance. *(See table 2.)*

Commodity Review

Metals

Aluminum.—Only secondary aluminum was produced in 1994. The 50,000-metric-ton-per-year (mt/a) capacity Ranshofen smelter is the larger of two secondary smelters. Owned by the Government, it is slated to be privatized by 1998. In addition to the smelter and casthouse, it included a rolling mill, a press mill, and an automobile wheel plant. Both smelters, Ranshofen and Lend, bought scrap from private collecting organizations.

At the Lend smelter, indigenous scrap was augmented by imported ingots, the quantity of which depended on the quality of available scrap and the requested grade of the final product. The plant consisted of a smelter, using Sodeberg technology, two casthouses equipped with a 4-metric ton (mt) crucible furnace, three oil-fired furnaces, and a 10-mt closed furnace. The 1994 capacity was about 15,000 mt/a, producing mainly tanks for fuel and compressed air.

Copper.—The secondary copper smelter at Brixlegg relied on domestic copper and copper-alloy scrap, as well as intermediate products and scrap imports from Germany and Italy. A recent modernization increased the capacity of the casthouse to 75,000 mt/a.

Iron Ore.—Since 1992, the Steirischen Erzberg Mine had been only strip mined. The estimated proven and probable ore reserves, grading 31% iron and about 2% manganese, amounted to about 25 million metric tons (Mmt) and 150 Mmt, respectively, according to an industry official. Ore was beneficiated locally and shipped by rail to the nearby Donawitz and Linz steel mills for the production of self-fluxing sinter, averaging 50% iron and 3% manganese. An iron ore delivery contract with Voest-Alpine Stahl Ges.m.b.H., the operator of both mills, was renewed in 1993 for 5 years, ensuring production until at least 1998.

A small iron-mica mine, owned by Kafer Transportgesellschaft m.b.H. is in Klagenfurt. The annual production of about 20,000 mt is used mostly to manufacture pigment.

Lead and Zinc.—After the only lead-zinc mine in Austria closed in 1993, the primary smelter at the nearby Arnolstein also was shut down. In 1994, only the secondary lead

smelter remained operational. Presently, the Government-owned Bleiberger Bergwerks-Union AG (BBU) is involved in selling land and other assets to cover the cost of closing the primary smelter. According to an industry official, BBU will either be sold to a private investor or liquidated by 1996.

Steel.—Voest-Alpine Ges.m.b.H., the only steel producer in Austria, consisted of two steel plants at Donawitz and Linz. The Donawitz steelworks was equipped with three blast furnaces with a total capacity of 2 million metric tons per year (Mmt/a), three basic oxygen converters (1.2 Mmt/a capacity), and two continuous casting machines. The Linz steel plant had five blast furnaces (total capacity of 2.99 Mmt/a), three 130-mt basic oxygen converters (3.35 Mmt/a capacity), two continuous casting machines, and numerous rolling mills. Both steel works were planned to be privatized in 1995.

Industrial Minerals

Graphite.—Most of the 12,300 mt of graphite production in 1994 was supplied by the open pit mine at Trandorf, owned by Industrie und Bergbaugesellschaft Pryssok & Co. The crushed graphite, associated with silicates, contained about 55% carbon.

The other two mines, Kaisersberg and Trieben, are both underground operations. The graphite at both mines occurred in a large number of small lenses, making mechanization difficult and keeping the output per employee-hour very low. Because of its high carbon content (70% to 80%), raw graphite was processed into valuable pulverized graphite.

Gypsum.—The 1.1 Mmt production, about 90% gypsum and 10% anhydride, was produced by seven mines, all in the northern Alps, between the cities of Moosegg in the west and Preinsfeld in the east. The largest producer in 1994 was Erste Salzburger Gipswerks Gesellschaft Christian Moldan KG. Its two adjacent mines—an underground mine at Abtenau and the Moosegg open pit mine—produced about 300,000 mt.

Kaolin.—Two mines supplied Austria's entire 469,000 mt of production in 1994. An open pit mine at Aspang-Zobern, owned by Aspanger Baustoffe und Mineralien Ges.m.b.H., produced about three-fourths of the total output. A deposit of kaolin-like material, called leucosphenite, consisted of several 10-meters (m) to 40-m-thick seams. The smaller mine at Kriechbaum-Weinzierl, 20 kilometers (km) east of Linz, is owned by Osterreichische Kaolin und Montanindustrie AG. That deposit contained kaolin, other clays, and quartz sand.

Kaolinite slurry from both mining operations was transported by pipeline to a processing plant at Eisthofen, 10 km from Schwertberg.

Magnesite.—The largest convergence of magnesite mines is the Steiemark region in southest Austria. After the merger of two magnesite mining giants in 1991, Veitsch-Radex AG became the largest producer of magnesite in Austria. Three of five mines it owns are active: Breitenau, Gulsen, and Millstatteralpe/ Radentheim. With an output of about 400,000 mt, the Breitenau Mine is the largest magnesite operation in Austria. The roughly tabular deposit was about 200 m thick, and 500 m long, dipping at about 25 degrees. A total of about 110 people were employed at the mine site in 1994, with underground productivity of about 30 mt per shift.

The second largest mine in 1994 was Millstatteralpe/Radentheim in southern Austria. The massive ore body, 600 m long and 450 m high, is mined by block caving.

Quartz.—Most of the 416,000 mt produced in 1994 came from two mines, Zelking/Melk and Saint Georgen, both owned by Quartzwerke Gesellschaft m.b.H. Production included quartz, sand, and feldspar. In addition to two major mines, a number of smaller mines were owned and operated by either Quartzwerke Gesellschaft m.b.H. or other independent operators.

Salt.—Austrian salt mines were owned by the Government and regulated by the Ministry of Finance. Exploration, production, and trade were controlled by Osterreichische Salinen Aktiengesellschaft AG. In 1994, all salt output was from three underground mines and one brine well in central Austria. According to an industry source, as a precursor to possible privatization, all salt mines were expected to be independently operated by 1995.

Talc.—Naintsch Mineralwerke Ges.m.b.H., the only producer of talc in Austria, owned three mines in Styria. The capacity of the largest mine, Rabenwald, 35 km northeast of Graz, is about 110,000 mt/a. Open pit production yielded a ratio of talc to overburden of about 1 to 38. After screening and hand sorting, raw talc is transported by ropeway to a 90,000-mt/a-capacity processing plant in Oberfeistritz, with the rest being processed at Lassing.

The underground mine at Lassing produces a dolomite-talc mixture with a high degree of whiteness. Near Liezen, 110 km northwest of Graz, the 30,000-mt/a-capacity mine uses an underhand cut-and-fill mining method.

Mineral Fuels

Coal.—By yearend 1995, only one of three lignite companies was expected to remain in production. The Trimmelkam underground mine, owned by Salzach-Kohlenbergbau Gesellschaft m.b.H., was flooded in 1992. The company never recovered from the damage and was in the process of closing. Because of depletion of an easily accessible deposit, the Schmitzberg underground mine near

Ampflwang, owned by Wolfsegg-Traunthaler Kohlenwerks Gesellschaft m.b.H., also was to be closed in 1995. Only the open pit Oberdorf Mine in western Styria, west of Graz, reportedly will remain operational beyond 1995. The Graz-Koflacher Eisenbahn und Bergbaugesellschaft m.b.H. oversees production from two adjacent pits. The 1.3 Mmt/a production was accomplished with a fleet of hydraulic backhoes and loaded directly to a mobile conveyor belt for transportation to the preparation plant. All production is used exclusively by a local powerplant.

Infrastructure

Austria is a landlocked country and nearly all transportation is on railroads and highways. The total length of railroad consisted of 5,410 km of standard-gauge and 339 km of narrow-gauge tracks. About 98% of the railroad was Government-owned and more than 50% was electrified. The length of roads totaled 95,412 km, of which 34,612 km consisted of primary highway network (autobahn, Federal, and provincial roads), while the rest were unpaved communal roads. The only navigable river was the Danube, with ports in Linz and Vienna.

Outlook

Because of Austria's long mining tradition, geological conditions are well known. There is minimal likelihood of discovery of large new mineral deposits. Future mining activities will most probably be concentrated in industrial minerals, mainly for domestic use.

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[1]Text prepared May 1995.

Major Sources of Information

Bundesministerium fur Wirtschaftliche Angelegenheiten
Lansatrasse Haupstrasse 55-57
A-1031 Wien, Austria
Osterreichische Montan Handbuch, 1994, Wien, Austria.

TABLE 1
AUSTRIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons, unless otherwise specified)

Commodity		1990	1991	1992	1993	1994
METALS						
Aluminum metal:						
Primary		89,400	80,400 r/	32,900 r/	--	--
Secondary		35,700	33,600	45,400 r/	43,300 r/	46,800
Total		125,000	114,000 r/	78,300 r/	43,300 r/	46,800
Antimony, mine output, Sb content of concentrate		352	--	--	--	--
Cadmium, metal		44	19	--	--	--
Copper:						
Smelter, secondary		41,000	44,800 e/	49,500	47,300 r/	51,600
Refined:						
Primary		8,690	8,080	5,710	5,870	3,040
Secondary		41,000	44,800	49,000	46,900 r/	47,400
Total		49,700	52,800	54,700	52,700 r/	50,500
Germanium, Ge content of concentrate	kilograms	5,000	5,000 e/	--	--	--
Gold, metal	do.	58	60	158	315 r/	300 e/
Iron and steel:						
Iron ore and concentrate:						
Gross weight	thousand tons	2,310	2,130	1,630	1,440 r/	1,650
Fe content	do.	653	481	515 r/	452 r/	520 e/
Metal:						
Pig iron	do.	3,450	3,440	3,070	3,390 r/	3,360
Ferroalloys, electric-furnace	do.	12	12 e/	12 e/	12 e/	12
Crude steel	do.	4,240	3,900	3,600	2,970 r/	4,400
Semimanufactures	do.	3,720	3,500 e/	3,360	3,450 r/	3,500
Lead:						
Mine output, Pb content of concentrate		1,490	1,150	920	1,340 r/	--
Metal:						
Smelter:						
Primary		5,170	5,500 e/	3,800 e/	2,000	--
Secondary		15,900	14,600 e/	17,800 e/	18,800	17,200
Total		21,100	20,100	21,600	20,800	17,200
Refined:						
Primary		8,390	6,350	5,730 r/	4,780 r/	--
Secondary		15,100	16,300	18,200 r/	17,900 r/	17,000
Total		23,500	22,700	23,900	22,600	17,000
Manganese, Mn content of domestic iron ore		42,700	40,000 e/	30,800	30,000 r/	33,000 e/
Silver, metal		22	29	22	83 r/	80 e/
Tungsten, mine output, W content of concentrate		1,380	1,310	1,490 r/	104 r/	--
Zinc:						
Mine output, Zn content of concentrate		16,700	14,800	13,500	5,400 e/	--
Metal, primary, refined		26,900 r/	15,900 r/	5,540 r/	6,820 r/	--
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	4,900	5,020	5,030 r/	4,940 r/	5,000 e/
Clays:						
llite	do.	191	217	276	300	267
Kaolin:						
Crude	do.	473	352	344	342	469
Marketable	do.	81	72	65	64 r/	87 e/
Other	do.	31	3,460	3,450	2,990	2,960
Feldspar, crude		8,790	10,400	11,100	8,490	4,880
Graphite, crude		22,700	19,800	19,800 r/	4,150	12,300
Gypsum and anhydrite, crude	thousand tons	752	655	792	876	1,070
Lime	do.	1,640	1,600 e/	1,720	1,810 r/	1,850

See footnotes at end of table.

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

(Metric tons, unless otherwise specified)

Commodity		1990	1991	1992	1993	1994
INDUSTRIAL MINERALS--Continued						
Magnesite:						
Crude	thousand tons	1,180	961	995	649	681
Sintered or dead-burned	do.	441	337	223 r/	323 r/	350 e/
Caustic-calcined	do.	55	57	54	50	50 e/
Nitrogen: N content of ammonia e/		410	410	410	400	400
Pigments, mineral: Micaceous iron oxide		9,940	10,200	9,480	8,400	8,000 e/
Pumice (trass)		8,950	8,200	7,490	9,100	5,670
Salt:						
Rock	thousand tons	1	1	1	1	1
In brine	do.	674	698	662	695	700
Sand and gravel:						
Quartz sand	do.	818	2,090	5,880	4,300 r/	6,460
Other sand and gravel	do.	16,800	17,000	17,400	16,900	58,000
Total	do.	17,600	19,100	23,300	21,200	64,500
Sodium compounds, n.e.s.: e/						
Soda ash, manufactured	do.	150	150	150	150	150
Sulfate, manufactured	do.	120	120	120	120	120
Stone: 3/						
Dolomite	do.	1,880	5,090	5,870	7,770 r/	8,160
Quartz and quartzite	do.	249	464	511	429	416
Other:						
Limestone and marble	do.	NA	15,400	19,300	19,600	19,900
Basalt	do.	NA	3,670	4,100	3,360	4,090
Marl	do.	NA	2,780	2,640	2,840	2,310
Crushed stone	do.	12,800 r/	10,700 r/	10,600	11,500 r/	27,000
Total	do.	14,900 r/	38,100 r/	43,000	45,600 r/	61,800
Sulfur:						
Byproduct:						
Of metallurgy		12,000	10,700 e/	8,200 e/	9,300 r/	9,500 e/
Of petroleum and natural gas		5,600	7,150	8,680	7,660 r/	9,270
Total		17,600	17,800	16,900	17,000	18,800
Talc and soapstone, crude		134,000	161,000	146,000	137,000	131,000
MINERAL FUELS AND RELATED MATERIALS						
Coal, brown and lignite	thousand tons	2,450	2,080	1,750 r/	1,690	1,390
Coke	do.	1,730	1,540 r/	1,490 r/	1,400	1,400 e/
Gas, natural:						
Gross	million cubic meters	1,290	1,330	1,440	1,490	1,360
Marketed e/	do.	1,080	1,100	1,100	1,100	1,000
Oil shale		475	290	430	195	330
Petroleum:						
Crude	thousand 42-gallon barrels	8,010	8,930	8,230	8,060	7,670
Refinery products:						
Liquefied petroleum gas	do.	5,290	7,840 r/	7,380 r	6,760 r/	6,500 e/
Gasoline	do.	22,200	20,500 r/	19,500 r/	19,000 r/	19,000 e/
Kerosene and jet fuel	do.	2,400	3,030 r/	3,240 r/	3,140 r/	3,100 e/
Distillate fuel oil	do.	22,500	11,900 r/	12,900 r/	12,800 r/	12,800 e/
Lubricants	do.	416	8,280 r/	6,910 r/	8,670 r/	8,700 e/
Residual fuel oil	do.	11,400	11,800 r/	11,700 r/	11,000 r/	11,000 e/
Bitumen	do.	1,470	1,760 r/	1,120 r/	1,660 r/	1,500 e/
Unspecified	do.	75	714 r/	787 r/	739 r/	750 e/
Refinery fuel and losses	do.	2,120	2,000 e/	2,470	2,240 r/	2,200 e/
Total	do.	67,900	67,800 r/	66,000 r/	65,900 r/	65,600 e/

e/ Estimated. r/ Revised. NA Not available.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through May 1995.

3/ Excluding stone used by the cement and iron and steel industries.

TABLE 2
AUSTRIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum	Salzburger Aluminum GmbH	Smelter at Lend	15
Do.	Austria Metall AG (Government 100%)	Smelter at Ranshofen	50
Cement	Perlmooser Zementwerke AG	Plants at Kirchblich, Mannesdorf, Retsnei, and Rodaun	3,000
Do .	Gebr Leube Portlandzementwerke	Plant at Gartenau	700
Do .	Zemenwerke Eiberg	Plant at Eiberg	600
Do .	Wietersdorfer Zemenwerke	Plant at Wietersdorf	600
Coal	Graz-Koflacher Eisenbahn und Bergbaugesellschaft mbH (Government 100%)	Oberdorf Mine	1,300
Do .	Salzach-Kohlenbergbau Gesellschaft m.b.H. (Government 100%)	Trimmelkam Mine	100
Copper	Austria Metall AG (Metal Mining Corp. of Canada 41%, Mount Isa Mines of Australia 41%, and Government 18%)	Plant at Brixlegg	75
Graphite	Industrie und Bergbaugesellschaft Pryssok & Co KG	Trandorf Mine at Mühldorf	15
Do .	Grafitbergbau Kaisersberg Franz Mayr-Melnhof & Co	Kaisersberg Mine	3
Do .	Grafitbergbau Trieben GmbH	Trieben Mine	3
Gypsum	Erste Salzburger Gipswerk-Gesellschaft Christian Moldan KG	Abtenau and Moosegg Mines	300
Do .	Rigips Austria GmbH	Grundlsee, Puchberg, Unterkainisch, and Weisenbach Mines	250
Do .	Knauf Gesellschaft mbH	Hinterstein Mine	160
Iron ore	Voest-Alpine Erzberg GmbH (Government 100%)	Erzberg Mine at Eisenerz	2,000
Lead	Bleiberg Bergwerks-Union AG (Metall Gesellschaft 74%)	Smelter at Brixlegg	55
Magnesite	Veitsc - Radex AG	Mines at Breitenau, Hochfilzen and Weissenstein	600
Do .	Radex Austria AG (Osterreichische Magnesit AG 100%)	Millstatteralpe Mine	250
Natural gas million cubic meters	Osterreichische Mineralolverwaltung AG (Government 100%)	Fields in Vienna Basin	1,500
Steel	Voest-Alpine Stahl GmbH (Government 100%)	Plants at Donawitz and Linz	4,500
Talc	Naintsch Mineralwerke	Mines at Lassing, Rabenwald, and Weisskirchen Plants at Oberfeistitz and Weisskirchen	160