

THE MINERAL INDUSTRY OF

ITALY

By Harold R. Newman

Italy has been a significant processor of imported raw materials, as well as a significant consumer and exporter of mineral and metal semimanufactured and finished products. The world's largest producer of pumice and related materials, it produced almost one-half of the world's output. Also the world's largest feldspar producer, it produced about one-fourth of the world's output. The country was the world's 8th and 10th largest producer of crude steel and cement, respectively. Italy was also an important producer of dimension stone and marble.

Italy's gross domestic product, adjusted for inflation, grew at a rate of 1.4% in 1999 as the Italian Government continued to exercise budget austerity and to reduce its role in the economy through privatization of its assets. Italy had the world's sixth largest economy in 1999 (U.S. Department of State, July 2000, Italy—Background notes, accessed December 12, 2000, at URL http://www.state.gov/www/background_notes/italy_0007_bgn.html).

Growth in Italy's mining and extractive industries was marginal in 1999. Among the metallic ores, lead and zinc were mined, although production was minimal and decreasing. Most of the output came from the Silius Mine in Sardinia. The small output of zinc ore that came from the safety and environmental recovery work at sites in the Iglesias area of Sardinia ceased in 1999.

Industrial mineral production was the most important sector with overall output remaining about the same as that of 1998. Domestic production of natural gas and petroleum decreased (table 1).

Table 2 lists the impact of selected classes of mineral commodities on Italy's balance of payments position in relation to the European Union (EU) and the world in 1998 (the latest year for which data are available). Tables 3 and 4 list exports, as well as reexports, and imports of selected mineral commodities by Italy in 1998 (the latest year for which data are available), respectively.

Private and public companies owned facilities for the mining and processing of minerals and mineral products. Some enterprises were under State control for economic reasons and to maintain employment (table 5). The Government was proceeding with privatization efforts to divest its holdings in aluminum and a number of other industry sectors.

In 1999 Eurallumina S.p.A. announced plans to raise the capacity of its alumina refinery to 1 million metric tons per year from 950,000 metric tons per year (t/yr). Eurallumina sourced 90% of its bauxite requirements from Comalco Ltd.'s Weipa Mine in Australia and 10% from Comalco's Boké Mine in Guinea. Eventually, bauxite supplied by Boké will be phased out, and Weipa will furnish all Eurallumina's requirements (Metal Bulletin, 1999b).

Enirisorse S.p.A., which was the largest producer of refined copper in Italy, accounted for about one-half of Italy's copper output. Italy's refined copper production averaged about 89,000 t/yr between 1993 and 1997 and dropped significantly in 1998 and 1999 owing to availability and price of scrap material. Imported scrap, ashes, slag, and other residues were the major sources of the copper produced in Italy. Copper mines in Italy are not significant, and imports of ore were small.

Gold Mines of Sardinia Ltd. (GMS), which was a joint venture of Gold Mines of Sardinia (70%) and Progemisa S.p.A. (30%), operated the Furtei Mine, which is north of Cagliari. Furtei was the first gold mine of GMS and the first gold mine in Italy.

GMS reported that the latest drilling results from the Osilo project in northern Sardinia confirmed a major epithermal gold system. A trial mine was planned that would produce 50,000 metric tons of material with an average grade of 7.5 grams per ton gold. The mine, which will incorporate an on-site treatment facility, had a projected mine life of 5 years. In addition to the Osilo deposit, further exploration at the Furtei Mine uncovered mineralization with the estimated potential for an ore body larger than expected (Mining Journal, 1999b).

Italy imported most of its supplies of lead and zinc concentrates. Within Italy, most lead and zinc concentrate production came from Enirisorse's mines in Sardinia.

Enirisorse completed the sale of its Porto Vesme lead/zinc smelter in Sardinia and its San Gavino lead smelter and refinery near Porto Vesme with Glencor International AG of Switzerland; Glencor was selected after submitting the best offer in a privatization tender. The Porto Vesme smelter produced primary lead and zinc metal and cadmium, and the San Gavino complex produced refined lead and byproducts, such as bismuth, gold, and silver (Mining Journal, 1999a).

In Italy, all the steel was produced by private companies after the completion of a privatization program by the Government between 1992 and 1997. About 60% of Italian steel was produced by electric arc furnaces, and 40% was produced by basic oxygen furnaces.

The Riva Group suspended crude steel production at its Cornigliano works in Genoa. Production was cut in response to falling demand from Riva's rolling operations across Western Europe. Two blast furnaces were at the works; the smaller of the two had been out of operation for some time. Riva may close the blast furnaces permanently to concentrate crude steel production at its Taranto works (Metal Bulletin, 1999c).

Enirisorse ordered production stopped at the zinc smelter at Crotone; output was to be wound up in the near future. One possible future for Crotone would be its sale to Cogein S.p.A. which was negotiating its purchase to take over the smelter. Cogein planned to shut the smelter down to allow it to undergo

a 3-year modernization program. Crotona has been producing from around 90,000 to 100,000 t/yr of zinc. The modernization program would double that output and would address environmental problems at the smelter (Metal Bulletin, 1999a).

Zincatura Bresciana S.p.A. opened a new hot-dip zinc galvanizing plant near Brescia. The \$11 million plant took 2 years to complete and had an increased capacity of 65,000 t/yr. Zincatura closed an existing 40-year old plant and moved to the new site. The plant would treat a wide range of metallic products which will include larger items that the previous plant was not equipped to handle (Metal Bulletin, 2000).

Italy was the second largest cement producer in the EU after Germany. Italcementi Fabbriche Riunite Cemento S.p.A. was the largest of Italy's cement producers with 28 plants. Italy was a net exporter of cement.

Although most of Italy's bentonite ores were mined in Sardinia, processing plants were on the mainland. More than one-half of the country's bentonite production came from Industria Chimica Carlo Laviosa S.p.A. The company's main mining activity was in the Pedra de Fogu and the Puntenuova areas of Sardinia. Production from these areas fed the processing plants at Livorno and Oristano, Sardinia.

Montmorillonite clay (white bentonite) was quarried at S'Aliderru in northwestern Sardinia. Caffaro S.p.A., which operated in Sardinia, was Italy's only producer of acid-activated montmorillonite. The clay was shipped to the company's plant at Porto Marghera near Venice. Several small bentonite producers operated at Foggia and Pietracuta di S. Leo.

Italy was a significant producer of feldspar and feldspathic minerals (table 1). These materials were important constituents of ceramic tile. Italy accounted for about 30% of world tile output and more than 50% of the total tile produced in the EU. Italian marble occurs in many localities from the Alps to Sicily and is quarried at hundreds of operations. The most important geographic area for producing white marble is in the Apuan Alps in Tuscany, particularly near the town of Carrara. Lombardy, Po Valley, Puglia, Sicily, and Verona-Vincenza are important colored-marble-producing areas. About one-half of production was in block form. About one-half of the total production was exported. Other major marble-producing areas include the Valle di Susa near Turin and Benevento, northeast of Naples.

Production of potash remained suspended in 1999. The main reasons were the result of a severe drought that has restricted the availability of process water to the plants and the inability to remove waste material and mine water owing to environmental and ecological concerns. In Sicily, the underground mines that were previously operating at Pasquasia, Racalmuto, and Realmonte remained on standby.

Italy was a significant producer of pumice and pozzolan (table 1). The Mediterranean island of Lipari, 40 kilometers off the northern coast of Sicily, was the center of the Italian pumice industry, where Pumex S.p.A. and Sta Siciliana per l'Industria ed il Commercio della Pomice di Lipari S.p.A. (Italpomice S.p.A.) quarried pumice for world markets. Pumex, with about a 600,000-t/yr capacity, was Italy's largest pumice producer. The company quarried the Mount Pelato deposit on Lipari.

White talc was produced by Luzenac Val Chisone S.p.A., which operated an underground mine at Pinerolo near Turin.

The white talc, which was mined from metamorphic rocks, has been of very high quality. Talco Sardegna S.p.A. operated an open pit mine at Orani.

EU membership has initiated important changes in Italy's energy sector by requiring privatization of dominant energy monopolies. Hence, the sector has been undergoing considerable restructuring in recent years. Ente Nazionale Idrocarburi (ENI), which was the state-held oil and gas conglomerate, as well as its main subsidiaries, which were Agip S.p.A. (hydrocarbons exploration and production) and Snam S.p.A. (gas supplies and distribution), and Ente Nazionale per l'Energia Elettrica (ENEL), which was the state-owned electricity company, had to be privatized. ENI and ENEL became joint-stock companies. The Government sold off shares of ENI between 1995 and 1998 and held 35% of the company in 1999. Privatization of ENEL has stalled. According to EU directives, plans for privatization must proceed quickly in coming years (U.S. Energy Information Administration, September 1999, Italy—Country analysis briefs, accessed November 3, 1999, at URL <http://www.eia.doe.gov/emeu/cabs/italy.html>).

Italy was heavily dependent on imported coal. Most imports were from, in declining order of importance, Russia, South Africa, the United States, and China. Lignite coal was produced by ENEL. Extraction problems and environmental reasons caused a further reduction in output from ENEL's Santa Barbara Mine in Tuscany, which was the only lignite mine in Italy.

Geothermal energy was produced in the Larderello, the Monte Amiata, and the Travale areas of Tuscany. Exploration that used various geologic techniques has been actively pursued in these areas, as well as research for power stations exploiting geothermal energy.

Deregulation of Italy's natural gas and electricity sectors was setting the stage for a major expansion of the country's gas industry and a transformation of its energy sector. The Government has proposed to end ENI's near-monopoly of natural gas distribution. If approved by Parliament, the decree would open the gas market to competition and would not allow any company to have more than 50% of the retail gas market or more than 70% of pipeline shipments. ENI had 88% of sales and 85% of shipments. Decontrol was considered to be justified because Italian gas cost 12.5% more than the European average (Oil & Gas Journal, 1999).

Despite increasing domestic production of crude oil, Italy was almost totally dependent on imported crude oil for its needs. Some 75 million metric tons of crude oil was imported. The major sources were, in declining order of importance, Libya, Iran, and Saudi Arabia.

ENI announced the successful testing of the horizontal extension drilled from its Cerro Falcone 1 well, which was located in the Volturino concession in southern Italy. ENI was the operator of the concession, and Enterprise Oil Italiana S.p.A. had a 55% interest. The well tested at a maximum rate of 5,500 barrels per day (bbl/d) through a 3/4-inch choke. This represented a major increase from the rate of 600 bbl/d tested in 1992 and made Cerro Falcone 1 the most productive well drilled in the field. The well was expected to produce more than 8,000 bbl/d (ENI, January 22, 1999, ENI successfully tests the Cero

Falcone 1 well in Val d'Agri, southern Italy, accessed August 4, 1999, via URL <http://www.eni.it/english/home.html>).

Public and private spending on environmental controls is expected to grow, particularly in the areas of water treatment, transportation equipment and services, disposal of urban and industrial waste, remediation of soil contamination, and control of emissions.

Mining of metallic ores is expected to remain at its low levels because of ore depletion and will eventually cease altogether. The metals-processing industry, which is based primarily on imported stocks, is expected to continue to play an important role in Italy's economy. Italy is expected to remain a large producer of crude steel and a significant producer of secondary aluminum in the EU.

The industrial minerals quarrying industry and preparation plants were expected to remain significant, especially in the production of barite, cement, clays, fluorspar, marble, and talc. Italy was expected to continue to be the world's leading producer of feldspar, feldspathic minerals, and pumice. The ceramics sector was expected to be important, particularly regarding exports.

Domestic outputs of natural gas, crude petroleum, and petroleum refinery products were expected to grow, although Italy will continue to depend on imported coal, gas, and petroleum for most of its needs.

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Oil & Gas Journal, 2000, Italian gas decontrol: Oil & Gas Journal, v. 98, no. 8, January 21, p. 25.

Major Sources of Information

Associazione Mineraria Italiana
Via delle Madonne, 20
00197 Rome, Italy
Ministero dell'Industria del Commercio e dell'Artigianato
Direzione Generale delle Minire
Via Molise, 2
00184 Rome, Italy

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

(Metric tons unless otherwise specified)

Commodity	1995	1996	1997	1998	1999 e/
METALS					
Aluminum:					
Bauxite, gross weight	11,200	--	--	--	--
Alumina, calcined basis e/	857,000 r/	881,000 r/	913,000 r/	930,000 r/	973,000
Metal:					
Primary	197,750	184,377	187,719	186,953	187,281 3/
Secondary	412,300	376,600	442,900	502,600	501,800 3/
Antimony, oxides, gross weight 4/	757	800	800	700 e/	600
Bismuth metal e/	5	5	5	5	5
Cadmium metal, smelter	308	296	287	328	360 3/
Copper, metal, refined, all kinds e/	98,000	85,800	85,700	29,100	28,500 3/
Gold, Au content kilograms	--	--	--	1,200	1,000
Iron and steel, metal:					
Pig iron thousand tons	11,684	10,427	11,348	10,704	10,509 3/
Ferroalloys:					
Electric furnace:					
Ferrosilicon	51,017	29,915	11,295	11,487	12,000
Ferromanganese	20,216	25,143	16,000	16,000	16,000
Ferrosilicon e/	--	11,741 3/	12,000	12,000	12,000
Silicomanganese	103,961	100,353	100,000	100,000	100,000
Silicon metal	15,006	14,240	15,000	15,000	15,000
Other e/	10,000	10,000	10,000	10,000	10,000
Total e/	200,000	191,000	164,000	164,000	165,000
Steel, crude thousand tons	27,766	23,922	25,537	25,826	24,964 3/
Semimanufactures do.	22,000 e/	23,048	23,146	22,648	22,000
Lead:					
Mine output, Pb content	15,142	14,070	11,792	6,800	6,000
Metal, refined:					
Primary	84,900 e/	65,900	65,700	57,400	66,954 3/
Secondary	95,500 e/	143,900	145,900	141,900	148,354 3/
Total	180,000 e/	209,800	211,600	199,300	215,308 3/
Manganese, mine output, Mn content	1,625	1,450	1,590	1,440 e/	1,200
Silver metal kilograms	13,900	9,100 e/	4,500	2,500	2,000
Zinc:					
Mine output, Zn content	24,500 e/	11,055	8,470	2,459	--
Metal, primary	259,600	269,000	268,300	231,600	145,318 3/
INDUSTRIAL MINERALS					
Barite	44,000	80,463	26,300	36,000 e/	30,000
Bromine e/	300	300	300	300	300
Cement, hydraulic thousand tons	33,715	33,327	33,721	35,000	34,000
Clays, crude:					
Bentonite do.	591	475	513	592	600
Refractory excluding kaolinitic earth e/ do.	730	784 3/	750	750	700
Fuller's earth do.	34	26	30 e/	30 e/	30
Kaolin do.	88	126	100 e/	100 e/	100
Kaolinitic earth e/ do.	10	9 3/	10	10	10
Diatomite e/	25,000	25,000	25,000	25,000	25,000
Feldspar thousand tons	2,199	2,310	2,200 e/	2,748	2,700
Fluorspar:					
Acid-grade	91,529	103,527	105,800	92,000 e/	95,000
Metallurgical-grade	33,140	23,000	20,000	15,000 e/	15,000
Total	124,669	126,527	125,800	107,000 e/	110,000
Gypsum thousand tons	1,493	1,275	1,300 e/	1,300 e/	1,300
Lime, hydrated, hydraulic and quicklime e/ do.	3,500	3,500	3,500	3,500	3,500
Nitrogen, N content of ammonia do.	487	397	445	409	367 3/
Perlite e/	60,000	60,000	60,000	60,000	60,000
Pigments, mineral, iron oxides, natural e/	600	500	500	500	500
Pumice and related materials: e/					
Pumice and pumiceous lapilli thousand tons	650	600	600	600	600
Pozzolan do.	4,000	4,000	4,000	4,000	4,000
Salt:					
Marine, crude e/ 5/ do.	600	600	600	600	600
Rock and brine do.	2,952	2,941	3,500	3,300 e/	3,200

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	1995	1996	1997	1998	1999 e/
INDUSTRIAL MINERALS--Continued					
Sand and gravel: e/					
Volcanic sand thousand tons	100	100	100	100	100
Silica sand do.	3,000	2,950	3,000	3,000	3,000
Other sand and gravel	87,000	90,000	100,000	100,000	100,000
Sodium compounds: e/					
Soda ash thousand tons	1,070	1,100	1,000	1,000	1,000
Sodium sulfate do.	125	125	125	125	125
Stone: e/ 6/					
Calcareous:					
Alabaster do.	25	25	25	25	25
Marble in blocks:					
White do.	100	103	100	100	100
Colored do.	3,000	3,000	3,000	3,000	3,000
Travertine do.	2,000	2,610	2,500	2,500	2,500
Other:					
Granite do.	1,000	67	100	100	100
Sandstone do.	1,800	1,800	1,800	1,800	1,800
Slate do.	120	107	100	100	100
Crushed and broken:					
Dolomite do.	700	780	760	711 3/	700
Limestone do.	120,000	120,000	120,000	120,000	120,000
Marl for cement do.	14,000	14,000	15,000	15,000	1,500
Serpentine do.	1,400	1,662	1,500	1,500	1,500
Quartz and quartzite do.	250	29	30	30	30
Sulfur, recovered as elemental, in compounds, byproducts, and other sources e/ do.	530	551	609	624	678 3/
Talc and related materials e/	136,000 3/	136,000	142,000	138,000	14,000
MINERAL FUELS AND RELATED MATERIALS					
Asphalt and bituminous rock, natural	31,620	29,646	30,000 e/	30,000 e/	30,000
Coal:					
Lignite thousand tons	352	223	203	84	60
Subbituminous, Sulcis coal	--	4,787	2,800	10 e/	5
Coke, metallurgical thousand tons	5,000 e/	4,686	5,214	3,500 e/	3,500
Gas, natural million cubic meters	20,383	20,218	19,500 e/	19,000 e/	18,500
Natural gas liquids e/ thousand 42-gallon barrels	400	400	400	400	350
Petroleum:					
Crude do.	35,466	36,994	36,720 e/	38,700 e/	38,000
Refinery products:					
Liquefied petroleum gas do.	25,926	25,114	26,181	25,750	26,000
Gasoline do.	160,000 e/	160,000 e/	171,615	173,264	174,000
Naphtha do.	30,000 e/	30,000 e/	33,040	37,341	38,000
Jet fuel e/ do.	24,000	24,000	24,000	25,000	25,000
Kerosene e/ do.	35,000	35,000	35,000	30,000	30,000
Distillate fuel oil do.	220,000 e/	220,000 e/	256,833	271,910	260,000
Residual fuel oil do.	140,000 e/	140,000 e/	112,180	114,226	115,000
Other e/ do.	35,000	35,000	35,000	36,000	35,000
Refinery fuel and losses e/ do.	2,000	2,000	1,800	1,700	1,600
Total e/ do.	672,000	671,000	696,000	715,000	705,000

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

1/ Table includes data available through December 2000.

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

3/ Reported figure.

4/ Antimony content is 83% of gross weight.

5/ Does not include production from Sardinia and Sicily, which was estimated to be 200,000 metric tons per year.

6/ Output of limestone and serpentine for dimension stone is included with "Stone: Crushed and broken." In addition to the commodities listed, a variety of other dimension stone was produced and previously listed, but available general information was inadequate for continued reliable estimation of output levels.

TABLE 2
ITALY: 1998 BALANCE OF PAYMENTS, SELECTED MINERAL COMMODITIES

(Thousand dollars)

Mineral commodity	Exports to EU	Imports from EU	Net gain or (loss)	Exports to the world	Imports from the world	Net gain or (loss)
Crude industrial minerals:						
Cement, hydraulic	48,676	57,596	(8,920)	128,174	73,384	54,790
Clays, crude	16,724	78,521	(61,797)	20,958	134,250	(113,292)
Feldspar	4,101	3,748	353	5,351	31,716	(26,365)
Granite, sandstone etc.	68,674	64,779	3,895	220,237	453,047	(232,810)
Salt and brine	9,389	29,334	(19,945)	10,713	34,384	(23,671)
Steatite, natural, talc	14,357	13,606	751	18,222	17,903	319
Other	6,152	18,324	(12,172)	23,185	30,259	(7,074)
Total	168,073	265,908	(97,835)	426,840	774,943	(348,103)
Metalliferous ores:						
Copper	--	266	(266)	--	293	(293)
Lead	--	9,793	(9,793)	841	42,736	(41,895)
Tin	--	189	(189)	--	189	(189)
Zinc	6,124	29,634	(23,510)	6,124	142,796	(136,672)
Other (including waste and scrap)	5,513	25,332	(19,819)	14,464	60,268	(45,804)
Total	11,637	65,214	(53,577)	21,429	246,282	(224,853)
Metals:						
Aluminium	912,011	1,812,465	(900,454)	1,322,379	2,619,045	(1,296,666)
Iron and steel 1/	7,885,955	7,431,077	454,878	12,618,075	11,401,671	1,216,404
Lead	10,495	34,458	(23,963)	15,294	59,021	(43,727)
Mercury	13	140	(127)	44	145	(101)
Other nonferrous metals	899,064	2,170,915	(1,271,851)	1,322,756	7,503,456	(6,180,700)
Total	9,707,538	11,449,055	(1,741,517)	15,278,548	21,583,338	(6,304,790)
Mineral fuels	975,105	1,385,962	(410,857)	2,713,777	12,112,916	(9,399,139)

-- Zero.

1/ Includes ferroalloys and silicon metal.

Source: United Nations Statistical Office (microfiche).

TABLE 3
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS			
Alkali and alkaline-earth metals:			
Alkali metals	619	--	Germany 217; Japan 98; Slovenia 38.
Alkaline-earth metals	250	--	France 91; Turkey 41; Malaysia 23.
Aluminium:			
Ore and concentrate	4,312	--	Morocco 1,575; France 917; Venezuela 744.
Oxides and hydroxides	500,193	18	Slovakia 187,268; Slovenia 139,808; Russia 67,212.
Ash and residue	12,898	--	Norway 12,143; Spain 497; Germany 205.
Metal including alloys:			
Scrap	12,469	(2/)	Germany 6,645; France 3,403; Greece 694.
Unwrought	35,702	24	Germany 9,318; France 9,002; Spain 7,636.
Semimanufactures	35,645	6,010	Germany 87,704; France 57,422; Spain 33,208.
Antimony:			
Oxides	77	--	France 60; Germany 6; Belgium-Luxembourg 3.
Metal including alloys, all forms	value, thousands	\$9	France \$7; Czech Republic \$2.
Arsenic, metal including alloys, all forms	14	--	Egypt 12; Yugoslavia 2.
Beryllium, metal including alloys, all forms	value, thousands	\$67	Germany \$39; Turkey \$21; France \$4.
Bismuth, metal including alloys, all forms	do.	\$140	United Kingdom \$76; Germany \$13; Switzerland \$6.
Cadmium, metal including alloys, all forms	212	--	Netherlands 96; Belgium-Luxembourg 91; United Kingdom 22.
Chromium:			
Ore and concentrate	2,228	--	Austria 629; France 385; Bosnia and Herzegovina 249.
Metal including alloys, all forms	260	--	Algeria 100; Kenya 81; Romania 31.

See footnotes at end of table.

TABLE 3--Continued
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS--Continued			
Cobalt:			
Ore and concentrate	8	--	All to Slovenia.
Oxides and hydroxides	77	--	Germany 52; Spain 14; United Kingdom 6.
Metal including alloys, all forms	75	(2/)	Germany 24; United Kingdom 17; France 11.
Copper:			
Matte and speiss including cement copper	1,115	--	Belgium-Luxembourg 1,110; France 4.
Oxides and hydroxides	1,769	--	Germany 1,182; Belgium-Luxembourg 216; Netherlands 135.
Ash and residue	19,901	--	Germany 11,178; Spain 8,267; Austria 267.
Metal including alloys:			
Scrap	50,519	106	Germany 23,636; Sweden 6,349; Spain 5,617.
Unwrought	17,874	143	Spain 4,536; France 4,340; Germany 1,951.
Semimanufactures	264,679	5,290	Germany 60,066; Spain 46,984; France 45,640.
Germanium, metal including alloys, all forms	value, thousands \$124	--	All to Canada.
Gold:			
Waste and sweepings	do. \$155	\$55	Switzerland \$57; Germany \$33; Libya \$5.
Metal including alloys, unwrought and partly wrought	do. \$122,888	\$2,490	United Kingdom \$36,146; Switzerland \$18,598; unspecified \$28,189.
Iron and steel:			
Ore and concentrate:			
Including roasted pyrite	48,865	--	Israel 20,630; Greece 13,363; France 9,984.
Excluding roasted pyrite	62	--	Greece 37; Turkey 24; Germany 1.
Pyrite, roasted	48,802	--	Israel 20,630; Greece 13,326; France 9,984.
Metal:			
Scrap	33,218	1	France 12,680; Slovenia 6,795; Germany 3,582.
Pig iron, cast iron, related materials	52,549	727	Belgium-Luxembourg 9,042; Austria 7,627; Germany 7,208.
Ferroalloys:			
Ferromanganese	1,781	--	Slovenia 1,262; France 148; Spain 141.
Ferromanganese	13,465	5,167	Canada 2,967; Slovenia 2,022; Austria 867.
Ferromolybdenum	303	--	Spain 231; Germany 42; Netherlands 25.
Ferronickel	39	--	France 22; Germany 14; Iran 3.
Ferrosilichromium	57	--	Germany 44; France 12; Slovenia 1.
Ferrosilicomanganese	5,361	873	Spain 1,320; Germany 1,048; France 1,041.
Ferrosilicon	2,427	--	Austria 522; France 488; Germany 407.
Ferrotitanium and ferrosilicotitanium	73	--	Germany 55; France 17; Romania 1.
Ferrotungsten and ferrosilicotungsten	2	--	All to Belgium-Luxembourg.
Ferrovandium	269	--	Spain 256; Germany 8; France 5.
Silicon metal	2,366	14	Germany 1,149; Austria 385; Belgium-Luxembourg 291.
Unspecified	321	--	France 109; Slovakia 41; Macedonia 33.
Steel, primary forms	184,331	9,352	Belgium-Luxembourg 50,940; France 36,260; Germany 27,725.
Semimanufactures:			
Flat-rolled products:			
Of iron or nonalloy steel:			
Not clad, plated, coated	thousand tons 2,126	210	France 515; Greece 366; Spain 347.
Clad, plated, coated	840,613	43,827	France 204,249; Germany 129,308; Spain 106,621.
Of alloy steel	557,950	66,599	Germany 80,555; France 67,524; Spain 48,371.
Bars, rods, angles, shapes, sections	thousand tons 3,424	114	Germany 1,053; France 573; Greece 258.
Rails and accessories	8,852	99	Netherlands 2,369; Turkey 1,240; Portugal 825.
Wire	389,080	16,834	France 87,505; Austria 51,369; Germany 46,637.
Tubes, pipes, fittings	thousand tons 2,542	78	Germany 483; France 394; United Kingdom 167.
Lead:			
Ore and concentrate	4,850	--	All to Yugoslavia.
Oxides	5,627	80	Spain 1,552; Russia 657; Egypt 640.
Ash and residue	10,402	--	All to Belgium-Luxembourg.
Metal including alloys:			
Scrap	1,423	--	France 1,359; Germany 61; Croatia 1.
Unwrought	21,132	49	Turkey 6,071; Austria 5,770; United Kingdom 3,539.
Semimanufactures	1,010	49	France 448; Germany 270; Croatia 46.
Lithium oxides and hydroxides	34	--	Turkey 18; Morocco 8; Nigeria 5.
Magnesium, metal including alloys:			
Scrap	2,648	35	Norway 2,064; United Kingdom 296; Germany 137.
Unwrought	802	33	France 252; United Kingdom 154; Germany 119.

See footnotes at end of table.

TABLE 3--Continued
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS--Continued			
Magnesium, metal including alloys--Continued:			
Semimanufactures	2,396	114	France 688; Belgium-Luxembourg 328; Turkey 300.
Manganese:			
Ore and concentrate	1,627	--	France 1,586; Yugoslavia 23; Ireland 13.
Oxides	250	--	Yugoslavia 163; Morocco 26; Spain 26.
Metal including alloys, all forms	103	--	Trukey 50; Croatia 8; Hungary 7.
Mercury	12	--	Croatia 8; Bermuda 2; Czech Republic 1.
Molybdenum:			
Ore and concentrate:			
Roasted	value, thousands	\$3	-- All to Germany.
Unroasted		5	-- Spain 3; Belgium-Luxembourg 1; Nigeria 1.
Metal including alloys:			
Unwrought		147	-- Germany 146; Portugal 1.
Semimanufactures	value, thousands	\$893	\$58 Spain \$466; France \$70; Netherlands \$58.
Nickel:			
Matte and speiss	do.	\$59	-- Switzerland \$30; Hungary \$25; France \$1.
Oxides and hydroxides	do.	\$19	-- Slovenia \$18; France \$1.
Metal including alloys:			
Scrap		1,162	136 Germany 484; France 263; United Kingdom 152.
Unwrought		2,985	39 Netherlands 1,537; Spain 690; Sweden 523.
Semimanufactures		1,613	112 France 192; Brazil 182; India 176.
Platinum-group metals:			
Waste and sweepings	value, thousands	\$4,519	\$1,038 Netherlands \$1,483; Germany \$623; Spain \$535.
Metal including alloys, unwrought and partly wrought:			
Palladium	do.	\$22,381	\$16,044 United Kingdom \$1,929; Belgium-Luxembourg \$1,506; France \$1,056.
Platinum	do.	\$9,258	\$3,957 France \$1,966; United Kingdom \$1,547; Switzerland \$797.
Rhodium	do.	\$263	\$81 Portugal \$63; Switzerland \$43; United Kingdom \$33.
Iridium, osmium, ruthenium	do.	\$227	\$120 Germany \$82; Congo (Brazzaville) \$9; Nigeria \$9.
Rare-earth, metals including alloys, all forms		31	-- Slovenia 23; Yugoslavia 7.
Silicon, high-purity		553	368 Japan 67; Malaysia 44; France 30.
Silver:			
Ore and concentrate	value, thousands	\$29	-- All to Greece.
Metal including alloys, unwrought and partly wrought	do.	\$86,064	\$301 Germany \$21,943; Spain \$19,734; Switzerland \$17,496.
Tantalum, metal including alloys, all forms	do.	\$251	-- China \$81; Netherlands \$40; France \$25.
Tin, metal including alloys:			
Scrap		243	-- Netherlands 139; Belgium-Luxembourg 70; United Arab Emirates 15.
Unwrought		543	-- Spain 354; United Kingdom 61; Romania 42.
Semimanufactures		340	-- Malta 62; United Arab Emirates 43; Greece 28.
Titanium:			
Ore and concentrate		47	-- Yugoslavia 24; Turkey 10; India 6.
Oxides		27,830	1,233 Canada 11,713; Japan 5,066; United Kingdom 2,672.
Metal including alloys, all forms		4,595	1,138 Germany 1,140; United Kingdom 335; France 310.
Tungsten:			
Ore and concentrate		5	-- Spain 4; Switzerland 1.
Metal including alloys:			
Unwrought		10	5 Belgium-Luxembourg 2; United Kingdom 2; Mexico 1.
Semimanufactures	value, thousands	\$787	\$1 Germany \$170; France \$91; Slovenia \$56.
Uranium and thorium:			
Ore and concentrate	do.	\$5	-- All to Spain.
Metal including all forms:			
Uranium	do.	\$10	\$10
Thorium	do.	\$3	-- Brazil \$2; Seychelles \$1.
Vanadium:			
Oxides and hydroxides		59	-- Belgium-Luxembourg 36; Germany 23.
Ash and residue		1,735	1,735
Zinc:			
Ore and concentrate		24,546	-- Belgium-Luxembourg 9,009; Germany 8,926; Spain 6,610.
Oxides		17,697	2 Germany 8,189; Spain 4,462; France 3,277.
Blue powder		1,268	19 Belgium-Luxembourg 1,161; Brazil 37; France 27.
Ash and residue		16,562	-- Spain 5,035; Netherlands 3,006; Germany 2,398.

See footnotes at end of table.

TABLE 3--Continued
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
METALS--Continued			
Zinc--Continued:			
Metal including alloys:			
Scrap	6,915	82	China 1,354; France 1,071; unspecified Asia 2,446.
Unwrought	19,471	4	France 5,532; Slovenia 3,684; Tunisia 3,486.
Semimanufactures	2,239	270	Germany 942; Austria 91; Slovenia 84.
Zirconium:			
Ore and concentrate	20,831	1,839	Turkey 7,971; Hungary 2,196; Egypt 1,975.
Metal including alloys, semimanufactures	153	--	Iran 58; Turkey 41; Czech Republic 21.
Other:			
Oxides and hydroxides	976	(2/)	Malta 366; Spain 159; Poland 63.
Ashes and residues	73,264	1,757	Spain 20,044; Germany 16,634; Norway 12,343.
Base metals including alloys, all forms	value, thousands \$358	\$181	Germany \$80; Austria \$51; United Kingdom \$37.
Metalloids	21	--	All to Poland.
Precious metals, n.e.s.:			
Ores and concentrates	kilograms 19,000	--	All to Switzerland.
Waste and scrap	value, thousands \$2,481	\$17	Germany \$1,539; Norway \$345; Switzerland \$255.
INDUSTRIAL MINERALS			
Abrasives, n.e.s.:			
Natural, corundum, emery, pumice, etc.	50,281	3,164	United Kingdom 23,858; Germany 11,321; Poland 5,302.
Artificial:			
Corundum	33,424	1,805	Austria 8,291; Germany 7,294; France 4,718.
Silicon carbide	2,508	--	France 1,559; Germany 406; Iran 149.
Dust and powder of precious and semiprecious stones			
including diamonds	value, thousands \$1,202	\$87	United Kingdom \$475; Spain \$181; Iran \$120.
Grinding and polishing wheels and stones	43,251	1,115	France 4,262; Spain 3,330; Saudi Arabia 3,238.
Asbestos, crude	7	--	All to Austria.
Barite and witherite	1,876	--	Germany 879; Malta 660; Switzerland 129.
Boron, crude natural borates	13,505	--	France 12,460; Germany 363; Slovakia 344.
Cement	thousand tons 2,652	690	Albania 436; Portugal 198; France 165.
Chalk	10,262	--	Switzerland 9,283; Jordan 611; Israel 120.
Clays, crude:			
Bentonite	200,241	16	Germany 58,372; France 54,315; Spain 45,510.
Chamotte earth and dinas earth	13,844	--	Germany 7,101; France 4,068; Switzerland 653.
Fire clay	887	28	Egypt 690; Bulgaria 76; Germany 21.
Fuller's earth	389	--	Germany 265; Croatia 49; France 47.
Kaolin	56,878	63	France 34,146; Austria 16,126; Tunisia 1,614.
Other	6,849	--	Tunisia 3,663; Slovenia 1,759; Switzerland 323.
Cryolite and chiolite	14	--	Brazil 11; Lebanon 3.
Diamond, natural:			
Gem, not set or strung	value, thousands \$9,450	\$593	United Kingdom \$2,104; Belgium-Luxembourg \$1,749; Israel \$1,113.
Industrial stones	do. \$695	\$41	Belgium-Luxembourg \$531; Russia \$47; France \$39.
Dust and powder	do. \$1,120	\$87	United Kingdom \$475; Spain \$181; Iran \$93.
Diatomite and other infusorial earth	1,129	98	Switzerland 163; Hungary 130; Ukraine 123.
Feldspar	89,042	--	Spain 61,700; Germany 7,576; Bulgaria 3,300.
Fertilizer materials:			
Crude, n.e.s.			
Manufactured:			
Ammonia	500	--	Slovenia 252; Ireland 134; Switzerland 27.
Nitrogenous	569,209	2	Turkey 140,070; Spain 62,133; Greece 59,704.
Phosphatic	815	--	Croatia 414; Syria 200; Cyprus 65.
Potassic	38,091	--	France 35,832; Greece 947; Albania 542.
Unspecified and mixed	38,686	227	France 7,210; Kenya 6,804; Greece 6,390.
Fluorspar	1,472	--	Yugoslavia 1,031; Brazil 214; Switzerland 167.
Graphite, natural	234	--	Spain 58; India 42; Germany 35.
Gypsum and plaster	122,980	39	Slovenia 44,264; Switzerland 24,280; Austria 19,582.
Iodine	17	--	Croatia 14; France 1; Israel 1.
Kyanite and related materials:			
Mullite	419	--	China 359; Spain 22; France 20.
Unspecified	68	--	All to United Kingdom.
Lime	33,959	(2/)	France 21,340; Switzerland 5,685; Slovenia 2,164.

See footnotes at end of table.

TABLE 3--Continued
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
INDUSTRIAL MINERALS--Continued			
Magnesium compounds:			
Magnesite, crude	7,393	18	South Africa 1,127; Germany 1,075; Croatia 1,000.
Oxides and hydroxides	54,927	55	Spain 12,632; Germany 10,471; Austria 7,759.
Other	882	--	Greece 857; Portugal 13; France 5.
Mica:			
Crude including splittings and waste	374	--	Germany 156; Malta 56; Greece 24.
Worked including agglomerated splittings	177	--	Germany 135; United Kingdom 12; Belgium-Luxembourg 8.
Nitrates, crude	120	--	Slovenia 34; Egypt 23; Yugoslavia 18.
Phosphates, crude	2,391	--	France 1,222; Libya 1,002; Slovenia 49.
Pigments, mineral:			
Natural, crude	83	--	Malaysia 42; Togo 14; Algeria 10.
Iron oxides and hydroxides, processed	25,055	1,940	Germany 8,266; United Kingdom 3,693; France 1,632.
Potassium salts, crude	3	--	All to Slovenia.
Precious and semiprecious stones other than diamond:			
Natural	value, thousands	\$8,878	\$1,226 United Kingdom \$1,875; Spain \$1,317; Germany \$898.
Synthetic	do.	\$6,263	\$93 Switzerland \$3,643; France \$1,158; Spain \$430.
Pyrite, unroasted		9,237	414 Germany 2,068; Australia 1,504; Austria 923.
Quartz crystal, piezoelectric	value, thousands	\$1,147	\$4 Germany \$274; France \$186; United Kingdom \$116.
Salt and brine		265,377	536 Sweden 83,649; Netherlands 58,294; Greece 55,951.
Sodium compounds, n.e.s.:			
Soda ash, manufactured		22,093	-- Spain 11,936; Israel 4,965; Greece 2,036.
Sulfate, manufactured		956	-- Yugoslavia 483; Slovenia 246; Slovakia 73.
Stone, sand and gravel:			
Dimension stone:			
Crude and partly worked		854,309	14,566 Lebanon 128,177; Egypt 104,608; Germany 80,806.
Worked	thousand tons	2,659	367 Germany 611; Saudi Arabia 198; Hong Kong, China 144.
Dolomite, chiefly refractory-grade		57,950	172 France 38,430; Germany 7,131; Switzerland 2,013.
Gravel and crushed rock	thousand tons	1,362	2 Germany 335; Switzerland 224; Belgium-Luxembourg 147.
Limestone other than dimension		683	-- Slovenia 560; Israel 43; Switzerland 30.
Quartz and quartzite		18,015	20 France 9,157; Germany 2,330; Austria 592.
Sand other than metal-bearing		54,856	-- Switzerland 34,504; France 3,741; Germany 3,155.
Sulfur:			
Elemental:			
Crude including native and byproduct		50,375	2 Croatia 23,756; Egypt 18,300; Lebanon 7,500.
Colloidal, precipitated, sublimed		278	-- Croatia 184; Belgium-Luxembourg 48; Israel 36.
Dioxide		19,465	15 Austria 5,545; Spain 5,489; France 3,140.
Sulfuric acid		148,405	-- Turkey 53,251; Spain 49,206; Greece 15,171.
Talc, steatite, soapstone, pyrophyllite		80,228	141 Germany 41,987; Austria 6,780; Belgium-Luxembourg 6,663.
Vermiculite, perlite, chlorite		40,996	(2/) France 20,007; United Kingdom 19,209; Greece 1,051.
Other:			
Crude		34,009	1,035 Spain 6,955; Hong Kong, China 4,545; Indonesia 2,563.
Slag and dross, not metal-bearing:			
Granulated slag (slag sand) from iron and steel industry	thousand tons	2,175	272 Greece 376; Croatia 338; Turkey 267.
Waste, scale, dross, slag of iron or steel industry		16,492	-- Austria 8,638; Slovenia 5,012; France 2,728.
Slag and ash, n.e.s., including seaweed ash (kelp)		49,544	-- United Kingdom 25,565; France 17,758; Austria 1,368.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural		4,177	1 Switzerland 1,342; Romania 666; Bulgaria 265.
Carbon black		80,436	2 France 19,985; Turkey 16,934; Germany 16,104.
Coal:			
Anthracite		3,892	-- Croatia 2,575; Turkmenistan 372; France 355.
Bituminous		871	-- Malta 534; Croatia 280; Austria 55.
Briquets of anthracite and bituminous coal		44	-- Australia 40; France 2; Austria 1.
Lignite including briquets		42	-- Switzerland 26; Croatia 16.
All grades including briquets		7,736	70 Croatia 5,444; Malta 787; Turkmenistan 372.
Coke and semicoke		88,644	-- France 29,396; Spain 8,967; Greece 6,839.
Gas, manufactured	value, thousands	\$6	-- Eritrea \$3; Kenya \$3.
Gas, natural:			
Gaseous		33,138	-- All to Switzerland.
Liquefied		577	-- South Africa 515; Congo (Brazzaville) 50; India 9.

See footnotes at end of table.

TABLE 3--Continued
ITALY: EXPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
MINERAL FUELS AND RELATED MATERIALS--Continued			
Peat including briquets and litter	2,111	--	Switzerland 1,314; Slovenia 245; Croatia 132.
Petroleum:			
Crude thousand 42-gallon barrels	1,524	--	Spain 877; Germany 646; France 1.
Refinery products:			
Liquefied petroleum gas do.	2,757	160	Lebanon 422; France 348; Tunisia 320.
Mineral jelly and wax 42-gallon barrels	166,317	55	Netherlands 66,895; Germany 35,706; Slovenia 25,782.
Asphalt thousand 42-gallon barrels	1,691	--	France 316; Tunisia 266; Austria 200.
Bituminous mixtures 42-gallon barrels	24,185	--	Cuba 5,545; Poland 4,351; Austria 1,994.
Petroleum coke do.	780,872	--	Greece 386,785; Albania 77,685; Slovenia 71,035.
Unspecified thousand 42-gallon barrels	146,635	5,570	Spain 19,995; Tunisia 13,534; Brazil 12,111.

-- Zero.

1/ Table prepared by Glenn Wallace, International Data Unit.

2/ Less than 1/2 unit.

Source: United Nations Statistical Office (microfiche).

TABLE 4
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
METALS			
Alkali and alkaline-earth metals:			
Alkali metals	336	1	France 197; Germany 180; Ireland 103.
Alkaline-earth metals	347	4	Germany 168; Ireland 103; Netherlands 37.
Aluminum:			
Ore and concentrate thousand tons	2,132	3	Australia 1,773; Guinea 230; China 69.
Oxides and hydroxides	306,854	883	France 155,581; Germany 60,212; Australia 24,325.
Ash and residue	21,020	--	Australia 16,237; Switzerland 1,887; Slovenia 978.
Metal including alloys:			
Scrap	360,129	1,669	Germany 154,307; France 55,334; Switzerland 37,904.
Unwrought	608,030	10	Netherlands 85,962; Romania 46,402; Germany 43,119.
Semimanufactures	456,594	4,326	Germany 142,228; United Kingdom 67,163; France 51,990.
Antimony:			
Oxides	4,543	122	France 1,458; China 1,342; Spain 474.
Metal including alloys, all forms	956	--	Netherlands 454; Turkey 129; China 108.
Arsenic, metal including alloys, all forms	102	(2/)	Netherlands 38; Germany 35; China 20.
Beryllium, metal including alloys, all forms value, thousands	\$322	\$294	United Kingdom \$20; Germany \$5; France \$3.
Bismuth, metal including alloys, all forms	150	--	United Kingdom 104; Belgium-Luxembourg 23; Netherlands 12.
Cadmium, metal including alloys, all forms	22	--	Peru 10; Finland 9; Japan 2.
Chromium:			
Ore and concentrate	83,863	--	South Africa 51,602; Philippines 13,103; Turkey 9,450.
Oxides and hydroxides	3,970	14	Germany 1,293; United Kingdom 1,157; Poland 567.
Metal including alloys, all forms	617	1	France 251; United Kingdom 113; Netherlands 73.
Cobalt:			
Oxides and hydroxides	914	--	Finland 403; Russia 251; Belgium-Luxembourg 140.
Metal including alloys, all forms	595	19	Belgium-Luxembourg 196; United Kingdom 115; France 83.
Copper:			
Ore and concentrate	127	--	Germany 125; Congo (Brazzaville) 2.
Matte and speiss including cement copper	4	--	France 3; Netherlands 1.
Oxides and hydroxides	1,013	294	United Kingdom 282; Germany 169; Yugoslavia 50.
Sulfate	1,074	--	Austria 274; Germany 217; Spain 202.
Ash and residue	4,414	--	Albania 3,660; France 472; Spain 246.
Metal including alloys:			
Scrap	254,408	2,319	Germany 110,345; France 32,010; United Kingdom 25,033.

See footnotes at end of table.

TABLE 4--Continued
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
METALS--Continued			
Copper--Continued:			
Metal including alloys--Continued:			
Unwrought	591,920	941	Chile 274,075; Spain 45,279; Peru 44,395.
Semimanufactures	356,263	3,076	Germany 112,727; France 107,212; Spain 36,732.
Germanium, metal including alloys, all forms value, thousands	\$1,137	\$2	Belgium-Luxembourg \$889; Germany \$218; United Kingdom \$14.
Gold:			
Waste and sweepings do.	\$1,344	--	Switzerland \$1,240; France \$102; Germany \$1.
Metal including alloys, unwrought and partly wrought value, millions	\$4,118	\$79	Switzerland \$1,873; South Africa \$1,496; Australia \$240.
Iron and steel:			
Ore and concentrate:			
Excluding roasted pyrite thousand tons	15,718	338	Brazil 7,785; Mauritania 3,313; Canada 1,228.
Pyrite, roasted	27	27	
Metal:			
Scrap thousand tons	5,112	21	Germany 1,562; France 921; Ukraine 455.
Pig iron, cast iron, related materials do.	1,958	16	Ukraine 675,610; Russia 303,496; India 235,862.
Ferroalloys:			
Ferrochromium	259,358	15	South Africa 138,653; Zimbabwe 36,882; Albania 21,834.
Ferromanganese	68,274	280	France 21,418; South Africa 21,148; Spain 10,865.
Ferromolybdenum	5,735	--	United Kingdom 1,667; Austria 1,625; Netherlands 1,092.
Ferronickel	40,062	--	New Caledonia 11,327; France 8,390; Netherlands 6,682.
Ferroniobium	1,395	--	Netherlands 893; Germany 462; Sweden 26.
Ferrosilichromium	172	--	China 60; Netherlands 60; United Kingdom 25.
Ferrosilicomanganese	81,050	--	Romania 13,872; Macedonia 9,385; Spain 8,741.
Ferrosilicon	112,673	13	Norway 43,496; France 15,485; Macedonia 15,349.
Ferrotitanium and ferrosilicotitanium	3,296	20	United Kingdom 2,029; Germany 471; France 372.
Ferrotungsten and ferrosilicotungsten	146	--	Netherlands 94; Austria 46; United Kingdom 6.
Ferrovandium	1,296	--	Austria 769; Netherlands 291; Spain 75.
Silicon metal	33,609	60	Germany 12,505; France 5,706; Brazil 5,624.
Unspecified	16,523	194	Germany 5,659; France 3,156; Norway 2,081.
Steel, primary forms thousand tons	2,111	(2/)	Ukraine 734; Russia 397; Austria 170.
Semimanufactures:			
Flat-rolled products:			
Of iron or nonalloy steel:			
Not clad, plated, coated do.	7,716	9	France 1,343; Germany 906; Belgium-Luxembourg 609.
Clad, plated, coated do.	1,682	53	France 336; Belgium-Luxembourg 266; Germany 218.
Of alloy steel do.	1,443	3	France 407; Germany 270; Belgium-Luxembourg 147.
Bars, rods, angles, shapes, sections do.	1,842	(2/)	Germany 435; France 303; United Kingdom 211.
Rails and accessories	16,249	--	France 5,693; Belgium-Luxembourg 4,460; Germany 1,941.
Wire	162,101	129	Belgium-Luxembourg 39,528; France 16,954; Russia 16,750.
Tubes, pipes, fittings	796,578	17,654	Germany 169,343; France 98,036; Ukraine 76,799.
Lead:			
Ore and concentrate	97,969	15,182	Peru 21,473; South Africa 15,199; Greece 11,160.
Oxides	1,156	(2/)	Netherlands 385; United Kingdom 332; Portugal 226.
Metal including alloys:			
Scrap	2,843	7	Switzerland 468; Nigeria 322; United Arab Emirates 271.
Unwrought	82,108	--	France 20,185; Bulgaria 11,938; United Kingdom 9,815.
Semimanufactures	6,532	2	Belgium-Luxembourg 3,426; Germany 2,683; France 223.
Lithium oxides and hydroxides	278	33	China 71; Netherlands 70; Russia 38.
Magnesium, metal including alloys:			
Scrap	288	--	Germany 228; Norway 29; Switzerland 20.
Unwrought	12,257	(2/)	Netherlands 5,779; Denmark 1,841; Yugoslavia 1,317.
Semimanufactures	971	2	France 483; Netherlands 272; Austria 70.
Manganese:			
Ore and concentrate	283,914	--	Gabon 168,487; South Africa 59,323; Brazil 34,638.
Oxides	1,840	69	Belgium-Luxembourg 685; Netherlands 369; India 142.
Metal including alloys, all forms	2,791	35	Spain 589; United Kingdom 520; Netherlands 518.
Mercury	12	--	Austria 4; United Kingdom 4; Spain 3.
Molybdenum:			
Oxides and hydroxides	94	--	Germany 42; Chile 28; Canada 12.

See footnotes at end of table.

TABLE 4--Continued
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
METALS--Continued			
Molybdenum--Continued:			
Ore and concentrate:			
Roasted	4,558	633	Chile 1,324; Netherlands 1,040; United Kingdom 881.
Unroasted	71	28	Austria 35; Germany 3; Netherlands 3.
Metal including alloys:			
Unwrought	32	(2/)	Netherlands 25; Germany 5; United Kingdom 2.
Semimanufactures	141	4	Austria 88; Netherlands 26; Germany 13.
Nickel:			
Matte and speiss	171	--	Russia 170; Slovenia 1.
Oxides and hydroxides	90	--	Netherlands 78; United Kingdom 7; Finland 4.
Metal including alloys:			
Scrap	1,808	87	Netherlands 580; France 391; Germany 313.
Unwrought	47,527	266	Netherlands 15,683; Canada 7,963; Russia 4,255.
Semimanufactures	5,036	636	Germany 1,180; United Kingdom 1,086; Sweden 734.
Platinum-group metals:			
Waste and sweepings	value, thousands \$3,806	--	France \$1,995; United Kingdom \$1,290; Spain \$520.
Metal including alloys, unwrought and partly wrought:			
Palladium	do. \$234,138	\$189,813	Russia \$18,204; Germany \$8,295; United Kingdom \$5,737.
Platinum	do. \$80,829	\$38,233	Switzerland \$13,257; South Africa \$7,471; Russia \$4,486.
Rhodium	do. \$44,553	\$32,718	France \$4,831; United Kingdom \$2,475; South Africa \$2,174.
Iridium, osmium, ruthenium	do. \$2,346	\$1,969	United Kingdom \$328; France \$44; Austria \$4.
Rare-earth, metals including alloys, all forms	8	--	Austria 5; Germany 1; Netherlands 1.
Selenium, elemental	28	--	Netherlands 11; Germany 6; United Kingdom 4.
Silicon, high-purity	287	10	Germany 189; France 56; Netherlands 30.
Silver, metal including alloys, unwrought and partly wrought	value, thousands \$197,632	\$2,863	Germany \$98,923; France \$12,810; United Kingdom \$12,650.
Tantalum, metal including alloys, all forms	do. \$820	\$193	Austria \$381; Germany \$106; United Kingdom \$95.
Tin:			
Ore and concentrate	6	--	Belgium-Luxembourg 4; United Kingdom 2.
Metal including alloys:			
Scrap	73	--	Belgium-Luxembourg 40; Switzerland 21; United Kingdom 10.
Unwrought	6,771	120	Malaysia 2,185; Indonesia 1,160; Netherlands 938.
Semimanufactures	1,474	8	France 697; Germany 522; United Kingdom 81.
Titanium:			
Ore and concentrate	5,145	--	South Africa 3,069; United Kingdom 1,149; Australia 264.
Oxides	23,176	39	Czech Republic 3,373; Germany 3,048; Slovenia 2,680.
Metal including alloys, all forms	6,254	710	Germany 1,780; Russia 1,642; Canada 758.
Tungsten:			
Ore and concentrate	4	--	Germany 3; France 1.
Metal including alloys:			
Unwrought	201	10	Israel 76; China 53; Austria 32.
Semimanufactures	77	11	Germany 40; Austria 10; France 4.
Uranium and thorium:			
Ore and concentrate	value, thousands \$3	\$3	
Oxides and other compounds	do. \$5	\$2	United Kingdom \$3.
Metal including all forms:			
Uranium	do. \$38	\$37	Austria \$1.
Thorium	do. \$9	\$8	Do.
Vanadium:			
Oxides and hydroxides	448	197	United Kingdom 127; South Africa 111; Germany 13.
Metal including alloys, all forms	value, thousands \$10	\$6	Germany \$3; United Kingdom \$1.
Zinc:			
Ore and concentrate	495,111	55,196	Ireland 78,901; Australia 67,771; Peru 63,671.
Oxides	19,325	5	France 3,381; China 2,941; Germany 2,365.
Blue powder	3,545	58	Belgium-Luxembourg 1,369; Germany 995; Sweden 854.
Ash and residue	19,577	--	France 7,557; Germany 3,360; Saudi Arabia 1,168.
Metal including alloys:			
Scrap	17,571	--	Germany 9,626; France 4,424; Switzerland 1,035.
Unwrought	189,136	--	Kazakhstan 36,178; Belgium-Luxembourg 26,405; Macedonia 17,750.
Semimanufactures	12,387	202	United Kingdom 3,528; Germany 3,457; France 3,049.

See footnotes at end of table.

TABLE 4--Continued
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
METALS--Continued			
Zirconium:			
Ore and concentrate	144,636	10,377	Australia 65,190; South Africa 55,728; China 2,477.
Metal including alloys, semimanufactures	23	4	Germany 10; Hungary 6; Belgium-Luxembourg 2.
Other:			
Ores and concentrates	4,366	--	Germany 3,041; Austria 939; France 386.
Oxides and hydroxides	963	8	Germany 389; Turkey 154; Belgium-Luxembourg 118.
Ashes and residues	93,126	72	Canada 86,874; France 2,662; Netherlands 2,194.
Base metals including alloys, all forms	30	1	Germany 14; Poland 5; Switzerland 5.
Metalloids	14	(2/)	Philippines 12; Germany 1.
Precious metals, n.e.s.:			
Ores and concentrates kilograms	93	--	Germany 68; unspecified 25.
Waste and scrap value, thousands	\$66,062	\$43,209	France \$7,658; Switzerland \$7,235; Canada \$1,671.
INDUSTRIAL MINERALS			
Abrasives, n.e.s.:			
Natural, corundum, emery, pumice, etc.	16,153	111	Turkey 6,856; Greece 4,129; China 2,943.
Artificial:			
Corundum	49,284	1,006	China 10,817; Austria 9,972; Ukraine 8,443.
Silicon carbide	32,091	168	Denmark 7,142; Romania 6,539; Germany 3,827.
Dust and powder of precious and semiprecious stones including diamonds value, thousands	\$79,219	\$3,096	Switzerland \$52,076; Ireland \$12,008; Belgium-Luxembourg \$7,833.
Grinding and polishing wheels and stones	7,759	64	Austria 1,709; Germany 1,147; Venezuela 1,068.
Asbestos, crude	192	--	All from Germany.
Barite and witherite	70,887	--	Bulgaria 44,248; Turkey 12,136; Spain 5,963.
Boron:			
Crude natural borates	121,322	--	Turkey 119,940; Spain 1,065; France 305.
Oxides and acids	7,969	45	Netherlands 3,665; Turkey 1,700; Chile 1,138.
Cement thousand tons	1,185	(2/)	Greece 618; France 154; Spain 73.
Chalk	5,694	54	France 5,465; Belgium-Luxembourg 75; Germany 65.
Clays, crude:			
Bentonite	79,538	4,019	Greece 20,548; Morocco 15,250; United Kingdom 13,316.
Chamotte earth and dinas earth	63,977	26	Germany 22,965; France 18,845; China 5,540.
Fire clay	730,131	4	Ukraine 555,463; Germany 117,393; France 37,626.
Fuller's earth	12,575	1,613	Spain 5,338; Germany 2,763; Malaysia 1,950.
Kaolin	930,913	172,880	United Kingdom 209,607; Germany 186,244; France 111,200.
Other thousand tons	1,854	4	Germany 1,208; Ukraine 342; France 196.
Cryolite and chiolite	7	--	Spain 6; Netherlands 1.
Diamond, natural:			
Gem, not set or strung value, thousands	\$321,247	\$7,933	Belgium-Luxembourg \$225,538; Israel \$24,848; India \$18,849.
Industrial stones do.	\$7,558	\$12	Belgium-Luxembourg \$6,026; Netherlands \$360; United Kingdom \$339.
Dust and powder do.	\$78,870	\$3,014	Switzerland \$52,076; Ireland \$12,005; Belgium-Luxembourg \$7,833.
Diatomite and other infusorial earth	9,722	603	France 4,927; Austria 2,088; Denmark 972.
Feldspar thousand tons	1,024	4	Turkey 950; France 23; Croatia 17.
Fertilizer materials:			
Crude, n.e.s.	33,186	15	Spain 15,807; France 7,532; Germany 3,935.
Manufactured:			
Ammonia	319,858	41	Ukraine 161,951; Russia 56,886; Turkey 26,724.
Nitrogenous thousand tons	1,417	(2/)	Libya 202; Austria 169; Ukraine 153.
Phosphatic	332,997	--	Lebanon 72,854; Israel 69,772; Tunisia 67,338.
Potassic	622,144	15,972	Israel 174,277; Germany 165,912; Canada 105,663.
Unspecified and mixed thousand tons	1,334	19	Tunisia 279; Belgium-Luxembourg 179; Morocco 139.
Fluorspar	106,303	--	China 55,558; Mexico 25,941; Morocco 11,415.
Graphite, natural	11,407	286	Germany 3,361; China 2,755; Austria 1,719.
Gypsum and plaster	19,455	2,836	Germany 10,673; France 3,436; United Kingdom 1,344.
Iodine	841	--	Japan 557; Belgium-Luxembourg 223; Netherlands 33.
Kyanite and related materials:			
Mullite	2,417	40	Germany 1,062; United Kingdom 668; Hungary 527.
Unspecified	68,324	1,948	Ukraine 53,750; South Africa 9,703; France 1,303.
Lime	16,033	--	Slovenia 8,178; United Kingdom 2,471; Austria 1,735.

See footnotes at end of table.

TABLE 4--Continued
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
INDUSTRIAL MINERALS--Continued			
Magnesium compounds:			
Magnesite, crude	31,542	--	Greece 11,782; Turkey 11,551; China 5,789.
Oxides and hydroxides	111,329	362	Greece 31,042; Austria 14,386; Turkey 13,980.
Other	3,844	--	Germany 3,840; Netherlands 4.
Mica:			
Crude including splittings and waste	2,450	92	France 710; Austria 498; United Kingdom 388.
Worked including agglomerated splittings	762	31	Belgium-Luxembourg 254; China 198; Switzerland 79.
Nitrates, crude	3,892	3	Chile 3,274; Germany 506; United Kingdom 66.
Phosphates, crude	167,485	--	Morocco 80,357; Syria 71,704; Algeria 22,499.
Phosphorus, elemental	4,400	(2/)	China 4,254; Germany 140; United Kingdom 5.
Pigments, mineral:			
Natural, crude	1,627	--	Austria 938; France 418; Germany 133.
Iron oxides and hydroxides, processed	36,632	278	Germany 11,596; Austria 5,958; Spain 3,314.
Precious and semiprecious stones other than diamond:			
Natural value, thousands	\$47,933	\$3,880	Thailand \$12,535; Germany \$9,566; India \$5,624.
Synthetic do.	\$9,093	\$594	Germany \$2,865; France \$938; Thailand \$920.
Pyrite, unroasted	18,791	71	Russia 18,619; Austria 52; Canada 22.
Quartz crystal, piezoelectric value, thousands	\$780	\$143	Germany \$470; Hong Kong, China \$64; Thailand \$39.
Salt and brine	656,656	55	France 403,991; Germany 84,656; Tunisia 72,609.
Sodium compounds, n.e.s., manufactured:			
Soda ash	224,277	--	Bulgaria 79,277; Turkey 63,950; Romania 34,868.
Sulfate	150,045	22	Spain 87,636; China 27,695; Austria 26,929.
Stone, sand, and gravel:			
Dimension stone:			
Crude and partly worked thousand tons	2,015	45	India 499; Brazil 389; Spain 195.
Worked	130,952	542	Argentina 26,954; China 21,455; Spain 12,031.
Dolomite, chiefly refractory-grade	4,669	--	Germany 3,454; Netherlands 1,015; Austria 137.
Gravel and crushed rock thousand tons	1,381	1	Croatia 1,193; France 86; Austria 72.
Limestone other than dimension	89,988	--	Slovenia 49,017; Croatia 38,000; Germany 2,531.
Quartz and quartzite	86,854	38	Switzerland 41,095; Spain 19,872; Germany 8,840.
Sand other than metal-bearing thousand tons	1,319	2	France 585; Egypt 234; Spain 187.
Sulfur:			
Elemental:			
Crude including native and byproduct	198,532	--	Saudi Arabia 50,402; Poland 43,691; Aruba 31,422.
Colloidal, precipitated, sublimed	2,317	--	Germany 1,617; France 398; India 173.
Dioxide	20	--	Greece 19; Germany 1.
Sulfuric acid	53,758	68	Spain 29,900; Switzerland 8,328; Slovenia 6,898.
Talc, steatite, soapstone, pyrophyllite	94,832	133	France 28,162; China 27,275; Austria 16,799.
Vermiculite, perlite, chlorite	65,323	46	Turkey 45,429; Greece 11,331; South Africa 5,196.
Other:			
Crude	127,066	2,259	Spain 46,825; China 21,249; Australia 14,028.
Slag and dross, not metal-bearing:			
Granulated slag (slag sand) from iron and steel industry	3,157	--	United Kingdom 1,860; Austria 1,296.
Waste, scale, dross, slag of iron or steel industry	4,366	--	Germany 3,041; Austria 939; France 386.
Slag and ash, n.e.s., including seaweed ash (kelp)	32,463	--	France 12,936; Austria 11,038; Germany 6,171.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	688,964	717	Venezuela 687,395; Germany 503; France 104.
Carbon black	64,792	3,476	France 17,466; Croatia 7,131; Spain 6,986.
Coal:			
Anthracite	197,665	3	Russia 157,459; Venezuela 21,773; Germany 11,587.
Bituminous thousand tons	12,347	4,551	Colombia 2,359; Australia 2,330; South Africa 1,702.
Briquets of anthracite and bituminous coal	1,556	--	France 1,194; Germany 332; Belgium-Luxembourg 24.
Lignite including briquets	12,029	138	Germany 10,397; Spain 930; France 430.
All grades including briquets thousand tons	15,676	4,694	South Africa 3,205; Colombia 2,974; Australia 2,330.
Coke and semicoke	556,074	--	China 303,232; Netherlands 62,639; Romania 40,096.
Gas, manufactured	15	(2/)	Germany 14; France 1.
Gas, natural, liquefied thousand tons	1,484	(2/)	Algeria 1,399; United Arab Emirates 84.
Peat including briquets and litter	526,755	702	Germany 279,517; Netherlands 71,839; Lithuania 55,427.

See footnotes at end of table.

TABLE 4--Continued
ITALY: IMPORTS OF MINERAL COMMODITIES IN 1998 1/

(Metric tons unless otherwise specified)

Commodity	Total	Sources	
		United States	Other (principal)
MINERAL FUELS AND RELATED MATERIALS--Continued			
Petroleum			
Crude	thousand 42-gallon barrels	634,108	35 Libya 193,442; Iran 92,794; Saudi Arabia 92,482.
Refinery products:			
Liquefied petroleum gas	thousand 42-gallon barrels	137,623	342 Algeria 10,741; France 3,097; Saudi Arabia 2,443.
Mineral jelly and wax	do.	9,992	12 Indonesia 9,414; Egypt 207; France 74.
Asphalt	42-gallon barrels	320,610	-- France 190,066; Spain 128,066; Germany 1,630.
Bitumen and other residues	thousand 42-gallon barrels	1,292	613 United Kingdom 709; France 190; Spain 129.
Bituminous mixtures	42-gallon barrels	17,495	145 United Kingdom 5,224; France 3,606; Netherlands 2,921.
Petroleum coke	thousand 42-gallon barrels	14,759	12,152 Venezuela 1,413; Aruba 356; Argentina 295.
Unspecified	do.	169,010	855 Libya 31,677; United Kingdom 29,691; Belgium-Luxembourg 8,767.

-- Zero.

1/ Table prepared by Glenn J. Wallace, International Data Unit.

2/ Less than 1/2 unit.

Source: United Nations Statistical Office (microfiche).

TABLE 5
ITALY: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners		Location of main facilities	Annual capacity
Alumina	Eurallumina S.p.A. (Comalco Ltd., 56.2%; Glencore AG, 43.8%)		Plant at Porto Vesme, Sardinia	950
Aluminum	Alcoa Italia S.p.A. (Aluminium Company of America, 100%)		Smelters at Porto Vesme, Sardinia, and Fusina, near Venice	188
Asbestos	Amiantifera di Balangero S.p.A.		Mine at Balangero, near Turin	100
Barite	Bariosarda S.p.A. (Ente Mineraria Sarda)		Mines at Barega and Mont'Ega, Sardinia	100
Do.	Edem S.p.A. (Government)		Mines at Val di Castello, Lucca	20
Do.	Edemsarda S.p.A. (Soc. Imprese Industriali)		Mines at Su Benatzu, Sto Stefano, and Peppixeddu, Sardinia	20
Do.	Mineraria Baritina S.p.A.		Mines at Marigolek, Monte Elto, and Primaluna, near Milan	20
Bauxite	Sardabauxiti S.p.A. (Cogein S.p.A., 40%; Comtec, 40%; Icofin Co., 20%)		Mine at Olmedo, Sardinia	350
Bentonite	Industria Chimica Carlo Laviosa S.p.A.		Mines and plant on Sardinia Island, and a plant near Pisa	250
Cement	52 companies, of which the largest are: Italcementi Fabbriche Riunite Cemento S.p.A.		28 plants, of which the largest are Calusco, Monselice, and Ccollefero	(15,000)
Do.	Unicem S.p.A.		12 plants, of which Guidonia, Lugagnano, Morano, Piacenza, S'Arcangelo di Romagna, and Settimello are the largest	(10,000)
Do.	Cementerie del Tirreno S.p.A. (Cementir)		6 plants at Arquasta Scivia, Livorno, Maddaloni, Napoli, Spoleto, and Taranto	(5,300)
Copper, refined	Enirisorse S.p.A. (Government)		Refineries at Porto Marghera, near Venice, and Pieve Vergonte	46
Do.	Europa Metalli - LMI S.p.A.		Refineries at Campo Tizzoro, Fornaci di Barga, and Villa Carcina	26
Do.	Chimet S.p.A.		Refinery at Arezzo	13
Feldspar	At least five companies, of which the three largest are: Maffei S.p.A. (a number of companies, the largest of which include Mineraria Marittima Srl) Miniera di Fragne S.p.A. Sabbie Silicee Fossanova S.p.A. (Sasifo)		Surface mines at Pinzolo, Sondalo, and Campiglia Marittima; underground mine at Vipiteno Surface mine at Alagna Valsesia Surface mine at Fossanova	1,500 (200) (300) (60) (30)
Gold	Gold Mines of Sardinia Ltd. 70%, Government 30%		Furtei Mine near Cagliari, Sardinia	1,400 1/

See footnotes at end of table.

TABLE 5
ITALY: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Lead-zinc, ore	Enirisorse S.p.A. (Government)	Mines at Masua, Monteponi, and Sardinia	60
Lead, metal	do.	Refinery at San Gavino, Sardinia Kivcet smelter and Imperial smelter at Porto Vesme, Sardinia	80 114
Lignite	Ente Nazionale per l'Energia Elettrica (ENEL)	Surface mines at Pietrafitta and Santa Barbara	1,500
Magnesium, metal	Societa Italiana Magnesio S.p.A. (INDEL)	Plant at Bolzano	8
Marble	Industria dei Marmi Vicentini S.p.A. Figaia S.p.A.	Quarries in the Carrara and Massa areas	2,000 (500)
Petroleum, crude	Ente Nazionale/Idrocarburi (ENI) Government	Oilfields: offshore Sicily, the Adriatic Sea, and onshore in Po River Valley	90
Petroleum, refined	do.	About 30 refineries	2,000 2/
Potash ore	Industria Sali Otassici e Affini per Aziono S.p.A.	Underground mines at Corvillo, Pasquasia, Racalmuto, and San Cataldo, in Sicily	1,300
Do.	Sta Italiana Sali Alcalini S.p.A. - (Italkali)	Underground mines at Casteltermini and Pasquasia, Sicily	700
Pumice	Pumex S.p.A.	Quarries, Lipari Island, north of Sicily	600
Do.	Sta Siciliana per l'Industria ed il Commercio della Pomice di Lipari S.p.A. (Italpomice S.p.A.)	do.	200
Pyrite	Nuova Solmine S.p.A.	Underground mines at Campiano and Niccioleta	900
Salt, rock	Sta Italiana Sali Alcalini S.p.A. (Italkahi)	Underground mines at Petralia, Racalmuto, and Realmonte, Sicily	4,000
Do.	Solvay S.p.A.	Underground mines at Buriano, Ponteginori, and Querceto, Tuscany	2,000
Steel	Ilva Laminati Piani S.p.A. (Riva Group)	5 steel plants, the largest of which is Taranto (1,300)	4,000
Do.	Riva S.p.A	About 5 plants	7,000
Do.	AFV Beltrame S.p.A.	Steel plant at Vicenza	700
Talc	Luzenac Val Chisone S.p.A.	Mines at Pinerolo, near Turin, and at Orani, Sardinia	120
Do.	Talco Sardegna S.p.A.	Mine at Orani, Sardinia	20
Zinc, metal	Enirisorse S.p.A. (Government)	Plants at Crotone and Porto Vesme, Sardinia, and Porto Maghera, near Venice	349

1/ Kilograms.

2/ Thousand 42-gallon barrels per day.