GARNET, INDUSTRIAL[1]

(Data in metric tons of garnet, unless otherwise noted)

Domestic Production and Use: Garnet for industrial use was mined in 1999 by five firms, three in New York, one in Montana, and one in Idaho. Output of crude garnet was valued at more than $6 million, while refined material sold or used was valued at $11 million. Major end uses for garnet were abrasive blasting media, 45%; water filtration, 15%; waterjet cutting, 10%; and abrasive powders, 10%.

Salient Statistics—United States:	1995	1996	1997	1998	1999[e]
Production (crude)[2]	46,300	60,900	64,900	74,000	64,400
Sold by producers[2]	39,900	46,200	53,600	51,900	45,200
Imports for consumption[e]	7,000	9,000	10,000	20,000	15,000
Exports[e]	8,000	12,000	12,000	12,000	10,000
Consumption, apparent	38,000	34,500	46,300	39,900	43,400
Price, range of value, dollars per ton[3]	50-1,500	50-2,000	50-2,000	50-2,000	50-2,000
Stocks, producer[e 4]	5,900	14,600	19,900	39,900	46,700
Employment, mine and mill, number	180	210	250	230	230
Net import reliance[5] as a percent of apparent consumption	E	E	E	E	E

Recycling: Relatively small amounts of garnet reportedly are recycled.

Import Sources (1995-98[e]): Australia, 75%; India, 20%; and China, 5%.

Tariff: Item	Number	Normal Trade Relations 12/31/99
Emery, natural corundum, natural garnet, and other natural abrasives, crude	2513.20.1000	Free.
Emery, natural corundum, natural garnet, and other natural abrasives, other than crude	2513.20.9000	Free.
Natural abrasives on woven textile	6805.10.0000	Free.
Natural abrasives on paper or paperboard	6805.20.0000	Free.
Natural abrasives sheets, strips, disks, belts, sleeves, or similar form	6805.30.1000	Free.

Depletion Allowance: 15% (Domestic and foreign).

Government Stockpile: None.

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GARNET, INDUSTRIAL

Events, Trends, and Issues: During 1999, stock accumulations of garnet produced as byproduct increased while the garnet market continued to decline. This caused the producer stocks to be high. Two of the three garnet mines in the western half of the United States (both in Montana) were still being offered for sale in 1999. Although U.S. garnet sales declined during 1999, some forecasts indicate that domestic and foreign markets for industrial garnet may grow in the next several years. Markets for blasting media and water jet cutting are expected to lead the demand. China may join Australia and India as an important garnet exporter early in the next decade.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves[6]	Reserve base[6]
	1998	1999[e]		
United States	74,000	64,400	5,000,000	25,000,000
Australia	60,000	60,000	1,000,000	7,000,000
China	30,000	30,000	Moderate to Large	Moderate to Large
India	50,000	50,000	500,000	20,000,000
Other countries	10,000	10,000	6,500,000	20,000,000
World total (may be rounded)	224,000	214,000	Moderate	Large

World Resources: World resources of garnet are large and occur in a wide variety of rocks, particularly gneisses and schists. Garnet also occurs as contact-metamorphic deposits in crystalline limestones, pegmatites, and serpentinites, and in high-temperature intrusive contacts and vein deposits. In addition, alluvial garnet is present in many heavy mineral sand and gravel deposits throughout the world. Large domestic resources of garnet are concentrated in coarsely crystalline gneiss near North Creek, NY. Significant domestic resources of garnet also occur in Idaho, Maine, Montana, New Hampshire, North Carolina, and Oregon. In addition to the United States, major garnet deposits exist in Australia, China, and India, where they are mined for foreign and domestic markets; deposits in Russia and Turkey also have been mined in recent years, primarily for internal markets. Additional garnet resources are located in Canada, the Czech Republic, Pakistan, and Ukraine; small mining operations have been reported in most of these areas.

Substitutes: Other natural and manufactured abrasives can substitute to some extent for all major end uses of garnet. In many cases, however, the substitutes would entail sacrifices in quality or cost. Fused aluminum oxide and staurolite compete with garnet as a sandblasting material. Ilmenite, magnetite, and plastics compete as filtration media. Diamond, corundum, and fused aluminum oxide compete for lens grinding and for many lapping operations. Emery is a substitute in nonskid surfaces. Finally, quartz sand, silicon carbide, and fused aluminum oxide compete for the finishing of plastics, wood furniture, and other products.

[e]Estimated. E Net exporter.

[1]Excludes gem and synthetic garnet.

[2]Data revised to correspond with new information published in the USGS Mineral Industry Surveys annual review of industrial garnet for 1998.

[3]Includes both crude and refined garnet; most crude concentrate is $50 to $100 per ton, and most refined material is $150 to $400 per ton.

[4]The large increase in producer stocks between 1997 and 1998 is due to the revision of stock estimating methods so that stock estimates are more accurate. Estimates were only revised back to 1998.

[5]Defined as imports - exports + adjustments for industry stock changes.

[6]See Appendix C for definitions.