

GARNET, INDUSTRIAL¹

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

Domestic Production and Use: Garnet was produced in 1996 by five firms, four in New York and one in Idaho. Output of crude garnet was valued at \$11 million, while refined material sold or used was valued at \$18 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:	1992	1993	1994	1995	1996^e
Production (crude)	54,100	44,000	51,000	53,000	54,000
Sold by producers (refined)	46,100	55,800	40,600	34,900	35,000
Imports for consumption ^e	6,000	12,200	6,000	6,000	6,000
Exports ^e	8,880	11,400	10,000	8,500	9,000
Consumption, apparent	45,700	56,600	37,500	31,700	32,200
Price, range of value, dollars per ton	100-2,000	100-2,000	100-2,000	85-1,500	90-1,600
Stocks, producer ^e	8,640	4,900	4,000	4,700	4,500
Employment, mine and mill, number	150	150	160	180	200
Net import reliance ² as a percent of apparent consumption	E	E	E	E	E

Recycling: Relatively small amounts of garnet reportedly are recycled.

Import Sources (1992-95^e): Australia, 85%; India, 10%; and China, 5%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/96	Non-MFN³ 12/31/96
	Emery, natural corundum, natural garnet, and other natural abrasives, crude	2513.20.1000	Free	Free.
	Emery, natural corundum, natural garnet, and other natural abrasives, other than crude	2513.20.9000	0.4¢/kg.	2.2¢/kg.
	Natural abrasives on woven textile	6805.10.0000	1.5% ad val.	20% ad val.
	Natural abrasives on paper or paperboard	6805.20.0000	1.5% ad val.	20% ad val.
	Natural abrasives sheets, strips, disks, belts, sleeves, or similar form	6805.30.0000	1.5% ad val.	20% ad val.

Depletion Allowance: 14% (Domestic), 14% (Foreign).

Government Stockpile: None.

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Events, Trends, and Issues: Production capacity in the United States and abroad may increase significantly during the next several years in response to anticipated increases in demand. Some forecasts indicate that global markets for industrial garnet may grow beyond 300,000 tons within 5 years. Markets for blasting media and water jet cutting are expected to lead demand. Additional capacity planned in the United States and worldwide would help to stabilize prices.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁴	Reserve base ⁴
	1995	1996 ^e		
United States	53,000	54,000	5,000,000	25,000,000
Australia	30,000	30,000	1,000,000	7,000,000
China	15,000	15,000	Moderate to Large	Moderate to Large
India	15,000	15,000	500,000	20,000,000
Other countries	<u>17,000</u>	<u>17,000</u>	<u>6,500,000</u>	<u>20,000,000</u>
World total (rounded)	130,000	130,000	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 a coproduct with 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. One of the world's largest known garnet deposits is in Ranglely County, ME. Significant domestic resources of garnet also occur in Idaho, 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.

Substitutes: Other natural and manufactured abrasives could serve as substitutes 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.

^eEstimated. E Net exporter.

¹Excludes gem and synthetic garnet.

²Defined as imports - exports + adjustments for Government and industry stock changes.

³See Appendix B.

⁴See Appendix C for definitions.