

GARNET (INDUSTRIAL)¹

(Data in metric tons of garnet unless otherwise noted)

Domestic Production and Use: Garnet for industrial use was mined in 2005 by three firms, one in Idaho and two in New York. The estimated value of crude garnet production was about \$3.05 million, while refined material sold or used had an estimated value of \$10.0 million. Major end uses for garnet were abrasive blasting media, 35%; waterjet cutting, 30%; water filtration, 15%; abrasive powders, 10%; and other end uses, 10%.

Salient Statistics—United States:	2001	2002	2003	2004	2005^e
Production (crude)	52,700	38,500	29,200	28,400	28,400
Sold by producers	46,200	37,500	33,100	30,400	30,400
Imports for consumption ^e	23,000	23,000	30,800	36,500	33,200
Exports ^e	10,000	10,400	11,000	10,900	13,300
Consumption, apparent ^e	59,300	56,300	83,200	58,600	50,300
Price, range of value, dollars per ton ²	50-2,000	50-2,000	50-2,000	50-2,000	50-2,000
Stocks, producer ^e	50,000	43,800	13,600	11,000	11,000
Employment, mine and mill, number ^e	220	200	180	160	160
Net import reliance ³ as a percentage of apparent consumption	22	33	60	48	40

Recycling: Small amounts of garnet reportedly are recycled.

Import Sources (2001-04):^e Australia, 39%; India, 26%; China, 18%; Canada, 12%; and other, 5%.

Tariff: Item	Number	Normal Trade Relations 12-31-05
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: 14% (Domestic and foreign).

Government Stockpile: None.

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Events, Trends, and Issues: During 2005, U.S. garnet consumption decreased 14%, while domestic production of crude garnet concentrates remained the same as that of 2004. In 2005, imports were estimated to have decreased 9% compared with 2004, and exports were estimated to have increased more than 21% from those of 2004. The 2005 estimated domestic sales of garnet remained at about the same level as sales of 2004. In 2005, the United States was a net importer. Garnet imports have displaced U.S. production in the domestic market, with Australia, Canada, China, and India being major garnet suppliers.

The garnet market is very competitive. To increase profitability, garnet mines will have to produce other salable minerals (in addition to garnet) from the same deposits.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁴	Reserve base ⁴
	2004	2005 ^e		
United States	28,400	28,400	5,000,000	25,000,000
Australia	150,000	155,000	1,000,000	7,000,000
China	28,000	29,000	Moderate to Large	Moderate to Large
India	64,000	65,000	90,000	5,400,000
Other countries	31,800	34,800	6,500,000	20,000,000
World total (rounded)	302,000	312,000	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, serpentinites, 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 also are concentrated in coarsely crystalline gneiss near North Creek, NY; other significant domestic resources of garnet 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, Chile, Czech Republic, Pakistan, South Africa, Spain, Thailand, and Ukraine; small mining operations have been reported in most of these countries.

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.

^eEstimated.

¹Excludes gem and synthetic garnet.

²Includes both crude and refined garnet; most crude concentrate is \$50 to \$150 per ton, and most refined material is \$150 to \$450 per ton.

³Defined as imports – exports + adjustments for industry stock changes.

⁴[See Appendix C for definitions.](#)