

GARNET (INDUSTRIAL)¹

(Data in metric tons of garnet unless otherwise noted)

Domestic Production and Use: Garnet for industrial use was mined in 2006 by four firms, one in Idaho, one in Montana, and two in New York. The estimated value of crude garnet production was about \$3.38 million, while refined material sold or used had an estimated value of \$6.20 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:	2002	2003	2004	2005	2006^e
Production (crude)	38,500	29,200	28,400	40,100	35,300
Sold by producers	37,500	33,100	30,400	23,100	23,100
Imports for consumption ^e	27,200	34,800	36,500	41,800	52,300
Exports ^e	10,400	11,000	10,900	13,400	13,200
Consumption, apparent ^{e, 2}	55,300	53,000	54,000	68,600	74,300
Price, range of value, dollars per ton ³	50-2,000	50-2,000	50-2,000	50-2,000	50-2,000
Stocks, producer	NA	NA	NA	NA	NA
Employment, mine and mill, number ^e	200	180	160	160	160
Net import reliance ⁴ as a percentage of apparent consumption	30	45	47	41	53

Recycling: Small amounts of garnet reportedly are recycled.

Import Sources (2002-05):^e Australia, 39%; India, 25%; China, 22%; Canada, 10%; and other, 4%.

Tariff:	Item	Number	Normal Trade Relations 12-31-06
	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 2006, U.S. garnet consumption increased 8%, while domestic production of crude garnet concentrates decreased by 12% compared with the production of 2005. In 2006, imports were estimated to have increased 25% compared with 2005, and exports were estimated to have decreased slightly from those of 2005. The 2006 estimated domestic sales of garnet remained at about the same level as sales of 2005. In 2006, 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 and remain competitive with foreign imported material, other salable minerals that occur with garnet may be produced.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁵	Reserve base ⁵
	2005	2006 ^e		
United States	40,100	35,300	5,000,000	25,000,000
Australia	155,000	160,000	1,000,000	7,000,000
China	29,000	30,000	Moderate to Large	Moderate to Large
India	65,000	65,000	90,000	5,400,000
Other countries	34,900	35,200	6,500,000	20,000,000
World total (rounded)	324,000	326,000	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. NA Not available.

¹Excludes gem and synthetic garnet.

²Defined as crude production + net imports.

³Includes both crude and refined garnet; most crude concentrate is \$50 to \$120 per ton, and most refined material is \$150 to \$450 per ton.

⁴Defined as imports – exports.

⁵[See Appendix C for definitions.](#)