

GARNET (INDUSTRIAL)¹

(Data in metric tons of garnet unless otherwise noted)

Domestic Production and Use: Garnet for industrial use was mined in 2007 by four firms, one in Idaho, one in Montana, and two in New York. The estimated value of crude garnet production was about \$4.23 million, while refined material sold or used had an estimated value of \$5.33 million. Major end uses for garnet were waterjet cutting, 35%; abrasive blasting media, 30%; water filtration, 15%; abrasive powders, 10%; and other end uses, 10%.

Salient Statistics—United States:	2003	2004	2005	2006	2007^e
Production (crude)	29,200	28,400	40,100	34,100	34,000
Sold by producers	33,100	30,400	23,100	16,800	16,800
Imports for consumption ^e	34,800	36,500	41,800	50,800	56,100
Exports ^e	11,000	10,900	13,400	13,300	12,500
Consumption, apparent ^{e, 2}	53,000	54,000	68,600	71,600	77,600
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	180	160	160	160	160
Net import reliance ⁴ as a percentage of apparent consumption	45	47	41	52	56

Recycling: Small amounts of garnet reportedly are recycled.

Import Sources (2003-06):^e Australia, 41%; India, 26%; China, 20%; Canada, 11%; and other, 2%.

Tariff:	Item	Number	Normal Trade Relations 12-31-07
	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 2007, U.S. garnet consumption increased 9%, while domestic production of crude garnet concentrates remained about the same compared with the production of 2006. In 2007, imports were estimated to have increased 10% compared with those of 2006, and exports were estimated to have decreased 6% from those of 2006. The 2007 estimated domestic sales of garnet remained at about the same level as sales of 2006. In 2007, 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
	2006	2007 ^e		
United States	34,100	34,000	5,000,000	25,000,000
Australia	160,000	160,000	1,000,000	7,000,000
China	30,000	30,000	Moderate to Large	Moderate to Large
India	65,000	65,000	90,000	5,400,000
Other countries	35,500	36,000	6,500,000	20,000,000
World total (rounded)	325,000	325,000	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 those in 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 trade.

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.](#)