

ABRASIVES (MANUFACTURED)

(Fused aluminum oxide and silicon carbide)
(Data in metric tons unless otherwise noted)

Domestic Production and Use: Fused aluminum oxide was produced by two companies at three plants in the United States and Canada. Production of regular-grade fused aluminum oxide had an estimated value of \$1.7 million. Silicon carbide was produced by two companies at two plants in the United States. Domestic production of crude silicon carbide had an estimated value of about \$25.9 million. Bonded and coated abrasive products accounted for most abrasive uses of fused aluminum oxide and silicon carbide.

Salient Statistics—United States:	2009	2010	2011	2012	2013^e
Production, ¹ United States and Canada (crude):					
Fused aluminum oxide, regular	10,000	10,000	10,000	10,000	10,000
Silicon carbide	35,000	35,000	35,000	35,000	35,000
Imports for consumption (U.S.):					
Fused aluminum oxide	64,200	185,000	223,000	231,000	228,000
Silicon carbide	78,000	143,000	129,000	100,000	108,000
Exports (U.S.):					
Fused aluminum oxide	12,300	20,000	19,900	19,100	23,500
Silicon carbide	20,700	23,100	27,800	20,000	17,700
Consumption, apparent (U.S.):					
Fused aluminum oxide	NA	NA	NA	NA	NA
Silicon carbide	92,300	155,000	136,000	115,000	125,000
Price, value of imports, dollars per ton (U.S.):					
Fused aluminum oxide, regular	608	555	627	560	643
Fused aluminum oxide, high-purity	1,170	1,300	1,360	1,080	721
Silicon carbide	557	793	1,260	877	1,080
Net import reliance ² as a percentage of apparent consumption (U.S.):					
Fused aluminum oxide	NA	NA	NA	NA	NA
Silicon carbide	62	77	74	70	72

Recycling: Up to 30% of fused aluminum oxide may be recycled, and about 5% of silicon carbide is recycled.

Import Sources (2009–12): Fused aluminum oxide, crude: China, 76%; Venezuela, 14%; Canada, 7%; and other, 3%. Fused aluminum oxide, grain: Brazil, 21%; Germany, 20%; Austria, 15%; Canada, 12%; and other, 32%. Silicon carbide, crude: China, 58%; South Africa, 17%; Netherlands, 7%; Romania, 7%; and other, 11%. Silicon carbide, grain: China, 44%; Brazil, 24%; Russia, 8%; Norway, 7%; and other, 17%.

Tariff:	Item	Number	Normal Trade Relations 12–31–13
	Fused aluminum oxide, crude	2818.10.1000	Free.
	White, pink, ruby artificial corundum, greater than 97.5% fused aluminum oxide, grain	2818.10.2010	1.3% ad val.
	Artificial corundum, not elsewhere specified or included, fused aluminum oxide, grain	2818.10.2090	1.3% ad val.
	Silicon carbide, crude	2849.20.1000	Free.
	Silicon carbide, grain	2849.20.2000	0.5% ad val.

Depletion Allowance: None.

Government Stockpile: None.

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Events, Trends, and Issues: In 2013, China was the world's leading producer of abrasive fused aluminum oxide and abrasive silicon carbide, with production nearly at capacity. Imports and higher operating costs continued to challenge abrasives producers in the United States and Canada. Foreign competition, particularly from China, is expected to persist and further curtail production in North America. Abrasives markets are greatly influenced by activity in the manufacturing sector in the United States. During 2013, these manufacturing sectors included the aerospace, automotive, furniture, housing, and steel industries, all of which experienced increased production. The U.S. abrasive markets also are influenced by economic and technological trends.

World Production Capacity:

	Fused aluminum oxide		Silicon carbide	
	<u>2012</u>	<u>2013^e</u>	<u>2012</u>	<u>2013^e</u>
United States and Canada	60,400	60,400	42,600	42,600
Argentina	—	—	5,000	5,000
Australia	50,000	50,000	—	—
Austria	60,000	60,000	—	—
Brazil	50,000	50,000	43,000	43,000
China	700,000	700,000	455,000	455,000
France	40,000	40,000	16,000	16,000
Germany	80,000	80,000	36,000	36,000
India	40,000	40,000	5,000	5,000
Japan	25,000	25,000	60,000	60,000
Mexico	—	—	45,000	45,000
Norway	—	—	80,000	80,000
Venezuela	—	—	30,000	30,000
Other countries	<u>80,000</u>	<u>80,000</u>	<u>190,000</u>	<u>190,000</u>
World total (rounded)	1,190,000	1,190,000	1,010,000	1,010,000

World Resources: Although domestic resources of raw materials for the production of fused aluminum oxide are rather limited, adequate resources are available in the Western Hemisphere. Domestic resources are more than adequate for the production of silicon carbide.

Substitutes: Natural and manufactured abrasives, such as garnet, emery, or metallic abrasives, can be substituted for fused aluminum oxide and silicon carbide in various applications.

^eEstimated. NA Not available. — Zero.

¹Rounded to the nearest 5,000 tons to protect proprietary data.

²Defined as imports – exports.