

Mineral Industry Surveys

For information, contact:

Donald W. Olson, Abrasives Commodity Specialist
U.S. Geological Survey
983 National Center
Reston, VA 20192
Telephone: (703) 648-7721, Fax: (703) 648-7975
E-mail: dolson@usgs.gov

Christine K. Pisut (Data)
Telephone: (703) 648-7967
Fax: (703) 648-7975
E-mail: cpisut@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 2003

The U.S. Geological Survey (USGS) collects quarterly data on manufactured abrasives through its survey of producers. Manufactured abrasives included in this report are fused aluminum oxide, silicon carbide, and metallic abrasives. Where indicated, Canadian and United States data are combined to protect proprietary information. Except where noted, the quantities cited in this report are in metric units. All unit value calculations in this report are based on unrounded data.

Fused Aluminum Oxide

Only one company, which operates one plant in Canada, remains of the former Canadian and U.S. fused aluminum oxide producers. The total production during the fourth quarter of 2003 was a small amount of regular-grade crude fused aluminum oxide.

According to the U.S. Census Bureau, U.S. imports of crude fused aluminum oxide through November 2003 were 121,000 metric tons valued at \$30.8 million, or an average of \$254 per ton. About 73% of the imports came from China, 14% from Canada, 11% from Venezuela, and 1% from other countries. Imports of crude fused aluminum oxide from China have been rising, but some of the imports may not be abrasive-quality material.

U.S. imports of refined and ground fused aluminum oxide through the month of November 2003 reached 38,200 tons valued at \$32.9 million, or an average of \$860 per ton. The top five sources of the refined and ground imports were China (32%), Germany (19%), Brazil (18%), Austria (12%), and Hungary (6%). Low-cost imports of fused aluminum oxide grain from China also have increased in recent years. The imports, however, reportedly include refractory-grade material as well as abrasive grain. U.S. exports of fused aluminum oxide through November 2003 were 11,000 tons. The exports were valued at \$32.1 million, or \$2,930 per ton. Germany received 33% of the exports that were shipped; Canada 26% and Mexico 14%.

The Department of Defense stores fused aluminum oxide in the National Defense Stockpile (NDS). All of the NDS aluminum oxide, however, has been authorized by law for disposal. During the fourth quarter of 2003, the Department of

Defense reported sales of 20 tons of fused aluminum oxide abrasive grain valued at \$9,900. At the end of the quarter, NDS reported 13,800 tons of fused aluminum oxide abrasive grain with an estimated value of \$6.5 million remained in the stockpile. The NDS has sold all of the crude fused aluminum oxide in the stockpile (Janet Rollins, Defense National Stockpile Center, oral commun., 2004). No further stockpiling of crude fused aluminum oxide by the Department of Defense is anticipated. If the current authorized disposal rate and NDS sales schedules are continued, all of the stockpiled fused aluminum oxide abrasive grain could be sold by the end of 2004.

Silicon Carbide

Abrasive-grade silicon carbide is produced by one company in the United States. The total production during the fourth quarter of 2003 was 10,000 tons of abrasive-grade silicon carbide with an estimated value of \$4.9 million. This total production figure has been rounded to the nearest 5,000 tons to avoid disclosing proprietary data.

Total U.S. imports of crude silicon carbide for the year through November 2003 were 118,000 tons valued at \$41.8 million; imports from China alone were 89,100 tons valued at \$27.4 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$490 per ton; the average price of Chinese crude was \$308 per ton. U.S. imports of refined and ground silicon carbide for the same period were 28,800 tons valued at \$28.1 million, or an average of \$973 per ton. During the period, China accounted for 75% of the crude material and 44% of the refined and ground material.

U.S. exports of crude silicon carbide through November 2003 were reported to be 2,270 tons with a value of \$4.4 million. Exports of refined and ground silicon carbide were 9,770 tons valued at \$6.7 million. About 93% of the crude material was shipped to, in decreasing order, Norway, Mexico, Japan, Switzerland, and Germany. Most of the refined material went to, in decreasing order, Canada, Australia, and Mexico.

The NDS has sold all of the silicon carbide in the stockpile. No further stockpiling is anticipated.

Metallic Abrasives

Metallic abrasives information was collected from 12 companies operating 14 U.S. plants. During the fourth quarter of 2003, six companies produced 42,100 tons of steel shot and grit, a decrease, compared with the same period in 2002. At least one of the companies produced shot and grit from reclaimed material. Total fourth quarter production was valued at \$18.8 million, or an average of \$446 per ton. Total annual output in 2003 is 192,000 tons valued at \$86.2 million; 2002 output was 201,000 tons valued at \$91 million.

Shipments of steel shot and grit in the fourth quarter of 2003 were 46,600 tons valued at \$21.4 million, or an average of \$459 per ton, compared with shipments during the fourth quarter of

2002, which were 53,400 tons valued at \$24.3 million for an average of \$456 per ton.

Fourth quarter production of other types of metallic shot and grit (primarily cut wire shot) was 345 tons valued at \$1.3 million. Six companies produced shot.

Imports of all types of metallic shot and grit through November 2003 were 15,200 tons valued at \$8.9 million for an average of \$588 per ton. Canada was the largest supplier, accounting for 64% of the tonnage imported.

Exports of all types of metallic abrasives through November 2003 were 20,500 tons valued at \$13.6 million, or an average of \$663 per ton. Shipments to Canada accounted for 51% of the exports; an additional 43% was shipped to Mexico.

TABLE 1
MANUFACTURED ABRASIVES¹

(Metric tons, unless otherwise specified)

Source and product	2002		2003							
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
United States and Canada, production: ²										
Silicon carbide ³	10,000	\$5,000	10,000	\$5,800	10,000	\$5,500	10,000	\$5,100	10,000	\$4,900
Crude aluminum oxide, regular-grade	10,000	2,600	5,000	1,400	15,000	4,300	(4)	(5)	(4)	(5)
United States, production:										
Steel shot and grit	53,400	24,300	54,000	24,600	46,500	20,900	49,200	21,900	42,100	18,800
Other shot and grit ^{c,6}	248	831	274	1,180	267	1,000	334	1,190	345	1,250
Total	53,700	25,200	54,300	25,800	46,800	21,900	49,500	23,000	42,400	20,000
United States, shipments:										
Steel shot and grit	52,800	24,700	53,900	24,900	52,400	24,600	57,400	27,000	46,600	21,400
Other shot and grit ^{c,6}	256	940	279	1,260	271	1,110	310	1,280	323	1,320
Total	53,100	25,600	54,200	26,200	52,700	25,700	57,800	28,300	46,900	22,700

^cEstimated.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Quantities are rounded to the nearest 5,000 tons to avoid disclosing proprietary data; values are estimated.

³Includes materials for metallurgical uses and other applications.

⁴Less than 2,500 tons.

⁵Less than \$500,000.

⁶Includes cut wire shot and reclaimed shot and grit from primary producers.