

# Mineral Industry Surveys

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## MANUFACTURED ABRASIVES IN THE FIRST QUARTER 2011

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

The United States and Canadian combined production during the first quarter of 2011 was estimated to be 5,000 metric tons (t) of regular-grade crude fused aluminum oxide with an estimated value of \$800,000, which was essentially unchanged in quantity and value from that of both the first and fourth quarters of 2010. One company, operating one plant in Canada and one in the United States, produced fused aluminum oxide. These production figures have been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

According to the U.S. Census Bureau, U.S. imports of crude fused aluminum oxide during the first quarter of 2011 were 40,000 t valued at \$24.7 million, or an average of \$619 per ton. About 68% of the imports came from China, 26% from Venezuela, 5% from Canada, and the remainder from other countries. Imports of crude fused aluminum oxide from China may not all be abrasive-quality material.

U.S. imports of ground and refined fused aluminum oxide for the first quarter of 2011 were 12,100 t valued at \$15.7 million, or an average of \$1,290 per ton.

U.S. exports of crude fused aluminum oxide for the first quarter of 2011 were 4,910 t. These exports were valued at \$16.7 million, or \$3,410 per ton. Canada received 44% of the exports that were shipped; Germany, 19%; Mexico, 13%; United Kingdom, 7%; Japan, 5%; Korea, 5%; and others, 7%. U.S. exports of ground fused aluminum oxide for the first quarter of 2011 were 416,000 t valued at \$209 million, or \$502 per ton. Canada received 49% of the exports that were shipped; Iceland, 29%; France, 8%; Georgia, 7%; and others, 7%.

### Silicon Carbide

Abrasive-grade silicon carbide is produced by one company in the United States. The total production of abrasive-grade silicon carbide during the first quarter of 2011 was estimated to be 10,000 t, with an estimated value of \$7.4 million, which was essentially unchanged in quantity and value from that of both the first and fourth quarters of 2010. These production figures have been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

Total U.S. imports of crude silicon carbide during the first quarter of 2011 were 11,100 t valued at \$15.8 million; imports from China alone were 8,080 t valued at \$9.21 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$2,210 per ton; the average price of Chinese crude was \$1,140 per ton. U.S. imports of ground and refined silicon carbide for the same period were 16,300 t valued at \$29.3 million, or an average of \$1,800 per ton. During the first quarter of 2011, China accounted for 73% of the crude material and 57% of the ground and refined material imported.

U.S. exports of crude silicon carbide during the first quarter of 2011 were reported to be 5,210 t with a value of \$6.73 million. First quarter exports of ground and refined silicon carbide were 1,350 t valued at \$6.93 million. About 99% of the crude material was shipped to, in decreasing order of quantity, Norway, Germany, Mexico, Thailand, Japan, and Taiwan. About 90% of the refined material was shipped to, in decreasing order of quantity, Canada, Germany, Mexico, Japan, China, Brazil, and Thailand.

### Metallic Abrasives

Metallic abrasives information was collected from 10 companies operating 11 U.S. plants. During the first quarter of 2011, five companies produced 43,600 t of steel shot and grit, a 10% increase compared with that of the same period in 2010. At least one of the companies produced shot and grit from reclaimed material. Total first quarter 2011 production was valued at \$21.4 million, or an average of \$491 per ton. Total production in 2010 was 166,000 t valued at \$81.3 million. Total production in 2009 was 137,000 t valued at \$64.9 million.

Shipments of steel shot and grit in the first quarter of 2011 were 47,500 t valued at \$27.9 million, or an average of \$587 per ton, compared with shipments during the first quarter of 2010, which were 43,400 t valued at \$25.6 million for an average of \$591 per ton.

During the first quarter of 2011, five companies produced 529 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$2.15 million.

Imports of all types of metallic shot and grit during the first quarter of 2011 were 14,300 t valued at \$9.51 million for an average of \$666 per ton, compared with imports during the first

quarter of 2010, which were 11,700 t valued at \$5.25 million for an average of \$450 per ton. Sweden and Canada were the leading suppliers, accounting for 63% and 18% of the tonnage imported, respectively.

Exports of all types of metallic abrasives during the first quarter of 2011 were 9,630 t valued at \$13.2 million, or an average of \$1,370 per ton, compared with exports during the first quarter of 2010, which were 6,130 t valued at \$7.03 million for an average of \$1,150 per ton. Shipments to Mexico accounted for 40% of the exports; an additional 27% was shipped to China and 23% was shipped to Canada.

TABLE 1  
MANUFACTURED ABRASIVES<sup>1</sup>

Source and product	2010										2011	
	First quarter		Second quarter		Third quarter		Fourth quarter		Year		First quarter	
	Quantity (metric tons)	Value (thousands)										
<b>United States and Canada, production:<sup>e, 2</sup></b>												
Silicon carbide <sup>3</sup>	10,000	\$7,400	10,000	\$7,400	10,000	\$7,400	10,000	\$7,400	35,000	\$25,900	10,000	\$7,400
Crude aluminum oxide, regular-grade	5,000	800	5,000	800	5,000	800	5,000	800	10,000	1,700	5,000	800
<b>United States, production:</b>												
Steel shot and grit	39,600	19,200	41,500	20,400	41,000	20,000	44,300	21,700	166,000	81,300	43,600	21,400
Other shot and grit <sup>e, 4</sup>	480	1,840	558	2,140	516	1,740	563	2,050	2,120	7,770	536	1,900
Total	40,100	21,000	42,100	22,500	41,500	21,700	44,900	23,800	169,000	89,100	44,100	23,300
<b>United States, shipments:</b>												
Steel shot and grit	43,400	25,600	45,800	27,000	46,400	27,200	49,300	28,700	185,000	109,000	47,500	27,900
Other shot and grit <sup>e, 4</sup>	458	2,000	486	2,160	510	2,040	536	2,230	1,990	8,420	529	2,150
Total	43,800	27,600	46,200	29,200	46,900	29,300	49,800	31,000	187,000	117,000	48,000	30,000

<sup>e</sup>Estimated.

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

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

<sup>3</sup>Includes materials for metallurgical uses and other applications.

<sup>4</sup>Includes cut wire shot and reclaimed shot and grit from primary producers.

TABLE 2  
U.S. EXPORTS AND IMPORTS FOR CONSUMPTION OF ALUMINUM OXIDE, SILICON CARBIDE, AND METALLIC ABRASIVES<sup>1</sup>

Source and product	2010										2011	
	First quarter		Second quarter		Third quarter		Fourth quarter		Year		First quarter	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)										
<b>Exports:</b>												
Aluminum oxide:												
Crude	4,500	\$13,800	5,050	\$19,100	5,700	\$19,400	4,740	\$15,500	20,000	\$67,900	4,910	\$16,700
Ground and refined	429,000	182,000	381,000	167,000	319,000	143,000	324,000	155,000	1,450,000	647,000	416,000	209,000
Silicon carbide:												
Crude	5,400	7,350	4,400	6,860	2,980	4,500	5,430	7,930	18,200	26,600	5,210	6,730
Ground and refined	1,130	5,120	1,250	7,040	1,260	8,170	1,280	9,080	4,920	29,400	1,350	6,930
Metallic abrasives	6,130	7,030	7,360	9,930	9,090	13,000	8,220	11,300	30,800	41,300	9,630	13,200
<b>Imports for consumption:</b>												
Aluminum oxide:												
Crude	20,300	11,300	46,600	25,300	30,000	16,900	43,700	24,600	141,000	78,100	40,000	24,700
Ground and refined	7,950	11,300	9,780	13,700	11,800	14,900	15,000	18,100	44,600	58,000	12,100	15,700
Silicon carbide:												
Crude	14,900	8,100	31,400	20,100	27,700	25,100	25,300	25,400	99,300	78,700	11,100	15,800
Ground and refined	8,940	18,900	14,000	23,300	9,940	20,600	10,500	23,100	43,400	85,900	16,300	29,300
Metallic abrasives	11,700	5,250	4,360	3,710	13,300	7,150	14,100	9,150	43,400	25,300	14,300	9,510

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

<sup>2</sup>Customs value.

Source: U.S. Census Bureau.