

# Mineral Industry Surveys

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## MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 2013

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 fourth quarter of 2013 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 the fourth quarter of 2012 and third quarter of 2013. 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 fourth quarter of 2013 were 33,700 t valued at \$23.3 million, or an average of \$693 per ton. About 93% of the imports came from China, 7% from Canada, and less than 1% from other countries.

U.S. imports of ground and refined fused aluminum oxide for the fourth quarter of 2013 were 11,100 t valued at \$16.4 million, or an average of \$1,480 per ton.

U.S. exports of crude fused aluminum oxide for the fourth quarter of 2013 were 4,160 t. These exports were valued at \$15.4 million, or \$3,700 per ton. Canada received 43% of the exports that were shipped; Mexico, 18%; Germany, 9%; Japan, 7%; and others, 23%. U.S. exports of ground fused aluminum oxide for the fourth quarter of 2013 were 565,000 t valued at \$230 million, or \$408 per ton. Canada received 28% of the exports that were shipped; Egypt, 19%; Iceland, 18%; Russia, 17%; Norway, 16%; and others, 2%.

### 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 fourth quarter of 2013 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 the fourth quarter of 2012 and third quarter of 2013. 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 fourth quarter of 2013 were 19,600 t valued at \$12.1 million. The average customs value of imported crude silicon carbide was \$617 per ton. U.S. imports of ground and refined silicon carbide for the same period were 6,880 t valued at \$12.8 million, or an average of \$1,860 per ton. During the fourth quarter of 2013, China accounted for 79% of the crude material and 36% of the ground and refined material imported.

U.S. exports of crude silicon carbide during the fourth quarter of 2013 were reported to be 4,200 t with a value of \$5.22 million. Fourth quarter exports of ground and refined silicon carbide were 991 t valued at \$4.28 million. About 99% of the crude material was shipped to, in decreasing order of quantity, Norway, Republic of Korea, Mexico, and Taiwan. About 94% of the refined material was shipped to, in decreasing order of quantity, Canada, Germany, Japan, Mexico, Republic of Korea, and Italy.

### Metallic Abrasives

Metallic abrasives information was collected from 10 companies operating 11 U.S. plants. During the fourth quarter of 2013, five companies produced 48,500 t of steel shot and grit, a slight decrease compared with that of the same period in 2012. At least one of the companies produced shot and grit from reclaimed material. Total fourth quarter 2013 production was valued at \$23.6 million, or an average of \$486 per ton. Total production in 2013 was 191,000 t valued at \$92.8 million, compared with total production in 2012 of 190,000 t valued at \$92.9 million.

Shipments of steel shot and grit in the fourth quarter of 2013 were 53,100 t valued at \$30.4 million, or an average of \$573 per ton, compared with shipments during the fourth quarter of 2012, which were 53,100 t valued at \$30.4 million for an average of \$572 per ton.

During the fourth quarter of 2013, five companies produced 549 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$2.08 million.

Imports of all types of metallic shot and grit during the fourth quarter of 2013 were 5,930 t valued at \$6.10 million for an average of \$1,030 per ton, compared with imports during the fourth quarter of 2012, which were 5,300 t valued at \$5.45 million for an average of \$1,030 per ton. Canada, Germany, Japan, China, and Republic of Korea were the leading suppliers,

accounting for 47%, 12%, 12%, 8%, and 7% of the tonnage imported, respectively.

Exports of all types of metallic abrasives during the fourth quarter of 2013 were 9,760 t valued at \$13.9 million, or an average of \$1,430 per ton, compared with exports during the fourth quarter of 2012, which were 9,550 t valued at \$14.8 million, or an average of \$1,540 per ton. Shipments to Mexico accounted for 39% of the exports, an additional 21% was shipped to China, 19% was shipped to Canada, and 21% was shipped to others.

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

Source and product	2012				2013									
	4th quarter		Year		1st quarter		2d quarter		3d quarter		4th quarter		Year	
	Quantity (metric tons)	Value (thousands)												
<b>United States and Canada, production:<sup>e,2</sup></b>														
Crude aluminum oxide, regular-grade	5,000	\$800	10,000	\$1,700	5,000	\$800	5,000	\$800	5,000	\$800	5,000	\$800	10,000	\$1,700
Silicon carbide <sup>3</sup>	10,000	7,400	35,000	25,900	10,000	7,400	10,000	7,400	10,000	7,400	10,000	7,400	35,000	25,900
<b>United States, production:</b>														
Steel shot and grit	48,500	23,500	190,000	92,900	47,200	23,200	46,400	22,500	48,500	23,500	48,500	23,600	191,000	92,800
Other shot and grit <sup>e,4</sup>	498	1,920	2,180	7,110	534	2,090	591	2,160	545	2,020	549	2,080	2,220	8,340
Total	49,000	25,400	193,000	100,000	47,700	25,300	47,000	24,600	49,100	25,600	49,000	25,600	193,000	101,000
<b>United States, shipments:</b>														
Steel shot and grit	53,100	30,400	208,000	120,000	51,300	29,500	49,600	28,700	53,200	30,400	53,100	30,400	207,000	119,000
Other shot and grit <sup>e,4</sup>	488	2,100	2,290	8,770	515	2,310	585	2,500	497	2,100	530	2,200	2,130	9,110
Total	53,600	32,500	211,000	129,000	51,800	31,800	50,100	31,200	53,700	32,500	53,600	32,600	209,000	128,000

<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	2012				2013									
	4th quarter		Year		1st quarter		2nd quarter		3rd quarter		4th quarter		Year	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)												
<b>Exports:</b>														
<b>Aluminum oxide:</b>														
Crude	4,720	\$15,700	19,100	\$64,200	4,850	\$17,400	6,890	\$16,800	6,070	\$16,300	4,160	\$15,400	22,000	\$65,900
Ground and refined	473,000	210,000	1,680,000	756,000	460,000	198,000	527,000	207,000	622,000	235,000	565,000	230,000	2,170,000	871,000
<b>Silicon carbide:</b>														
Crude	3,810	5,370	14,800	20,600	3,480	4,140	2,640	3,200	3,350	4,800	4,200	5,220	13,600	17,400
Ground and refined	1,300	4,270	5,240	19,800	1,350	4,640	1,410	4,350	968	4,290	991	4,280	4,720	17,600
Metallic abrasives	9,550	14,800	39,000	53,400	9,270	13,000	8,730	12,400	8,160	11,700	9,760	13,900	35,900	51,100
<b>Imports for consumption:</b>														
<b>Aluminum oxide:</b>														
Crude	44,600	24,300	161,000	90,200	47,800	30,300	22,900	15,200	31,300	20,900	33,700	23,300	136,000	89,600
Ground and refined	24,100	18,800	70,000	75,900	37,300	25,200	26,400	21,500	13,100	17,400	11,100	16,400	87,900	80,500
<b>Silicon carbide:</b>														
Crude	3,180	2,900	62,200	62,000	17,800	11,900	22,400	17,300	30,400	16,200	19,600	12,100	90,200	57,500
Ground and refined	4,120	11,400	25,900	63,900	5,490	12,100	8,430	16,900	7,950	15,500	6,880	12,800	28,700	57,400
Metallic abrasives	5,300	5,450	34,000	21,700	5,510	5,640	5,880	5,950	6,750	7,150	5,930	6,100	24,100	24,800

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

<sup>2</sup>Export values are free alongside ship values; import values are customs values.

Source: U.S. Census Bureau.