

Mineral Industry Surveys

For information, contact:

Donald W. Olson, Abrasives Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-7721, Fax: (703) 648-7757
E-mail: dolson@usgs.gov

Glenn W. Walker (Data)
Telephone: (703) 648-7953
Fax: (703) 648-7975
E-mail: gwwalker@usgs.gov

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

MANUFACTURED ABRASIVES IN THE FOURTH 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 fourth quarter of 2010 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 fourth quarter of 2010 and third quarter of 2011. One company, operating one plant in Canada and one in the United States, produced fused aluminum oxide. Total production in 2011 was 10,000 t valued at \$1.70 million, which was essentially unchanged in quantity and value from that of 2010. 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 2011 were 47,500 t valued at \$31.1 million, or an average of \$654 per ton. About 82% of the imports came from China, 15% from Venezuela, 2% from Canada, and 1% from other countries. U.S. imports of crude fused aluminum oxide for all of 2011 were 177,000 t valued at \$111 million, or an average of \$627 per ton. 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 fourth quarter of 2011 were 12,200 t valued at \$16.9 million, or an average of \$1,380 per ton. U.S. imports of ground and refined fused aluminum oxide for all of 2011 were 46,400 t valued at \$62.9 million, or an average of \$1,360 per ton.

U.S. exports of crude fused aluminum oxide for the fourth quarter of 2011 were 4,280 t. These exports were valued at \$14.9 million, or \$3,490 per ton. Canada received 45% of the exports that were shipped; Germany, 15%; Mexico, 12%; Japan,

6%; Korea, 5%; United Kingdom, 3%; and others, 14%. U.S. exports of crude fused aluminum oxide for all of 2011 were 19,900 t valued at \$74.7 million, or \$3,750 per ton.

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 2011 was estimated to be 10,000 t, with an estimated value of \$7.4 million. Total production in 2011 was 35,000 t valued at \$25.9 million, which was a slight increase in quantity and value from that 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 fourth quarter of 2011 were 18,600 t valued at \$24.8 million; imports from China alone were 4,340 t valued at \$5.56 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$1,350 per ton; the average price of Chinese crude was \$1,280 per ton. U.S. imports of ground and refined silicon carbide for the same period were 14,300 t valued at \$23.9 million, or an average of \$1,670 per ton. During the fourth quarter of 2011, China accounted for 23% of the crude material and 46% of the ground and refined material imported. Total U.S. imports of crude silicon carbide for all of 2011 were 76,800 t valued at \$97.1 million. U.S. imports of ground and refined silicon carbide for all of 2011 were 52,200 t valued at \$104 million, or an average of \$1,990 per ton.

U.S. exports of crude silicon carbide during the fourth quarter of 2011 were reported to be 3,380 t with a value of \$6.01 million. Fourth quarter exports of ground and refined silicon carbide were 1,660 t valued at \$5.87 million. About 97% of the crude material was shipped to, in decreasing order of quantity, Norway, Mexico, Korea, and Germany. About 91% of the refined material was shipped to, in decreasing order of quantity, Canada, Germany, Thailand, Mexico, Japan, Sweden, and China. U.S. exports of crude silicon carbide for all of 2011 were reported to be 20,800 t with a value of \$30.4 million. Exports of ground and refined silicon carbide for all of 2011 were 6,980 t valued at \$28.6 million.

Metallic Abrasives

Metallic abrasives information was collected from 11 companies operating 12 U.S. plants. During the fourth quarter of 2011, five companies produced 49,200 t of steel shot and grit, a 11% increase compared with that of the same period in 2010. At least one of the companies produced shot and grit from reclaimed material. Total fourth quarter 2011 production was valued at \$27.7 million, or an average of \$564 per ton. Total production in 2011 was 200,000 t valued at \$103 million. 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 fourth quarter of 2011 were 49,100 t valued at \$29.1 million, or an average of \$593 per ton, compared with shipments during the fourth quarter of 2010, which were 49,300 t valued at \$28.7 million for an average of \$583 per ton. Shipments of steel shot and grit for all of 2011 were 204,000 t valued at \$113 million, compared with shipments during 2010, which were 185,000 t valued at \$109 million.

During the fourth quarter of 2011, five companies produced 437 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$1.61 million. During all of 2011, the same five companies produced 1,950 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$7.10 million.

Imports of all types of metallic shot and grit during the fourth quarter of 2011 were 5,190 t valued at \$5.20 million for an average of \$1,000 per ton. Canada, Germany, and Korea were the leading suppliers, accounting for 50%, 11%, and 11%, respectively, of the tonnage imported. Imports of all types of metallic shot and grit for all of 2011 were 49,600 t valued at \$34.7 million.

Exports of all types of metallic abrasives during the fourth quarter of 2011 were 10,100 t valued at \$13.5 million, or an average of \$1,330 per ton. Shipments to Mexico accounted for 42% of the exports; 21% was shipped to Canada; and 18% was shipped to China. Exports of all types of metallic abrasives for all of 2011 were 39,500 t valued at \$55.0 million.

TABLE 1
MANUFACTURED ABRASIVES¹

Source and product	2010				2011									
	Fourth quarter		Year		First quarter		Second quarter		Third quarter		Fourth quarter		Year	
	Quantity (metric tons)	Value (thousands)												
United States and Canada, production: ^{e,2}														
Silicon carbide ³	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
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
United States, production:														
Steel shot and grit	44,300	21,700	166,000	81,300	43,600	21,400	53,600	27,000	53,700 ^r	27,100 ^r	49,200	27,700	200,000	103,000
Other shot and grit ^{e,4}	563	2,050	2,120	7,770	536	1,900	487	1,910	490 ^r	1,680	437	1,610	1,950	7,100
Total	44,900	23,800	169,000	89,100	44,100	23,300	54,100	29,000	54,200 ^r	28,800 ^r	49,600	29,300	202,000	110,000
United States, shipments:														
Steel shot and grit	49,300	28,700	185,000	109,000	47,500	27,900	53,100	27,900	53,900 ^r	28,400 ^r	49,100	29,100	204,000	113,000
Other shot and grit ^{e,4}	536	2,230	1,990	8,420	529	2,150	478	2,180	473	1,970	456	1,880	1,940	8,180
Total	49,800	31,000	187,000	117,000	48,000	30,000	53,600	30,100	54,400 ^r	30,400 ^r	49,600	31,000	206,000	122,000

^eEstimated. ^rRevised.

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.

⁴Includes 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 ABRASIVES¹

Source and product	2010				2011									
	Fourth quarter		Year		First quarter		Second quarter		Third quarter		Fourth quarter		Year	
	Quantity (metric tons)	Value ² (thousands)												
Exports:														
Aluminum oxide:														
Crude	4,740	\$15,500	20,000	\$67,900	4,910	\$16,700	5,010	\$21,400	5,710	\$21,700	4,280	\$14,900	19,900	\$74,700
Ground and refined	324,000	155,000	1,450,000	647,000	416,000	209,000	476,000	234,000	404,000	207,000	367,000	174,000	1,660,000	824,000
Silicon carbide:														
Crude	5,430	7,930	18,200	26,600	5,210	6,730	5,670	7,520	6,550	10,100	3,380	6,010	20,800	30,400
Ground and refined	1,280	9,080	4,920	29,400	1,350	6,930	1,620	8,650	2,350	7,190	1,660	5,870	6,980	28,600
Metallic abrasives	8,220	11,300	30,800	41,300	9,630	13,200	9,360	12,700	10,300	15,600	10,100	13,500	39,500	55,000
Imports for consumption:														
Aluminum oxide:														
Crude	43,700	24,600	141,000	78,100	40,000	24,700	42,300	25,100	47,200 [†]	30,000	47,500	31,100	177,000	111,000
Ground and refined	15,000	18,100	44,600	58,000	12,100	15,700	12,300	16,700	9,750	13,600	12,200	16,900	46,400	62,900
Silicon carbide:														
Crude	25,300	25,400	99,300	78,700	11,100	15,800	29,800	35,400	17,300	21,100	18,600	24,800	76,800	97,100
Ground and refined	10,500	23,100	43,400	85,900	16,300	29,300	12,900	28,400	8,620	22,500	14,300	23,900	52,200	104,000
Metallic abrasives	14,100	9,150	43,400	25,300	14,300	9,510	5,790	5,710	24,400	14,300	5,190	5,200	49,600	34,700

[†]Revised.

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

²Customs value.

Source: U.S. Census Bureau.