

Mineral Industry Surveys

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MANUFACTURED ABRASIVES IN THE FIRST QUARTER 2023

The U.S. Geological Survey (USGS) collects quarterly data on manufactured abrasives through its survey of producers. Manufactured abrasives included in this report are metallic abrasives, fused aluminum oxide, and silicon carbide. Where indicated, data from the United States and Canada are combined to avoid disclosing 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.

Metallic Abrasives

During the first quarter of 2023, an estimated 42,700 metric tons (t) of steel shot and grit valued at an estimated \$29.8 million was produced, and an estimated 49,400 t valued at an estimated \$30.1 million was shipped in the United States. This was compared with an estimated 43,000 t valued at \$37.0 million produced and an estimated 48,000 t valued at \$43.0 million shipped during the first quarter of 2022. At least one company produced shot and grit from reclaimed material. Production of other types of metallic shot and grit (primarily cut wire shot) was estimated to be 544 t valued at \$2.00 million, 46% less in quantity and 33% less in value compared with those of the first quarter of 2022. The quantity of shipments of other types of metallic shot was estimated to be 565 t valued at \$2.51 million, 44% less in quantity and 17% less in value compared with those of the first quarter of 2022. Total first quarter 2023 production of metallic abrasives was 43,300 t valued at \$31.8 million, for an average unit value of \$734 per ton. Total first quarter 2023 shipments of metallic abrasives were 49,900 t valued at \$32.6 million, for an average unit value of \$653 per ton (table 1).

Imports of all types of metallic abrasives during the first quarter of 2023 were 4,570 t valued at \$9.37 million, for an average unit value of \$2,050 per ton compared with 5,850 t valued at \$11.5 million, for an average unit value of \$1,970 during the first quarter of 2022 (table 2).

Exports of all types of metallic abrasives during the first quarter of 2023 were 5,650 t valued at \$8.78 million, for an average unit value of \$1,560 per ton compared with 4,980 t valued at \$8.83 million, for an average unit value of \$1,770 during the first quarter of 2022 (table 2).

Fused Aluminum Oxide

Combined production of regular-grade crude fused aluminum oxide in the United States and Canada during the first quarter of 2023 was estimated to be 5,000 t with an estimated value of \$800,000, which has been essentially unchanged for several years owing to production figures being rounded to the nearest 5,000 t to avoid disclosing proprietary data (table 1).

Imports of crude fused aluminum oxide during the first quarter of 2023 were 16,800 t valued at \$11.4 million, for an average unit value of \$680 per ton. Imports of ground and refined fused aluminum oxide for the same period were 14,700 t valued at \$21.6 million, for an average unit value of \$1,470 per ton (table 2).

Exports of crude fused aluminum oxide for the first quarter of 2023 were 2,220 t valued at \$8.28 million, for an average unit value of \$3,730 per ton (table 2).

Silicon Carbide

Total production of abrasive-grade silicon carbide in the United States during the first quarter of 2023 was estimated to be 10,000 t with an estimated value of \$6.60 million, which has been essentially unchanged in quantity and an 11% decrease in value compared with the first quarter of 2022 (table 1).

Imports of crude silicon carbide during the first quarter of 2023 were 21,100 t valued at \$17.8 million, for an average unit value of \$841 per ton. Imports of ground and refined silicon carbide for the same period were 6,650 t valued at \$28.7 million, for an average unit value of \$4,310 per ton (table 2).

Exports of crude silicon carbide during the first quarter of 2023 were 882 t with a value of \$1.93 million, for an average unit value of \$2,190 per ton. Exports of ground and refined silicon carbide for the same period were 1,630 t valued at \$6.00 million, for an average unit value of \$3,670 per ton (table 2).

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TABLE 1
PRODUCTION AND SHIPMENTS OF ALUMINUM OXIDE, SILICON CARBIDE, AND METALLIC ABRASIVES¹

Source and product	2022							
	1st quarter		2d quarter		3d quarter		4th quarter	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
United States, production:								
Steel shot and grit ^e	43,000	\$37,000	43,100	\$41,800	45,700	\$36,300	44,100	\$32,800
Other shot and grit ^{e, 2}	1,000	3,000	1,000	3,000	1,000	3,000	1,000	3,000
Total ^e	44,000	40,000	44,100	44,800	46,700	39,300	45,100	35,800
United States, shipments:								
Steel shot and grit ^e	48,000	43,000	46,600	46,700	50,000	42,000	50,000	42,000
Other shot and grit ^{e, 2}	1,000	3,000	1,000	3,000	1,000	3,000	1,000	3,000
Total ^e	49,000	46,000	47,600	49,700	51,000	45,000	51,000	45,000
United States and Canada, production: ^{e, 3}								
Crude aluminum oxide, regular-grade	5,000	800	5,000	800	5,000	800	5,000	800
United States, production: ^{e, 3}								
Silicon carbide ⁴	10,000	7,400	10,000	7,400	10,000	6,700	10,000	6,700

Source and product	2022		2023	
	1st quarter–4th quarter		1st quarter	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
United States, production:				
Steel shot and grit ^e	176,000	148,000	42,700	\$29,800
Other shot and grit ^{e, 2}	4,000	12,000	544	2,000
Total ^e	180,000	160,000	43,300	31,800
United States, shipments:				
Steel shot and grit ^e	195,000	174,000	49,400	30,100
Other shot and grit ^{e, 2}	4,000	12,000	565	2,510
Total ^e	199,000	186,000	49,900	32,600
United States and Canada, production: ^{e, 3}				
Crude aluminum oxide, regular-grade	20,000	3,200	5,000	800
United States, production: ^{e, 3}				
Silicon carbide ⁴	40,000	28,200	10,100	6,620

^eEstimated.

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

²Includes cut wire shot and reclaimed shot and grit from primary producers.

³Quantities are rounded to the nearest 5,000 tons to avoid disclosing proprietary data. Values are rounded to avoid disclosing proprietary data.

⁴Includes materials for metallurgical uses and other applications.

TABLE 2
U.S. EXPORTS AND IMPORTS FOR CONSUMPTION OF ALUMINUM OXIDE, SILICON CARBIDE, AND METALLIC ABRASIVES¹

Source and product	2022							
	1st quarter		2d quarter		3d quarter		4th quarter	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Exports:								
Metallic abrasives	4,980	\$8,830	5,520	\$9,860	6,570	\$10,600	6,870	\$9,680
Aluminum oxide, crude	4,400	14,600	4,440	14,500	2,870	11,600	2,630	10,900
Silicon carbide:								
Crude	976	1,510	1,130	1,600	942	2,090	899	2,910
Ground and refined	1,650	3,760	2,360	6,650	2,160	6,330	1,890	5,210
Imports for consumption:								
Metallic abrasives	5,850	11,500	5,350	12,600	4,180	9,350	4,740	9,280
Aluminum oxide:								
Crude	29,700	23,000	32,100	26,400	60,800	49,200	39,500	30,600
Ground and refined	11,400	16,500	18,700	26,300	17,700	29,300	14,800	25,100
Silicon carbide:								
Crude	20,500	19,800	31,600	33,400	45,800	49,400	29,200	34,000
Ground and refined	9,880	26,900	10,600	35,300	9,520	38,700	7,790	36,100
Source and product	2022		2023					
	1st quarter–4th quarter		1st quarter					
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)				
Exports:								
Metallic abrasives	23,900	\$39,000	5,650	\$8,780				
Aluminum oxide, crude	14,300	51,600	2,220	8,280				
Silicon carbide:								
Crude	3,950	8,100	882	1,930				
Ground and refined	8,060	21,900	1,630	6,000				
Imports for consumption:								
Metallic abrasives	20,100	42,800	4,570	9,370				
Aluminum oxide:								
Crude	162,000	129,000	16,800	11,400				
Ground and refined	62,600	97,200	14,700	21,600				
Silicon carbide:								
Crude	127,000	137,000	21,100	17,800				
Ground and refined	37,800	137,000	6,650	28,700				

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

²Export values are free alongside ship values; import values are customs values.

Source: U.S. Census Bureau.