

Mineral Industry Surveys

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MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 2022

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 fourth quarter of 2022, an estimated 44,100 metric tons (t) of steel shot and grit valued at an estimated \$32.8 million was produced, and an estimated 50,000 t valued at an estimated \$42.0 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 fourth quarter of 2021 and an estimated 45,700 t valued at \$36.3 million produced and an estimated 50,000 t valued at \$42.0 million shipped during the third quarter of 2022. At least one company produced shot and grit from reclaimed material. Production and shipments of other types of metallic shot and grit (primarily cut wire shot) were each estimated to be 1,000 t valued at \$3 million, compared with production of 1,000 t valued at \$2 million and shipments of 1,000 t valued at \$3 million in the fourth quarter of 2021 and unchanged from production and shipments of the third quarter of 2022. Total fourth quarter 2022 production of metallic abrasives was 45,100 t valued at \$35.8 million, for an average unit value of \$794 per metric ton. Total fourth quarter 2022 shipments of metallic abrasives were 51,000 t valued at \$45.0 million, for an average unit value of \$882 per metric ton. Total production in 2022 for all types of metallic shot and grit was estimated to be 180,000 t valued at \$160 million compared with an estimated 176,000 t valued at \$148 million during 2021 (table 1).

Imports of all types of metallic abrasives during the fourth quarter of 2022 were 4,740 t valued at \$9.28 million, for an average unit value of \$1,960 per metric ton (table 2).

Exports of all types of metallic abrasives during the fourth quarter of 2022 were 6,870 t valued at \$9.68 million, for an average unit value of \$1,410 per metric ton (table 2).

Fused Aluminum Oxide

Combined production of regular-grade crude fused aluminum oxide in the United States and Canada during the fourth quarter of 2022 was estimated to be 5,000 t with an estimated value of \$800,000, which has been unchanged for several years owing to production figures being rounded to the nearest 5,000 t to avoid disclosing proprietary data. Total production in 2022 for regular-grade crude fused aluminum oxide was 20,000 t valued at \$3.20 million, which was unchanged in quantity and value from that of 2021 (table 1).

Imports of crude fused aluminum oxide during the fourth quarter of 2022 were 39,500 t valued at \$30.6 million, for an average unit value of \$774 per metric ton. Imports of ground and refined fused aluminum oxide for the same period were 14,800 t valued at \$25.1 million, for an average unit value of \$1,690 per metric ton (table 2).

Exports of crude fused aluminum oxide for the fourth quarter of 2022 were 2,630 t valued at \$10.9 million, for an average unit value of \$4,160 per metric ton (table 2).

Silicon Carbide

Total production of abrasive-grade silicon carbide in the United States during the fourth quarter of 2022 was estimated to be 10,000 t with an estimated value of \$6.7 million, which has been unchanged in quantity from both the fourth quarter of 2021 and the third quarter of 2022, but the value was 9% less than that of the fourth quarter of 2021 and unchanged from that of the third quarter of 2022. Total production in 2022 of abrasive-grade silicon carbide was 40,000 t valued at \$28.2

million, which was unchanged in quantity and 5% less in value from that of 2021 (table 1).

Imports of crude silicon carbide during the fourth quarter of 2022 were 29,200 t valued at \$34.0 million, for an average unit value of \$1,160 per metric ton. Imports of ground and refined silicon carbide for the same period were 7,790 t valued at \$36.1 million, for an average unit value of \$4,640 per metric ton (table 2).

Exports of crude silicon carbide during the fourth quarter of 2022 were 899 t with a value of \$2.91 million, for an average unit value of \$3,230 per metric ton. Exports of ground and refined silicon carbide for the same period were 1,890 t

valued at \$5.21 million, for an average unit value of \$2,760 per metric ton (table 2).

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

Source and product	4th quarter		2021 1st quarter–4th quarter	
	Quantity	Value	Quantity	Value
	(metric tons)	(thousands)	(metric tons)	(thousands)
United States, production:				
Steel shot and grit ^e	43,000	\$37,000	172,000	\$137,000
Other shot and grit ^{e, 2}	1,000	2,000	4,000	11,000
Total ^e	44,000	39,000	176,000	148,000
United States, shipments:				
Steel shot and grit ^e	48,000	43,000	189,000	162,000
Other shot and grit ^{e, 2}	1,000	3,000	4,000	14,000
Total ^e	49,000	46,000	193,000	176,000
United States and Canada, production: ^{e, 3}				
Crude aluminum oxide, regular-grade	5,000	800	20,000	3,200
United States, production: ^{e, 3}				
Silicon carbide ⁴	10,000	7,400	40,000	29,600

Source and product	2022									
	1st quarter		2d quarter		3d quarter		4th quarter		1st quarter–4th quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(thousands)	(metric tons)	(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	176,000	148,000
Other shot and grit ^{e, 2}	1,000	3,000	1,000	3,000	1,000	3,000	1,000	3,000	4,000	12,000
Total ^e	44,000	40,000	44,100	44,800	46,700	39,300	45,100	35,800	180,000	160,000
United States, shipments:										
Steel shot and grit ^e	48,000	43,000	46,600	46,700	50,000	42,000	50,000	42,000	195,000	174,000
Other shot and grit ^{e, 2}	1,000	3,000	1,000	3,000	1,000	3,000	1,000	3,000	4,000	12,000
Total ^e	49,000	46,000	47,600	49,700	51,000	45,000	51,000	45,000	199,000	186,000
United States and Canada, production: ^{e, 3}										
Crude aluminum oxide, regular-grade	5,000	800	5,000	800	5,000	800	5,000	800	20,000	3,200
United States, production: ^{e, 3}										
Silicon carbide ⁴	10,000	7,400	10,000	7,400	10,000	6,700	10,000	6,700	40,000	28,200

^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	2021									
	4th quarter		1st quarter–4th quarter							
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)						
Exports:										
Metallic abrasives	5,210	\$8,490	20,100	\$34,500						
Aluminum oxide, crude	3,890	14,500	13,500	54,100						
Silicon carbide:										
Crude	718	1,300	2,870	5,260						
Ground and refined	1,750	4,990	9,100	20,100						
Imports for consumption:										
Metallic abrasives	6,080	10,600	26,400	39,800						
Aluminum oxide:										
Crude	35,500	25,000	105,000	70,600						
Ground and refined	12,600	17,100	54,200	69,700						
Silicon carbide:										
Crude	29,400	20,000	92,200	54,100						
Ground and refined	11,200	25,000	32,500	75,400						
	2022									
Source and product	1st quarter		2d quarter		3d quarter		4th quarter		1st 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)	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	23,900	\$39,000
Aluminum oxide, crude	4,400	14,600	4,440	14,500	2,870	11,600	2,630	10,900	14,300	51,600
Silicon carbide:										
Crude	976	1,510	1,130	1,600	942	2,090	899	2,910	3,950	8,100
Ground and refined	1,650	3,760	2,360	6,650	2,160	6,330	1,890	5,210	8,060	21,900
Imports for consumption:										
Metallic abrasives	5,850	11,500	5,350	12,600	4,180	9,350	4,740	9,280	20,100	42,800
Aluminum oxide:										
Crude	29,700	23,000	32,100	26,400	60,800	49,200	39,500	30,600	162,000	129,000
Ground and refined	11,400	16,500	18,700	26,300	17,700	29,300	14,800	25,100	62,600	97,200
Silicon carbide:										
Crude	20,500	19,800	31,600	33,400	45,800	49,400	29,200	34,000	127,000	137,000
Ground and refined	9,880	26,900	10,600	35,300	9,520	38,700	7,790	36,100	37,800	137,000

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.