

DIAMOND (INDUSTRIAL)¹

(Data in million carats unless otherwise specified)

Domestic Production and Use: In 2023, total domestic primary production of manufactured industrial diamond bort, grit, and dust and powder was estimated to be 150 million carats with a value of \$48 million, which was essentially unchanged from the quantity and value in 2022. No industrial diamond stone was produced domestically. One company with facilities in Florida and Ohio and a second company in Pennsylvania accounted for all domestic primary production. At least four companies produced polycrystalline diamond from diamond powder. At least two companies recovered used industrial diamond material from used diamond drill bits, diamond tools, and other diamond-containing wastes for recycling. The major consuming sectors of industrial diamond are computer chip production; construction; drilling for minerals, natural gas, and oil; machinery manufacturing; stone cutting and polishing; and transportation (infrastructure and vehicles). Highway building, milling, and repair and stone cutting consumed most of the industrial diamond stone. About 97% of U.S. industrial diamond apparent consumption was synthetic industrial diamond because its quality can be controlled, and its properties can be customized.

Salient Statistics—United States:	2019	2020	2021	2022	2023^e
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond ^e	114	130	132	150	150
Secondary	35.6	35.0	1.20	14.4	14
Imports for consumption	306	190	261	303	280
Exports	114	90.7	99.1	94.0	72.0
Consumption, apparent ²	342	264	295	373	370
Price, unit value of imports, dollars per carat	0.14	0.19	0.18	0.19	0.16
Net import reliance ³ as a percentage of apparent consumption	56	38	55	56	56
Stones, natural and synthetic:					
Production:					
Manufactured diamond ^e	—	—	—	—	—
Secondary	0.10	0.10	0.08	0.08	0.08
Imports for consumption	1.07	0.51	0.33	0.79	0.40
Exports	(4)	0.02	—	(4)	(4)
Consumption, apparent ²	1.17	0.61	0.41	0.86	0.48
Price, unit value of imports, dollars per carat	5.82	8.41	13.0	8.40	14
Net import reliance ³ as a percentage of apparent consumption	91	84	81	91	84

Recycling: In 2023, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 14 million carats with an estimated value of \$530,000. An estimated 75,000 carats of diamond stone was recycled with an estimated value of \$110,000.

Import Sources (2019–22): Bort, grit, and dust and powder; natural and synthetic: China,⁵ 77%; Republic of Korea, 7%; Ireland, 6%; Russia, 4%; and other, 6%. Stones, primarily natural: India, 31%; South Africa, 27%; Russia, 11%; Congo (Kinshasa), 10%; and other, 21%.

Tariff:	Item	Number	Normal Trade Relations 12–31–23
Industrial Miners' diamonds:			
	Carbonados	7102.21.1010	Free.
	Other	7102.21.1020	Free.
Industrial diamonds:			
	Simply sawn, cleaved, or bruted	7102.21.3000	Free.
	Not worked	7102.21.4000	Free.
Grit or dust and powder of natural diamonds:			
	80 mesh or finer	7105.10.0011	Free.
	Over 80 mesh	7105.10.0015	Free.
Grit or dust and powder of synthetic diamonds:			
	Coated with metal	7105.10.0020	Free.
	Not coated with metal, 80 mesh or finer	7105.10.0030	Free.
	Not coated with metal, over 80 mesh	7105.10.0050	Free.

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Depletion Allowance: 14% (domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: Most natural industrial diamond is produced as a byproduct of mining gem-quality diamond. Global natural industrial diamond production was essentially the same in 2023 as in the previous year. Russia, the leading country in the production of natural industrial diamond, produced 18 million carats or 41% of total world production, followed by Congo (Kinshasa), 8 million carats (18%); Botswana, 7 million carats (17%); South Africa, 6 million carats (13%); and Zimbabwe, 4 million carats (9%). These five countries produced 97% of the world's natural industrial diamond. In recent years, mines have closed, and output has been lower as mines approach the ends of their lives. The world's largest diamond mines have matured and are past their peak production levels, and several of the largest diamond mines are expected to close by the end of 2025. As these mines are depleted, global production is expected to decline in quantity.

In 2023, U.S. synthetic-industrial-diamond producers did not manufacture any diamond stone. The combined apparent consumption of all types of industrial diamond was essentially unchanged from that of the previous year. Domestic and global consumption of synthetic diamond grit and powder is expected to remain greater than that of natural diamond material. During 2023, imports of all types of natural and synthetic industrial diamond imports decreased by 7% from that in 2022. In 2023, China was the leading producing country of synthetic industrial diamond, followed by the United States, and Russia, in descending order of quantity. These three countries produced about 99% of the world's synthetic industrial diamond. Synthetic diamond accounted for more than 99% of global industrial diamond production and consumption. Worldwide production of manufactured industrial diamond totaled more than 15.4 billion carats.

The United States is likely to continue to be one of the world's leading markets for industrial diamond into the next decade and is expected to remain a significant producer of synthetic industrial diamond as well. U.S. demand for industrial diamond is likely to be strong in the construction sector as the United States continues building, milling, and repairing the Nation's highway system. Industrial diamond is impregnated in or coats the cutting edge of saws used to cut concrete in highway construction and repair work.

World Natural Industrial Diamond Mine Production and Reserves: Reserves for Botswana, Russia, and South Africa were revised based on company and Government reports.

	Mine production		Reserves ⁶
	2022	2023 ^e	
United States	—	—	NA
Angola	1	1	150
Botswana	7	7	280
Congo (Kinshasa)	8	8	150
Russia	18	18	860
South Africa	6	6	95
Zimbabwe	4	4	NA
Other countries	1	1	120
World total (rounded)	45	45	1,700

World Resources:⁶ Natural diamond deposits have been discovered in more than 35 countries. Natural diamond accounts for less than 1% of all industrial diamond used, synthetic diamond accounts for the remainder. At least 15 countries have the technology to produce synthetic diamond.

Substitutes: Materials that can compete with industrial diamond in some applications include manufactured abrasives, such as cubic boron nitride, fused aluminum oxide, and silicon carbide. Globally, synthetic diamond, rather than natural diamond, is used for more than 99% of industrial applications.

^eEstimated. NA Not available. — Zero.

¹See the Gemstones chapter for information on gem-quality diamond.

²Defined as manufactured diamond production + secondary diamond production + imports – exports.

³Defined as imports – exports.

⁴Less than 500 carats.

⁵Includes Hong Kong.

⁶See Appendix C for resource and reserve definitions and information concerning data sources.