

DIAMOND (INDUSTRIAL)¹

(Data in million carats unless otherwise noted)

Domestic Production and Use: In 2021, total domestic primary production of manufactured industrial diamond bort, grit, and dust and powder was estimated to be 140 million carats with a value of \$42 million, a 7% increase compared with that in 2020. 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 94% 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:	2017	2018	2019	2020	2021^e
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond ^e	41	184	114	130	140
Secondary	11	32	36	35	34
Imports for consumption	362	574	310	191	220
Exports	161	139	114	91	100
Consumption, apparent ²	253	652	346	265	290
Price, unit value of imports, dollars per carat	0.16	0.12	0.14	0.19	0.21
Net import reliance ³ as a percentage of apparent consumption	79	67	57	38	41
Stones, natural and synthetic:					
Production:					
Manufactured diamond ^e	87	—	—	—	—
Secondary	0.39	0.13	0.10	0.10	0.10
Imports for consumption	1.23	2.52	1.07	0.51	0.32
Exports	—	—	(⁴)	0.02	—
Consumption, apparent ²	89.0	2.7	1.2	0.6	0.4
Price, unit value of imports, dollars per carat	12.9	2.9	5.8	8.4	12.0
Net import reliance ³ as a percentage of apparent consumption	1	95	91	83	76

Recycling: In 2021, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 34 million carats with an estimated value of \$5.4 million. It was estimated that 98,000 carats of diamond stone were recycled with an estimated value of \$150,000.

Import Sources (2017–20): Bort, grit, and dust and powder; natural and synthetic: China,⁵ 81%; Ireland, 6%; the Republic of Korea, 6%; Russia, 4%; and other, 3%. Stones, primarily natural: South Africa, 24%; India, 18%; Congo (Kinshasa), 17%; Botswana, 10%; and other, 31%.

Tariff:	Item	Number	Normal Trade Relations 12–31–21
	Industrial Miners' diamonds, carbonados	7102.21.1010	Free.
	Industrial Miners' diamonds, other	7102.21.1020	Free.
	Industrial diamonds, simply sawn, cleaved, or bruted	7102.21.3000	Free.
	Industrial diamonds, not worked	7102.21.4000	Free.
	Grit or dust and powder of natural diamonds, 80 mesh or finer	7105.10.0011	Free.
	Grit or dust and powder of natural diamonds, over 80 mesh	7105.10.0015	Free.
	Grit or dust and powder of synthetic diamonds, coated with metal	7105.10.0020	Free.
	Grit or dust and powder of synthetic diamonds, not coated with metal, 80 mesh or finer	7105.10.0030	Free.
	Grit or dust and powder of synthetic diamonds, 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 increased slightly during 2021. This increase was the result of mines returning to normal operation after the global COVID-19 pandemic caused reduced production in 2020. The most significant recoveries in rough diamond production were in Angola, Botswana, and Canada. Recovery from the effects of the pandemic have been hampered by mine closures and lower output 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 and the global supply of crude natural diamond (including gem-quality and industrial diamond) is forecasted to steadily decrease to about 120 million carats in 2030.

In 2021, U.S. synthetic-industrial-diamond producers did not manufacture any diamond stone and the combined apparent consumption of all types of industrial diamond decreased. Domestic and global demand for synthetic diamond grit and powder is expected to remain greater than that for natural diamond material. The average unit value of all types of natural and synthetic industrial diamond imports increased by 6%. In 2021, China was the leading producing country of synthetic industrial diamond, followed by the United States, Russia, Ireland, and South Africa, in descending order of quantity. These five 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 14.7 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 and exporter 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 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 Australia, Botswana, Russia, and South Africa were revised based on Government and company information.

	Mine production		Reserves ⁶
	2020	2021 ^e	
United States	—	—	NA
Australia	11	8	711
Botswana	5	6	300
Congo (Kinshasa)	10	11	150
Russia	14	15	1,100
South Africa	2	2	120
Zimbabwe	2	2	NA
Other countries	1	1	120
World total (rounded)	45	45	1,800

World Resources:⁶ Natural diamond deposits have been discovered in more than 35 countries. Natural diamond accounts for about 4% 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 about 99% of industrial applications.

^eEstimated. NA Not available. — Zero.

¹See Gemstones 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.

⁷For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 10 million carats.