

DIAMOND (INDUSTRIAL)¹

(Data in million carats unless otherwise noted)

Domestic Production and Use: In 2020, total domestic primary production of manufactured industrial diamond bort, grit, and dust and powder was estimated to be 110 million carats with a value of \$44 million, a slight decrease from that in 2019. No diamond stone was produced domestically. One firm with facilities in Florida and Ohio and a second firm in Pennsylvania accounted for all of the production. At least four firms 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 99% 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:

	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020^e</u>
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond ^e	42	41	184	114	110
Secondary	66	11	32	36	35
Imports for consumption	216	399	574	312	220
Exports	134	161	139	114	91
Consumption, apparent ²	190	290	651	348	270
Price, value of imports, dollars per carat	0.23	0.16	0.12	0.14	0.18
Net import reliance ³ as a percentage of apparent consumption	43	79	67	57	47
Stones, natural and synthetic:					
Production:					
Manufactured diamond ^e	83	87	—	—	—
Secondary	0.36	0.39	0.13	0.10	0.10
Imports for consumption	1.37	1.23	2.52	1.61	0.55
Exports	—	—	—	(⁴)	0.03
Consumption, apparent ²	84.9	89.0	2.7	1.7	0.6
Price, value of imports, dollars per carat	13.6	12.9	2.9	3.9	7.4
Net import reliance ³ as a percentage of apparent consumption	2	1	95	94	84

Recycling: In 2020, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 35 million carats with an estimated value of \$5.5 million. It was estimated that 98,000 carats of diamond stone was recycled with an estimated value of \$150,000.

Import Sources (2016–19): Bort, grit, and dust and powder; natural and synthetic: China, 80%; Ireland, 7%; the Republic of Korea, 6%; Russia, 3%; and other, 4%. Stones, primarily natural: South Africa, 22%; India, 20%; Botswana, 15%; Congo (Kinshasa), 13%; and other, 30%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u> <u>12–31–20</u>
	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 decreased slightly during 2020. This decrease was due to mine closures and lower output as mines approach the ends of their mine life. 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 continue 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.

Worldwide diamond exploration spending has increased over the past few years. The success rate in diamond exploration has been estimated to be less than 1%, and no major deposit has been discovered in more than 20 years.

In 2020, U.S. synthetic-industrial-diamond producers did not manufacture any diamond stone, and industrial diamond stone apparent consumption decreased. Domestic and global demand for synthetic diamond grit and powder is expected to remain greater than that for natural diamond material. In 2020, 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 14.6 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, and South Africa were revised based on Government and company information.

	Mine production		Reserves ⁵
	2019	2020 ^e	
United States	—	—	NA
Australia	13	12	⁶ 25
Botswana	7	5	310
Congo (Kinshasa)	11	12	150
Russia	20	19	650
South Africa	1	3	130
Zimbabwe	2	2	NA
Other countries	<u>1</u>	<u>1</u>	<u>120</u>
World total (rounded)	55	54	1,400

World Resources:⁵ Natural diamond deposits have been discovered in more than 35 countries. Natural diamond accounts for about 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 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 ½ unit.

⁵See Appendix C for resource and reserve definitions and information concerning data sources.

⁶In Australia, Joint Ore Reserves Committee-compliant reserves were 25 million carats.