

DIAMOND (INDUSTRIAL)¹

(Data in million carats unless otherwise noted)

Domestic Production and Use: In 2018, total domestic production of manufactured industrial diamond bort, grit, dust and powder, and stone was estimated to be 140 million carats with a value of \$140 million. Domestic output was synthetic grit, powder, and stone. One firm in Ohio and one firm in Pennsylvania accounted for all of the production. At least nine firms produced polycrystalline diamond from diamond powder. Three companies recovered used industrial diamond as one of their principal operations. Total domestic secondary production of industrial diamond bort, grit, dust and powder, and stone was estimated to be 13 million carats with a value of \$12 million. The United States was one of the world's leading markets. 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:	2014	2015	2016	2017	2018^e
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond ^e	53	40	42	41	43
Secondary	44	63	66	11	12
Imports for consumption	682	275	216	399	580
Exports	163	140	134	161	140
Consumption, apparent ²	616	238	190	290	495
Price, value of imports, dollars per carat	0.11	0.20	0.23	0.16	0.12
Net import reliance ³ as a percentage of apparent consumption	84	57	43	82	89
Stones, natural and synthetic:					
Production:					
Manufactured diamond ^e	72	79	83	87	92
Secondary	0.52	0.19	0.36	0.39	0.37
Imports for consumption	2.16	1.31	1.37	1.23	0.85
Exports	—	—	—	—	—
Sales from Government stockpile excesses	—	—	—	—	—
Consumption, apparent ²	74.6	80.7	84.9	88.6	93.0
Price, value of imports, dollars per carat	14.40	17.50	13.60	12.90	8.10
Net import reliance ³ as a percentage of apparent consumption	3	2	2	1	1

Recycling: In 2018, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 12.0 million carats with an estimated value of \$11.0 million. It was estimated that 370,000 carats of diamond stone was recycled with an estimated value of \$860,000.

Import Sources (2014–17): Bort, grit, and dust and powder; natural and synthetic: China, 76%; Ireland, 8%; Republic of Korea, 4%; Romania, 4%; and other, 8%. Stones, primarily natural: Botswana, 21%; India, 20%; South Africa, 19%; Ghana, 14%; and other, 26%.

Tariff:	Item	Number	Normal Trade Relations 12–31–18
	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: In 2018, China was the world's leading producer of synthetic industrial diamond, with annual production exceeding 13 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.

Demand for synthetic diamond grit and powder is expected to remain greater than that for natural diamond material.

The operator of a diamond mine in the Northwest Territories, Canada, began commercial production from the A-21 kimberlite pipe during the fourth quarter of 2018. A diamond producer in Russia processed the first diamonds from the Verkhne-Munskoe deposit in the Republic of Sakha (Yakutia, Russia) during the fourth quarter of 2017. The next shipment of ore from the Verkhne-Munskoe deposit arrived for processing during the fourth quarter of 2018.

World Natural Industrial Diamond Mine Production and Reserves:⁴

	Mine production		Reserves ⁵
	2017	2018 ^e	
United States	—	—	NA
Australia	17	17	⁶ 120
Botswana	7	7	90
Congo (Kinshasa)	15	15	150
Russia	19	19	650
South Africa	2	2	70
Zimbabwe	2	2	NA
Other countries	1	1	90
World total (rounded)	63	63	1,200

World Resources: 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.

⁴Natural industrial diamond only. Synthetic diamond production far exceeds natural industrial diamond output. Worldwide production of manufactured industrial diamond totaled at least 4.5 billion carats in 2018; the leading producers included China, France, Ireland, Japan, Russia, South Africa, Sweden, and the United States.

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

⁶For Australia, Joint Ore Reserves Committee-compliant reserves were about 67 million carats.