

**DIAMOND (INDUSTRIAL)<sup>1</sup>**

(Data in million carats unless otherwise noted)

**Domestic Production and Use:** In 2017, total domestic production of manufactured industrial diamond bort, grit, dust and powder, and stone was estimated to be 125 million carats with a value of \$123 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 66.4 million carats with a value of \$4.08 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). Stone cutting and highway building, milling, and repair consumed most of the industrial diamond stone. About 98% of the U.S. industrial diamond market now uses synthetic industrial diamond because its quality can be controlled and its properties can be customized.

<b>Salient Statistics—United States:</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017<sup>e</sup></b>
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond <sup>e</sup>	46	53	40	42	42
Secondary	38.1	43.7	63.5	66.1	66.1
Imports for consumption	728	682	275	216	391
Exports	149	163	140	134	134
Consumption, apparent <sup>2</sup>	663	616	239	190	365
Price, value of imports, dollars per carat	0.11	0.11	0.20	0.23	0.16
Net import reliance <sup>3</sup> as a percentage of apparent consumption	87	84	57	43	70
Stones, natural and synthetic:					
Production:					
Manufactured diamond <sup>e</sup>	63	72	79	83	83
Secondary	0.34	0.52	0.19	0.36	0.36
Imports for consumption	1.94	2.16	1.31	1.37	1.12
Exports	—	—	—	—	—
Sales from Government stockpile excesses	—	—	—	—	—
Consumption, apparent <sup>2</sup>	65.3	74.7	80.5	84.7	84.5
Price, value of imports, dollars per carat	15.50	14.40	17.50	13.60	15.90
Net import reliance <sup>3</sup> as a percentage of apparent consumption	3	3	2	2	1

**Recycling:** In 2017, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 66.1 million carats with an estimated value of \$3.5 million. It was estimated that 360,000 carats of diamond stone was recycled with an estimated value of \$540,000.

**Import Sources (2013–16):** Bort, grit, and dust and powder; natural and synthetic: China, 78%; Ireland, 8%; Russia, 4%; Romania, 4%; and other, 6%. Stones, primarily natural: South Africa, 23%; India, 21%; Botswana, 20%; Ghana, 13%; and other, 23%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–17</b>
	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 2017, China was the world's leading producer of synthetic industrial diamond, with annual production exceeding 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 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 cement 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 Gahcho Kué Mine in the Northwest Territories, Canada, began commercial production in February 2017. The mine is expected to be one of the world's largest diamond mines, and it is estimated that the mine will produce around 54 million carats of rough diamond over its 12-year lifetime.

**World Mine Production and Reserves:**<sup>4</sup> Reserves for Australia, Botswana, and Russia were revised based on Government and company information.

	Mine production		Reserves <sup>5</sup>
	2016	2017 <sup>e</sup>	
United States	—	—	NA
Australia	14	14	<sup>6</sup> 120
Botswana	6	6	90
Congo (Kinshasa)	19	19	150
Russia	18	18	650
South Africa	2	2	70
Zimbabwe	2	2	NA
Other countries	1	1	90
World total (rounded)	62	62	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.

<sup>e</sup>Estimated. NA Not available. — Zero.

<sup>1</sup>See Gemstones for information on gem quality diamond.

<sup>2</sup>Defined as manufactured diamond production + secondary diamond production + imports – exports.

<sup>3</sup>Defined as imports – exports.

<sup>4</sup>Natural industrial diamond only. Synthetic diamond production far exceeds natural industrial diamond output. Worldwide production of manufactured industrial diamond totaled at least 4.4 billion carats in 2017; the leading producers included Belarus, China, Ireland, Japan, Russia, South Africa, Sweden, and the United States.

<sup>5</sup>See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

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