# DIAMOND (INDUSTRIAL)[1]

(Data in million carats unless otherwise noted)

**Domestic Production and Use:** In 2022, 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, a 14% increase in quantity and value compared with that in 2021. 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 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:** | **2018** | **2019** | **2020** | **2021** | **2022[e]** |
|---|---|---|---|---|---|
| Bort, grit, and dust and powder; natural and synthetic: | | | | | |
| Production: | | | | | |
| Manufactured diamond[e] | 184 | 114 | 130 | 132 | 150 |
| Secondary | 32 | 36 | 35 | 1.2 | 1.2 |
| Imports for consumption | 574 | 310 | 190 | 261 | 340 |
| Exports | 139 | 114 | 90 | 99 | 100 |
| Consumption, apparent[2] | 652 | 347 | 265 | 295 | 390 |
| Price, unit value of imports, dollars per carat | 0.12 | 0.14 | 0.19 | 0.18 | 0.19 |
| Net import reliance[3] as a percentage of apparent consumption | 67 | 57 | 38 | 55 | 62 |
| Stones, natural and synthetic: | | | | | |
| Production: | | | | | |
| Manufactured diamond[e] | — | — | — | — | — |
| Secondary | 0.13 | 0.10 | 0.10 | 0.08 | 0.08 |
| Imports for consumption | 2.52 | 1.07 | 0.51 | 0.33 | 0.64 |
| Exports | — | — | 0.02 | — | ([4]) |
| Consumption, apparent[2] | 2.65 | 1.17 | 0.59 | 0.41 | 0.71 |
| Price, unit value of imports, dollars per carat | 2.96 | 5.82 | 8.41 | 13.0 | 10 |
| Net import reliance[3] as a percentage of apparent consumption | 95 | 91 | 83 | 81 | 89 |

**Recycling:** In 2022, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 1.2 million carats with an estimated value of $400,000. It was estimated that 75,000 carats of diamond stone were recycled with an estimated value of $110,000.

**Import Sources (2018–21):** Bort, grit, and dust and powder; natural and synthetic: China,[5] 81%; Republic of Korea, 6%; Ireland, 5%; Russia, 4%; and other, 4%. Stones, primarily natural: South Africa, 22%; Congo (Kinshasa), 19%; India, 17%; Sierra Leone, 10%; and other, 32%.

| **Tariff: Item** | **Number** | **Normal Trade Relations 12–31–22** |
|---|---|---|
| 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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# DIAMOND (INDUSTRIAL)

**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 2022 as in the previous year. Russia, the leading country in the production of natural industrial diamond, produced 17 million carats or 37% of total world production, followed by Congo (Kinshasa), 11 million carats (24%); Botswana, 7 million carats (15%); South Africa, 6 million carats (13%); and Zimbabwe, 4 million carats (9%). These five countries produced 98% 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 2022, U.S. synthetic-industrial-diamond producers did not manufacture any diamond stone, and the combined apparent consumption of all types of industrial diamond increased. Domestic and global consumption of synthetic diamond grit and powder is expected to remain greater than that of natural diamond material. Imports of all types of natural and synthetic industrial diamond imports increased by 29%. In 2022, 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 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 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 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 Russia were revised based on company and Government reports.

| | Mine production | | Reserves[6] |
|---|---|---|---|
| | 2021 | 2022[e] | |
| United States | — | — | NA |
| Australia | — | — | [7]11 |
| Botswana | 7 | 7 | 300 |
| Congo (Kinshasa) | 11 | 11 | 150 |
| Russia | 17 | 17 | 600 |
| South Africa | 6 | 6 | 120 |
| Zimbabwe | 4 | 4 | NA |
| Other countries | 1 | 1 | 120 |
| World total (rounded) | 46 | 46 | 1,300 |

**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.

[e]Estimated. NA Not available. — Zero.

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

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

[3]Defined as imports – exports.

[4]Less than 500 carats.

[5]Includes Hong Kong.

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

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