

DIAMOND (INDUSTRIAL)

(Data in million carats, unless otherwise noted)

Domestic Production and Use: In 2002, domestic production was estimated at approximately 310 million carats, and the United States remained the world's largest market for industrial diamond. All domestic output was synthetic grit and powder. Two firms, one in New Jersey and the other in Ohio, accounted for all of the production. Nine firms produced polycrystalline diamond from diamond powder. Four companies recovered used industrial diamond as one of their principal operations. The following industry sectors were the major consumers of industrial diamond: computer chip production, construction, machinery manufacturing, mining services (drilling), stone cutting/polishing, and transportation systems (infrastructure and vehicles). Stone cutting and highway building and repair consumed most of the industrial stone. More than 90% of the industrial diamond market now uses synthetic industrial diamond, whose quality can be controlled and whose properties can be customized to fit specific requirements.

Salient Statistics—United States:	1998	1999	2000	2001	2002^e
Bort, grit, and dust and powder; natural and synthetic:					
Production:					
Manufactured diamond ^e	140	208	248	308	310
Secondary	10	10	10	10	8.4
Imports for consumption	221	208	291	281	195
Exports ¹	104	98	98	88	81
Sales from Government stockpile excesses	(2)	(2)	—	—	—
Consumption, apparent	267	328	451	511	432
Price, value of imports, dollars per carat	0.44	0.44	0.39	0.31	0.34
Net import reliance ³ as a percentage of apparent consumption	44	36	43	38	27
Stones, natural:					
Production:					
Mine	(2)	(2)	(2)	(2)	—
Secondary	0.5	(2)	(2)	(2)	(2)
Imports for consumption ⁴	4.7	3.1	2.5	2.5	2.2
Exports ¹	0.8	0.7	1.6	1.0	1.0
Sales from Government stockpile excesses	0.8	0.6	1.0	0.5	0.4
Consumption, apparent	5.2	3.4	2.2	2.2	1.8
Price, value of imports, dollars per carat	3.92	4.61	5.31	3.54	5.43
Net import reliance ³ as a percentage of apparent consumption	90	88	86	91	89

Recycling: In 2002, the amount of diamond bort, grit, and dust and powder recycled was estimated to be 8.4 million carats. Lower prices and greater competition appear to be reducing the number and scale of diamond stone recycling operations; in 2002, it was estimated that 205 thousand carats of diamond stone were recycled.

Import Sources (1998-2001): Bort, grit, and dust and powder; natural and synthetic: Ireland, 44%; China, 18%; Ukraine, 16%; and other, 22%. Stones, primarily natural: Switzerland, 21%; Russia, 20%; United Kingdom, 17%; Ireland, 13%; and other, 29%.

Tariff: Item	Number	Normal Trade Relations 12/31/02
Miners' diamond, carbonados	7102.21.1010	Free.
Other	7102.21.1020	Free.
Industrial diamond, natural advanced	7102.21.3000	Free.
Industrial diamond, natural not advanced	7102.21.4000	Free.
Industrial diamond, other	7102.29.0000	Free.
Grit or dust and powder	7105.10.0000	Free.

Depletion Allowance: 14% (Domestic and foreign).

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Government Stockpile:

Stockpile Status—9-30-02⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2002	Disposals FY 2002
Industrial stones	0.797	0.219	0.797	1.300	0.412

Events, Trends, and Issues: The United States will continue to be the world's largest market for industrial diamond into the next decade and will remain a significant producer and exporter of industrial diamond as well. Increase in U.S. demand for industrial diamond is likely to continue in the construction sector as the United States builds and repairs the Nation's highway system. Industrial diamond coats the cutting edge of saws used to cut cement in highway construction and repair work.

World and U.S. demand for diamond grit and powder will grow during the next 5 years. Increases in demand for synthetic grit and powder are expected to be greater than for natural diamond material. Constant-dollar prices of synthetic diamond products probably will continue to decline as production technology becomes more cost effective; the decline is even more likely if competition from low-cost producers in China and Russia increases.

World Mine Production, Reserves, and Reserve Base:⁶

	Mine production		Reserves ⁷	Reserve base ⁷
	2001	2002 ^e		
United States	(²)	—	NA	NA
Australia	13.1	13.1	90	230
Botswana	5.1	5.1	130	200
China	1.0	1.0	10	20
Congo (Kinshasa)	9.1	9.1	150	350
Russia	11.6	11.9	40	65
South Africa	6.7	6.7	70	150
Other countries	1.4	2.0	85	210
World total (may be rounded)	48.0	48.9	580	1,200

World Resources: Natural diamond resources have been discovered in more than 35 countries. Nevertheless, natural diamond accounts for less than 10% 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. Synthetic diamond rather than natural diamond is used for more than 90% of industrial applications.

^eEstimated. NA Not available. — Zero.

¹Reexports no longer are combined with exports because increasing amounts of U.S. reexports obscure apparent consumption rates.

²Less than ½ unit.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴May include synthetic miners' diamond.

⁵See Appendix B for definitions.

⁶Natural industrial diamond only. Note, however, that synthetic diamond production far exceeds natural industrial diamond output. Worldwide production of manufactured industrial diamond totaled at least 614 million carats in 2001; the largest producers included Ireland, Japan, Russia, and the United States.

⁷See Appendix C for definitions.