

DIAMOND (INDUSTRIAL)

(Data in million carats, unless otherwise noted)

Domestic Production and Use: In 2000, production reached a record high for the fourth consecutive year and the United States remained the world's largest market for industrial diamond. Virtually all output was synthetic grit and powder. Two firms, one in New Jersey and the other in Ohio, accounted for all of the production. Nine other firms produced polycrystalline diamond from diamond powder. Four companies recovered used industrial diamond as one of their principal operations. Most consumption was accounted for by the following industry sectors: 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 accounted for most of the industrial stone consumption. More than 90% of the industrial diamond market is now accounted for by synthetic industrial diamonds, whose quality can be controlled and whose properties can be customized to fit specific requirements.

Salient Statistics—United States:	1996	1997	1998	1999	2000^e
Bort, grit, and dust and powder; natural and synthetic:					
Production: Manufactured diamond	114	125	140	208	248
Secondary	20	10	10	10	10
Imports for consumption	218	254	221	208	325
Exports ¹	105	126	104	98	99
Sales from Government stockpile excesses	1	.7	(2)	(2)	—
Consumption, apparent	248	264	267	328	484
Price, value of imports, dollars per carat	.46	.43	.44	.44	.37
Net import reliance ³ as a percent of apparent consumption	46	49	44	36	47
Stones, natural:					
Production: Mine	(2)	(2)	(2)	(2)	(2)
Secondary	.4	.5	.5	.4	.5
Imports for consumption ⁴	2.9	2.8	4.7	3.1	2.9
Exports ¹	.5	.6	.8	.7	1.7
Sales from Government stockpile excesses	.5	1.2	.8	.6	1.0
Consumption, apparent	3.3	3.9	5.2	3.4	2.7
Price, value of imports, dollars per carat	7.54	7.69	3.92	4.61	5.16
Net import reliance ³ as a percent of apparent consumption	88	87	90	88	81

Recycling: Lower prices and greater competition appear to be reducing the number and scale of recycling operations.

Import Sources (1996-99): Bort, grit, and dust and powder; natural and synthetic: Ireland, 47%; China, 17%; Russia, 8%; and other, 28%. Stones, primarily natural: United Kingdom, 19%; Switzerland, 13%; Belgium, 11%; Ireland, 11%; and other, 46%.

Tariff: Item	Number	Normal Trade Relations 12/31/00
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).

Government Stockpile:

Stockpile Status—9-30-00⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2000	Disposals FY 2000
Industrial stones	1.51	0.681	1.51	1.000	0.989

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Events, Trends, and Issues: The United States will continue to be the world's largest market for industrial diamond well into the next decade and will remain a significant producer and exporter of industrial diamond as well. The most dramatic increase in U.S. demand for industrial diamond is likely to occur in the construction sector as the \$200 billion Transportation Equity Act for the 21st Century (Public Law 105-178; enacted June 9, 1998) is further implemented. The act provides funding for building and repairing the Nation's highway system through 2003. 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
	1999	2000 ^e		
United States	(²)	(²)	Unknown	Unknown
Australia	16.4	18.5	90	230
Botswana	5.0	5.0	130	200
Brazil	.6	.6	5	15
China	.9	.9	10	20
Congo (Kinshasa)	14.5	14.5	150	350
Russia	11.5	11.7	40	65
South Africa	6.0	6.2	70	150
Other countries	<u>1.4</u>	<u>1.2</u>	<u>80</u>	<u>200</u>
World total (may be rounded)	56.3	58.6	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.

¹Reexports no longer are combined with exports, as in previous Mineral Commodity Summaries, because increasing amounts of U.S. reexports obscure apparent consumption rates.

² Less 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 467 million carats in 1999; the largest producers included Ireland, Japan, Russia, and the United States.

⁷See Appendix C for definitions.