

GRAPHITE (NATURAL)

(Data in thousand metric tons, unless noted)

Domestic Production and Use: Natural graphite was not produced domestically in 1995. Natural graphite was consumed by several hundred manufacturing firms, primarily in the Northeastern and Great Lakes regions. The main uses of natural graphite were estimated to be in refractories, 27%; brake linings, 21%; packings, 13%; lubricants, 6%; dressings and molds in foundry operations, 6%; and other, 27%.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production, mine	—	—	—	—	—
Imports for consumption	34	50	52	53	60
Exports	19	20	17	20	30
Consumption, apparent	14	30	35	33	30
Price, imports (average dollars per ton at foreign ports):					
Flake	970	708	612	629	635
Lump and chip (Sri Lankan)	1,440	1,070	789	709	600
Amorphous (Mexican)	119	125	127	138	150
Stocks, yearend	NA	NA	NA	NA	NA
Employment, mine, mill, and processing plant	—	—	—	—	—
Net import reliance ¹ as a percent of apparent consumption	100	100	100	100	100

Recycling: None; however, the U.S. Bureau of Mines process to recover flake graphite from kish, a steelmaking waste, has been tested in the pilot-plant stage.

Import Sources (1991-94): Mexico, 30%; Canada, 27%; China, 20%; Madagascar, 7%; Brazil, 5%; and other, 11%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN² 12/31/95
	Crystalline flake (not including flake dust)	2504.10.1000	Free	3.6¢/kg.
	Other	2504.90.0000	Free	10% ad val.

Depletion Allowance: 22% (Domestic lump and amorphous), 14% (Domestic flake), 14% (Foreign).

Government Stockpile:

Stockpile Status—9-30-95

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 95
Sri Lanka, amorphous lump	5	—	—	—
Madagascar, crystalline flake	14	1	14	1
Other than Sri Lanka and Madagascar crystalline	2	1	2	1

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Events, Trends, and Issues: Graphite was near to supply-demand balance in 1995. Demand was met largely by imports of flake from Canada, China, and Madagascar; lump and chip from Sri Lanka; and amorphous graphite from China and Mexico. Imports of all kinds of graphite were up 13% from those of 1994. Exports were up 50%.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ³	Reserve base ³
	<u>1994</u>	<u>1995^e</u>		
United States	—	—	—	1,000
Brazil	29	30	500	1,000
Canada	16	20	1,500	2,700
China	320	320	5,500	310,000
India	75	70	740	740
Korea, South	78	80	3,200	20,000
Madagascar	8	10	980	980
Mexico	44	40	3,100	3,100
Other countries	<u>149</u>	<u>150</u>	<u>5,500</u>	<u>43,000</u>
World total (may be rounded)	719	720	^e 21,000	380,000

Resources: Domestic resources are relatively small, although the rest of the world's inferred reserve base exceeds 800 million tons of recoverable graphite. Deposits in Alabama, Alaska, New York, Pennsylvania, and Texas were not economically viable.

Substitutes: Substitute materials are more costly and/or do not perform as well as natural graphite for most applications. Manufactured graphite powder, scrap from discarded machined shapes, and calcined petroleum coke compete for use in iron and steel production. Finely ground coke with olivine is a potential competitor in foundry facing operations. Molybdenum disulfide competes as a dry lubricant, but is more sensitive to oxidative conditions.

^eEstimated. NA Not available.

¹Defined as imports - exports + adjustments for Government and industry stock changes. Data on changes in stocks were not available and were assumed to be zero in the calculations.

²See Appendix B.

³See Appendix C for definitions.