GRAPHITE (NATURAL)

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: Natural graphite was not produced domestically in 1997. Natural graphite was consumed by approximately 200 manufacturing firms, primarily in the Northeastern and Great Lakes regions. The major uses of natural graphite did not significantly vary from those of 1996. Refractory applications, once again, led the way in use categories with 25%; brake linings was a close second with 22%; lubricants, 5%; dressings and molds in foundry operations, 6%; and miscellaneous uses making up the remaining 42%.

Salient Statistics—United States:	1993	1994	1995	1996	1997[e]
Production, mine	—	—	—	—	—
Imports for consumption	52	53	61	53	54
Exports	17	20	37	26	27
Consumption, apparent	35	33	24	27	28
Price, imports (average dollars per ton at foreign ports):					
Flake	612	629	658	699	716
Lump and chip (Sri Lankan)	789	709	610	675	692
Amorphous (Mexican)	127	138	143	134	137
Stocks, yearend	NA	NA	NA	NA	NA
Net import reliance[1] as a percent of apparent consumption	100	100	100	100	100

Recycling: Refractory brick and linings led the way in recycling of graphite products. Primary recycling of refractory articles is growing with the recycled market being principally in less demanding service conditions, such as safety linings and insulation.

Import Sources (1993-96): Canada, 30%; Mexico, 28%; China, 20%; Madagascar, 7%; and other, 15%.

Tariff: Item	Number	Most favored nation (MFN) 12/31/97	Non-MFN[2] 12/31/97
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—9-30-97[3]

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1997	Disposals FY 1997
Sri Lanka, amorphous lump	5	—	—	—	—
Madagascar, crystalline flake	14	14	14	2	2
Other than Sri Lanka and Madagascar crystalline	—	—	—	1	—

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GRAPHITE (NATURAL)

Events, Trends, and Issues: Graphite was near to supply-demand balance in 1996. 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. Graphite electrode consumption in steelmaking has been decreasing since the late 1980's due to increased efficiency of the iron and steel producers. Applicators of natural graphite in lubrication applications are also decreasing due to changes in lubricant compositions and processing technologies.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves[4]	Reserve base[4]
	1996	1997[e]		
United States	—	—	—	1,000
Brazil	36	36	500	1,000
Canada	22	22	1,500	2,700
China	—	250	5,500	310,000
India	120	100	740	740
Madagascar	16	15	980	980
Mexico	36	40	3,100	3,100
Other countries	204	204	5,500	43,000
World total (may be rounded)	644	667	21,000	380,000

World Resources: Domestic resources are relatively small, although the rest of the world's inferred reserve base exceeds 800 million tons of recoverable graphite.

Substitutes: 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.

[e]Estimated. NA Not available.

[1]Defined 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.

[2]See Appendix B.

[3]See Appendix C for definitions.

[4]See Appendix D for definitions.