FLUORSPAR

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: There was no domestic mining of fluorspar in 2004. Some byproduct calcium fluoride was recovered from industrial waste streams, although data are not available on exact quantities. Material purchased from the National Defense Stockpile or imported was screened and dried for resale to customers. Domestically, about 88% of reported fluorspar consumption went into the production of hydrofluoric acid (HF) in Louisiana and Texas and aluminum fluoride in Texas. HF is the primary feedstock for the manufacture of virtually all organic and inorganic fluorine-bearing chemicals and is also a key ingredient in the processing of aluminum and uranium. The remaining 12% of the reported fluorspar consumption was as a flux in steelmaking, in iron and steel foundries, primary aluminum production, glass manufacture, enamels, welding rod coatings, cement production, and other uses or products. An estimated 54,000 tons of fluorosilicic acid (equivalent to 95,000 tons of 92% fluorspar) was recovered from phosphoric acid plants processing phosphate rock. Fluorosilicic acid was used primarily in water fluoridation, either directly or after processing into sodium silicofluoride.

Salient Statistics—United States:	2000	2001	2002	2003	2004[e]
Production:					
Finished, all grades[1]	NA	NA	—	—	—
Fluorspar equivalent from phosphate rock	119	104	92	94	95
Imports for consumption:					
Acid grade	484	495	466	533	540
Metallurgical grade	39	27	28	34	50
Total fluorspar imports	523	522	494	567	590
Fluorspar equivalent from hydrofluoric acid plus cryolite	208	176	182	180	190
Exports[2]	40	21	24	31	22
Shipments from Government stockpile	106	65	23	75	42
Consumption:					
Apparent[3]	601	543	477	589	622
Reported	512	536	588	616	630
Stocks, yearend, consumer and dealer[4]	289	221	245	206	110
Employment, mine and mill, number	5	5	—	—	—
Net import reliance[5] as a percentage of apparent consumption	100	100	100	100	100

Recycling: An few thousand tons per year of synthetic fluorspar is recovered primarily from uranium enrichment, but also from petroleum alkylation and stainless steel pickling. Primary aluminum producers recycled HF and fluorides from smelting operations. HF is recycled in the petroleum alkylation process.

Import Sources (2000-03): China, 65%; South Africa, 22%; Mexico, 12%; and other, 1%.

Tariff: Item	Number	Normal Trade Relations 12-31-04
Acid grade (97% or more CaF_2)	2529.22.0000	Free.
Metallurgical grade (less than 97% CaF_2)	2529.21.0000	Free.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: During fiscal year 2004, there were no fluorspar sales from the Defense National Stockpile. Under the proposed fiscal year 2005 Annual Materials Plan, the Defense National Stockpile Center will be authorized to sell 54,400 metric tons (60,000 short dry tons) of metallurgical grade and 10,900 tons (12,000 short dry tons) of acid grade.

Stockpile Status—9-30-04[6]

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2004	Disposals FY 2004
Acid grade	4	53	11	11	—
Metallurgical grade	84	—	54	54	—

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FLUORSPAR

Events, Trends, and Issues: China reduced its announced fluorspar export quota for 2004 to 750,000 tons. This continues the trend of recent years as China attempts to reduce fluorspar exports in order to supply rapidly increasing domestic markets. In 2003, China exported 951,000 tons, which was about 100,000 tons higher than the 2003 quota. The higher figure is explained by the fact that there is usually a carryover of export licenses from the previous year. The average export license fees in 2004 were in the $55 to $60 per metric ton range.

Work continued on mine projects in Australia and Vietnam and on capacity upgrades in Kenya and South Africa. Increased production is expected from Mongolia, which has large reserves but in the past has exported the majority of its material to Russia and Ukraine.

Import prices for acid-grade fluorspar stabilized in 2004 after a dramatic increase in 2003. The reduction in Chinese exports resulted in short supplies and increased prices.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves[7, 8]	Reserve base[7, 8]
	2003	2004[e]		
United States	—	—	NA	6,000
China	2,650	2,700	21,000	110,000
France	105	105	10,000	14,000
Kenya	100	120	2,000	3,000
Mexico	730	750	32,000	40,000
Mongolia	190	270	12,000	16,000
Morocco	75	80	NA	NA
Namibia	[9]79	[9]81	3,000	5,000
Russia	170	170	Moderate	18,000
South Africa	235	235	41,000	80,000
Spain	130	130	6,000	8,000
Other countries	290	290	110,000	180,000
World total (rounded)	4,750	4,930	230,000	480,000

World Resources: Identified world fluorspar resources were approximately 500 million tons of contained fluorspar. The quantity of fluorine present in phosphate rock deposits is enormous. Current U.S. reserves of phosphate rock are estimated to be 1.0 billion tons, which at 3.5% fluorine would contain 35 million tons of fluorine, equivalent to about 72 million tons of fluorspar. World reserves of phosphate rock are estimated to be 18 billion tons, equivalent to 630 million tons of fluorine and 1.29 billion tons of fluorspar.

Substitutes: Olivine and/or dolomitic limestone were used as substitutes for fluorspar. Byproduct fluorosilicic acid from phosphoric acid production was used as a substitute in aluminum fluoride production, and also has the potential to be used as a substitute in HF production.

[e]Estimated. NA Not available. — Zero.
[1]Shipments.
[2]Exports are all general imports reexported or National Defense Stockpile material exported.
[3]Excludes fluorspar equivalent of fluorosilicic acid, hydrofluoric acid, and cryolite.
[4]Industry stocks for three leading consumers, fluorspar distributors, and National Defense Stockpile material committed for sale pending shipment.
[5]Defined as imports – exports + adjustments for Government and industry stock changes.
[6]See Appendix B for definitions.
[7]See Appendix C for definitions.
[8]Measured as 100% calcium fluoride.
[9]Data are in wet tons.