

SULFUR

(Data in thousand metric tons of sulfur, unless noted)

Domestic Production and Use: In 1995, elemental sulfur and byproduct sulfuric acid were produced at 168 operations in 30 States, Puerto Rico, and the U.S. Virgin Islands. Total shipments were valued at about \$500 million. Total elemental sulfur production was 10.3 million metric tons; Texas and Louisiana accounted for 50% of domestic production. Elemental sulfur was recovered at petroleum refineries, natural gas processing plants, and coking plants by 59 companies at 150 plants in 26 States, Puerto Rico, and the U.S. Virgin Islands. Elemental sulfur was produced by one company at two mines in two States, using the Frasch method of mining. Byproduct sulfuric acid, representing 13% of sulfur in all forms, was recovered at 16 nonferrous smelters in 10 States by 11 companies. Domestic elemental sulfur provided 67% of domestic consumption, and byproduct acid 11%. The remaining 22% of sulfur consumed was imported sulfur and sulfuric acid. About 90% of sulfur was consumed in the form of sulfuric acid. Agricultural chemicals (primarily fertilizers) comprised 67% of sulfur demand; chemicals, organic and inorganic, 8%; metal mining, 6%; and petroleum refining, 5%. Other uses, accounting for 14% of demand, were widespread because a multitude of industrial products require sulfur in one form or another during some stage in their manufacture.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production: Frasch	2,870	2,320	¹ 1,900	2,960	W
Recovered elemental	6,650	7,050	² 7,720	7,160	³ 10,300
Other forms	<u>1,310</u>	<u>1,300</u>	<u>1,430</u>	<u>1,380</u>	<u>1,500</u>
Total	10,800	10,700	11,000	11,500	11,800
Shipments, all forms	11,100	11,000	10,500	11,700	12,000
Imports for consumption:					
Frasch and recovered	3,020	2,730	2,040	1,650	2,300
Sulfuric acid, sulfur content	603	649	797	696	650
Exports:					
Frasch and recovered	1,200	966	656	899	1,000
Sulfuric acid, sulfur content	49	46	46	46	65
Consumption, apparent, all forms	13,500	13,400	12,600	13,100	13,900
Price, reported average value, dollars per ton of elemental sulfur, f.o.b., mine and/or plant	71.45	48.14	31.86	28.60	35.00
Stocks, producer, yearend	1,190	809	1,380	1,160	600
Employment, mine and/or plant	3,100	3,200	3,100	3,100	3,100
Net import reliance ⁴ as a percent of apparent consumption	19	20	12	12	18

Recycling: About 3 million tons of spent acid was reclaimed from petroleum refining and chemical processes.

Import Sources (1991-94): Frasch and recovered: Canada, 65%; Mexico, 33%; and other, 2%. Sulfuric acid: Canada, 68%; Germany, 12%; Japan, 6%; Mexico, 5%; and other, 9%. Total sulfur imports: Canada, 65%; Mexico, 27%; and other, 8%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN⁵ 12/31/95
	Sulfur, crude or unrefined	2503.10.0000	Free	Free.
	Sulfur, all kinds, other	2503.90.0000	Free	Free.
	Sulfur, sublimed or precipitated	2802.00.0000	Free	Free.
	Sulfuric acid	2807.00.0000	Free	Free.

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

Government Stockpile: None.

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Events, Trends, and Issues: Conditions affecting the U.S. sulfur industry improved for the second consecutive year. Production, shipments, imports, exports, consumption, and prices increased. Stocks decreased. Supplies were tight throughout the year.

At the beginning of the year, one U.S. Frasch producer bought the sulfur assets of the only other U.S. Frasch producer. There was some question as to how long the Texas mine would continue to produce; however, the other operation, off the Louisiana coastline, was expected to operate at or above capacity for the foreseeable future. U.S. demand has been strong, especially for the phosphate fertilizer industry, and world trade was also expanding.

Domestic sulfur production is expected to increase slightly for the next few years, with Frasch production remaining relatively stable as long as both mines continue to operate. Recovered production should continue its slow, but consistent growth. Small quantities of sulfur or sulfuric acid recovered from electric powerplants should enter the market within the next few years. Apparent consumption of sulfur is projected to be 14 million tons in 1996.

World Production, Reserves, and Reserve Base:

	Production—All forms		Reserves ⁶	Reserve base ⁶
	1994	1995 ^e		
United States	11,500	11,800	140,000	230,000
Canada	9,140	9,200	160,000	330,000
China	6,030	6,000	100,000	250,000
France	1,100	1,100	10,000	20,000
Iraq	800	600	130,000	500,000
Japan	2,900	2,900	5,000	15,000
Mexico	2,920	3,000	75,000	120,000
Poland	2,380	2,500	130,000	300,000
Russia	1,830	1,900	NA	NA
Saudi Arabia	1,600	1,600	100,000	130,000
Spain	702	600	50,000	300,000
Other countries	<u>10,100</u>	<u>10,800</u>	<u>500,000</u>	<u>1,300,000</u>
World total (may be rounded)	51,000	52,000	1,400,000	3,500,000

World Resources: Resources of elemental sulfur in evaporite and volcanic deposits and sulfur associated with natural gas, petroleum, tar sands, and metal sulfides amount to about 5 billion tons. The sulfur in gypsum and anhydrite is almost limitless, and some 600 billion tons are contained in coal, oil shale, and shale rich in organic matter, but low-cost methods have not been developed to recover sulfur from these sources. The domestic resource is about one-fifth of the world total.

Substitutes: There are no adequate substitutes for sulfur at present or anticipated price levels; some acids, in certain applications, may be substituted for sulfuric acid.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹Includes 10 months of Frasch sulfur data. Two remaining months of Frasch data included with recovered sulfur data to conform with proprietary data requirements.

²Includes corresponding Frasch sulfur data for November and December.

³Includes Frasch sulfur data.

⁴Defined as imports - exports + adjustments for Government and industry stock changes.

⁵See Appendix B.

⁶See Appendix C for definitions.