

SODIUM SULFATE

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: The domestic natural sodium sulfate industry consisted of two producers operating a total of two plants in California and Texas. Total production of natural and synthetic sodium sulfate increased an estimated 10% compared with that of 1998. Approximately one-half of total production was as byproduct from facilities that manufacture rayon and various chemicals. The total value of natural and synthetic sodium sulfate sold was an estimated \$60 million.

Estimates of U.S. sodium sulfate consumption by end use were soap and detergents, 45%; textiles, 18%; pulp and paper, 13%; glass, 10%; and miscellaneous, 14%.

Salient Statistics—United States:	1995	1996	1997	1998	1999^e
Production: Natural	327	306	318	W	W
Synthetic ¹	318	296	262	NA	NA
Total ¹	645	602	580	535	590
Imports for consumption	206	177	150	110	80
Exports	66	86	86	90	140
Consumption, apparent (natural and synthetic)	803	690	636	555	530
Price: Quoted, sodium sulfate (100% Na ₂ SO ₄), bulk, f.o.b. works, East, dollars per short ton	114.00	114.00	114.00	114.00	114.00
Average sales value (natural source), f.o.b. mine or plant, dollars per metric ton	84.55	88.90	109.13	W	W
Stocks, producer, yearend, natural	16	19	26	W	W
Employment, well and plant, number	240	240	240	W	W
Net import reliance ² as a percent of apparent consumption	17	13	10	4	E

Recycling: There was some recycling of sodium sulfate by consumers, particularly in the pulp and paper industry, but no recycling by sodium sulfate producers.

Import Sources (1995-98): Canada, 95%; Mexico, 4%; and other, 1%.

Tariff: Item	Number	Normal Trade Relations 12/31/99
Disodium sulfate:		
Saltcake (crude)	2833.11.1000	Free.
Other:	2833.11.5000	0.4% ad val.
Anhydrous	2833.11.5010	0.4% ad val.
Other	2833.11.5050	0.4% ad val.

Depletion Allowance: 15% (Domestic and foreign); for natural only.

Government Stockpile: None.

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Events, Trends, and Issues: Data reporting from the natural sodium sulfate company that has an operation in Texas was terminated in mid-1998 at the company's request, resulting in the suspension of the U.S. Geological Survey's natural sodium sulfate canvass for this industry. Collection of data from the California operation continues but cannot be disclosed and must be withheld. Total sodium sulfate production statistics continue to be collected and published by the U.S. Bureau of the Census.

Byproduct production from rayon and battery recycling facilities declined in 1999. The demand for rayon decreased because of imports of less expensive textiles, and the availability of recycled leaded automotive batteries was lower than normal because of the mild winters for the past couple of years and better battery manufacturing. Severe winter weather causes a strain on battery life resulting in more batteries being discarded and recycled.

Consumption of sodium sulfate by the detergent industry remained strong in 1999 as powdered laundry detergent manufacturers increased sales, especially to developing nations. Liquid detergents, which do not use very much sodium sulfate in their formulations, remain popular in North America. Sodium sulfate use by the pulp and paper sector remained stagnant and was expected to remain so in the future.

The outlook for sodium sulfate in 2000 is forecast to be slightly lower than that for 1999, with detergents remaining the largest sodium sulfate-consuming sector. World production and consumption of sodium sulfate are expected to grow in the next few years, especially in Asia and South America.

World Production, Reserves, and Reserve Base: Data on mine production for natural sodium sulfate are not available; however, total world production of natural sodium sulfate is about 4 million tons. Total world production of byproduct sodium sulfate is estimated between 1.5 million tons and 2.0 million tons.

	Reserves ³	Reserve base ³
Natural:		
United States	860,000	1,400,000
Canada	84,000	270,000
Mexico	170,000	230,000
Spain	180,000	270,000
Turkey	100,000	NA
Other countries	<u>100,000</u>	<u>200,000</u>
World total, natural (rounded)	3,300,000	4,600,000

World Resources: Sodium sulfate resources are sufficient to last hundreds of years at the present rate of world consumption. In addition to the countries listed in World Production, the following countries also contain identified resources of sodium sulfate: Botswana, China, Egypt, Italy, Mongolia, Romania, and South Africa. Commercial production from domestic resources is from deposits in California and Texas. The brine in Searles Lake, CA, contains about 450 million metric tons of sodium sulfate resource, representing about 35% of the lake brine. In Utah, about 12% of the dissolved salts in the Great Salt Lake is sodium sulfate, representing about 400 million tons of resource. An irregular, 21-meter-thick mirabilite deposit is associated with clay beds 4.5 to 9.1 meters below the lake bottom near Promontory Point, UT. Several playa lakes in west Texas contain underground sodium sulfate-bearing brines and crystalline material. Other economic and subeconomic deposits of sodium sulfate are near Rhodes Marsh, NV; Grenora, ND; Okanogan County, WA; and Bull Lake, WY. Sodium sulfate can also be obtained as a byproduct from the production of ascorbic acid, boric acid, cellulose, chromium chemicals, lithium carbonate, rayon, resorcinol, and silica pigments. The quantity and availability of byproduct sodium sulfate are dependent on the production capabilities of the primary industries and the sulfate recovery rates.

Substitutes: In pulp and paper, emulsified sulfur and caustic soda (sodium hydroxide) can replace sodium sulfate. In detergents, a variety of products can substitute for sodium sulfate. In glassmaking, soda ash and calcium sulfate have been substituted for sodium sulfate with less-than-perfect results.

⁰Estimated. E Net exporter. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹Source: Bureau of the Census. Synthetic production data are revised in accordance with recent updated Census statistics.

²Defined as imports - exports + adjustments for Government and industry stock changes (if available).

³See Appendix C for definitions.