

SODIUM SULFATE

(Data in thousand metric tons, unless 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 24% compared with that of the previous year. Approximately 44% of total production was a byproduct from facilities that manufacture rayon and various chemicals. The total value of sodium sulfate sold was an estimated \$50 million.

End uses of sodium sulfate were soap and detergents, 40%; pulp and paper, 25%; textiles, 19%; glass, 5%; and miscellaneous, 11%.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production: Natural	354	337	327	298	325
Synthetic ¹	366	216	210	166	250
Imports for consumption	157	158	163	190	170
Exports	103	155	89	65	70
Consumption, apparent (natural and synthetic)	778	544	616	597	675
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	87.34	91.79	76.53	81.25	84.00
Stocks, producer, yearend, natural	35	47	42	34	34
Employment, well and plant	240	240	240	240	240
Net import reliance ² as a percent of apparent consumption	7	E	13	22	15

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 (1991-94): Canada, 95%; Mexico, 4%; and other, 1%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN³ 12/31/95
Disodium sulfate:				
	Saltcake (crude)	2833.11.1000	Free	Free.
	Other	2833.11.5000	0.4% ad val.	3.6% ad val.
	Anhydrous	2833.11.5010	0.4% ad val.	3.6% ad val.
	Other	2833.11.5050	0.4% ad val.	3.6% ad val.

Depletion Allowance: 14% (Domestic), 14% (Foreign). For natural only.

Government Stockpile: None.

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Events, Trends, and Issues: Demand for powdered laundry detergents in Mexico increased, causing Mexican producers of natural sodium sulfate to export less material to the United States. This resulted in more U.S. supply being distributed in domestic markets rather than imported material.

Soap and detergent manufacturers reformulated certain detergents using additional quantities of sodium sulfate that possibly substituted for higher priced zeolites and surfactants in powdered formulations. This trend is opposite of what had been occurring as superconcentrates and liquid detergents had been growing and displacing the less-expensive powdered rivals for about the past 7 years.

A new battery acid recycling operation that recovers byproduct sodium sulfate began production at Columbus, GA. The plant had an annual capacity of about 30,000 tons of sodium sulfate. Two other battery recyclers in New York and Louisiana were scheduled to come on-stream in 1996, with 25,000 tons and 15,000 tons of capacity, respectively.

World Production, Reserves, and Reserve Base:

Natural	Production		Reserves ⁴	Reserve base ⁴
	1994	1995 ^e		
United States	298	325	860,000	1,400,000
Argentina	10	10	NA	NA
Canada	312	300	84,000	270,000
Iran	280	290	NA	NA
Mexico	500	550	170,000	230,000
Spain	600	600	180,000	270,000
Turkey	80	80	100,000	NA
Turkmenistan ⁵	50	50	NA	200
Other countries	170	160	100,000	200,000
World total, natural (may be rounded)	2,300	2,400	⁶ 3,300,000	⁷ 4,600,000
World total, synthetic (rounded)	1,600	1,600	—	—
World total (rounded)	3,900	4,000	—	—

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.

^eEstimated. E Net exporter. NA Not available.

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.

³See Appendix B.

⁴See Appendix C for definitions.

⁵Part of the Former Soviet Union. Data are inadequate to formulate reliable estimates for individual countries of the Former Soviet Union.

⁶Excludes Argentina, Iran, and Turkmenistan. Includes non-producing nations.

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