

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 two plants, one each in California and Texas. Nine companies operating 11 plants in 9 States recovered byproduct sodium sulfate from various manufacturing processes or products, including battery reclamation, cellulose, resorcinol, silica pigments, and sodium dichromate. About one-half of the total output was a byproduct of these plants in 2011. The total value of natural and synthetic sodium sulfate sold was an estimated \$42 million. Estimates of U.S. sodium sulfate consumption by end use were soap and detergents, 35%; glass, 18%; pulp and paper, 15%; carpet fresheners and textiles, 4% each; and miscellaneous, 24%.

Salient Statistics—United States:	2007	2008	2009	2010	2011^e
Production, total (natural and synthetic) ¹	312	319	260	297	300
Imports for consumption	43	69	77	77	80
Exports	101	107	140	196	200
Consumption, apparent (natural and synthetic)	254	281	197	178	180
Price, quoted, sodium sulfate (100% Na ₂ SO ₄), bulk, f.o.b. works, East, dollars per short ton	134	134	134	134	140
Employment, well and plant, number ^e	225	225	225	225	225
Net import reliance ² as a percentage of apparent consumption	E	E	E	E	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 (2007–10): Canada, 87%; China, 4%; Japan, 3%; Finland, 2%; and other, 4%.

Tariff:	Item	Number	Normal Trade Relations 12-31-11
	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: Natural, 14% (Domestic and foreign); synthetic, none.

Government Stockpile: None.

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Events, Trends, and Issues: China remained the leading exporter and producer of natural and synthetic sodium sulfate in the world. Jiangsu Province is the major area for sodium sulfate production. It was anticipated that this area will produce 4.8 million tons of sodium sulfate annually by 2013. As of 2008, China represented about three-fourths of world production capacity and more than 70% of world production.

The primary use of sodium sulfate worldwide is in powdered detergents. Sodium sulfate is a low-cost, inert, white filler in home laundry detergents. Although powdered home laundry detergents may contain as much as 50% sodium sulfate in their formulation, the market for liquid detergents, which do not contain any sodium sulfate, continued to increase. However, with the major downturn in the world economies beginning in 2008, many consumers have reverted to using more powdered laundry detergents because they are less expensive than their liquid counterparts. Sodium sulfate consumption in the domestic textile industry also has been declining because of imports of less-expensive textile products. In nations with strengthening economies, sodium sulfate consumption increased by yearend 2011.

Sodium sulfate consumption in 2012 is expected to be comparable with that of 2011, with detergents remaining the leading sodium-sulfate-consuming sector. If the winter of 2011–12 is relatively mild, byproduct recovery of sodium sulfate from automobile batteries may decline because fewer battery failures during mild winter weather reduce recycling. World production and consumption of sodium sulfate have been stagnant but are expected to increase between 2% to 3% per year in the next few years, especially in Asia and South America.

World Production and Reserves: Although data on mine production for natural sodium sulfate are not available, total world production of natural sodium sulfate is estimated to be about 6 million tons. Total world production of byproduct sodium sulfate is estimated to be between 1.5 and 2.0 million tons.

	Reserves³
United States	860,000
Canada	84,000
China	NA
Mexico	170,000
Spain	180,000
Turkey	100,000
Other countries	<u>1,900,000</u>
World total (rounded)	<u>3,300,000</u>

World Resources: Sodium sulfate resources are sufficient to last hundreds of years at the present rate of world consumption. In addition to the countries with reserves listed above, the following countries also possess identified resources of sodium sulfate: Botswana, 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 tons of sodium sulfate resource, representing about 35% of the lake's 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 also can be obtained as a byproduct from the production of ascorbic acid, boric acid, cellulose, chromium chemicals, lithium carbonate, rayon, resorcinol, silica pigments, and from battery recycling. 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-effective results.

⁰Estimated. E Net exporter. NA Not available.

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

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

³See Appendix C for resource/reserve definitions and information concerning data sources.