

SODA ASH

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: The U.S. soda ash (sodium carbonate) industry, which is the largest in the world, comprised four companies in Wyoming operating five plants, one company in California with one plant, and one company with one plant in Colorado. The six producers have a combined annual nameplate capacity of 14.5 million tons. Sodium bicarbonate, sodium sulfate, potassium chloride, potassium sulfate, borax, and other minerals were produced as coproducts from sodium carbonate production in California. Sodium bicarbonate, sodium sulfite, sodium tripolyphosphate, and chemical caustic soda were manufactured as coproducts at several of the Wyoming soda ash plants. Sodium bicarbonate was produced as a coproduct at the Colorado operation. The total estimated value of domestic soda ash produced in 2002 was \$770 million.¹

Based on final 2001 data, the estimated 2002 reported distribution of soda ash by end use was glass, 48%; chemicals, 26%; soap and detergents, 11%; distributors, 5%; flue gas desulfurization, pulp and paper, and water treatment, 2% each; and other, 4%.

Salient Statistics—United States:	1998	1999	2000	2001	2002^e
Production ²	10,100	10,200	10,200	10,300	10,300
Imports for consumption	83	92	75	33	10
Exports	3,660	3,620	3,900	4,090	4,100
Consumption:					
Reported	6,550	6,430	6,390	6,380	6,240
Apparent	6,560	6,740	6,430	6,310	6,240
Price:					
Quoted, yearend, soda ash, dense, bulk, f.o.b. Green River, WY, dollars per short ton	105.00	105.00	105.00	105.00	105.00
f.o.b. Searles Valley, CA, same basis	130.00	130.00	130.00	130.00	130.00
Average sales value (natural source), f.o.b. mine or plant, same basis	75.30	69.11	66.23	67.79	68.00
Stocks, producer, yearend	273	248	245	226	200
Employment, mine and plant, number	2,700	2,600	2,600	2,700	2,600
Net import reliance ³ as a percentage of apparent consumption	E	E	E	E	E

Recycling: There is no recycling of soda ash by producers; however, glass container producers are using cullet glass, thereby reducing soda ash consumption.

Import Sources (1998-2001): Canada, 99%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations
	Disodium carbonate	2836.20.0000	<u>12/31/02</u> 1.2% ad val.

Depletion Allowance: Natural, 14% (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: The domestic market for soda ash for the first half of the year was virtually identical to that of the corresponding period in 2001. Despite major price increase attempts that were initiated in late 2001, the estimated average annual value for 2002 was relatively unchanged. The U.S. soda ash industry was optimistic that the projected increase in exports in the last two quarters could bolster soda ash sales and revenue. To stimulate profitability, the industry in September announced a \$7-per-ton increase in the off-list price of soda ash.

Because of mounting financial pressures, the parent company of the newest soda ash plant built in the United States decided to sell its 60% share of the Colorado facility early in the year. The only company that was interested in purchasing the plant was the remaining partner, which was attempting to secure financing by yearend.

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A major Wyoming soda ash producer signed a letter of intent with a Utah-based power company to supply a sodium compound used for manufacturing spheres that store hydrogen for release on demand. The spheres, which contain sodium hydride that releases hydrogen when exposed to water, are encased in a waterproof plastic coating that can be cut open to expose the compound. The technology is particularly useful to developing countries that have limited energy resources. The hydrogen can power fuel cells to operate automobiles, houses, or nearly anything that currently is powered by electricity.

The United States continues to be the largest supplier of soda ash in the world; however, China continues expanding its soda ash manufacturing capability. Soda ash demand in China is very strong, with domestic supplies being augmented by imports from the United States. It is anticipated that competition with China for markets in Asia will be strong in the future. Notwithstanding economic and energy problems in certain areas of the world, overall global demand for soda ash is expected to grow from 1.5% to 2% annually. Domestic demand should be slightly higher in 2003.

World Production, Reserves, and Reserve Base:

Natural:	Production		Reserves ^{4 5}	Reserve base ⁵
	2001	2002 ^e		
United States	10,300	10,300	⁶ 23,000,000	⁶ 39,000,000
Botswana	270	270	400,000	NA
Kenya	260	300	7,000	NA
Mexico	—	—	200,000	450,000
Turkey	—	—	200,000	240,000
Uganda	NA	NA	20,000	NA
Other countries	—	—	260,000	220,000
World total, natural (may be rounded)	10,800	10,900	24,000,000	40,000,000
World total, synthetic (rounded)	24,300	22,100	XX	XX
World total (rounded)	35,100	33,000	XX	XX

World Resources: Soda ash is obtained from trona and sodium carbonate-rich brines. The world's largest deposit of trona is in the Green River Basin of Wyoming. About 47 billion metric tons of identified soda ash resources could be recovered from the 56 billion tons of bedded trona and the 47 billion tons of interbedded or intermixed trona and halite that are in beds more than 1.2 meters thick. About 34 billion tons of reserve base soda ash could be obtained from the 36 billion tons of halite-free trona and the 25 billion tons of interbedded or intermixed trona and halite that are in beds more than 1.8 meters thick. Underground room-and-pillar mining, using a combination of conventional, continuous, and shortwall mining equipment is the primary method of mining Wyoming trona ore. The method has an average 45% mining recovery, which is higher than the 30% average mining recovery from solution mining. Improved solution mining techniques, such as horizontal drilling to establish communication between well pairs, could increase this extraction rate and enable companies to develop some of the deeper economic trona. Wyoming trona resources are being depleted at the rate of about 15 million tons per year (8.3 million tons of soda ash). Searles Lake and Owens Lake in California contain an estimated 815 million tons of soda ash reserves. There are at least 62 identified natural sodium carbonate deposits in the world, some of which have been quantified. Although soda ash can be manufactured from salt and limestone, both of which are practically inexhaustible, synthetic soda ash is more costly to produce and generates environmentally deleterious wastes.

Substitutes: Caustic soda can be substituted for soda ash in certain uses, particularly in the pulp and paper, water treatment, and certain chemical sectors. Soda ash, soda liquors, or trona can be used as feedstock to manufacture chemical caustic soda, which is an alternative to electrolytic caustic soda.

^eEstimated. E Net exporter. NA Not available. XX Not applicable. — Zero.

¹Does not include values for soda liquors and mine waters.

²Natural only.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴The reported quantities are sodium carbonate only. About 1.8 tons of trona yields 1 ton of sodium carbonate.

⁵See Appendix C for definitions.

⁶From trona, nahcolite, and dawsonite sources.