

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 four plants (a fifth plant is mothballed), 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 2003 was \$800 million.¹

Based on final 2002 reported data, the estimated 2003 distribution of soda ash by end use was glass, 49%; chemicals, 26%; soap and detergents, 11%; distributors, 5%; miscellaneous uses, 4%; flue gas desulfurization, 2%; pulp and paper, 2%; and water treatment, 1%.

<u>Salient Statistics—United States:</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003^e</u>
Production ²	10,200	10,200	10,300	10,500	10,600
Imports for consumption	92	75	33	9	5
Exports	3,620	3,900	4,090	4,250	4,400
Consumption:					
Reported	6,430	6,390	6,380	6,430	6,200
Apparent	6,740	6,430	6,310	6,250	6,200
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	69.11	66.23	67.79	68.00	69.00
Stocks, producer, yearend	248	245	226	222	200
Employment, mine and plant, number	2,600	2,600	2,700	2,600	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 (1999-2002): Canada, 99%; and other, 1%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
			<u>12/31/03</u>
	Disodium carbonate	2836.20.0000	1.2% ad val.

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

Government Stockpile: None.

Events, Trends, and Issues: The newest natural soda ash facility in the United States, which came onstream in Colorado in late 2000 was sold in September 2003 to the world's largest soda ash producer based in Belgium. This plant will be the 10th soda ash plant the company operates worldwide and the second plant that it owns that produces soda ash from natural sources; the other plant refines soda ash from Wyoming trona ore. The company's total worldwide capacity now exceeds 9 million tons, or about 20% of the world total. The Colorado facility solution mines underground nahcolite ore and transports the brine to a processing plant where soda ash and sodium bicarbonate are produced.

The largest soda ash company in the United States announced that it planned to close its Green River, WY, phosphate plant, which is associated with its soda ash operation in early 2004. About 50 employees will be affected by the closure. The company indicated that the closure was required in order to reduce fixed costs and strengthen the company and its joint-venture partner's market position in food phosphates and technical phosphates.

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Surplus nameplate capacity continued to adversely affect the U.S. soda ash industry's efforts to increase prices in the past couple of years. Although the industry announced a \$7-per-short-ton price increase in the third quarter 2003, it was uncertain by yearend how much of the increase was realized. Domestic soda ash consumption remained stagnant during the year despite a small increase in glass container production during the year.

China is a major world producer of synthetic soda ash, and remains the largest competitor of the United States in the Asian soda ash markets. China announced it planned to increase capacity at its Weifang soda ash plant by 600,000 tons by 2004 and to construct a new synthetic soda ash facility at Zhejiang that will have an annual capacity of 900,000 tons when it is commissioned in late 2004. Reports indicate that China will surpass the United States in 2003 as the world's largest soda-ash-producing nation.

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 2004.

World Production, Reserves, and Reserve Base:

Natural:	Production		Reserves ^{4 5}	Reserve base ⁵
	2002	2003 ^e		
United States	10,500	10,600	⁶ 23,000,000	⁶ 39,000,000
Botswana	270	280	400,000	NA
Kenya	308	310	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 (rounded)	11,100	11,200	24,000,000	40,000,000
World total, synthetic (rounded)	26,000	26,800	XX	XX
World total (rounded)	37,000	38,000	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 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 entice companies to develop some of the deeper 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.