

SODA ASH

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: The total value of domestic soda ash (sodium carbonate) produced in 2004 was estimated to be about \$820 million¹. The U.S. soda ash industry 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 mothballed plant in Colorado that owns one of the Wyoming plants. The five 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 of sodium carbonate production in California. Sodium bicarbonate, sodium sulfite, and chemical caustic soda were manufactured as coproducts at several of the Wyoming soda ash plants. Sodium bicarbonate was produced at the Colorado operation.

Based on final 2003 reported data, the estimated 2004 distribution of soda ash by end use was glass, 49%; chemicals, 28%; soap and detergents, 11%; distributors, 4%; miscellaneous uses, 3%; flue gas desulfurization, 2%; pulp and paper, 2%; and water treatment, 1%.

<u>Salient Statistics—United States:</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004^e</u>
Production ²	10,200	10,300	10,500	10,600	10,800
Imports for consumption	75	33	9	5	5
Exports	3,900	4,090	4,250	4,450	4,700
Consumption:					
Reported	6,390	6,380	6,430	6,270	6,200
Apparent	6,430	6,310	6,250	6,090	6,300
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	66.23	67.79	68.00	65.31	69
Stocks, producer, yearend	245	226	222	330	200
Employment, mine and plant, number	2,600	2,700	2,600	2,600	2,500
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 (2000-03): Canada, 99%; and other, 1%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
	Disodium carbonate	2836.20.0000	<u>12-31-04</u> 1.2% ad val.

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

Government Stockpile: None.

Events, Trends, and Issues: The soda ash plant in Colorado that came onstream in late 2000 was mothballed in September 2004; however, the sodium bicarbonate part of the operation will continue but will use soda ash feedstock shipped from the company's Wyoming facility. The Colorado facility continued to produce soda ash from underground nahcolite ore through August. The same company also merged its chemical businesses with its mineral operations and renamed the company. In addition, the company formed a joint venture with a major Chinese soda ash manufacturer that has a plant in Lianyungang.

The United States had been the world's leader in soda ash production for nearly 100 years until China, a major world producer of synthetic soda ash, surpassed the United States in 2003 by producing 11.1 million tons. By midyear 2004, China was on pace to produce 12 million tons of soda ash.

SODA ASH

Although the domestic and export markets improved in 2004, approximately 2.8 million tons of nameplate capacity remained mothballed in the United States. This surplus capacity adversely affected the U.S. soda ash industry's efforts to increase prices in the past couple of years. The industry announced price increases of \$22 per short ton in the third quarter 2004 to offset higher energy and transportation costs. It was uncertain by yearend how much of the increase will be realized for the following year, but industry sources were optimistic that most of the proposed price increase would be accepted by consumers.

A new soda ash project was proposed in Kazakhstan in the Zhambul region by a large detergent company in conjunction with a Turkish investor. The synthetic soda ash plant would have an annual capacity of 200,000 tons. There are more than 35 different companies in Kazakhstan that presently use soda ash in varying quantities.

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 may be slightly higher in 2005.

World Production, Reserves, and Reserve Base:

Natural:	Production		Reserves ^{4,5}	Reserve base ⁵
	2003	2004 ^e		
United States	10,600	10,800	* ⁶ 23,000,000	* ⁶ 39,000,000
Botswana	285	280	400,000	NA
Kenya	350	350	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)	11,200	11,400	24,000,000	40,000,000
World total, synthetic (rounded)	26,800	27,600	XX	XX
World total (rounded)	38,000	39,000	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. *Corrected on November 30, 2005.

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.