

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 2006 was estimated to be about \$928 million.¹ The U.S. soda ash industry comprised four companies in Wyoming operating five plants, 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. Salt, sodium sulfate, and borax 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 using soda ash feedstock shipped from the company's Wyoming facility.

Based on final 2005 reported data, the estimated 2006 distribution of soda ash by end use was glass, 49%; chemicals, 27%; soap and detergents, 10%; distributors, 5%; miscellaneous uses, 4%; flue gas desulfurization and pulp and paper, 2% each, and water treatment, 1%.

| <u>Salient Statistics—United States:</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006^e</u> |
|---|--------------------|--------------------|--------------------|--------------------|--------------------------------|
| Production ² | 10,500 | 10,600 | 11,000 | 11,000 | 10,900 |
| Imports for consumption | 9 | 5 | 6 | 8 | 6 |
| Exports | 4,250 | 4,450 | 4,670 | 4,680 | 4,800 |
| Consumption: | | | | | |
| Reported | 6,430 | 6,270 | 6,260 | 6,200 | 6,000 |
| Apparent | 6,250 | 6,090 | 6,290 | 6,380 | 6,000 |
| Price: | | | | | |
| Quoted, yearend, soda ash, dense, bulk: | | | | | |
| F.o.b. Green River, WY, dollars per short ton | 105.00 | 105.00 | 105.00 | 155.00 | 170.00 |
| F.o.b. Searles Valley, CA, same basis | 130.00 | 130.00 | 130.00 | 180.00 | 195.00 |
| Average sales value (natural source), | | | | | |
| f.o.b. mine or plant, dollars per short ton | 68.00 | 65.21 | 63.75 | 80.19 | 85.00 |
| Stocks, producer, yearend | 222 | 330 | 338 | 243 | 300 |
| Employment, mine and plant, number | 2,600 | 2,600 | 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 (2002-05): Canada, 98%; and other, 2%.

| <u>Tariff: Item</u> | <u>Number</u> | <u>Normal Trade Relations</u> |
|----------------------------|----------------------|--|
| Disodium carbonate | 2836.20.0000 | <u>12-31-06</u> 1.2% ad val. |

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

Government Stockpile: None.

Events, Trends, and Issues: In late 2005, a major synthetic soda ash producer in India acquired the soda ash operations in England, Kenya, and the Netherlands from the only soda ash producer based in England. A second Indian soda ash manufacturer purchased one of the soda ash plants in Romania for \$24 million during the same time period. In 2006, this same manufacturer bought the second soda ash plant in Romania and intended to purchase all or part of one of the U.S. soda ash companies. These transactions, combined with plants in its own country, established India as the third leading soda ash-producing nation in the world.

A Chinese investment group based in Beijing built a soda ash plant for \$100 million in Kungrad, in the area of western Uzbekistan locally known as the Republic of Karakalpakstan. The facility was scheduled to produce 100,000 tons of soda ash annually using salt from Barsakelmes and limestone from Jamansay. Uzbekistan will consume about 60,000 tons to 70,000 tons each year and export the remainder.

SODA ASH

Although the U.S. soda ash industry posted higher average annual values in 2005, most of the increases included energy and transportation surcharges. Because of China's increased soda ash production posing a barrier to U.S. export sales in the Far East markets, the U.S. Congress passed legislation to aid the Wyoming soda ash industry's global competitiveness by reducing the federal royalty rate from 6% to 2% for a 5-year period.

In May 2006, a major domestic soda ash producer announced a \$15 per short ton increase in the list and off-list price of soda ash effective July 1 or as contracts permit. Other producers soon followed this price move. The same company made a second price increase announcement in September that would raise the off-list price another \$10 per short ton. One other company followed this move, but other companies remained uncommitted by yearend.

The economic slowdowns in the domestic automobile construction and the building construction industries affected soda ash consumption in 2006. Notwithstanding the continuing 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 for the next several years. If the domestic economy improves, U.S. demand may be slightly higher in 2007.

World Production, Reserves, and Reserve Base:

| Natural: | Production | | Reserves ^{4,5} | Reserve base ⁵ |
|----------------------------------|------------|-------------------|-------------------------|---------------------------|
| | 2005 | 2006 ^e | | |
| United States | 11,000 | 10,900 | ⁶ 23,000,000 | ⁶ 39,000,000 |
| Botswana | 250 | 280 | 400,000 | NA |
| Kenya | 360 | 360 | 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) | 11,600 | 11,500 | 24,000,000 | 40,000,000 |
| World total, synthetic (rounded) | 30,400 | 31,500 | XX | XX |
| World total (rounded) | 42,000 | 43,000 | 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 conventional and continuous mining, is the primary method of mining Wyoming trona ore. The method has an average 45% mining recovery, whereas average recovery from solution mining is 30%. 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 beds. 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.