

## 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 2009 was estimated to be about \$1.4 billion.<sup>1</sup> 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 2008 reported data, the estimated 2009 distribution of soda ash by end use was glass, 48%; chemicals, 29%; soap and detergents, 10%; distributors, 4%; miscellaneous uses, 3%; and flue gas desulfurization, pulp and paper, and water treatment, 2% each.

<b><u>Salient Statistics—United States:</u></b>	<b><u>2005</u></b>	<b><u>2006</u></b>	<b><u>2007</u></b>	<b><u>2008</u></b>	<b><u>2009<sup>e</sup></u></b>
Production <sup>2</sup>	11,000	11,000	11,100	11,300	10,900
Imports for consumption	8	7	9	13	5
Exports	4,680	4,820	5,130	5,370	4,900
Consumption:					
Reported	6,200	6,110	5,940	5,730	6,100
Apparent	6,380	6,100	6,030	5,860	6,100
Price:					
Quoted, yearend, soda ash, dense, bulk:					
F.o.b. Green River, WY, dollars per short ton	155.00	155.00	155.00	260.00	260.00
F.o.b. Searles Valley, CA, same basis	180.00	180.00	180.00	285.00	285.00
Average sales value (natural source),					
f.o.b. mine or plant, dollars per short ton	80.19	96.64	103.53	122.11	120.00
Stocks, producer, yearend	243	290	206	259	200
Employment, mine and plant, number	2,600	2,600	2,600	2,500	2,500
Net import reliance <sup>3</sup> 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 (2005-08):** United Kingdom, 29%; China, 25%; Mexico, 24%; Germany, 6%; and other, 16%.

<b><u>Tariff: Item</u></b>	<b><u>Number</u></b>	<b><u>Normal Trade Relations</u></b>
Disodium carbonate	2836.20.0000	<b><u>12-31-09</u></b> 1.2% ad val.

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

**Government Stockpile:** None.

**Events, Trends, and Issues:** The global economic problems in 2009 had a negative effect on most soda ash producers in the world, except in China. The Chinese soda ash industry received some assistance from the government in the form of a 9 percent rebate on the Chinese soda ash export sales. By lowering the export price, Chinese soda ash manufacturers were able to increase export sales and maintain high operating rates. The lower priced Chinese soda ash exports adversely affected U.S. soda ash export sales causing domestic producers to reduce output levels for most of the year.

The leading U.S. soda ash producer in Wyoming announced in April it would temporarily suspend production at its Granger facility because of poor domestic and export market sales but hoped to restart the operation later in the year if export sales improved. In July, the company announced it would not resume operations for the remainder of the year.

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A Wyoming soda ash producer with seven synthetic soda ash plants in Europe announced in January that it would withdraw from the U.S. export association effective at the end of December 2010. The company indicated that it was now fully capable to logistically and technically serve its worldwide customers. This is the second soda ash company to leave the association since its formation in 1984.

The adverse economic conditions in the domestic automobile and housing markets affected soda ash consumption in the flat glass and fiberglass sectors beginning in 2007 and continuing through 2009. 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 and export sales improve, U.S. consumption may be slightly higher in 2010.

### World Production and Reserves:

Natural:	Production		Reserves <sup>4, 5</sup>
	2008	2009 <sup>e</sup>	
United States	11,300	10,900	<sup>6</sup> 23,000,000
Botswana	250	250	400,000
Kenya	513	500	7,000
Mexico	—	—	200,000
Turkey	—	—	200,000
Uganda	NA	NA	20,000
Other countries	—	—	260,000
World total, natural (rounded)	12,100	11,700	24,000,000
World total, synthetic (rounded)	33,900	34,200	XX
World total (rounded)	46,000	46,000	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. Underground room-and-pillar mining, using conventional and continuous mining, is the primary method of mining Wyoming trona ore. This 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, only 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.

<sup>e</sup>Estimated. E Net exporter. NA Not available. XX Not applicable. — Zero.

<sup>1</sup>Does not include values for soda liquors and mine waters.

<sup>2</sup>Natural only.

<sup>3</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

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

<sup>5</sup>See [Appendix C for definitions](#). Reserve base estimates were discontinued in 2009; see [Introduction](#).

<sup>6</sup>From trona, nahcolite, and dawsonite sources.