

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 2010 was estimated to be about \$1.3 billion.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 2009 reported data, the estimated 2010 distribution of soda ash by end use was glass, 46%; chemicals, 29%; soap and detergents, 10%; distributors, 6%; flue gas desulfurization and miscellaneous uses, 3% each; and, pulp and paper, 2%; and water treatment, 1%.

<u>Salient Statistics—United States:</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010^e</u>
Production ²	11,000	11,100	11,300	9,310	10,000
Imports for consumption	7	9	13	6	30
Exports	4,820	5,130	5,370	4,410	5,000
Consumption:					
Reported	6,110	5,940	5,700	5,010	5,000
Apparent	6,100	6,030	5,860	4,950	5,000
Price:					
Quoted, yearend, soda ash, dense, bulk:					
F.o.b. Green River, WY, dollars per short ton	155.00	155.00	260.00	260.00	260.00
F.o.b. Searles Valley, CA, same basis	180.00	180.00	285.00	285.00	285.00
Average sales value (natural source),					
f.o.b. mine or plant, dollars per short ton	96.64	103.53	122.11	129.88	120.00
Stocks, producer, yearend	290	206	259	217	200
Employment, mine and plant, number	2,600	2,600	2,500	2,400	2,400
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 (2006–09): United Kingdom, 29%; China, 28%; Mexico, 22%; Japan, 7%; and other, 14%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
	Disodium carbonate	2836.20.0000	<u>12-31-10</u> 1.2% ad val.

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

Government Stockpile: None.

Events, Trends, and Issues: The global economic problems in 2009 continued in 2010. The downturn in the residential and commercial construction and automotive industries reduced glass usage and that affected soda ash consumption worldwide. In the third quarter of 2010, domestic soda ash production and export sales increased, especially to South America and southeast Asia. The U.S. soda ash export association raised the export price by \$30 per ton effective October 1 citing that global soda ash demand was improving.

U.S. soda ash producers announced \$10 per ton price increases in May and again in September. The increases were necessary to offset cost increases and to support continued investment in the soda ash business. By yearend, it was uncertain how much of the proposed price increases were accepted by consumers through contract negotiations.

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A Wyoming soda ash producer with seven synthetic soda ash plants in Europe withdrew from the U.S. export association effective after December 31, 2010. The company indicated that it was fully capable to logistically and technically serve its worldwide customers. This was the second soda ash company to leave the association since its formation in 1984.

Operators of the natural soda ash facility at Beypazari, Turkey, which came onstream in 2009, announced plans to double production capacity by early 2013. The plant was designed to produce one million tons of soda ash annually from underground trona beds. Production costs were estimated to be 30% to 40% lower than the Solvay synthetic soda ash process.

The adverse economic conditions throughout most of the world are forecast to improve beginning in 2011. 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 higher in 2011.

World Production and Reserves:

	Production		Reserves ^{4, 5}
	2009	2010 ^e	
Natural:			
United States	9,310	10,000	⁶ 23,000,000
Botswana	250	250	400,000
Kenya	405	450	7,000
Mexico	—	—	200,000
Turkey	1,000	1,000	200,000
Uganda	NA	NA	20,000
Other countries	—	—	<u>260,000</u>
World total, natural (rounded)	11,100	11,700	24,000,000
World total, synthetic (rounded)	33,000	34,300	XX
World total (rounded)	44,000	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.

^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 resource/reserve definitions and information concerning data sources.](#)

⁶From trona, nahcolite, and dawsonite sources.