

SODA ASH

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Soda ash, also known as sodium carbonate (Na_2CO_3), is an alkali chemical refined from the mineral trona or naturally occurring sodium-carbonate-bearing brines (both referred to as “natural soda ash”), the mineral nahcolite (referred to as “natural sodium bicarbonate” from which soda ash can be produced), or manufactured from one of several chemical processes (referred to as “synthetic soda ash”).

Despite the fact that most people have never heard of soda ash, it is an important industrial compound used to manufacture chemicals, glass, pulp and paper, soaps and detergents, and many other familiar consumer products. The United States is the world’s second-ranked soda-ash-producing nation with the world’s largest natural deposit of trona. U.S. natural soda ash is extremely competitive in world markets because the majority of the world output of soda ash is made synthetically, which is usually a more expensive process.

Production

Soda ash production and inventory data were collected by the U.S. Geological Survey (USGS) from monthly, quarterly, and annual voluntary surveys of the U.S. soda ash industry. A survey request was sent to each of the six soda ash companies, all of which responded, representing 100% of the total production data in this report (table 1). The information and data are fundamental resources for analysis, within and outside the Government. The soda ash data and information are used by the public and private sectors to better understand minerals and materials usage and the ultimate disposition of materials in the economy and in the environment and to develop public and private sector policies and practices that better use our Nation’s mineral and material resources. Soda ash data and information are used by financial institutions, State and Federal agencies, soda-ash-consuming industries (for example, glass, chemicals, detergents), educational institutions, and the general public.

For the second consecutive year, the United States was the world’s second ranked soda-ash-producing nation. After more than one century of U.S. leadership, China overtook the United States in 2003, and China will likely continue to be the world’s leader for the foreseeable future. U.S. production of natural soda ash from California, Colorado, and Wyoming in 2004 was 11 million metric tons (Mt), which was about 3% higher than that of 2003. Based on about 14.5 Mt (16 million short tons) of total nameplate capacity, the U.S. soda ash industry operated at 76% of total capacity. This capacity utilization rate appears low because it includes the full nameplate capacity of 900,000 metric tons (t) (1 million short tons) for American Soda, L.L.P., which intentionally operated at reduced capacity during the year but was included in the industry total because nameplate capacity is based on the industry total as of December 31 of each year. In addition, the low-capacity utilization

rate resulted from idle capacity of 816,000 t (900,000 short tons) and 1.18 Mt (1.3 million short tons) at OCI Chemical Corp. and FMC Wyoming Corp., respectively. Approximately 2 Mt of nameplate capacity (2.2 million short tons), which represented about 14% of total industry nameplate capacity, was idled in 2004. This available capacity could be brought back online when market conditions improve. Rather than using nameplate capacity, the U.S. soda ash industry uses the term “effective capacity” because it disregards all idled or mothballed capacity. This results in higher capacity utilization percentages. Furthermore, individual effective capacity data are not publicly disclosed.

The U.S. soda ash industry consisted of five companies in 2004—four in Wyoming operating four plants that produced soda ash from underground trona ore and one in California that produced soda ash from sodium-carbonate-rich brines; one of the Wyoming companies owned a plant in Colorado that produced soda ash for part of the year and sodium bicarbonate from solution mining underground nahcolite. Nahcolite is a mineral that is naturally occurring sodium bicarbonate; its name is derived from the chemical elements contained in sodium bicarbonate—Na (sodium), H (hydrogen), C (carbon), O (oxygen), and “lite” (stone). The Granger, WY, plant that is owned by FMC Corp. was idle in 2004.

On January 28, IMC Global, Inc. signed a definitive agreement to sell the majority of its Searles Lake operations in California to Sun Capital Partners, Inc. of Boca Raton, FL, for an undisclosed sum. The transaction was finalized on March 23 and included the California boron chemicals, soda ash, and sodium sulfate businesses. Sun Capital would own 80.1% of the venture, while IMC would retain a 19.9% share. The new company was renamed Searles Valley Minerals, Inc (DesertMines.com, 2004§¹).

In April, American Soda, L.L.P. (a subsidiary of Solvay America, Inc.) announced that it planned to eliminate 50 positions at its nahcolite solution-mining site and its soda ash refinery in Colorado. The decision was based on continued high energy and production costs. Sodium bicarbonate would continue to be made at the plant using soda ash feedstock shipped from Solvay Chemicals, Inc.’s Wyoming soda ash facility (Glenwood Springs Post Independent, 2004§). American Soda had been producing soda ash at about two-thirds of its nameplate capacity; however, it operated at only one-third of nameplate capacity until the plant was mothballed in September (Chemical Market Reporter, 2004c).

Consumption

The USGS collects soda ash consumption data by end use on a quarterly basis from the marketing and sales departments

¹References that include a section mark (§) are found in the Internet References Cited section.

of each company. Every effort has been made to categorize company sales within the correct end-use sector. Quarterly reports are often revised in subsequent quarters because of customer reclassifications or other factors. All U.S. soda ash companies responded to the quarterly surveys; data represented 100% of the total reported consumption data found in this report.

In 2004, U.S. apparent consumption of soda ash was 6.29 Mt; reported consumption, however, was 6.26 Mt (table 1). Reported consumption and apparent consumption do not necessarily correspond because reported consumption is actual sales, whereas apparent consumption is the calculated quantity available for domestic consumption based on balancing supply (production, imports, and inventory adjustments) with external demand (exports).

In 2004, U.S. apparent consumption and reported consumption varied by only 30,000 t, which was a very small discrepancy when compared with other years. The discrepancy between the two forms of consumption was attributed to disagreement between the two sources of export data used to derive consumption statistics. The two sources were the U.S. Census Bureau, which reports exports upon departure from the U.S. ports, and the soda ash producers, which consider shipment as exported when their export association American Natural Soda Ash Corp. (ANSAC) takes consignment of the product at the California, Colorado, or Wyoming plant sites; ANSAC represented the five domestic producers. Transit times between the plant and port, which can take about 2 to 3 weeks before the cargo is actually exported, and carryover export inventories contribute to the discrepancy between reported and apparent consumption as well.

In the domestic market, large-volume buyers of soda ash were primarily the major glass container manufacturers whose purchases were seasonal (more beverage containers made in the second and third quarters for summertime beverage consumption). Soda ash sales to the flat glass sector were usually dependent on the state of the economy because the leading uses of flat glass were in automobile manufacture and in residential housing and commercial building construction. These two major industrial sectors were especially sensitive to changing economic conditions, and soda ash sales follow trends in the two sectors. The distribution of soda ash by end use in 2004 was glass, 50%; chemicals, 26%; soap and detergents, 11%; distributors, 5%; miscellaneous uses, 4%; flue gas desulfurization, 2%; and pulp and paper and water treatment, 1%, each.

Glass.—Glass manufacture represented about 50% of domestic soda ash consumption, of which the container sector accounted for 49%; flat, 36%; fiber, 9%; and specialty, 6%. Glass containers are made for beverages (beer and carbonated and noncarbonated drinks), chemical and household products, food, liquor, medical products, and toiletries and cosmetics.

Chemicals.—Soda ash is used to manufacture many sodium-base inorganic chemicals, including sodium bicarbonate, sodium chromates, sodium phosphates, and sodium silicates.

Soaps and Detergents.—Detergents were the third ranked use of soda ash. Soda ash was used as a builder to emulsify oil stains, to reduce the redeposition of dirt during washing and

rinsing, to provide alkalinity for cleaning, and to soften laundry water. In addition, soda ash was a component of sodium tripolyphosphate (STPP), another major builder in detergent formulations. Soda ash consumption has been decreasing because phosphatic detergents can contribute to eutrophication, which is an environmental concern. Many regions of the Nation adopted phosphate limitations or bans, affecting about 40% of the U.S. population. A strong U.S. economy boosted demand for industrial and institutional cleaners and automatic dishwashing detergents in the past several years. New technology incorporating enzymes in dishwashing detergents and a move toward liquid cleansers, however, may adversely affect STPP consumption in the future.

In response to the environmental concern that cardboard detergent packaging contributes to the volume of landfill waste, detergent manufacturers changed formulations to make compact and superconcentrated products. These reformulations required sodium silicates and synthetic zeolites, which are made from soda ash. Liquid detergents, which do not contain any soda ash, competed with powdered detergents and commanded about 50% of the household laundry detergent market in 2004.

Stocks

Yearend 2004 stocks of dense soda ash in domestic plant silos, warehouses, and terminals and on teamtracks amounted to 338,000 t. Producers indicated that a potential supply problem could exist if inventories fell below 180,000 t. Most consumers of soda ash did not have the storage facilities to accommodate large quantities of soda ash and had to rely on suppliers to provide the material on a timely basis.

Prices

The average annual value for bulk, dense natural soda ash, free on board (f.o.b.) Green River, WY, Searles Valley, CA, and Parachute, CO, was \$70.27 per metric ton (\$63.75 per short ton), which was less than that of 2003. The value is not a "price," but rather the value of the combined revenue of California, Colorado, and Wyoming bulk, dense soda ash sold on an f.o.b. plant basis at list, spot, or discount prices, on long-term contracts, and for export, divided by the quantity of soda ash sold. Only merchant soda ash is used to derive the annual value; therefore, no soda ash for value-added products or soda liquors is included. The list prices quoted in trade journals or by producers differed from the annual average values reported to and by the USGS. This value may or may not correspond to the posted list prices.

In May, FMC Wyoming announced it would raise its off-list and list prices by \$15 per short ton and \$5 per short ton, respectively, on July 1 or as contract terms permit. Any future contracts negotiated after July 31, 2004, would be on a freight collect basis, f.o.b. plant. In this payment plan, FMC would prepay all transportation charges and add the charges to the soda ash invoice for a \$1-per-short-ton service charge. All shipping charges would be subject to adjustment based on charges in freight costs, including the carrier's fuel charges (Chemical Market Reporter, 2004b). The other producers followed

FMC and raised their list and off-list prices accordingly. In September, the industry announced a second off-list price increase of \$7 per short ton, bringing the total proposed increase for the year to \$22 per short ton (Chemical Market Reporter, 2004d). On November 30, FMC issued a third price increase announcement that would increase its off-list price by \$8.00 per short ton and its list price by \$15 per short ton effective January 1, 2005, or as contract terms permitted. With the announcements in May, September, and November, the cumulative off-list price of soda ash increased by \$30 per short ton, and the cumulative list price rose by \$20 per short ton. By yearend, the new Wyoming list price for bulk, dense soda ash was \$125 per short ton (FMC Corporation, 2004§).

Because the price of natural gas remained high in 2004, all the producers maintained an energy surcharge on soda ash sales. Depending on the company, the surcharges were adjusted either monthly [based on the last quoted New York Mercantile Exchange (NYMEX) Henry Hub closing price for the next forward month] or quarterly (based on the 3-month forward average NYMEX gas price using the closing price as of the 15th of the month prior to the beginning of each calendar quarter). The surcharges would be in effect as long as the price of natural gas was between \$5.00 and \$8.00 per thousand thousand British thermal units (Solvay Chemicals, Inc., 2004a§).

The list price for Wyoming bulk, dense soda ash, which had not changed since it was raised effective July 1, 1995, or as contracts permit, to \$105 per short ton from \$98 per short ton, finally was raised effective July 1, 2004. The new list price was increased by \$20 per short ton to \$125 per short ton from \$105 per short ton. The California price for the comparable product also increased in 1995 by \$7 per short ton to \$130 per short ton from \$123 per short ton (table 4). The new list price for California soda ash came to \$135 per short ton.

Foreign Trade

U.S. soda ash export data for 2004 were from the U.S. Census Bureau. Exports of 4.67 Mt, which was a record high, represented about 43% of U.S. soda ash production in 2004.

In 2004, U.S. exports to 44 countries, on a regional basis, were as follows: Asia, 36%; North America and South America, 22% each; Europe, 11%; the Middle East, 4%; Oceania, 3%; Central America and Africa, 1% each, and the Caribbean, less than 1% (table 5). The average free alongside ship value was \$110.17 per metric ton in 2004 compared with \$115.61 per ton in 2003. Although the data in tables 1 and 6 are rounded to three significant digits, the unit values shown are based on the actual unrounded statistics and not the rounded data. The top 10 countries, representing 66% of total U.S. soda ash exports, in decreasing order and percent of total, were as follows: Mexico, 13%; Canada and Japan, 9% each; Indonesia, 7%; Brazil, 6%; Chile, the Republic of Korea, and Venezuela, 5% each; and Argentina and Thailand, 4% each. About 57% of all U.S. soda ash exports went through the Columbia-Snake River, ID-OR-WA, Customs District; the Port Arthur, TX, Customs District ranked second with 13% of the total (table 5). Exports to Canada increased because of the closure of Canada's only soda ash plant in Amherstburg, Ontario.

Imports of soda ash increased by 20% to 6,000 t. The majority of imports historically came from Canada where General Chemical had operated a synthetic soda ash plant in Amherstburg, Ontario, until April 2001. The facility produced dense soda ash and light soda ash, the majority of which was light soda ash exported to the United States. In 2004, about 41% of soda ash imports were from the United Kingdom, and 37% were from Mexico. The remainder of imports were from Belgium, Bulgaria, China, Germany, India, Japan, Taiwan, and Turkey. The average customs, insurance, and freight value of imported soda ash was \$297.99 per ton, and the customs value was \$236.80 per ton.

World Review

Soda ash is a mature commodity in which consumption tends to grow proportional to population and gross domestic product growth rates. For this reason, the leading customers of soda ash were, for the most part, developed nations that have lower growth rates compared with developing countries. The less developed nations tend to have higher soda ash demands and higher growth rates. Although the production and consumption quantities varied among the countries, the end-use patterns were basically the same; glass, chemicals, and detergents were the major sectors (table 8).

Nine countries had the capacity to produce more than 1 million metric ton per year (Mt/yr). In descending order, they were China, United States, Russia, India, Poland, Germany, France, Italy, and the United Kingdom. Bulgaria, Romania, and Ukraine had production installations that were rated at about 1 Mt/yr; adverse economic conditions, however, caused these nations to produce below their design capacities. Recent acquisitions or joint ventures with major European soda ash producers that have soda ash manufacturing expertise should reverse this situation in the next few years. In 2004, world soda ash production was estimated to be 40.3 Mt, which was a 6% increase compared with that of 2003.

Australia.—Castle Harlan Australian Mezzanine Partners (CHAMP) (the Australian affiliate of New York, NY, private equity investment firm Castle Harlan, Inc.) sold Penrice Soda Products Pty. Ltd. to Quadrant Capital (an affiliate of Westpac Private Equity Pty. Ltd.) and Colonial First State Private Equity Ltd. for \$78 million. The management of Penrice also retained an equity interest in the new company. CHAMP bought Penrice from IMC for \$43.3 million in November 2001; the Harris Chemical Group had sold Penrice to IMC in April 1998. Penrice was the only manufacturer of soda ash and sodium bicarbonate in Australia (Chemical Market Reporter, 2004a).

Austria.—Solvay S.A. of Belgium, the world's leading soda ash producer, announced plans to close its synthetic soda ash plant at Ebensee by mid-2005. The company stated that excess global capacity, rising energy costs, and increasing transportation costs necessitated the decision to permanently close the facility. The operation also experienced increased competition from the soda ash plants in Eastern Europe and Central Europe (Trona Patch Times, 2004).

China.—In May, Solvay signed a letter of mutual interest with Nanjing Chemical Industries (a subsidiary of China PetroChemical Corp.) to form a joint venture to operate the

synthetic soda ash plant in Lianyungang, which was one of China's leading soda ash plants. Solvay will contribute its technology expertise in exchange for soda ash marketing rights in Asia. This transaction will give Solvay a territorial position in Asia, Eastern Europe, Western Europe, and the United States as well as being a major member of ANSAC, which exports U.S. soda ash worldwide (Solvay Chemicals, Inc., 2004b§).

Turkey.—In July, the Export-Import Bank of the United States received an application to finance \$50 million in U.S. equipment and services to construct a trona operation in Turkey that would have an annual production capacity of 1 Mt of soda ash (Export-Import Bank of the United States, 2004). Various groups objected to this potential project, citing that the venture would have an adverse affect on the U.S. soda ash industry. There was no decision about the status of the proposed project by yearend (Chemical Market Reporter, 2004e).

Outlook

After surpassing the United States as the world's leading soda ash producer for the second consecutive year, China continued to add new capacity and to increase existing capacity at several of its plants despite escalating production costs. China imports a tremendous quantity of fuel to satisfy the energy requirements of many of its energy-intensive industries, one of which is its synthetic soda ash industry. Higher energy costs and the rising cost of importing salt will cause the price of Chinese soda ash to rise in 2005, and that should benefit the U.S. soda ash industry. Chinese soda ash consumption appears to be stabilizing; however, it is unclear how long China will continue to produce soda ash at rising levels. The U.S. soda ash industry will continue to encounter intense competition from China in some of the Asian markets.

Three dominant groups have survived to become the world leaders in soda ash—Solvay, ANSAC, and China. In years to come, these three soda ash suppliers will produce and export soda ash to many customers all over the world. Because the glass container sector is the leading soda-ash-consuming sector, the demand for soda ash for glass containers may decline as consumers slowly accept their food and beverages packaged in the newer polyethylene terephthalate containers.

The outlook for U.S. soda ash for the next 5 years is optimistic despite the competitiveness of the Chinese soda ash producers. Domestic soda ash is expected to grow by about 0.5% per year, and world demand is forecast to range from 2.0% to 2.5% per year for the next several years. Asia and South America remain the likeliest areas for increased soda ash consumption in the near future.

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TABLE 1
SALIENT SODA ASH STATISTICS¹

(Thousand metric tons and thousand dollars except average annual value)

	2000	2001	2002	2003	2004
United States:					
Production:					
Soda ash:					
Quantity ²	10,200	10,300	10,500	10,600	11,000
Value ²	748,000	773,000	784,000	765,000	770,000
Value, average annual:					
Per short ton	\$66.23	\$67.79	\$68.00	\$65.21	\$63.75
Per metric ton	\$73.00	\$74.73	\$74.96	\$71.88	\$70.27
Wyoming trona	15,700	15,400	15,100	15,500	16,500
Exports:					
Quantity	3,900	4,090	4,250	4,450	4,670
Value	477,000	487,000	500,000	515,000	514,000
Imports for consumption:					
Quantity	75	33	9	5	6
Value	8,570	4,070	2,000	1,510	1,880
Stocks, December 31, producers ¹	245	226	222	330	338
Consumption:					
Apparent	6,430	6,310	6,250	6,090	6,290
Reported	6,390	6,380	6,430	6,270	6,260
World, production ^e	34,300 ^r	35,500 ^r	36,800 ^r	38,000 ^r	40,300

^eEstimated. ^rRevised.

¹Data are rounded to no more than three significant digits, except value per ton.

²Natural only; soda liquors and purge liquors are withheld to avoid disclosing company proprietary data.

TABLE 2
U.S. PRODUCERS OF SODA ASH IN 2004

(Million short tons unless otherwise noted)

Company	Plant nameplate capacity	Plant location	Source of sodium carbonate
FMC Wyoming Corp.:			
Granger ¹	1.30	Granger, WY	Underground trona.
Green River ²	3.55	Green River, WY	Do.
General Chemical (Soda Ash) Partners ³	2.80	do.	Do.
OCI Chemical Corp. ⁴	3.10	do.	Do.
Searles Valley Minerals, Inc. ⁵	1.45	Trona, CA	Dry lake brine.
Solvay Minerals, Inc. ⁶			
Green River	2.80	Green River, WY	Underground trona.
Parachute ⁷	1.00	Parachute, CO	Underground nahcolite.
Total	16.00		
Total	million metric tons	14.50	

¹Tg Soda Ash Inc. was sold to FMC Wyoming Corp. in July 1999.

²Formed joint venture (20%) in February 1996 with Sumitomo Corp. and Nippon Sheet Glass Co., Ltd., both of Japan.

³A joint venture between General Chemical Corp. (51%), Owens-Illinois, Inc. [acquired Australian Consolidated Industries International (ACI) in 1998] (25%), and Tosoh Wyoming Inc. of Japan (24%), which purchased part of ACI's share in June 1992. An expansion was completed in 1998.

⁴Rhône-Poulenc Basic Chemicals Co. of France sold its 51% share to Oriental Chemical Industries Chemical Corp. (OCI) of the Republic of Korea on February 29, 1996; Anadarko Petroleum Corp. (acquired Union Pacific Resources Co. in 2000) owns 49%. An 800,000-short-ton expansion, brought onstream in November 1998, increased plant capacity to 3.1 million short tons; however, the company planned to take 900,000 short tons out of service temporarily for equipment refurbishment.

⁵IMC Global, Inc. acquired North American Chemical Co. in April 1998; operation sold in 2004 to Sun Capital Partners, Inc. (80.1%) with IMC retaining a 19.9% share.

⁶Solvay Soda Ash Joint Venture is owned by Solvay S.A. of Belgium (80%) and Asahi Glass Co. of Japan (20%), which became a partner in February 1990. Capacity increase of 272,000 metric tons (t) (300,000 short tons) installed December 1995 and 454,000 t (500,000 short tons) in October 2000. Company name changed to Solvay Chemicals, Inc. in 2003.

⁷Came onstream October 2000. A joint venture with Williams Sodium Products Co., which is a wholly owned subsidiary of The Williams Companies, Inc. (60%) and American Alkali, Inc. (40%). Operation sold to Solvay America, Inc. on September 10, 2003.

TABLE 3
REPORTED CONSUMPTION OF SODA ASH IN THE UNITED STATES, BY END USE, BY QUARTERS¹

(Thousand metric tons)

SIC ² code	End use	2003	2004				Total
			First quarter	Second quarter	Third quarter	Fourth quarter	
32	Glass:						
3221	Container	1,580	381	402	400	336	1,520
3211	Flat	1,060	263	280	288	303	1,130
3296	Fiber	269	69	69	72	73	283
3229	Other	196	47	47	47	47	188
	Total	3,100	760	798	807	758	3,120
281	Chemicals	1,730	395	389	411	422	1,620
284	Soaps and detergents	674	169	153	177	162	661
26	Pulp and paper	114	22	22	21	25	90
2899	Water treatment ³	70	20	22	21	19	82
	Flue gas desulfurization	124	31	27	39	32	128
	Distributors	277	76	79	76	69	300
	Other	180	56	42	75	83	255
	Total domestic consumption ⁴	6,270	1,530	1,530	1,630	1,570	6,260
	Exports ⁵	4,320	1,150	1,120	1,190	1,150	4,610
	Canada	319	81	78	85	87	332
	Total industry sales ⁶	10,600	2,670	2,650	2,820	2,720	10,900
	Total sales from plants	10,700	2,830	2,860	2,970	2,840	11,500
	Total production	10,600	2,650	2,740	2,800	2,770	11,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Standard industrial classification.

³Includes soda ash equivalent from soda liquors and purge liquors sold to powerplant for water treatment. Sales of mine water are excluded.

⁴Imports reported by the producer/importer have been distributed into appropriate end-use categories listed above.

⁵As reported by producers. Includes Canada. Data may not necessarily agree with those reported by the U.S. Census Bureau for the same periods.

⁶Represents soda ash from domestic origin (production and inventory changes) and imports and exports. Includes soda ash sold by coproducers and distributed by purchasers into appropriate end-use categories.

TABLE 4
SODA ASH YEAREND PRICES

(Dollars per short ton)

	2003	2004
Sodium carbonate (soda ash):		
Dense, 58% Na ₂ O 100-pound, paper bags, carlot, works, free on board	150.00-153.00	152.00-159.00
Bulk, carlot, same basis, tons	120.00-132.00	127.00-135.00
Light 58% 100-pound, paper bags, carlot same basis	186.00-210.00	188.00-215.00
Bulk, carlot, same basis, tons	174.00	176.00

Sources: Current prices of chemicals and related materials, Chemical Market Reporter, v. 265, no. 1, January 5, 2004, p. 19; v. 267, no. 1, January 3, 2005, p. 22.

TABLE 5
REGIONAL DISTRIBUTION OF U.S. SODA ASH EXPORTS, BY CUSTOMS DISTRICTS, IN 2004¹

(Metric tons)

Customs districts	North America	Central America	South America	Caribbean	Europe	Middle East	Africa	Asia	Oceania	Total	Percentage of total
Atlantic:											
Baltimore, MD	--	--	--	--	3	--	--	--	--	3	(2)
Miami, FL	--	5	--	55	--	--	--	--	--	60	(2)
New York, NY	--	--	674	--	1,270	--	--	51	--	1,990	(2)
Norfolk, VA	--	--	--	--	51	--	--	--	--	51	(2)
Philadelphia, PA	--	--	--	--	72	--	--	--	--	72	(2)
Savannah, GA	--	--	--	--	78	--	--	--	--	78	(2)
Gulf:											
Houston-Galveston, TX	--	--	443	2,520	620	2,000	--	--	--	5,580	(2)
Mobile, AL	--	--	--	--	23	--	--	--	--	23	(2)
New Orleans, LA	60	--	4	--	--	25	--	--	--	89	(2)
Port Arthur, TX	--	2,000	516,000	--	54,300	--	44,200	--	--	617,000	13
Pacific:											
Columbia-Snake River, ID-OR-WA	--	26,000	259,000	--	379,000	164,000	--	1,700,000	130,000	2,660,000	57
Los Angeles, CA	--	--	245,000	--	73,500	--	--	552	9,500	329,000	7
San Diego, CA	27,900	--	25,400	--	6,500	--	--	--	7,500	67,300	1
Seattle, WA	9,520	--	--	--	--	--	--	626	--	10,100	(2)
North Central:											
Chicago, IL	--	--	--	--	60	--	--	--	--	60	(2)
Cleveland, OH	101	--	--	--	--	--	--	--	--	101	(2)
Detroit, MI	317,000	--	--	--	79	--	--	--	--	317,000	7
Duluth, MN	39	--	--	--	--	--	--	--	--	39	(2)
Great Falls, MT	40,000	--	--	--	--	--	--	--	--	40,000	1
Pembina, ND	8,250	--	--	--	--	--	--	--	--	8,250	(2)
Northeast:											
Buffalo, NY	5,190	--	--	--	--	--	--	--	--	5,190	(2)
Ogdensburg, NY	463	--	--	--	1	--	--	--	--	464	(2)
St. Albans, VT	88	--	--	--	--	--	--	--	--	88	(2)
Southwest:											
El Paso, TX	31,300	--	--	--	--	--	--	--	--	31,300	1
Laredo, TX	555,000	--	--	--	--	--	--	--	--	555,000	12
Other, San Juan, PR	--	--	--	64	--	--	--	--	--	64	(2)
Unknown	23,200	--	--	--	--	--	--	--	--	23,200	(2)
Total	1,020,000	28,000	1,050,000	2,640	515,000	166,000	44,200	1,700,000	147,000	4,670,000	100
Percentage of total	22	1	22	(2)	11	4	1	36	3	100	XX

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. EXPORTS OF SODA ASH, BY COUNTRY¹

Country	2003			2004		
	Quantity (thousand metric tons)	Value ² (thousands)	Unit value	Quantity (thousand metric tons)	Value ² (thousands)	Unit value
Argentina	162	\$21,300	\$132	190	\$24,300	\$128
Aruba	--	--	--	3	277	110
Australia	117	13,400	115	111	12,800	115
Bahamas, The	(3)	13	720	--	--	--
Belgium	245	30,000	123	179	22,000	123
Belize	(3)	8	430	--	--	--
Brazil	312	43,600	139	289	35,600	123
Canada	378	28,900	76	403	33,100	82
Chile	200	28,600	143	225	28,900	128
China	280	21,900	78	166	12,500	75
Colombia	114	19,600	171	94	13,100	140
Costa Rica	15	2,840	186	6	915	153
Dominican Republic	--	--	--	(3)	7	111
Ecuador	20	3,710	190	11	1,420	126
Finland	(3)	17	250	(3)	13	249
France	55	5,120	93	79	8,250	104
Germany	(3)	21	640	1	102	110
Guatemala	17	3,030	173	18	2,810	156
Indonesia	242	28,600	118	327	32,400	99
Ireland	--	--	--	(3)	4	109
Israel	--	--	--	(3)	3	109
Italy	(3)	42	251	(3)	10	319
Japan	337	38,100	113	410	43,700	107
Korea, Republic of	203	22,200	109	230	23,200	101
Malaysia	103	13,600	132	109	12,200	112
Mexico	600	68,700	114	614	76,000	124
Netherlands	80	9,680	121	90	10,800	120
Netherlands Antilles	(3)	4	385	(3)	25	448
New Zealand	15	1,650	110	35	3,990	114
Nigeria	3	350	102	--	--	--
Pakistan	--	--	--	5	467	93
Panama	8	1,340	178	4	479	120
Peru	21	3,070	149	25	3,410	134
Philippines	67	8,260	122	71	7,560	106
Poland	--	--	--	(3)	62	341
Portugal	22	2,330	107	33	3,410	105
Russia	2	205	111	(3)	49	132
Saudi Arabia	128	10,900	85	128	12,000	94
South Africa	66	8,160	123	44	4,940	112
Spain	135	14,600	109	125	13,600	109
Suriname	--	--	--	(3)	7	1,715
Taiwan	150	16,700	112	184	18,600	101
Thailand	145	17,000	117	189	18,600	99
Trinidad and Tobago	6	901	152	--	--	--
United Arab Emirates	44	3,650	83	39	3,180	82
United Kingdom	6	703	112	8	884	114
Venezuela	138	19,700	144	212	28,000	132
Vietnam	15	2,220	149	10	830	83
Total	4,450	515,000	116	4,670	514,000	110

-- Zero.

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Free alongside ship value.

³Less than ½ unit.

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey using data and information from the Journal of Commerce Port Import-Export Reporting Service and industry sources.

TABLE 7
U.S. PRODUCTION OF SODIUM COMPOUNDS, BY MONTH¹

(Thousand metric tons)

	2003		2004	
	Soda ash	Wyoming trona ²	Soda ash	Wyoming trona ²
January	867	1,470	857	1,310
February	820	1,240	852	1,330
March	897	1,410	937	1,500
April	872	1,320	913	1,430
May	926	1,340	935	1,340
June	878	1,110	894	1,240
July	923	1,110	963	1,400
August	888	1,110	929	1,490
September	869	1,300	907	1,420
October	913	1,390	933	1,400
November	860	1,250	902	1,370
December	925	1,450	936	1,210
Total	10,600	15,500	11,000	16,500

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes solution-mined trona.

TABLE 8
SODA ASH: ESTIMATED WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2000	2001	2002	2003	2004
Australia	300	300	300	300	300
Austria	150	150	150	150	150
Bosnia and Herzegovina	5 ^r	5 ^r	5 ^r	5 ^r	5
Botswana ³	191 ⁴	251 ⁴	283 ⁴	309 ^{r,4}	300
Brazil	200	200	200	200	200
Bulgaria	800	800	800	800	800
Canada	300	300	300	300	300
China	8,343 ⁴	9,144 ⁴	10,330 ⁴	11,336 ^{r,4}	12,668 ⁴
Egypt	50	50	50	50	50
Ethiopia	4 ⁴	8 ⁴	4 ^{r,4}	4 ^r	4
France	1,000	1,000	1,000	1,000	1,000
Germany	1,400	1,400	1,400	1,400	1,400
India	1,500	1,500	1,500	1,500	1,500
Iran	120	120	120	120	120
Italy	1,000	1,000	1,000	1,000	1,000
Japan	669 ⁴	461 ⁴	410 ^r	400 ^r	420
Kenya ³	238 ⁴	298 ⁴	304 ⁴	353 ^{r,4}	356 ⁴
Korea, Republic of	310	310	310	310	310
Mexico	290	290	290	290	290
Netherlands	400	400	400	400	400
Pakistan	230	230	230	230	230
Poland	1,018 ⁴	1,062 ⁴	1,054 ⁴	1,050 ^{r,4}	1,500
Portugal	150	150	150	150	150
Romania	391 ^r	448 ^r	454 ^r	408 ^r	410
Russia	2,199 ⁴	2,370	2,400	2,400	2,600
Spain	500	500	500	500	500
Taiwan	140	140	140	140	140
Turkey	620	640	600	600	600
Ukraine	500	650	678	650	650
United Kingdom	1,000	1,000	1,000	1,000	1,000
United States ³	10,200 ⁴	10,300 ⁴	10,500 ⁴	10,600 ⁴	11,000 ⁴
Total	34,300 ^r	35,500 ^r	36,800 ^r	38,000 ^r	40,300

¹Revised.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through April 18, 2005. Synthetic unless otherwise specified.

³Natural only.

⁴Reported figure.