

# **2005 Minerals Yearbook**

## 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 glass, chemicals, soaps and detergents, pulp and paper, and many other familiar consumer products. The United States has the world's largest natural deposit of trona and is the world's second ranked soda-ash-producing nation. 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 five soda ash companies, all of which responded, representing 100% of the total production data in this report (table 1).

For the third consecutive year, the United States was the world's second ranked soda-ash-producing nation. After more than a century of the United States leading in the world's production of soda ash, China overtook the United States in 2003, and it appears that China will continue to be the world's leader for the foreseeable future. U.S. production of natural soda ash from California and Wyoming in 2005 was 11 million metric tons (Mt), which was virtually identical with that of 2004. 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 Solvay Chemicals, Inc.'s Parachute, CO, plant, 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 at OCI Chemical Corp. and FMC Wyoming Corp. plants of 816,000 t (900,000 short tons) and 953,000 t (1.05 million short tons), respectively. Approximately 2.7 Mt of nameplate capacity (2.98 million short tons), which represented about 19% of total industry nameplate capacity, was idled in 2005. 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 2005—four companies operating five plants in Wyoming that produced soda ash from underground trona ore and one in California that produced soda ash from sodium-carbonate-rich brines. One of the companies that operated a plant in Wyoming also operated one plant in Colorado, which was mothballed in September 2004 but continued sodium bicarbonate production using soda ash feedstock from the company's Wyoming soda ash facility. Stating that the demand for soda ash has increased, FMC Corp. restarted its Granger, WY, plant in June 2005, which it had acquired from Tg Soda Ash, Inc. in 1999 and had idled in May 2001. The company brought back onstream 276,000 t (250,000 short tons) of the 1.18 Mt (1.3 million short tons) of total nameplate capacity available (Chemical Week, 2005a).

#### Consumption

The USGS collects soda ash consumption data by end use on a quarterly basis from the marketing and sales departments 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 2005, U.S. apparent consumption of soda ash was 6.38 Mt; reported consumption, however, was 6.20 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 2005, U.S. apparent consumption and reported consumption varied by 180,000 t, which was attributed to a discrepancy in the export data that were used to derive consumption statistics. The two sources for export data were the U.S. Census Bureau, which reports exports upon departure from the U.S. ports, and the California and Wyoming soda ash producers, which consider shipments to be exported when their export association, American Natural Soda Ash Corp. (ANSAC), takes consignment of the product at the Wyoming plant sites. 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 are made in the second and third quarters for summertime beverage consumption). Soda ash sales to the flat glass sector depended more 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 2005 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%.

*Glass.*—Glass manufacture represented about 50% of domestic soda ash consumption; container, 48%; flat, 37%; fiber, 9%, and specialty, 6%. Glass containers are made for beverages (beer, carbonated, and noncarbonated drinks), chemical and household products, food, liquor, medical products, and toiletries and cosmetics. In 2004, about 35 billion glass containers were manufactured, of which 75% were for beverages (about 50% were beer bottles) and the remainder mostly were for food containers. Nearly 2.13 Mt, or 22%, of glass containers were recycled (Waste Age, 2005).

*Chemicals.*—Soda ash is used to manufacture many sodiumbase 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 2005.

#### Stocks

Yearend 2005 stocks of dense soda ash in domestic plant silos, warehouses, terminals, and on teamtracks amounted to 243,000 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, and Searles Valley, CA, was \$88.39 per metric ton (\$80.19 per short ton), which was 26% more than that of 2004. The value is not a "price," but rather the value of the combined revenue of California 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.

High energy and transportation costs caused soda ash prices to soar during 2005. In addition, list and off-list prices for 2004 increased, but not every soda ash producer achieved these increases because several older, multiyear contracts with price caps were still not renewable. To help offset the escalating energy and transportation costs, the domestic soda ash industry was forced to consider raising prices in 2005. Searles Valley Minerals, Inc. and FMC each announced a \$15 per short ton price increase effective May 1 and June 1, respectively. General Chemical (Soda Ash) Partners followed with a \$30 price increase for its list and off-list prices. Since June 2004, General Chemical had announced a cumulative price increase of \$60 per short ton. Finally, Solvay Chemicals announced in June an additional \$15 per short ton increase in its off-list price of soda ash effective immediately or as contracts permitted (Chemical Week, 2005c). OCI Chemical delayed any increase in its prices at that time but did raise its f.o.b. Wyoming list price for bulk, dense soda ash to \$155 per short ton effective September 1 (OCI Chemical Corp., 2005§1).

On September 15, FMC announced that, effective October 1 or as contracts permitted, it would increase off-list prices by \$15 per short ton for all grades of soda ash and that its list price, f.o.b. Green River and Granger would be \$155 per short ton (FMC Corp., 2005\$). The energy surcharge and freight policy changes initiated in 2004 would remain in full effect for 2005 and beyond.

Because the price of natural gas remained high in 2005, 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 million British thermal units (Solvay Chemicals, Inc., 2004§).

<sup>&</sup>lt;sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

By yearend 2005, the list price for Wyoming bulk, dense soda ash had increased to \$155 per short ton, f.o.b. plant. Searles Valley Minerals in California raised its f.o.b. list price to \$180 per short ton for bulk, dense soda ash.

#### Foreign Trade

U.S. soda ash exports for 2005 were 4.48 Mt according to the U.S. Census Bureau. Industry sources indicated that there may be some unreported soda ash shipments that were exported but were not included in the U.S. Census Bureau statistics. Using the Journal of Commerce's Port Import-Export Reporting Service (PIERS) and data provided by the soda ash producers, there appeared to be at least 180,000 t of additional soda ash exports that needed to be added to the 2005 export totals, which were shipped primarily to Argentina and Venezuela through the Long Beach, CA, and Port Arthur, TX, customs districts. The USGS adjusted the data to account for the discrepancies. Therefore, the 2005 U.S. soda ash export total was 4.68 Mt, which was a record high and represented about 43% of U.S. soda ash production.

In 2005, U.S. exports to 41 countries, on a regional basis, were as follows: Asia, 29%; North America and South America, 27% each; Europe, 10%; the Middle East, 3%; Oceania, 3%; Africa, 1%; and Central America and the Caribbean, about 1% (table 6). The average free alongside ship value was \$136.75 per metric ton in 2005 compared with \$110.06 per ton in 2004. Although the data in tables 1 and 6 are rounded to three significant digits, the unit values listed in table 6 are based on the unrounded statistics. The top 10 countries, representing 70% of total United States soda ash exports, in decreasing order and percentage of total were Mexico, 17%; Brazil, 10%; Canada, 9%; Japan and Indonesia, 6% each; Venezuela and Chile, 5% each; and Taiwan, the Republic of Korea, and Argentina, 4% each. About 47% of all United States soda ash exports went through the Columbia-Snake River customs district in Idaho, Oregon, and Washington; the Port Arthur customs district was the second ranked customs district with 18% of the total, and the Laredo, TX, customs district was third, with 15% of the total (table 5).

Imports of soda ash increased slightly to 8,200 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 and light soda ash, the majority of which was light soda ash exported to the United States. In 2005, about 32% of soda ash imports was from the United Kingdom, and 25% was from Mexico. The remainder of imports was from Belgium, China, France, Germany, India, Italy, Japan, and Romania. About 360 t of soda ash was reportedly imported from the Dominican Republic, which does not produce soda ash. [This material either was in the wrong category (mislabeled) or was transshipped from another source.] The average cost, insurance, and freight value of imported soda ash was \$299.96 per ton, and the customs value was \$244.35 per ton.

#### World Industry Structure

Soda ash is a mature commodity in which consumption tends to grow in proportion 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 developing 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.

Nine countries produced more than 1 million metric tons per year (Mt/yr). They were, in descending order, China, the United States, Russia, Germany, India, Poland, 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 facilities' 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 2005, world soda ash production was estimated to be 41.9 Mt, which was a 4% increase compared with that of 2004.

#### World Review

*Argentina.*—After many years of planning and setbacks, Alcalis de la Patagonia SA came onstream in April with its synthetic soda ash plant at San Antonio Oeste, Rio Negro. Although the plant had a design capacity of 250,000 metric tons per year (t/yr), it was scheduled to produce about 70,000 t the first year. The plant will supply soda ash primarily to customers in Brazil (Noticias Net, 2005§).

*India.*—Tata Chemicals Ltd. announced plans to expand soda ash production capacity at its plant at Mithapur in Gujarat. The \$34.4 million expansion will increase production capacity to 1 Mt/yr from 875,000 t/yr with completion scheduled for March 2006 or earlier. The decision to increase capacity was based on the belief that United States soda ash exports to Asian markets would become less competitive as transportation rates increase and China's shortage of salt for synthetic soda ash manufacture continues (Chemical Market Reporter, 2005).

**Pakistan.**—ICI Pakistan, Ltd. announced it would invest \$15 million to increase soda ash production capacity at its Khewra facility. The plant would expand by 50,000 t/yr to 225,000 t/yr of soda ash. The facility accounted for about 75% of the country's soda ash requirements (Chemical Week, 2005b).

*Romania.*—In December, Gujarat Heavy Chemicals Ltd. of India acquired a 65% share of SC Bega Upsom SA, the Romanian synthetic soda ash producer, for \$19.5 million. Gujarat Heavy Chemicals owned and operated a 525,000-t/yr synthetic soda ash plant in Sutrapada, India; the Romanian plant at Ocna Mures had capacity of 200,000 t/yr (Financial Express, The, 2005§).

*United Kingdom.*—In November, Tata Chemicals purchased a 63.5% majority share for \$113 million of Brunner Mond Ltd. of the United Kingdom. The sale from Wayland Investments Ltd. and Barclays Bank included the two synthetic soda ash plants in Northwich, Cheshire, a synthetic soda ash plant in Delfzijl, Netherlands, and the natural soda ash facility at Lake Magadi, Kenya. Tata Chemicals became the third ranked soda ash producer in the world with a combined capacity of 3 Mt/yr (Trona Patch Times, 2005).

#### Outlook

After surpassing the United States as the world's leading soda ash producer for the third consecutive year, China continued to add new capacity and increase existing capacity at several of its plants despite escalating production costs. China imported a large quantity of fuel to satisfy the energy requirements of many of its energy-intensive industries, one of which was its synthetic soda ash industry. Higher energy costs and the rising cost of importing salt are expected to cause the price of Chinese soda ash to rise in 2006, and could that benefit the U.S. soda ash industry. Although Chinese soda ash consumption appears to be stabilizing, it is unclear how long China will continue to increase production of soda ash. The United States soda ash industry may expect to 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 S.A. of Belgium, ANSAC of the United States (which represents all five domestic producers), and Chinese producers. 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 (PET) containers.

The outlook for United States soda ash for the next 5 years is optimistic despite competition from Chinese soda ash producers. Domestic soda ash production is expected to grow by about 0.5% per year, and growth in 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 STATISTICS<sup>1</sup>

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

	2001	2002	2003	2004	2005
United States:					
Production:					
Soda ash: <sup>2</sup>					
Quantity	10,300	10,500	10,600	11,000	11,000
Value	773,000	784,000	765,000	770,000	968,000
Value, average annual:					
Per short ton	\$67.79	\$68.00	\$65.21	\$63.75	\$80.19
Per metric ton	\$74.73	\$74.96	\$71.88	\$70.27	\$88.39
Wyoming trona	15,400	15,100	15,500	16,500	17,000
Exports:					
Quantity	4,090	4,250	4,450	4,670	4,680
Value	487,000	500,000	515,000	514,000	640,000
Imports for consumption:					
Quantity	33	9	5	6	8
Value	4,070	2,000	1,510	1,880	2,460
Stocks, December 31, producers'	226	222	330	338	243
Consumption:					
Apparent	6,310	6,250	6,090	6,290	6,380
Reported	6,380	6,430	6,270	6,260	6,200
World, production <sup>e</sup>	35,700 <sup>r</sup>	37,200 <sup>r</sup>	38,400 <sup>r</sup>	40,300	41,900

<sup>e</sup>Estimated. <sup>r</sup>Revised.

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

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

#### TABLE 2

#### U.S. PRODUCERS OF SODA ASH IN 2005

#### (Million short tons unless otherwise noted)

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

<sup>1</sup>Tg Soda Ash Inc. was sold to FMC Wyoming Corp. in July 1999.

<sup>2</sup>Formed joint venture (20%) in February 1996 with Sumitomo Corp. and Nippon Sheet Glass Co., Ltd., both of Japan.
<sup>3</sup>A joint venture between General Chemical Corp. (75%), Owens-Illinois, Inc. [acquired Australian Consolidated Industries International (ACI) in 1998] (25%). Tosoh Wyoming Inc. of Japan, which purchased part of ACI's 24% share in June 1992, sold its shares to General in August 2005.

<sup>4</sup>Rhône-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 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. <sup>5</sup>IMC 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.

<sup>6</sup>Solvay 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. <sup>7</sup>Came onstream October 2000. A joint venture with Williams Sodium Products Co. [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. Soda ash plant idled.

#### TABLE 3

#### REPORTED CONSUMPTION OF SODA ASH IN THE UNITED STATES, BY END USE, BY QUARTER<sup>1</sup>

					2005		
$SIC^2$			First	Second	Third	Fourth	
code	End use	2004	quarter	quarter	quarter	quarter	Total
32	Glass:						
3221	Container	1,520	363	372	374	351	1,460
3211	Flat	1,130	269	289	291	277	1,130
3296	Fiber	283	69	72	70	74	284
3229	Other	188	43	46	47	42	179
	Total	3,120	744	779	782	745	3,050
281	Chemicals	1,620	405	432	428	416	1,680
284	Soaps and detergents	661	163	158	154	149	624
26	Pulp and paper	90	22	23	22	22	90
2899	Water treatment <sup>3</sup>	82	20	21	17	20	78
	Flue gas desulfurization	128	34	33	39	36	141
	Distributors	300	75	74	72	70	290
	Other	255	72	54	59	56	241
	Total domestic consumption <sup>4</sup>	6,260	1,540	1,570	1,570	1,510	6,200
	Exports <sup>5</sup>	4,610	1,220	1,280	1,190	1,180	4,870
	Canada	332	98	96	94	104	393
	Total industry sales <sup>6</sup>	10,900	2,750	2,860	2,760	2,690	11,100
	Total sales from plants	11,500	2,760	2,860	2,790	2,790	11,200
	Total production	11,000	2,680	2,790	2,770	2,720	11,000

(Thousand metric tons)

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

<sup>2</sup>Standard industrial classification.

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

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

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

<sup>6</sup>Represents 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 4SODA ASH YEAREND PRICES

#### (Dollars per short ton)

	2004	2005
Sodium carbonate (soda ash):		
Dense, 58% Na <sub>2</sub> O 100-pound, paper bags, carlot, works, free on board	152.00-159.00	152.00-159.00
Bulk, carlot, same basis, tons	127.00-135.00	127.00-135.00
Light, 100-pound, paper bags, carlot same basis	188.00-215.00	188.00-215.00
Bulk, carlot, same basis, tons	176.00	176.00

Source: Current prices of chemicals and related materials, Chemical Market Reporter, January 3, 2005; January 9, 2006.

TABLE 5 REGIONAL DISTRIBUTION OF U.S. SODA ASH EXPORTS, BY CUSTOMS DISTRICTS, IN 2005<sup>1</sup>

(Metric tons)

	North	Central	South			Middle					Percentage
Customs districts	America	America	America	Caribbean	Europe	East	Africa	Asia	Oceania	Total	of total
Atlantic:											
Baltimore, MD	1	ł	1	1	1,830	I	ł	1	ł	1,830	(2)
Charleston, SC	1	1	1	1	1	I	ł	9	1	9	(2)
Miami, FL	ł	28	S	ŝ	I	I	ł	ł	ł	38	(2)
New York, NY	1	I	ł	1	1,440	ł	I	4	1	1,450	(2)
Norfolk, VA	1	I	1	1	324	I	ł	1	ł	324	(2)
Tampa, FL	ł	ł	149	1	ł	ł	ł	1	ł	149	(2)
Gulf:											
Houston-Galveston, TX	I	9	100	2,970	597	ł	I	1	ł	3,670	(2)
Port Arthur, TX	1	1	628,000	1	144,000	1	49,800	1	1	821,000	18
Pacific:											
Columbia-Snake River, ID-OR-WA	1	36,100	349,000	1	228,000	125,000	ł	1,350,000	130,000	2,220,000	47
Los Angeles, CA	ł	ł	267,000	1	64,800	ł	ł	5,860	6,020	344,000	7
San Diego, CA	31,500	4,400	9,580	1	19,400	ł	ł	1	ł	64,900	1
Seattle, WA	11,100	ł	1	1	1	1	ł	298	ł	11,400	(2)
North Central:											
Chicago, IL	ł	1	1	1	1	1	1	25	1	25	(2)
Cleveland, OH	180	ł	1	1	ł	ł	ł	1	ł	180	(2)
Detroit, MI	344,000	ł	1	1	169	ł	ł	1	1	344,000	7
Duluth, MN	82	ł	ł	1	I	ł	ł	ł	ł	82	(2)
Great Falls, MT	56,500	ł	ł	1	ł	ł	ł	ł	ł	56,500	1
Pembina, ND	8,120	ł	1	1	ł	ł	ł	1	1	8,120	(2)
Northeast:											
Buffalo, NY	5,820	1	1	1	1	1	ł	1	ł	5,820	(2)
Ogdensburg, NY	3,460	1	1	1	49	1	1	1	1	3,510	(2)
St. Albans, VT	375	ł	I	I	ł	I	ł	I	ł	375	(2)
Southwest:											
El Paso, TX	69,600	ł	1	1	ł	ł	ł	1	1	69,600	1
Laredo, TX	709,000	1	1	1	1	1	1	ł	1	709,000	15
Unknown	11,300	ł	1	1	ł	1	1	ł	1	11,300	(2)
Total	1,250,000	40,500	1,250,000	2,980	460,000	125,000	49,800	1,360,000	136,000	4,680,000	100
Percentage of total	27	1	27	(2)	10	3	1	29	3	100	XX
XX Not applicable Zero. <sup>1</sup> Data are rounded to no more than three significant digits: may not add to totals shown.	enificant diei	ts: may not a	add to totals s	hown.							
<sup>2</sup> Less than ½ unit.	0										

Source: U.S. Census Bureau, as adjusted by the U.S. Geological Survey using data and information from the Journal of Commerce PIERS trade service and industry sources.

 TABLE 6

 U.S. EXPORTS OF SODA ASH, BY COUNTRY<sup>1</sup>

		2004			2005	
	Quantity			Quantity		
	(thousand	Value <sup>2</sup>	Unit	(thousand	Value <sup>2</sup>	Unit
Country	metric tons)	(thousands)	value	metric tons)	(thousands)	value
Argentina	190	\$24,300	\$128	166	\$24,600	\$148
Aruba	3	277	110	3	327	110
Australia	- 111	12,800	115	100	13,100	131
Belgium	179	22,000	123	150	18,600	124
Belize				(3)	8	276
Brazil	289	35,600	123	450	69,200	154
Canada	403	33,100	82	441	50,800	115
Chile	225	28,900	128	234	31,500	134
China	166	12,500	75	95	12,000	126
Colombia	- 94	13,100	140	114	17,500	153
Costa Rica	6	915	153	17	2,790	169
Dominican Republic	(3)	7	111			
Ecuador	- 11	1,420	126	10	1,350	142
Finland	(3)	13	249	(3)	19	284
France	79	8,250	104	32	3,970	123
Germany	- 1	102	110			
Grenada				(3)	3	600
Guatemala		2,810	156	18	2,800	155
Indonesia		32,400	99	266	38,200	133
Ireland	(3)	4	109	(3)	27	108
Israel	(3)	4	109	(5)		
Italy	(3)	10	319	(3)	81	281
Japan	- 410	43,700	107	302	38,900	129
Korea, Republic of	230	43,700	107	188	27,100	144
Malaysia		12,200	112	100	17,300	151
Mexico	614	76,000	112	811	105,000	129
Netherlands		10,800	124	102	16,100	129
Netherlands Antilles	(3)	25	448			
New Zealand	- 35	3,990	114			128
Pakistan	_ 55	3,990 467	93	36	4,640 8	2,000
	_ 5			(3)		2,000 146
Panama		479	120	6	876	
Peru	_ 25	3,410	134	33	4,780	147
Philippines	_ 71	7,560	106	51	7,950	155
Poland	(3)	62 2 410	341	(3)	41	171
Portugal	_ 33	3,410	105	14	1,760	122
Russia	(3)	49	132	2	251	113
Saudi Arabia	128	12,000	94	96	11,200	117
South Africa	_ 44	4,940	112	50	7,150	144
Spain	125	13,600	109	158	19,900	126
Suriname	(3)	7	1,715			
Taiwan	184	18,600	101	195	27,100	139
Thailand		18,600	99	142	21,600	152
United Arab Emirates	39	3,180	82	29	3,400	116
United Kingdom	8	884	114	(3)	3	3,000
Venezuela	212	28,000	132	247	38,200	154
Vietnam	10	830	83	3	596	203
Total Zero	4,670	514,000	110	4,680	640,000	137

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown. <sup>2</sup>Free alongside ship value.

 $^{3}$ Less than  $\frac{1}{2}$  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 MONTH<sup>1</sup>

#### (Thousand metric tons)

	20	004	20	)05
		Wyoming		Wyoming
	Soda ash	trona <sup>2</sup>	Soda ash	trona <sup>2</sup>
January	857	1,310	925	1,440
February	852	1,330	858	1,350
March	937	1,500	894	1,410
April	913	1,430	928	1,360
May	935	1,340	931	1,510
June	894	1,240	932	1,550
July	963	1,400	955	1,550
August	929	1,490	893	1,380
September	907	1,420	923	1,480
October	933	1,400	898	1,320
November	902	1,370	895	1,310
December	936	1,210	922	1,360
Total	11,000	16,500	11,000	17,000

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

<sup>2</sup>Includes solution-mined trona.

## TABLE 8 SODA ASH: ESTIMATED WORLD PRODUCTION, BY COUNTRY<sup>1, 2</sup>

#### (Thousand metric tons)

Country <sup>3</sup>	2001	2002	2003	2004	2005
Argentina					70
Australia	300	300	300	300	300
Austria	150	150	150	150	150
Bosnia and Herzegovina	37 <sup>r, 4</sup>	r	12 <sup>r, 4</sup>	11 <sup>r</sup>	11
Botswana <sup>5</sup>	251 4	283 4	309 4	263 <sup>r, 4</sup>	250
Brazil	200	200	200	200	200
Bulgaria	800	800	800	800	800
Canada	300	300	300	300	300
Chad	12	12	12	12	12
China	9,144 4	10,330 4	11,336 4	12,668 4	14,210 4
Egypt	50	50	50	50	50
Ethiopia	8 4	4 4	4 4	6 <sup>r, 4</sup>	7
France	1,000	1,000	1,000	1,000	1,000
Germany	1,500 <sup>r</sup>	1,500 <sup>r</sup>	1,500 <sup>r</sup>	1,500 <sup>r</sup>	1,500
India	1,500	1,500	1,500	1,500	1,500
Iran	120	120	120	130 <sup>r</sup>	130
Italy	1,000	1,000	1,000	1,000	1,000
Japan	461 4	410	400	400 r	400
Kenya <sup>5</sup>	298 4	304 4	353 <sup>4</sup>	356 <sup>4</sup>	360 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	1,062 4	1,054 4	1,110 <sup>r, 4</sup>	1,167 <sup>r, 4</sup>	1,115 4
Portugal	150	150	150	150	150
Romania	448	454	407 <sup>r</sup>	401 r	410
Russia	2,370	2,400	2,400	2,600	2,600
Spain	500	500	500	500	500
Taiwan	140	140	140	140	140
Turkey	640	825 <sup>r, 4</sup>	835 <sup>r, 4</sup>	846 <sup>r, 4</sup>	850
Ukraine	650	678	650	650	700
United Kingdom	1,000	1,000	1,000	1,000	1,000
United States <sup>5</sup>	10,300 4	10,500 4	10,600 4	11,000 4	11,000 4
Total	35,700 r	37,200 <sup>r</sup>	38,400 r	40,300	41,900

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>2</sup>Table includes data available through April 18, 2006. Synthetic unless otherwise specified.

<sup>3</sup>In addition to the countries listed, Tanzania may produce soda ash for local consumption; available general information is inadequate for the formulation of reliable estimates of output levels.

<sup>4</sup>Reported figure.

<sup>5</sup>Natural only.