



2007 Minerals Yearbook

SODA ASH [ADVANCE RELEASE]

SODA ASH

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Soda ash production (based on unrounded data), exports, and average annual value each reached a record high in 2007. Tight supplies and a strong export market prompted higher domestic and export prices for soda ash. The total value of U.S. soda ash was \$1.26 billion.

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).

Soda ash 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 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).

The United States remained 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 appeared that China would continue to be the world's leader for the foreseeable future. U.S. production of natural soda ash from California and Wyoming in 2007 was a record 11.1 million metric tons (Mt). Based on about 14.5 million metric tons per year (Mt/yr) (16 million short tons per year) of total nameplate production capacity, the U.S. soda ash industry operated at 77% of total capacity. This capacity utilization rate appears to be low because it includes the full nameplate capacity of 900,000 metric tons per year (t/yr) (1 million short tons per year) 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 Corp. plants of 816,000 t/yr (900,000 short tons per year) and 726,000 t/yr (800,000 short tons per year), respectively.

Approximately 2.45 Mt/yr of nameplate capacity (2.70 million short tons per year), which represented about 17% of total industry nameplate capacity, was idled in 2007. 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. Individual effective capacity data are not publicly disclosed.

The U.S. soda ash industry consisted of five companies in 2007—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. Solvay operated a plant in Wyoming and a 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 demand for soda ash has increased, FMC had 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/yr (250,000 short tons per year) of the 1.18 Mt/yr (1.3 million short tons per year) of total nameplate production capacity available. FMC brought another 250,000 short tons of idled capacity back onstream in 2006. The idled capacity that was back onstream by 2007 helped compensate for the loss of soda ash production from Solvay's Parachute, CO, facility that idled soda ash capacity in 2003.

In November 2007, Nirma Ltd., a synthetic soda ash and detergent producer in India, purchased from Sun Capital Partners, Inc. the 80.1% share of Searles Valley Minerals Inc. and the 19.9% ownership of smaller investors for more than \$200 million (Forbes, 2007).

Each of the U.S. companies is either wholly owned, or partially owned, by foreign soda ash-producing companies or foreign soda ash consumers. As a result of the acquisition of Searles Valley Minerals by Nirma, the U.S. soda ash industry, for the last time, was primarily a U.S.-owned industry; 51% was domestic and 49% was foreign. In early 2008 when Tata Chemicals Ltd. of India was expected to purchase General Chemical Industrial Products, Inc., which includes General Chemical (Soda Ash) Partners' 75% ownership of the Wyoming soda ash plant, the U.S. soda ash industry for the first time would not be a U.S.-majority owned industry. The remaining 25% that was owned by Owens-Illinois Inc. was not affected. As of yearend 2007, the countries and percentage ownership are Belgium, 42%; Japan, 20%; the Republic of Korea, 20%; and India, 18%.

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 2007, U.S. apparent consumption and reported consumption were virtually identical. Apparent consumption of soda ash was 6.0 Mt; reported consumption was 5.94 Mt (table 1). Reported consumption and apparent consumption do not necessarily correspond because reported consumption is sales reported by producers, whereas apparent consumption is the calculated quantity available for domestic consumption based on balancing supply (production, imports, and inventory adjustments) with external demand (exports).

When these types of consumption do not closely correspond, it is usually 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 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 be 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 2007 was glass, 49%; chemicals, 30%; soap and detergents, 8%; distributors, 5%; miscellaneous uses, 3%; flue gas desulfurization and water treatment, 2% each; and pulp and paper, 1%.

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

Glass.—Glass manufacture represented about 49% of domestic soda ash consumption: container, 50%; flat, 37%; fiber, 7%; 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 2007, about 35.7 billion glass containers were manufactured, of which 57% was for beer

bottles, 16% for food containers, 9% for beverage containers, 6% each for miscellaneous containers (chemicals, cosmetics, health, household, industrial, medicinal, and toiletries) and wine containers, and 3% each for liquor and ready-to-drink alcoholic coolers and cocktail containers. Nearly 2.50 Mt, or 25%, of glass containers was recycled (Waste Age, 2007).

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 have 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 2007.

Stocks

Yearend 2007 stocks of dense soda ash in domestic plant silos, terminals, warehouses, and on teamtracks amounted to 206,000 metric tons (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 in 2007 for bulk, dense natural soda ash, free on board (f.o.b.) Green River, WY, and Searles Valley, CA, was \$114.12 per metric ton (\$103.53 per short ton), which was 7% more than that of 2006. This was a record high, eclipsing the previous record set in 2006 that was \$106.53 per ton (\$96.64 per short ton). 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 beginning in 2005 and continuing through 2007. To help offset the escalating energy and transportation costs, the domestic soda ash industry was forced to raise prices in 2007. On May 1, 2007, FMC Corp. and General Chemical (Soda Ash) Partners announced a \$15 per short ton increase in the list and off-list price of soda ash effective July 1 or as contracts permitted (FMC Corp., 2007; General Chemical Industrial Products, 2007). On June 11, Searles Valley Minerals increased its off-list price for soda ash by \$25 per ton, not to exceed the current list price effective July 15, 2007 (Searles Valley Minerals, 2007). FMC announced a second price increase on September 25 that raised the off-list price another \$15 per short ton effective October 1 or as contracts permitted. On October 4, Searles Valley Minerals increased its off-list price by another \$20 per ton effective November 1, 2007.

General Chemical (Soda Ash) Partners raised its list price of soda ash effective May 1, 2007, to \$185 per short ton. The FMC list price, which had been \$155 per short ton for bulk, dense soda ash, f.o.b. Green River, WY, increased to \$170 per short ton in September 2007. OCI followed with a \$15 price increase to \$185 per short ton for its list price effective November 1 (OCI Chemical Corp., 2007). The list price of soda ash for Searles Valley Minerals was \$195 per short ton. Many soda ash contracts are negotiated in November and December for the following year.

Because the price of natural gas remained high in 2007, 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 were expected to remain in effect as long as the price of natural gas was between \$5.00 and \$8.00 per million British thermal units.

Foreign Trade

The majority of U.S. soda ash exports were controlled by ANSAC. It is involved exclusively in the export trade of soda ash, defined as an alkali product designated by the chemical formula Na_2CO_3 , whether manufactured by brine evaporation and purification, Solvay process, trona refining, or any other means. Under the Treaty of Rome agreement (1958), ANSAC is not permitted to ship soda ash to the European Community; however, the members of the U.S. soda ash industry formed another organization for shipping to this region. It is the American-European Soda Ash Shipping Association, Inc., (AESSA), which is engaged solely in storage, transportation, and other related logistical and technical support activities to promote and further its members' individual commerce in soda ash being shipped to the European Community. Both ANSAC and AESSA were formed as Webb-Pomerene export associations under the authority of the U.S. Federal Trade Commission.

According to the U.S. Census Bureau, U.S. soda ash exports for 2007 were a record 5.13 Mt, which represented about 46%

of U.S. soda ash production. For comparison, exports accounted for only 5% of U.S. production in 1970, 13% in 1980, 26% in 1990, and 38% in 2000. In 2007, U.S. exports to 56 countries, on a regional basis, were as follows: South America, 27%; Asia and North America, 26% each; Europe, 12%; the Middle East and Oceania, 3% each; Africa and Central America, 2% each; and the Caribbean, less than 1% (table 6). The average free alongside ship value was \$143.02 per ton in 2007 compared with \$152.64 per ton in 2006. 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 71% of total U.S. soda ash exports, in decreasing order and percentage of total were Mexico, 17%; Brazil, 10%; Canada, 9%; Chile and Indonesia, 6% each; Japan, Taiwan, and Venezuela, 5% each; and Belgium and the Republic of Korea, 4% each. About 43% of all U.S. soda ash exports went through the Columbia-Snake River customs district in Idaho, Oregon, and Washington; the Port Arthur, TX, customs district was the second ranked customs district with 24% of the total, and the Laredo, TX, customs district was third, with 14% of the total (table 5).

Imports of soda ash increased slightly to 9,143 t from 13 countries according to U.S. Census Bureau data. 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 2007, about 37% of soda ash imports was from China, 32% from the United Kingdom, and 22% was from Mexico. The remainder of imports was from Canada, France, Germany, India, Japan, Poland, and Romania. About 266 t of soda ash reportedly was imported from Denmark, the Dominican Republic, and Hong Kong, none of which produce soda ash. This material either was in the wrong category (misabeled) or was transshipped from another source. The average cost, insurance, and freight value of imported soda ash was \$301.92 per ton, and the customs value was \$248.33 per ton.

World Review

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 use less soda ash than developed nations but have 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.

Seven countries produced more than 1 Mt/yr of soda ash. They were, in descending order, China, the United States, Russia, Germany, India, Poland, and France. 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 are expected to reverse this situation in the next few years. In 2007, world soda ash production was estimated to be 44.8 Mt, which was a 5% increase compared with that of 2006.

Some soda ash projects were under consideration in 2007 in the Middle East. General Chemical (Soda Ash) Partners [General Chemical (75%) and Owens-Illinois Inc. (25%)] agreed to a joint venture with Saleh & Abdulaziz Abahsain Co. Ltd. of Saudi Arabia to construct a 1 Mt/yr-capacity soda ash operation in Saudi Arabia (Middle East-North Africa Financial Network, 2008). Tata Chemicals Ltd. of India entered into discussions with Oman Oil Co. Ltd. to construct a soda ash plant in Oman. An industrial salt project also was under discussion (Business Standard, 2007).

Bosnia Herzegovina.—In August 2006, a joint venture between Fabrika Soda Lukavac D.O.O. (20%) and Soda Sanayii A.S. (80%) of Turkey was established. In December 2007, the International Finance Corp. financed an \$8 million loan to complete the construction of a dense soda ash facility. The plant has a total production capacity of 220,000 metric tons per year (t/yr) (Sisecam Chemicals Group, 2007).

Bulgaria.—Solvay Sodi A.D., [a joint venture between Solvay S.A. of Belgium (75%) and Sisecam Chemicals Group of Turkey (25%)] obtained a 5-year loan of \$111 million from the Bulgarian unit of the French banking group Societe Generale Expressbank. Part of the loan was to finance pollution abatement equipment at the Devon powerplant, and another part of the loan was to increase soda ash production capacity by 25% from 1.2 to 1.5 Mt/yr (Industrial Minerals, 2007).

Egypt.—The China National Chemical Engineering Corp. signed a memorandum of understanding with the Egyptian Salts and Minerals Co. to build a soda ash plant near Fayoum. The \$90 million project was expected to have a production capacity of 100,000 t/yr (Business Today Egypt, 2007).

Tanzania.—Tata Chemicals of India planned to develop the natural soda ash deposit at Lake Natron that is the breeding ground to 75% of the world's Lesser Flamingo population. The proposed project would produce 500,000 t/yr of soda ash; however, there were concerns about the plant's environmental impact on the flamingos and the region's \$932 million tourism industry. Negotiations and discussions continued through yearend (Afrol News, 2007).

Outlook

After surpassing the United States as the world's leading soda ash producer in 2003, China has remained in the lead for 5 consecutive years. China continued to add new production capacity and increase existing capacity at several of its plants despite escalating production costs. It 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 caused the price of Chinese soda ash to rise in 2006 and through 2007, which benefited the U.S. soda ash industry. It was unknown how long China would continue to increase production of soda ash, although China's soda ash consumption appeared to be stabilizing. The U.S. soda ash industry may expect to

continue to encounter intense competition from China in some 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 four of the 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.

U.S. soda ash production is expected to increase for the next 5 years despite competition from Chinese soda ash producers. Domestic soda ash production is expected to increase by 0.5% per year, and growth in world consumption 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)

	2003	2004	2005	2006	2007
United States:					
Production:					
Soda ash: ²					
Quantity	10,600	11,000	11,000	11,000	11,100
Value	765,000	770,000	968,000	1,170,000	1,260,000
Value, average annual:					
Per short ton	\$65.21	\$63.75	\$80.19	\$96.64	\$103.53
Per metric ton	\$71.88	\$70.27	\$88.39	\$106.53	\$114.12
Wyoming trona	15,500	16,500	17,000	16,700	17,200
Exports:					
Quantity	4,450	4,670	4,680	4,820	5,130
Value	515,000	514,000	640,000	736,000	734,000
Imports for consumption:					
Quantity	5	6	8	7	9
Value	1,510	1,880	2,460	2,290	2,760
Stocks, December 31, producers'	330	338	243	290	206
Consumption:					
Apparent	6,090	6,290	6,380	6,100	6,030
Reported	6,270	6,260	6,200	6,110	5,940
World, production ^e	37,100 ^r	39,700 ^r	41,200 ^r	42,500 ^r	44,800

^eEstimated. ^rRevised.

¹Data are rounded to no more than three significant digits, except average annual value.

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

TABLE 2
U.S. PRODUCERS OF SODA ASH IN 2007

(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 Chemicals, 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	

Do., do. Ditto.

¹Tg Soda Ash Inc. was sold to FMC Wyoming Corp. in July 1999. About 500,000 short tons of idled capacity was brought back online by 2007.

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. (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 Chemical in August 2005.

⁴Rhône-Poulenc Basic Chemicals Co. of France sold its 51% share to DC Chemical Co., Ltd. [formerly 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 per year; however, the company planned to take 900,000 short tons per year 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. The entire operation was sold to Nirma Ltd. of India in November 2007.

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 per year (t/yr) (300,000 short tons per year) installed December 1995 and 454,000 t/yr (500,000 short tons per year) in October 2000. Company name changed to Solvay Chemicals, Inc. in 2003.

⁷Came 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 QUARTER¹

(Thousand metric tons)

SIC ² code	End use	2006	2007				Total
			First quarter	Second quarter	Third quarter	Fourth quarter	
32	Glass:						
3221	Container	1,480	360	384	367	345	1,460
3211	Flat	1,120	256	274	271	280	1,080
3296	Fiber	263	54	55	51	50	210
3229	Other	177	42	43	33	36	154
	Total	3,030 ^r	712	756	722	711	2,900
281	Chemicals	1,790	426	453	436	441	1,760
284	Soaps and detergents	514	132	120	106	105	463
26	Pulp and paper	87	25	21	23	22	91
2899	Water treatment ³	89	24	25	26	23	98
	Flue gas desulfurization	128	31	30	36	33	130
	Distributors	260	61	59	88	89	297
	Other	207	52	47	51	52	202
	Total domestic consumption ⁴	6,110	1,460	1,510	1,490	1,480	5,940
	Exports ⁵	4,910	1,280	1,320	1,300	1,350	5,250
	Canada	431	112	91	100	103	406
	Total industry sales ⁶	11,000	2,740	2,830	2,790	2,830	11,200
	Total sales from plants	10,900	2,740	2,830	2,820	2,820	11,200
	Total production	11,000	2,710	2,760	2,850	2,760	11,100

^rRevised.

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
REGIONAL DISTRIBUTION OF U.S. SODA ASH EXPORTS, BY CUSTOMS DISTRICTS, IN 2007¹

(Metric tons)

Customs districts	North America	Central America	South America	Caribbean	Europe	Middle East	Africa	Asia	Oceania	Total	Percentage of total
Atlantic:											
Baltimore, MD	--	--	--	--	7	--	--	--	--	7	(2)
Charleston, SC	--	--	10	--	--	--	--	--	--	10	(2)
Miami, FL	--	170	251	56	--	--	--	--	--	477	(2)
New York, NY	--	--	51	--	450	3	--	1	--	505	(2)
Norfolk, VA	--	--	9	--	272	185	--	--	--	466	(2)
Savannah, GA	--	--	--	--	--	--	--	5	--	5	(2)
Wilmington, NC	--	--	--	--	4	--	--	--	--	4	(2)
Gulf:											
Houston-Galveston, TX	--	--	30	17	2,220	12	92	1,930	--	4,300	(2)
New Orleans, LA	--	--	207	--	--	--	--	--	--	207	(2)
Port Arthur, TX	--	28,500	760,000	2,500	376,000	--	83,600	--	--	1,250,000	24
Pacific:											
Columbia-Snake River, ID-OR-WA	--	53,300	311,000	--	245,000	177,000	--	1,310,000	133,000	2,230,000	43
Los Angeles, CA	10	--	305,000	--	305	468	3	3,650	12,400	322,000	6
San Diego, CA	50,500	--	--	--	--	--	--	--	--	50,500	1
San Francisco, CA	--	--	--	--	--	358	57	--	--	415	(2)
Seattle, WA	21,200	--	--	--	--	--	--	3	--	21,300	(2)
North Central:											
Cleveland, OH	87	--	--	--	--	--	--	--	--	87	(2)
Detroit, MI	333,000	--	--	--	--	--	--	51	--	333,000	6
Great Falls, MT	56,300	--	--	--	--	--	--	--	--	56,300	1
Pembina, ND	2,680	--	--	--	--	--	--	--	--	2,680	(2)
Northeast:											
Buffalo, NY	25,100	--	--	--	--	--	--	--	--	25,100	(2)
Ogdensburg, NY	779	--	--	--	35	--	--	--	--	814	(2)
Portland, ME	309	--	--	--	--	--	--	--	--	309	(2)
Southwest:											
El Paso, TX	96,800	--	--	--	--	--	--	--	--	96,800	2
Laredo, TX	733,000	--	--	--	--	--	--	--	--	733,000	14
Unknown	4,040	--	--	--	--	--	--	--	--	4,040	(2)
Total	1,320,000	81,900	1,380,000	2,570	624,000	178,000	83,800	1,310,000	145,000	5,130,000	100
Percentage of total	26	2	27	--	12	3	2	26	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, as adjusted by the U.S. Geological Survey using data and information from the Journal of Commerce PIERS trade service and industry sources.

TABLE 5
U.S. EXPORTS OF SODA ASH, BY COUNTRY¹

Country	2006			2007		
	Quantity (thousand metric tons)	Value ² (thousands)	Unit value	Quantity (thousand metric tons)	Value ² (thousands)	Unit value
Argentina	96	\$16,600	173	98	\$14,000	143
Aruba	(3)	7	538	(3)	8	483
Australia	92	13,700	149	118	17,700	150
Bahrain	(3)	390	439	(3)	164	350
Belgium	181	24,500	135	186	28,700	155
Botswana	--	--	--	(3)	8	2,378
Brazil	489	80,800	165	518	70,600	136
Cameroon	(3)	60	526	(3)	61	522
Canada	469	63,400	135	443	61,900	140
Chile	276	42,400	154	302	43,100	143
China	111	13,800	124	41	5,170	126
Colombia	143	25,100	176	136	19,600	144
Costa Rica	21	4,120	196	25	3,810	153
Dominican Republic	12	2,190	182	3	375	125
Ecuador	16	2,290	143	16	2,180	136
El Salvador	10	1,450	145	9	1,350	150
Finland	(3)	22	431	(3)	26	517
France	45	6,250	139	60	7,980	133
Germany	(3)	138	435	(3)	278	443
Grenada	(3)	5	556	(3)	6	595
Guatemala	39	7,020	180	38	6,420	169
Hong Kong	(3)	25	833	--	--	--
Iceland	--	--	--	(3)	121	307
India	(3)	5	102	(3)	6	110
Indonesia	240	38,500	161	295	42,800	145
Ireland	--	--	--	(3)	7	1,601
Italy	(3)	53	348	(3)	75	196
Jamaica	(3)	3	429	(3)	18	431
Japan	264	37,700	143	279	34,800	125
Korea, Republic of	168	27,600	164	184	28,000	152
Lithuania	18	2,730	152	50	5,430	109
Malaysia	86	15,500	181	76	12,200	160
Mexico	829	113,000	137	880	129,000	146
Netherlands	84	13,500	160	138	20,400	148
Netherlands Antilles	--	--	--	(3)	3	529
New Zealand	41	5,860	143	27	3,880	144
Nicaragua	--	--	--	(3)	17	110
Nigeria	7	1,290	185	--	--	--
Oman	--	--	--	(3)	184	375
Pakistan	--	--	--	(3)	4	2,800
Palau	(3)	5	294	--	--	--
Panama	8	1,580	197	10	1,450	145
Peru	41	6,210	151	44	6,980	159
Philippines	38	6,370	168	44	6,040	137
Portugal	41	5,130	125	27	2,900	107
Russia	(3)	69	113	(3)	6	442
Saudi Arabia	121	18,200	151	122	16,700	137
Sierra Leone	--	--	--	(3)	16	485
South Africa	70	12,800	182	84	11,400	136
Spain	163	22,300	137	160	21,700	136
Suriname	--	--	--	(3)	3	110
Sweden	(3)	4	4,000	(3)	4	3,000
Switzerland	--	--	--	(3)	51	171
Taiwan	173	30,000	173	238	37,200	156
Thailand	172	29,500	172	148	20,800	140
United Arab Emirates	56	8,370	150	55	7,640	139
United Kingdom	(3)	23	211	(3)	61	521
Venezuela	203	35,400	174	264	39,100	148
Vietnam	--	--	--	11	1,550	141
Total	4,820	736,000	153	5,130	734,000	143

See footnotes at end of table.

TABLE 5—Continued
U.S. EXPORTS OF SODA ASH, BY COUNTRY¹

-- 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 6
U.S. PRODUCTION OF SODIUM COMPOUNDS, BY MONTH¹

(Thousand metric tons)

	2006		2007	
	Soda ash	Wyoming trona ²	Soda ash	Wyoming trona ²
January	946	1,190	864	1,420
February	801	1,270	880	1,400
March	952	1,470	962	1,590
April	874	1,290	880	1,450
May	909	1,190	950	1,460
June	910	1,340	926	1,310
July	952	1,430	985	1,500
August	926	1,500	971	1,490
September	859	1,480	890	1,110
October	955	1,560	920	1,450
November	930	1,480	903	1,450
December	946	1,490	936	1,510
Total	11,000	16,700	11,100	17,200

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

²Includes solution-mined trona.

TABLE 7
SODA ASH: ESTIMATED WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country ³	2003	2004	2005	2006	2007
Argentina	--	--	86 ^{r,4}	161 ^{r,4}	70
Australia	300	300	300	310	310
Austria ⁵	150	150	150	-- ^r	--
Bosnia and Herzegovina	12 ⁴	11	11	11	11
Botswana ⁶	309 ⁴	263 ⁴	250	250	250
Brazil	200	200	200	200	200
Bulgaria	800	800	800	800	800
Canada ⁷	-- ^r	-- ^r	-- ^r	-- ^r	--
Chad ⁸	12	12	12	12	12
China	11,336 ⁴	13,024 ⁴	14,210 ⁴	15,600 ^{r,4}	17,720 ⁴
Egypt	50	50	50	50	50
Ethiopia	4 ⁴	6 ⁴	8 ⁴	8	1
France	1,000	1,000	1,000	1,000	1,000
Germany	1,493 ⁴	1,438 ⁴	1,533 ⁴	1,515 ⁴	1,500
India	1,500	1,500	1,500	1,500	1,500
Iran	120	130	130	130 ^r	140
Italy	193 ^r	505 ^r	525 ^r	500 ^r	500
Japan	400	400	400	400	400
Kenya ⁶	353 ⁴	354 ⁴	360 ⁴	374 ⁴	387 ⁴
Korea, Republic of	310	310	310	310	310
Mexico	290	290	290	290	290
Netherlands	400	400	400	400	400
Pakistan	240	240	260	250	260
Poland	1,050 ^{r,4}	1,167 ⁴	1,189 ^{r,4}	1,177 ^{r,4}	1,180
Portugal	150	150	150	150	150
Romania	407	401	410	400	400
Russia	2,400	2,600	2,600	2,800	2,900
Spain	500	500	500	500	500
Taiwan ⁹	-- ^r	-- ^r	-- ^r	-- ^r	--
Turkey	835 ⁴	846 ⁴	850	850	900
Ukraine	650	650	700	700	700
United Kingdom	1,000	1,000	1,000	900 ^r	900
United States ⁶	10,600 ⁴	11,000 ⁴	11,000 ⁴	11,000 ⁴	11,100 ⁴
Total	37,100 ^r	39,700 ^r	41,200 ^r	42,500 ^r	44,800

^rRevised. -- Zero.

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 23, 2008. Synthetic unless otherwise specified.

³In 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.

⁴Reported figure.

⁵Plant closed in 2005; production discontinued.

⁶Natural only.

⁷Canada idled in 2001, but closed by 2006.

⁸Produced for local consumption only.

⁹Taiwan idled in 2001, but closed by 2006.