



# 2017 Minerals Yearbook

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**SODA ASH [ADVANCE RELEASE]**

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# SODA ASH

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Domestic survey data and tables were prepared by Chanda C. Williams, statistical assistant.

For the third time in 4 years, the U.S. soda ash industry set records for soda ash production and the amount of soda ash exported. After decreasing slightly in 2015, U.S. soda ash production increased slightly in 2016 and 2017, and exports increased by 3% in 2017 compared with those of 2016. The annual average unit value of soda ash decreased slightly in 2017 from that of 2016 and was 6% lower than the record high set in 2012. U.S. soda ash exports accounted for 58% of total domestic production based on export data from the U.S. Census Bureau. U.S. soda ash production was 12 million metric tons (Mt) valued at \$1.75 billion in 2017 (table 1). World soda ash production was estimated to be 54 Mt, slightly more than the revised total of 53.7 Mt in 2016 (tables 1, 8).

Soda ash, also known as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), is an alkali chemical refined from the mineral trona or from naturally occurring sodium-carbonate-bearing brines (the soda ash from both is referred to as natural soda ash) or manufactured from one of several chemical processes (the soda ash from this process is 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 a cost-effective option in world markets because most of the world output of soda ash is made synthetically, which usually results in a more expensive product.

## Legislation and Government Programs

In February, Congressional sponsors of lower royalty legislation reintroduced the American Soda Ash Competitiveness Act to Secure American Mining Jobs. This act was intended to help U.S. soda ash producers remain internationally competitive by lowering the royalty rates that producers pay for trona mined on Federal land (Wyoming Business Report, 2017).

## 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 (tables 1, 2).

The United States remained the world's second-ranked soda-ash-producing nation in 2017 behind China. U.S. production of natural soda ash from California and Wyoming was 12 Mt in 2017. Based on about 13.9 million metric tons per year (Mt/yr) (15.3 million short tons per year) of total nameplate production capacity, the U.S. soda ash industry operated at 87% of total

capacity (table 3). Three of the largest producers use nameplate capacities to determine export allocations set by a U.S. export association, the American Natural Soda Ash Corp. (ANSAC).

The U.S. soda ash industry consisted of five companies in 2017—four companies operating five plants in Wyoming that produced soda ash from underground trona ore and one company operating one plant in California that produced soda ash from sodium-carbonate-rich brines (table 3). One company that operated a mine and a plant in Wyoming also operated a plant in Colorado, which produced sodium bicarbonate using soda ash feedstock from the company's Wyoming soda ash facility. The operation in Colorado could produce soda ash from local nahcolite but because of production cost considerations chose to use the soda ash from Wyoming in place of the local material.

Each of the U.S. companies was either wholly or partially owned by foreign soda-ash-producing companies or foreign soda ash consumers. The U.S. soda ash industry was 54% foreign owned and 46% domestically owned. At yearend, the countries and their percentage of ownership of United States soda ash producers were India, 23%; Belgium, 15%; Turkey, 11%; and Japan, 5%.

Genesis Energy, L.P. (Houston, TX) expanded into the mining industry by acquiring the Wyoming trona mining, soda ash production, and related businesses of Tronox Ltd. on September 1, 2017. Genesis Energy is a diversified midstream energy master limited partnership involved in offshore pipeline transportation, onshore facilities and transportation, refinery services, and marine transportation (Blum, 2017).

## Consumption

The USGS collected consumption data by end use for soda ash 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 sometimes 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 in this report.

In 2017, U.S. apparent consumption increased slightly compared with that of 2016. Apparent consumption of soda ash was 5.04 Mt; reported consumption was 4.91 Mt (table 1), a 4% decrease compared with that of 2016. Reported consumption and apparent consumption do not necessarily correspond because reported consumption is sales reported by producers, whereas apparent consumption is the quantity available for domestic consumption calculated by subtracting exports from the sum of production, imports, and changes in inventories.

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 because of increased beverage consumption during the summer). 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 residential housing and commercial building construction. These two major industrial sectors are especially sensitive to changing economic conditions, and soda ash sales follow trends in the two sectors. The distribution of soda ash for domestic consumption by end use in 2017 was glass, 48%; chemicals, 28%; distributors, 6%; other, 6%; soap and detergents, 6%; flue gas desulfurization, 4%; pulp and paper, 1%; and water treatment, 1% (table 4).

**Chemicals.**—Soda ash is used to manufacture many sodium-base inorganic chemicals, including sodium bicarbonate, sodium chromates, sodium phosphates, and sodium silicates. Chemical production accounted for 1.37 Mt of soda ash consumption.

**Glass.**—Glass manufacture used 2.36 Mt of soda ash, about 48% of domestic soda ash consumption, in different types of glass as follows: container, 48%; flat, 42%; fiber, 6%; and other glass, 4%. Glass containers are made for beverages (carbonated and noncarbonated drinks such as alcoholic beverages, sodas, and juices), chemical and household products, food, medical products, and toiletries and cosmetics.

**Soaps and Detergents.**—Detergents ranked third in the use of soda ash with 293,000 metric tons (t). Soda ash was used as a builder to emulsify oil stains, reduce the redeposition of dirt during washing and rinsing, provide alkalinity for cleaning, and soften laundry water. In addition, soda ash was a component of sodium tripolyphosphate (STPP), another major builder in detergent formulations. Soda ash consumption for STPP detergents has been decreasing because the use of phosphatic detergents has declined because they can contribute to decreased quality of water habitats.

In response to changes in consumer preference, detergent manufacturers changed formulations for dry (granular) detergents to make compact and superconcentrated products. These reformulations require sodium silicates and synthetic zeolites, which are made from soda ash.

Liquid detergents, which do not contain any soda ash, competed with soda-ash-containing powdered detergents and have become the preferred form of household laundry detergent. In recent years it was estimated that about 75% of household laundry detergent sales in the United States were liquid.

## Stocks

Yearend 2017 stocks of dense soda ash in domestic plant silos, terminals, warehouses, and on teamtracks (small railroad siding or spur tracks) were 293,000 t, which was about 13% less than those in 2016. Producers indicated that a supply problem could exist if inventories decreased to less than 180,000 t. Most consumers of soda ash did not have the storage facilities to accommodate large quantities of soda ash and needed to rely on suppliers to provide the material on a timely basis.

## Prices

The annual average unit value in 2017 for bulk, dense natural soda ash, free on board (f.o.b.) Green River, WY, and Searles Valley, CA, was \$146.26 per metric ton (\$132.68 per short ton), which was a slight decrease from that of the previous year (table 1). The value is not a “price,” but rather it is the sum 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 differ from the annual average values reported to and by the USGS.

## Foreign Trade

The majority of U.S. soda ash exports were controlled by ANSAC, which is involved exclusively in the export trade of soda ash, defined as an alkali product designated by the chemical formula  $\text{Na}_2\text{CO}_3$ , 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 countries of the European Union (EU); however, the members of the U.S. soda ash industry formed another organization for shipping to this region. The American-European Soda Ash Shipping Association, Inc. (AESSA) 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 countries of the EU. 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. exports of soda ash for 2017 were 6.99 Mt, which represented about 58% of U.S. soda ash production. For comparison, exports accounted for only 5% of U.S. production in 1970, 26% in 1990, and 51% in 2010. In 2017, the regional distribution of U.S. soda ash exports to 55 countries was as follows: Asia, 41%; Central America and South America, 26%; North America, 20%; Europe, 7%; Australia and Oceania, 4%; and Africa, 3% (table 5). The average free alongside ship value was \$200 per metric ton in 2017 compared with \$194 per metric ton in 2016. In 2017, the 11 leading countries, each receiving over 200,000 t of soda ash, were, in decreasing order of tonnage, Mexico, 16%; Brazil, 12%; Indonesia, 10%; Chile, 6%; Malaysia, 5%; Australia, Japan, the Republic of Korea, Thailand, and Vietnam, 4% each; and Canada, 3% (table 6). About 56% of all U.S. soda ash exports went through the Columbia-Snake River, OR, customs district; the Port Arthur, TX, district ranked second with 16% of the total; and the Laredo, TX, district was third with 13% of the total (table 5).

The quantity of imports of soda ash in 2017 was 19,100 t, about 46% less than the amount imported in 2016, and came from 16 countries according to U.S. Census Bureau data (table 7).

Imports account for a very small portion of soda ash supply in the United States. In 2017, 80% of United States soda ash imports were from Italy (21%), the Republic of Korea (19%), the United Kingdom (16%), China (13%), and Mexico (12%). The remaining imports were from Brazil, Bulgaria, Canada, France, Germany, India, Japan, Norway, Poland, Singapore, and Turkey. Although Canada, Norway, and Singapore are listed as sources of soda ash imports, these countries are not thought to produce soda ash. It is possible that the data were erroneous or that the product was transshipped from another location. Imports from China were thought to be sodium carbonate peroxohydrate, which is the active ingredient in algacides and fungicides. The national average cost, insurance, and freight value of imported soda ash in 2017 was \$252 per ton, 33% more than that of 2016.

## World Review

Soda ash is a mature commodity, and the leading consumers of soda ash were, for the most part, developed nations where consumption tends to increase in proportion to population and gross domestic product rates of growth. In developing countries, per capita consumption is lower than in developed countries because these countries do not yet have a well-established industrial base. 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 use sectors.

In 2017, world soda ash production was estimated to be 54 Mt, which was a slight increase from that of 2016; the leading producer was China (48%), and the United States ranked second (22%). In addition to the 24 producing countries listed in table 8, several other countries, which are listed in a footnote, were thought to produce soda ash but reliable data for estimates of production were unavailable. Only Botswana, China, Ethiopia, Kenya, Turkey, and the United States produce soda ash from natural sources; the remaining 18 nations manufacture soda ash through various chemical processes, primarily the Solvay process. China and Turkey are believed to produce soda ash using both natural sources and synthetic processes.

Eight countries produced 1 Mt/yr or more of soda ash. They were, in descending order of tonnage, China, the United States, Russia, Germany, India, Turkey, France, and Poland. These nations accounted for 93% of world production in 2017. Romania and Ukraine had production installations that were rated at about 1 Mt/yr; however, adverse economic conditions caused these nations to produce below their facilities' design capacities.

**Botswana.**—Botswana Ash (Pty.) Ltd. was unable to produce at normal levels because production was affected by rains related to Cyclone Dineo early in the year. The rains diluted plant feed brine and the reduced production was as low as 50% of capacity. After the slow start to the year, the company reported that it was back to full production by the middle of April (Madondo, 2017).

**China.**—A combination of the enforcement of environmental regulations and planned maintenance at soda ash facilities resulted in decreased output in the first half of 2017. In response, exports also decreased and were 29% lower in the first 4 months of the year compared with those in the same period of 2016.

Producers and consumers of soda ash in southeast Asia reported tight market supplies and increasing prices for soda ash in the second half of the year (Li, 2017a, b). Exports remained low throughout 2017, ending the year 23% lower than those of 2016 according to official statistics (Greenfield, 2018).

**India.**—Gujarat Heavy Chemicals Ltd. (Noida, Uttar Pradesh) announced expansion plans for several of its chemical segments, including soda ash and sodium bicarbonate. A brownfield soda ash operation was planned to increase soda ash capacity by 100,000 metric tons per year (t/yr) in addition to debottlenecking activity that would add another 25,000 t/yr of soda ash capacity. Sodium bicarbonate capacity would double to 60,000 t/yr after capacity increases (Pattanayak, 2017).

After rescinding antidumping duties on soda ash in December 2016, the Government of India instead decided to extend the duties through July 2018. India relied on imports to meet domestic demand and charged duties based on area of origin, with the highest duties on soda ash from the United States at \$38.79 per ton. Duties on soda ash from China were nearly as high at \$38.26 per ton, whereas soda ash from the European Union was charged duties of only \$9.17 per ton (Wong, 2017a).

**Kazakhstan.**—Araltuz JSC, a company based in Kazakhstan, and Chinese Qinghai Soda Desheng Ash Industrial Co. Ltd signed an agreement to establish a joint venture for the production of soda ash. The plant would have a capacity of 300,000 t/yr; soda ash consumption in the country is 400,000 t/yr and is currently supplied by imports. This was the second planned soda ash plant announced in Kazakhstan since 2016 (Kanunnikova, 2017).

**Turkey.**—Ciner Group, the parent company of Ciner Resources LP, worked on expansion plans at established and new Eti Soda A.S. facilities. By mid-year, Eti Soda had completed capacity expansion at its established plant to 1.7 Mt/yr and continued work on its new Kazan facility, which was planned to have a capacity of 2.7 Mt/yr (Wong, 2017b). Although the initial target date to achieve full capacity was yearend 2017, various reports gradually moved that date back, with the most recent projection for the end of March 2018 (Raitano, 2017).

## Outlook

Three groups dominate production and have become the world's leading suppliers of soda ash—ANSAC of the United States (which represented three of the five domestic producers in 2017), China's producers, and Solvay S.A. of Belgium. In addition, Turkish soda ash producers, with access to the world's second largest trona deposit, could potentially become a major supplier. It is very likely that some smaller soda ash facilities throughout the world may close because of energy and environmental considerations and competition from the major producers.

With competition mainly from China and Turkey, United States soda ash production is expected to increase slightly in 2018 and 2019. U.S. exports, which increased by 3% in 2017, are expected to maintain modest growth in the near future. It is projected that United States suppliers will struggle to achieve higher sales prices because of increasing supply from new low-cost trona operations in Turkey and potential

oversupply in China that may enter the export market. Overall global economic conditions are expected to continue to improve during the next few years and stimulate greater world soda ash consumption. Global consumption of soda ash is projected to increase by about 2% per year during the next 5 years. The United States likely will continue to compete with producers in China for the Far East and Oceania markets and with producers in Turkey for European, Middle Eastern, and southern Asian markets. Asia and South America remain the most likely 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)

	2013	2014	2015	2016	2017
United States:					
Production:					
Soda ash:					
Quantity	11,500	11,700	11,600	11,800	12,000
Value	1,660,000	1,730,000	1,800,000	1,770,000	1,750,000
Value, average annual:					
Per short ton	\$131.71	\$134.87	\$140.88	\$135.92	\$132.68
Per metric ton	\$145.18	\$148.67	\$155.30	\$149.83	\$146.26
Wyoming trona	17,400	17,300	17,600	17,700	18,000
Exports:					
Quantity	6,460	6,670	6,400	6,760 <sup>r</sup>	6,990
Value	1,210,000	1,300,000	1,320,000	1,310,000 <sup>r</sup>	1,400,000
Imports for consumption:					
Quantity	13	39	40	35	19
Value	3,470 <sup>r</sup>	6,960	6,780	6,660 <sup>r</sup>	4,810
Stocks, December 31, producers <sup>7</sup>	348	271	285	336	293
Consumption:					
Apparent	5,000	5,100	5,200	5,010	5,040
Reported	5,120	5,170	4,990	5,120	4,910
World, production <sup>e</sup>	51,500 <sup>r</sup>	52,600 <sup>r</sup>	53,400 <sup>r</sup>	53,700 <sup>r</sup>	54,000

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

<sup>1</sup>Table includes data available through December 20, 2018. Data are rounded to no more than three significant digits, except average annual value.

TABLE 2  
U.S. PRODUCTION OF SODIUM COMPOUNDS, BY MONTH<sup>1</sup>

(Thousand metric tons)

Month	2016		2017	
	Soda ash	Wyoming trona <sup>2</sup>	Soda ash	Wyoming trona <sup>2</sup>
January	956	1,570	929	1,560
February	909	1,460	897	1,330
March	1,010	1,240	1,030	1,610
April	955	1,450	947	1,420
May	987	1,420	993	1,530
June	989	1,380	1,020	1,410
July	1,060	1,470	1,020	1,530
August	984	1,450	997	1,510
September	961	1,560	989	1,490
October	995	1,560	1,040	1,510
November	990	1,550	1,000	1,400
December	1,010	1,620	1,100	1,710
Total	11,800	17,700	12,000	18,000

<sup>1</sup>Table includes data available through December 20, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

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

TABLE 3  
U.S. PRODUCERS OF SODA ASH IN 2017

(Million short tons unless otherwise noted)

Company	Partner(s)	Plant nameplate capacity	Plant location	Source of sodium carbonate
Ciner Wyoming LLC	Ciner Resources Corp. (51%) and Natural Resources Partners L.P. (49%)	3.25	Green River, WY	Underground trona.
Searles Valley Minerals, Inc.	None	1.45	Trona, CA	Dry lake brine.
Solvay Chemicals, Inc., Green River	Joint venture with Asahi Glass Co. (20%)	2.95	Green River, WY	Underground trona.
Tata Chemicals (Soda Ash) Partners	Joint venture with Owens-Illinois, Inc. (25%)	2.80	do.	Do.
Tronox Alkali Wyoming Corp. <sup>1</sup>				
Granger	None	1.30	Granger, WY	Do.
Green River	Joint venture with Sumitomo Corp. (6%)	3.55	Green River, WY	Do.
Total		15.30		
Total	million metric tons	13.9		

Do., do. Ditto.

<sup>1</sup>Acquired by Genesis Energy, L.P. in August 2017 and renamed Genesis Alkali Wyoming Corp.

TABLE 4  
REPORTED CONSUMPTION OF SODA ASH IN THE UNITED STATES, BY END USE, BY QUARTER<sup>1</sup>

(Thousand metric tons)

NAICS <sup>2</sup> code	End use	2016				2017						
		1st quarter	2d quarter	3d quarter	4th quarter	1st quarter- 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter- 4th quarter	
3272	Glass:											
327213	Container	300	312	306	284	1,200	273	296	284	271	1,120	
327211	Flat	249	265	252	254	1,020	242	252	235	259	989	
327993	Fiber	41	41	40	40	161	36	36	36	36	144	
327212	Other	32	33	31	30	126	27	27	25	26	105	
	Total	622	650 <sup>r</sup>	629	608	2,510	577	611	581	592	2,360	
32518	Chemicals	361	361	374	387	1,480	344	338	333	352	1,370	
325611	Soaps and detergents	79	80	78	85	322	73	74	73	73	293	
322	Pulp and paper	13	12	10	9	44	10	9	12	9	40	
221310	Water treatment <sup>3</sup>	18	20	21	15	75	8	9	9	11	37	
56221	Flue gas desulfurization	48	49	59	53	209	54	50	61	51	215	
4246	Distributors	76	68	71	70	285	78	73	71	66	288	
	Other	43	42	55	54	193	65	75	83	84	307	
	Total domestic consumption <sup>4</sup>	1,260	1,280	1,300	1,280	5,120	1,210	1,240	1,220	1,240	4,910	
	Exports <sup>5</sup>	1,570	1,690	1,640	1,710	6,610	1,680	1,630	1,830	1,790	6,940	
	Canada	54	49	49	49	202	53	46	50	48	197	
	Total industry sales <sup>6</sup>	2,840	2,970	2,930	2,990	11,700	2,890	2,870	3,060	3,030	11,800	
	Total sales from plants	2,850	2,980	2,980	2,960	11,800	2,920	2,930	3,120	3,100	12,100	
	Total production	2,870	2,930	3,010	3,000	11,800	2,860	2,960	3,000	3,140	12,000	

<sup>r</sup>Revised.

<sup>1</sup>Table includes data available through December 20, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>North American Industry Classification System.

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

<sup>4</sup>Imports reported by the producer or 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 joint producers and distributed by purchasers into appropriate end-use categories.



TABLE 5  
REGIONAL DISTRIBUTION OF U.S. SODA ASH EXPORTS, BY CUSTOMS DISTRICT, IN 2017<sup>1</sup>

(Metric tons)

Customs district	Africa	Asia	Australia and Oceania	Europe	North America	South America and Central America	Total	Percentage of total
<b>Atlantic:</b>								
Miami, FL	--	--	--	--	--	1,490	1,490	(2)
Mobile, AL	--	--	--	70	--	--	70	(2)
New York, NY	--	258	--	700	--	26	984	(2)
Norfolk, VA	--	94	--	1,430	--	--	1,520	(2)
Philadelphia, PA	--	--	--	1,710	--	110	1,820	(2)
Savannah, GA	--	--	--	463	--	--	463	(2)
Tampa, FL	--	--	--	--	--	57	57	(2)
Wilmington, NC	--	--	--	200	--	--	200	(2)
<b>Gulf of Mexico:</b>								
Houston-Galveston, TX	21,900	--	--	59	--	254,000	276,000	4
New Orleans, LA	--	30	--	--	13	--	42	(2)
Port Arthur, TX	194,000	--	--	419,000	--	488,000	1,100,000	16
<b>North-central:</b>								
Chicago, IL	--	264	--	28	--	--	292	(2)
Cleveland, OH	--	25	--	21	--	--	45	(2)
Detroit, MI	--	--	--	161	153,000	--	153,000	2
Duluth, MN	--	--	--	--	4,310	--	4,310	(2)
Great Falls, MT	--	--	--	--	30,500	--	30,500	(2)
Pembina, ND	--	--	--	--	3,990	--	3,990	(2)
St. Louis, MO	--	103	--	--	--	--	103	(2)
<b>Northeast:</b>								
Buffalo, NY	--	--	--	--	17,900	--	17,900	(2)
Ogdensburg, NY	--	--	--	--	306	--	306	(2)
Portland, ME	--	--	--	--	21	--	21	(2)
<b>Pacific:</b>								
Columbia-Snake, OR	--	2,750,000	288,000	49,800	--	844,000	3,930,000	56
Los Angeles, CA	--	96,600	17	--	12,000	194,000	303,000	4
San Diego, CA	--	--	--	--	82,900	9,260	92,200	1
Seattle, WA	--	--	--	--	12,200	--	12,200	(2)
<b>Southwest:</b>								
El Paso, TX	--	--	--	--	170,000	--	170,000	2
Laredo, TX	--	--	--	--	881,000	--	881,000	13
Nogales, AZ	--	--	--	--	401	--	401	(2)
Unknown	--	--	--	--	367	--	367	(2)
<b>Total</b>	<b>216,000</b>	<b>2,850,000</b>	<b>288,000</b>	<b>474,000</b>	<b>1,370,000</b>	<b>1,790,000</b>	<b>6,990,000</b>	<b>100</b>
Percentage of total	3	41	4	7	20	26	100	XX

XX Not applicable. -- Zero.

<sup>1</sup>Table includes data available through December 20, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6  
U.S. EXPORTS OF SODA ASH, BY COUNTRY OR LOCALITY<sup>1</sup>

Country or locality	2016			2017		
	Quantity (thousand metric tons)	Value <sup>2</sup> (thousands)	Unit value	Quantity (thousand metric tons)	Value <sup>2</sup> (thousands)	Unit value
Argentina	134	\$28,400	\$212	180	\$37,400	\$208
Australia	233	43,500	187	272	54,900	202
Belgium	34	4,920	143	137	31,300	228
Brazil	1,030	205,000	200	831	159,000	191
Canada	218	41,900	192	223	43,000	193
Chile	359	77,000	215	401	85,200	212
Colombia	143	27,700	194	138	27,000	195
Costa Rica	13	2,950	223	18	4,080	226
Ecuador	26	5,490	211	26	5,280	205
El Salvador	18	3,740	206	17	3,460	206
France	15	2,440	163	1	66	110
Guatemala	36	7,660	215	44	9,770	224
India	111	16,500	149	117	17,700	151
Indonesia	631	118,000	188	684	136,000	198
Japan	280	49,800	178	251	42,900	171
Korea, Republic of	259	45,500	175	291	53,400	184
Malaysia	115	24,700	215	352	66,700	189
Mexico	1,210	261,000	216	1,150	258,000	225
Netherlands	117	18,700	160	57	11,500	203
New Zealand	14	2,700	193	16	2,890	181
Pakistan	10	1,410	141	(3)	10	2,740
Peru	76	15,300	201	70	15,300	218
Philippines	59	11,200	189	53	10,900	206
Saudi Arabia	163	27,700	170	73	11,600	159
South Africa	89	15,100	169	73	12,300	169
Spain	32	6,860	211	146	32,800	225
Taiwan	193	33,400	173	193	36,000	187
Thailand	288	53,600	186	314	61,500	196
Tunisia	72	11,900	165	101	20,700	205
United Arab Emirates	104	17,500	168	89	14,300	160
United Kingdom	200 <sup>r</sup>	39,200 <sup>r</sup>	196 <sup>r</sup>	132	24,700	186
Venezuela	79	18,700	237	54	13,000	240
Vietnam	219	42,700	194	274	56,200	205
Other	184	29,700	161	214	40,300	188
Total	6,760 <sup>r</sup>	1,310,000 <sup>r</sup>	194	6,990	1,400,000	200

<sup>r</sup>Revised.

<sup>1</sup>Table includes data available through December 20, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Free alongside ship value.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 7  
U.S. IMPORTS OF SODA ASH, BY COUNTRY OR LOCALITY, IN 2017<sup>1</sup>

(Metric tons unless otherwise specified)

Country or locality	January–December												Value <sup>2</sup> (thousand dollars)		
	January	February	March	April	May	June	July	August	September	October	November	December		Quantity	Percentage of total quantity
Bulgaria	--	--	--	--	--	--	36	--	--	--	180	126	342	2	\$118
China	236	403	195	68	36	449	481	44	204	160	136	61	2,470	13	816
France	236	40	20	20	40	50	30	40	80	50	--	30	636	3	241
Germany	251	303	1	549	93	264	1	(3)	--	--	2	1	1,460	8	319
Italy	--	17	--	836	1,083	418	--	171	551	684	--	208	3,970	21	554
Japan	1	(3)	--	120	190	1	152	2	2	19	--	9	497	3	178
Korea, Republic of	206	514	617	411	800	297	495	198	18	--	--	--	3,550	19	436
Mexico	232	58	369	136	95	423	172	387	(3)	207	246	(3)	2,320	12	944
Poland	106	160	58	--	--	58	136	--	--	--	--	--	517	3	182
Turkey	106	--	--	106	--	8	8	8	8	8	--	8	258	1	61
United Kingdom	359	472	490	198	403	233	213	335	35	164	92	35	3,030	16	876
Other	1	1	7	3	7	8	2	5	--	1	2	3	40	(3)	81
Total	1,730	1,970	1,760	2,450	2,750	2,210	1,720	1,190	898	1,290	658	481	19,100	100	4,810

--Zero.

<sup>1</sup>Tables includes data available through December 20, 2018. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Cost, insurance, and freight value at U.S. ports.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

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

(Thousand metric tons)

Country or locality <sup>3</sup>	2013	2014	2015	2016	2017
Australia <sup>c</sup>	150	--	--	--	--
Bosnia and Herzegovina	66	73	82	98 <sup>r</sup>	100 <sup>e</sup>
Botswana <sup>4</sup>	228	269	243	280 <sup>r</sup>	227
China <sup>5</sup>	24,300 <sup>r,e</sup>	25,260	25,900 <sup>r,e</sup>	25,850 <sup>r</sup>	26,000 <sup>e</sup>
Egypt	130 <sup>e</sup>	130 <sup>e</sup>	130 <sup>e</sup>	40 <sup>r</sup>	-- <sup>e</sup>
Ethiopia <sup>4,6</sup>	5	4 <sup>r</sup>	7 <sup>r,e</sup>	8 <sup>r,e</sup>	8 <sup>e</sup>
France <sup>c</sup>	1,000	1,000	1,000	1,000	1,000
Germany <sup>c</sup>	2,550 <sup>r</sup>	2,560 <sup>r</sup>	2,600	2,600	2,600
India <sup>c</sup>	2,490 <sup>r</sup>	2,370 <sup>r</sup>	2,500 <sup>r</sup>	2,400	2,500
Italy <sup>c</sup>	500	500	500	500	500
Japan	361	341 <sup>r</sup>	230 <sup>r</sup>	217 <sup>r</sup>	220 <sup>e</sup>
Kenya <sup>4</sup>	468	410	320 <sup>r</sup>	302 <sup>r</sup>	310 <sup>e</sup>
Mexico <sup>c</sup>	290	290	290	290	290
Pakistan	379	284 <sup>r</sup>	449 <sup>r</sup>	476 <sup>r</sup>	475 <sup>e</sup>
Poland	1,052	1,053 <sup>r</sup>	1,074 <sup>r</sup>	1,000 <sup>r,e</sup>	1,000 <sup>e</sup>
Portugal <sup>c</sup>	75	--	--	--	--
Romania <sup>c</sup>	430	420 <sup>r</sup>	505 <sup>r</sup>	516 <sup>r</sup>	520
Russia	2,477	3,052	3,078 <sup>r</sup>	3,234 <sup>r</sup>	3,200 <sup>e</sup>
Taiwan	140 <sup>e</sup>	-- <sup>e</sup>	-- <sup>e</sup>	-- <sup>e</sup>	--
Turkey <sup>5</sup>	1,665	1,828	1,854 <sup>r</sup>	1,977 <sup>r</sup>	2,000 <sup>e</sup>
Ukraine <sup>c</sup>	720	600	600	600	600
United Kingdom	450	400	400	400 <sup>e</sup>	400 <sup>e</sup>
United States <sup>4</sup>	11,500	11,700	11,600	11,800	12,000
Uzbekistan <sup>c</sup>	90	90	90	90	90
Total	51,500 <sup>r</sup>	52,600 <sup>r</sup>	53,400 <sup>r</sup>	53,700 <sup>r</sup>	54,000

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

<sup>1</sup>Table includes data available through July 30, 2018. All data are reported unless otherwise noted. 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>Synthetic unless otherwise specified.

<sup>3</sup>In addition to the countries and (or) localities listed, Brazil, Bulgaria, Chad, Iran, the Republic of Korea, the Netherlands, and Tanzania may have produced soda ash, but available information was inadequate to make reliable estimates of output.

<sup>4</sup>Natural only.

<sup>5</sup>Natural and synthetic.

<sup>6</sup>Production is based on fiscal year, with a starting date of July 8 of the year shown.