



# 2016 Minerals Yearbook

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**SODA ASH [ADVANCE RELEASE]**

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# SODA ASH

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For the second time in 3 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 and exports increased by 6% in 2016 compared with those of 2015. The annual average unit value of soda ash decreased by 4% in 2016 from that of 2015 and was 4% lower than the record high set in 2012. U.S. soda ash exports accounted for 57% of total domestic production based on export data from the U.S. Census Bureau. U.S. soda ash production was 11.8 million metric tons (Mt) valued at \$1.8 billion in 2016 (table 1). World soda ash production was estimated to be 53.6 Mt, slightly more than the revised total of 53.5 Mt in 2015 (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

Congressional sponsors of lower royalty legislation worked to pass rate-lowering legislation in 2016 before trade talks with China later in the year. Because of a slowdown in the Chinese economy, soda ash originally targeted for the domestic market was promoted for export, and in 2015 Chinese exports of soda ash increased by 23%. Because these increased exports put downward pressure on prices, U.S. producers were looking at lower royalty rates to help them remain competitive in the international market (Richards, 2016).

## 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 in 2016 behind China. U.S. production of natural soda ash from California and Wyoming was 11.8 Mt in 2016. Based on about 13.7 million metric tons per year

(Mt/yr) (15.2 million short tons per year) of total nameplate production capacity, the U.S. soda ash industry operated at 86% of total capacity.

The U.S. soda ash industry used the term "effective capacity" to minimize the effect that "mothballed capacity" had on operating rates. This resulted in higher capacity utilization percentages. Effective capacity data for individual producers are not publicly disclosed. 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 2016—four companies operating five plants in Wyoming that produced soda ash from underground trona ore and one plant in California that produced soda ash from sodium-carbonate-rich brines (table 3). One company operated a mine and a plant in Wyoming and 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 U.S. soda ash producers were India, 23%; Belgium, 15%; Turkey, 11%; and Japan, 5%.

## 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 2016, U.S. apparent consumption decreased by 4% compared with that of 2015. Apparent consumption of soda ash was 5.01 Mt; reported consumption was 5.12 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 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 2016 was glass, 49%; chemicals, 29%; distributors, 6%; soaps and detergents, 6%; flue gas desulfurization, 4%; other, 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 1.5 Mt of soda ash consumption.

**Glass.**—Glass manufacture used 2.5 Mt of soda ash, about 49% of domestic soda ash consumption, in different types of glass as follows: container, 48%; flat, 41%; fiber, 6%; and other glass, 5%. 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 322,000 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 2015, about 75% of household laundry detergent sales in the United States were liquid.

## Stocks

Yearend 2016 stocks of dense soda ash in domestic plant silos, terminals, warehouses, and on teamtracks (small railroad siding or spur tracks) were 336,000 t, which was about 18% more than those in 2015. 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 2016 for bulk, dense natural soda ash, free on board (f.o.b.) Green River, WY, and Searles Valley, CA, was \$149.83 per metric ton (\$135.92 per short

ton), which was a 4% 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 2016 were 6.78 Mt, which represented about 57% 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 2016, the regional distribution of U.S. soda ash exports to 56 countries was as follows: Asia, 38%; Central America and South America, 28%; North America, 21%; Europe, 6%; Australia and Oceania, 4%; and Africa, 3% (table 5). The average free alongside ship value was \$194 per metric ton in 2016 compared with \$207 per ton in 2015. In 2016, the 11 leading countries, representing 71% of total United States soda ash exports were, in decreasing order of tonnage, Mexico, 18%; Brazil, 15%; Indonesia, 9%; Chile, 5%; Japan, the Republic of Korea, and Thailand, 4% each; and Australia, Canada, the United Kingdom, and Vietnam, 3% each (table 6). About 49% of all U.S. soda ash exports went through the Columbia-Snake River, OR, customs district; the Port Arthur, TX, district ranked second with 20% of the total; and the Laredo, TX, district was third with 14% of the total (table 5).

The quantity of imports of soda ash in 2016 was 35,300 t, about 12% less than the amount imported in 2015, and came from 14 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 2016, 88% of United States soda ash imports were from Germany (50%), Italy (20%), the United Kingdom (13%), and Mexico (5%). The remaining imports were from Canada, China, Czechia, France, India, Japan, the Republic of Korea, Poland, Taiwan, and Turkey. Although Canada and Taiwan are listed as a source 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 transhipped 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 2016 was \$189 per ton, 11% more than that of 2015.

## 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 2016, world soda ash production was estimated to be 53.6 Mt, which was a slight increase from that of 2015; the leading producer was China (49%) and the United States ranked second (22%). In addition to the 24 countries listed in table 8, several other countries, which are listed in a footnote, were thought to produce soda ash but reliable data were unavailable to make production estimates. 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, Poland, and France. These nations accounted for 93% of world production in 2016. 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.

**Belarus.**—TEYO A.S. (Istanbul, Turkey) announced plans to build a 1-Mt/yr soda ash plant in Gomel Oblast (Belarusian Telegraph Agency, 2016).

**China.**—Soda ash producers in China saw improving domestic demand and increasing soda ash prices in 2016 as producers decreased capacity to about 29 Mt/yr while demand from glassmakers and other consumers increased. In addition to planned cutbacks in capacity, one Chinese producer was forced to temporarily shut down a 3-Mt/yr plant after a wastewater dam collapsed. By November, Chinese domestic soda ash prices had increased five times during the year, reaching about \$300 per ton, even while export prices fell about 8% from 2015 to about \$190 per ton. Relatively minor imports of soda ash into China, mostly from the United States, nearly doubled during the year to about 100,000 t (Li, 2016a, b, c).

**Egypt.**—In April, Solvay S.A. announced plans to suspend production of a 100,000-metric-ton-per-year (t/yr) soda ash plant in Alexandria. The company cited higher energy costs as the main factor for the shutdown decision (Ondrey, 2016).

**India.**—Domestic producers of soda ash benefited from increased production and antidumping duties on imports.

Imports declined more than 10% as domestic producers were able to meet most of the annual demand of around 3.2 Mt; however, in late December, the Central Board of Excise and Customs rescinded the antidumping duties, an action that was expected to increase soda ash imports (Dollar Business Bureau, The, 2016; Vimukt, 2016).

**Kazakhstan.**—The construction of a 200,000-t/yr soda ash plant was announced for the Kyzylorda Region. Production of the synthetic soda ash would use salt from the local salt producer that is investing in the soda ash venture (Kazakh TV, 2016).

**Romania.**—Ciech Soda Romania faced serious production issues when a local powerplant stopped delivery of steam to the soda ash plant. The powerplant has entered insolvency and raised the prices for the steam which Ciech Soda was unable to pay. Both companies have faced financial hardship in recent years and were struggling to remain in business (Romania Insider, 2016).

**Uzbekistan.**—The state-owned soda ash plant in Kungrad announced an increase in capacity to 200,000 t/yr. The capacity expansion was partially funded by Chinese investors. The synthetic soda ash manufacturing process uses salt and limestone from nearby mines (Industrial Minerals, 2016).

## 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 2016), 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 2017 and 2018. U.S. exports, which increased by 6% in 2016, 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 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)

	2012	2013	2014	2015	2016
<b>United States:</b>					
<b>Production:</b>					
<b>Soda ash:</b>					
Quantity	11,100	11,500	11,700	11,600	11,800
Value	1,740,000	1,660,000	1,730,000	1,800,000	1,770,000
<b>Value, average annual:</b>					
Per short ton	\$141.90	\$131.71	\$134.87	\$140.88	\$135.92
Per metric ton	\$156.42	\$145.18	\$148.67 <sup>r</sup>	\$155.30	\$149.83
Wyoming trona	17,100	17,400	17,300	17,600	17,700
<b>Exports:</b>					
Quantity	6,150	6,460	6,670	6,400 <sup>r</sup>	6,780
Value	1,240,000	1,210,000	1,300,000	1,320,000	1,320,000
<b>Imports for consumption:</b>					
Quantity	13	13	39	40	35
Value	3,360	3,360 <sup>r</sup>	6,960 <sup>r</sup>	6,780 <sup>r</sup>	6,670
Stocks, December 31, producers <sup>7</sup>	338	348	271	285	336
<b>Consumption:</b>					
Apparent	4,980 <sup>r</sup>	5,000 <sup>r</sup>	5,100 <sup>r</sup>	5,200 <sup>r</sup>	5,010
Reported	5,060	5,120	5,170	4,990	5,120
World, production <sup>c</sup>	51,700 <sup>r</sup>	51,400 <sup>r</sup>	52,800 <sup>r</sup>	53,500 <sup>r</sup>	53,600

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

<sup>1</sup>Table includes data available through May 18, 2017. 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	2015		2016	
	Soda ash	Wyoming trona <sup>2</sup>	Soda ash	Wyoming trona <sup>2</sup>
January	1,010	1,630	956	1,570
February	925	1,450	909	1,460
March	1,010	1,540	1,010	1,240
April	983	1,400	955	1,450
May	920	1,440	987	1,420
June	980	1,500	989	1,380
July	1,010	1,510	1,060	1,470
August	971	1,480	984	1,460
September	915	1,460	961	1,560
October	927	1,280	995	1,560
November	973	1,510	990	1,550
December	952	1,450	1,010	1,620
Total	11,600	17,600	11,800	17,700

<sup>1</sup>Table includes data available through May 18, 2017. 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 2016

(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.	XX	1.45	Trona, CA	Dry lake brine.
Solvay Chemicals, Inc., Green River	Joint venture with Asahi Glass Co. (20%)	2.80	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.:				
Granger	XX	1.30	Granger, WY	Do.
Green River	Joint venture with Sumitomo Corp. (6%)	3.55	Green River, WY	Do.
Total		15.20		
Total	million metric tons	13.70		

Do., do. Ditto. XX Not applicable.

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	2015	2016				Total
			1st quarter	2d quarter	3d quarter	4th quarter	
3272	Glass:						
327213	Container	1,140	300	312	306	284	1,200
327211	Flat	971	249	265	252	254	1,020
327993	Fiber	149	41	41	40	40	161
327212	Other	134	32	33	31	30	126
	Total	2,390	622	651	629	608	2,510
32518	Chemicals	1,490	361	361	374	387	1,480
325611	Soaps and detergents	327	79	80	78	85	322
322	Pulp and paper	59	13	12	10	9	44
221310	Water treatment <sup>3</sup>	66	18	20	21	15	75
56221	Flue gas desulfurization	223	48	49	59	53	209
4246	Distributors	286	76	68	71	70	285
	Other	141	43	42	55	54	193
	Total domestic consumption <sup>4</sup>	4,990	1,260	1,280	1,300	1,280	5,120
	Exports <sup>5</sup>	6,440	1,580	1,690	1,640	1,710	6,610
	Canada	230	54	49	49	49	202
	Total industry sales <sup>6</sup>	11,400	2,840	2,970	2,930	2,990	11,700
	Total sales from plants	11,600	2,850	2,980	2,980	2,960	11,800
	Total production	11,600	2,870	2,930	3,010	3,000	11,800

<sup>1</sup>Table includes data available through May 18, 2017. 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.

<sup>5</sup>As reported by producers; includes Canada. Data may not 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 2016<sup>1</sup>

(Metric tons, unless otherwise specified)

Customs district	Africa	Asia	Australia and Oceania	Europe	North America	South America and Central America	Total	Percent of total
<b>Atlantic:</b>								
Miami, FL	--	--	--	--	--	1,520	1,520	(2)
New York, NY	13	1,840	--	347	--	--	2,200	(2)
Norfolk, VA	--	538	--	834	--	--	1,370	(2)
Philadelphia, PA	--	--	--	588	--	--	588	(2)
Savannah, GA	--	--	--	627	--	141	768	(2)
Tampa, FL	--	23	--	--	--	--	23	(2)
Wilmington, NC	--	--	--	148	--	--	148	(2)
<b>Gulf:</b>								
Houston-Galveston, TX	7	207	--	28	--	331,000	332,000	5
New Orleans, LA	--	--	--	51	--	--	51	(2)
Port Arthur, TX	188,000	--	--	432,000	--	769,000	1,390,000	20
<b>North-central:</b>								
Chicago, IL	--	511	--	30	--	--	542	(2)
Cleveland, OH	--	89	--	79	--	--	167	(2)
Detroit, MI	--	--	--	118	152,000	--	152,000	2
Duluth, MN	--	--	--	--	2,550	--	2,550	(2)
Great Falls, MT	--	--	--	--	26,600	--	26,600	(2)
Pembina, ND	--	--	--	--	3,030	--	3,030	(2)
<b>Northeast:</b>								
Boston, MA	--	--	--	--	--	259	259	(2)
Buffalo, NY	--	--	--	--	23,700	--	23,700	(2)
Ogdensburg, NY	--	--	--	--	331	--	331	(2)
<b>Pacific:</b>								
Columbia-Snake, OR	--	2,470,000	241,000	--	--	622,000	3,340,000	49
Los Angeles, CA	--	84,200	5,790	--	8,010	190,000	288,000	4
San Diego, CA	--	10,500	--	--	73,000	--	83,500	1
San Francisco, CA	--	74	--	--	--	--	74	(2)
Seattle, WA	--	--	--	--	10,100	--	10,100	(2)
<b>Southwest:</b>								
El Paso, TX	--	--	--	--	161,000	--	161,000	2
Laredo, TX	--	--	--	--	967,000	--	967,000	14
Nogales, AZ	--	--	--	--	805	--	805	(2)
Unknown	--	--	--	--	339	--	339	(2)
<b>Total</b>	<b>188,000</b>	<b>2,570,000</b>	<b>247,000</b>	<b>435,000</b>	<b>1,430,000</b>	<b>1,910,000</b>	<b>6,780,000</b>	<b>100</b>
Percent of total	3	38	4	6	21	28	100	XX

XX Not applicable. -- Zero.

<sup>1</sup>Table includes data available through May 18, 2017. 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	2015			2016		
	Quantity (thousand metric tons)	Value <sup>2</sup> (thousands)	Unit value	Quantity (thousand metric tons)	Value <sup>2</sup> (thousands)	Unit value
Argentina	89	\$18,300	\$205	134	\$28,400	\$212
Australia	293	58,600	200	233	43,500	187
Belgium	116 <sup>r</sup>	15,900 <sup>r</sup>	137	34	4,920	143
Brazil	1,030	214,000	207	1,030	205,000	200
Canada	253 <sup>r</sup>	52,600	208	218	41,900	192
Chile	301	64,600	214	359	77,000	215
Colombia	147	29,500	200	143	27,700	194
Costa Rica	16	3,420	218	13	2,950	223
Ecuador	33	7,450	226	26	5,490	211
El Salvador	12	2,480	206	18	3,740	206
France	45	7,960	177	15	2,440	163
Guatemala	43	9,510	221	36	7,660	215
India	92	16,400	179	111	16,500	149
Indonesia	641	135,000	211	631	118,000	188
Japan	255	46,300	182	280	49,800	178
Korea, Republic of	201	38,800	193	259	45,500	175
Malaysia	80	16,700	208	115	24,700	215
Mexico	980	231,000	236	1,210	261,000	216
Netherlands	110	18,000	163	117	18,700	160
New Zealand	24	4,300	182	14	2,700	193
Pakistan	10	1,640	157	10	1,410	141
Peru	78 <sup>r</sup>	17,000 <sup>r</sup>	219	76	15,300	201
Philippines	55	11,200	205	59	11,200	189
Saudi Arabia	167	30,700	184	163	27,700	170
South Africa	91	17,500	192	89	15,100	169
Spain	17	2,230	128	32	6,860	211
Taiwan	227	43,500	192	193	33,400	173
Thailand	190	39,600	208	288	53,600	186
Tunisia	122	25,200	207	72	11,900	165
United Arab Emirates	183	34,700	190	104	17,500	168
United Kingdom	190	39,400	207	220	42,600	194
Venezuela	148 <sup>r</sup>	34,600 <sup>r</sup>	233	79	18,700	237
Vietnam	125	27,100	217	219	42,700	194
Other	29 <sup>r</sup>	5,780 <sup>r</sup>	199	184	29,700	161
Total	6,400 <sup>r</sup>	1,320,000	207	6,780	1,320,000	194

<sup>r</sup>Revised.

<sup>1</sup>Table includes data available through May 18, 2017. Data are rounded to no more than three significant digits; may not add to totals shown.

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

Source: U.S. Census Bureau.

TABLE 7  
 U.S. IMPORTS OF SODA ASH BY COUNTRY OR LOCALITY IN 2016<sup>1</sup>  
 (Metric tons unless otherwise specified)

Country or locality	January	February	March	April	May	June	July	August	September	October	November	December	Quantity	Value <sup>2</sup> (thousand dollars)	Unit value
														Total	
China	7	144	3	21	86	130	21	98	33	--	1	28	573	\$199	\$347
France	153	--	--	--	--	1	--	166	283	--	--	--	603	146	--
Germany	632	2,080	2,330	1,630	3,030	1,290	2,110	2,940	1,130	171	181	2	17,500	2,620	149
Italy	--	571	1,370	1,310	190	950	1,330	209	190	568	--	456	7,140	1,570	220
Japan	2	1	--	226	120	3	120	120	--	--	362	--	955	147	--
Korea, Republic of	--	--	--	--	--	206	308	308	--	--	--	--	822	102	--
Mexico	1	19	60	39	78	235	195	212	464	135	--	441	1,880	708	377
Poland	--	--	--	--	--	--	58	77	77	96	106	--	414	122	--
Turkey	8	95	245	--	8	8	8	65	--	8	8	8	457	144	315
United Kingdom	513	752	705	518	602	270	270	253	396	144	218	18	4,660	854	183
Other	121	2	--	--	157	--	--	--	2	1	2	--	286	61	--
Total	1,440	3,670	4,710	3,740	4,270	3,090	4,420	4,450	2,580	1,120	876	952	35,300	6,670	189

--Zero.

<sup>1</sup>Table includes data available through May 18, 2017. Data are rounded to no more than three significant digits; may not add to totals shown.

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

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>	2012	2013	2014	2015	2016 <sup>p</sup>
Australia <sup>c</sup>	300	150	--	--	--
Bosnia and Herzegovina <sup>c</sup>	59	66	73	82	85
Botswana <sup>4</sup>	249 <sup>r</sup>	228	269	243 <sup>r</sup>	250 <sup>e</sup>
China <sup>5</sup>	24,010	24,320	25,260	26,130	26,000 <sup>e</sup>
Egypt <sup>c</sup>	130	130	130	130	130
Ethiopia <sup>4,6</sup>	5	5	6	6	6 <sup>e</sup>
France <sup>c</sup>	1,000	1,000	1,000	1,000	1,000
Germany	2,627	2,548	2,558	2,600 <sup>c</sup>	2,600 <sup>e</sup>
India	2,460	2,390	2,380	2,400 <sup>e</sup>	2,400 <sup>e</sup>
Italy	500	500	500	500	500
Japan	344	361	350 <sup>e</sup>	350 <sup>e</sup>	350 <sup>e</sup>
Kenya <sup>4</sup>	449	468	410 <sup>r</sup>	450 <sup>e</sup>	450 <sup>e</sup>
Mexico <sup>c</sup>	290	290	290	290	290
Pakistan	367	379	437	400 <sup>e</sup>	400 <sup>e</sup>
Poland	1,111	1,052	1,100 <sup>e</sup>	1,100 <sup>e</sup>	1,100 <sup>e</sup>
Portugal <sup>c</sup>	150	75	--	--	--
Romania <sup>c</sup>	430	430	425	425	425
Russia	2,807	2,477	3,052	2,800 <sup>e</sup>	2,800 <sup>e</sup>
Taiwan <sup>e</sup>	140	140	--	--	--
Turkey <sup>5</sup>	1,853	1,665	1,828	1,900 <sup>e</sup>	1,900 <sup>e</sup>
Ukraine	720	720 <sup>c</sup>	600 <sup>e</sup>	600 <sup>e</sup>	600 <sup>e</sup>
United Kingdom <sup>c</sup>	500	450	400	400	400
United States <sup>4</sup>	11,100	11,500	11,700	11,600	11,800
Uzbekistan <sup>c</sup>	90	90	90	90	90
Total <sup>c</sup>	51,700 <sup>r</sup>	51,400 <sup>r</sup>	52,800 <sup>r</sup>	53,500 <sup>r</sup>	53,600

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

<sup>1</sup>Table includes data available through April 14, 2017. All data are reported unless otherwise noted. U.S. data and estimated data are rounded to three significant digits; may not add to totals shown.

<sup>2</sup>Synthetic unless otherwise specified.

<sup>3</sup>In addition to the countries listed, Brazil, Bulgaria, Chad, Iran, the Republic of Korea, the Netherlands, Spain, 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 starting on July 7.