USGS
science for a changing world

2017 Minerals Yearbook

CEMENT [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

August 2020

Cement

By Kenneth C. Curry and Hendrik G. van Oss

Domestic survey tables were prepared by Christine K. Pisut, statistical assistant.

Production of portland and masonry cement in the United States, excluding Puerto Rico, increased by 2% to 86.4 million metric tons (Mt) in 2017 (table 1). Production in 2017 was 13% lower than the record-high 99.3 Mt in 2005. Overall cement consumption, as measured by sales to domestic final customers, increased by 2.2% to 96.7 Mt from that of 2016 (table 9), 24% lower than the 2005 record-high consumption of 127.9 Mt. The average mill net value ("price") for cement increased by 5.4% to a record-high $117.00 per metric ton, surpassing the previous record set in 2016. The overall value of sales increased by 7.6% to $11.3 billion, 12% lower than the record high of $12.9 billion set in 2006. World production of cement decreased slightly to 4.08 billion metric tons (Gt) (tables 1, 22).

Except where otherwise indicated, data and trends in this report exclude those in Puerto Rico. This report covers hydraulic varieties of cement broadly classified as portland cement (including blended cements and other varieties listed in table 15) and masonry cement (including portland-lime and plastic cements). Other types of hydraulic cement and clinker are included in some of the trade data (tables 16–18, 21) and within the world production data (table 22). The tables in this report exclude supplementary cementitious materials (SCMs), such as fly ash, other pozzolans, and ground granulated blast furnace slag (GGBFS), except where incorporated in finished cement and clinker. General background information on cement manufacturing and the U.S. Geological Survey (USGS) cement canvasses can be found in van Oss (2005).

In 2017, the USGS obtained the data in this report through the USGS annual canvass of 133 U.S. industrial cement and clinker production facilities and certain independent terminals. Responses were received from 129 facilities, including all U.S. production facilities, a response rate of 97%. Estimates were made for nonrespondents from company data or prior reports. The data did not include that of a few importers that did not participate in the surveys, accounting for an estimated 0.5% of additional portland cement sales.

Government Programs and Environmental Issues

Much of the cement consumption, within concrete, is for public-sector construction projects. Cement quantities sold for these projects are dependent on various government funding sources, especially for new construction rather than repairs. State and Federal funding for public-sector construction decreased in 2017 (Portland Cement Association, 2019). Public Law 114–94, "Fixing America's Surface Transportation Act" (FAST Act), authorized $40.5 billion in Federal-Aid Highway Program apportionments in fiscal year 2017 (Federal Highway Administration, 2017), which may have boosted portland cement consumption in 2017.

Large quantities of raw materials (mainly carbonate rocks, especially limestone) and fuels are burned at high temperatures to make clinker, resulting in emissions of large quantities of carbon dioxide (CO_2) and potentially significant emissions of nitrogen oxides, sulfur oxides, mercury and some other metals, volatile organic carbon compounds, and particulates. Increasingly, these emissions are being stringently regulated. The cement industry is one of the leading industrial emitters of CO_2, an important greenhouse gas (GHG).

For 2017, overall emissions of CO_2 by the U.S. cement industry were calculated to be about 67.0 Mt, or 0.87 metric ton (t) of CO_2 per ton of clinker produced. Overall emissions were calculated by averaging the results of two methods for estimating emissions from fuel combustion at individual plants. One method uses "standard" heat values for the fuel quantities consumed (the quantities reported in table 7), which resulted in a total of 68.0 Mt, and another method that incorporates heat values reported by individual plants, which resulted in 65.0 Mt. The emission factor from the Intergovernmental Panel on Climate Change (IPCC) is used to calculate process emissions from the calcination of limestone (Hanle and others, 2006). The calculations do not include any deductions for including materials such as ferrous slags and coal combustion ashes. Including these deductions would allow a reduction in the calculated emissions.

Certain fuels, including alternative or waste fuels, can reduce plant-level CO_2 emissions and may be allowed to be deducted from some reporting protocols for combustion emissions. These fuels may be lower in carbon per unit heat produced than other fuels, considered carbon neutral (certain biofuels), or may have credits allowed for their use (certain waste fuels). No fuel deductions were made to the average above. Plant-level emissions from combustion can be reduced through use of alternative raw materials, upgrading to more fuel-efficient kiln line technology, and use of SCMs and crushed limestone or other fillers in finished cement and concrete to reduce its clinker content.

The U.S. Environmental Protection Agency (EPA) applied emissions factors similar to those above to clinker production data published by the USGS to calculate GHG emissions associated with the U.S. cement industry. The USGS and EPA calculations, based on the IPCC methodology, have an estimated 5% uncertainty. The EPA compared its calculations to the results of mandatory GHG reporting by major emitter industries; these data began for the 2010 (emissions) data year and are available for 2010−17 as summary spreadsheets for each year (U.S. Environmental Protection Agency, 2018).

On September 9, 2015, rules came into effect pertaining to the national emissions standards for hazardous air pollutants (NESHAP); the NESHAP rules were finalized in 2013 and amended in July 2015 (U.S. Environmental Protection Agency,

2015). The NESHAP rules established new limits on emissions of mercury, total hydrocarbons, particulate matter (as a surrogate for nonvolatile metal pollutants), and hydrochloric acid. NESHAP rules do not apply to plants that burn hazardous wastes, which fall under different performance standards and emissions limits.

Production

In 2017, portland cement production increased by 2% from 82.2 Mt in 2016 to 84.0 Mt (table 3), which was 11% lower than the record high of 93.9 Mt in 2005. Overall, 70% of the portland-cement-producing districts registered production increases during 2017. Production of masonry cement decreased by 4% from 2.5 Mt in 2016 to 2.4 Mt (table 4), which was 56% lower than the record high of 5.4 Mt in 2005. Reported annual cement production capacity (grinding capacity) increased from 117 Mt in 2016 to an estimated 119 Mt in 2017 (table 3). Grinding capacity utilization increased slightly to an estimated 70.6% compared to an estimated 70.1% in 2016 and 82% in the record-high production year of 2005. A grinding capacity utilization of 85% or higher is generally considered to represent plants and the industry operating at full capacity.

Grinding capacity data include portland and masonry cements. The grinding capacity utilization percentages only include portland cement production. Capacity changes can reflect changes in demand for cements of various degrees of fineness, grinding equipment upgrades, shifts of some grinding capacity to other products (such as GGBFS), new plants and plant upgrades, and plant closures.

In 2017, the 10 leading cement companies were, in descending order of portland cement production, LafargeHolcim Ltd; CEMEX, Inc.; Lehigh Hanson, Inc.; Buzzi Unicem USA, Inc. (including Alamo Cement Co.); Ash Grove Cement Co.; Argos USA Corp.; Eagle Materials Inc.; CalPortland Co.; Martin Marietta Materials, Inc.; and GCC of America, Inc. The U.S. industry continued to be heavily consolidated, with 59% of U.S. portland cement production from the top 5 companies and 79% from the top 10. Of the 10 leading companies, Ash Grove, Eagle Materials, and Martin Marietta were the only U.S.-owned companies at yearend. Overall, about 79% of U.S. cement capacity was foreign owned in 2017.

Clinker production increased slightly in 2017 from 75.6 Mt in 2016 to 76.7 Mt (tables 1, 5), 13% below the record-high production of 88.6 Mt in 2006. Most district-level changes in output were only 0.3 Mt or less. Production in the Maine and New York district, however, increased by 0.4 Mt, owing to higher capacity utilization at some plants and a new preheater-precalciner kiln at LafargeHolcim's Ravena, NY, plant. In the Missouri district, a nearly 0.9-Mt increase in clinker production reflected higher capacity utilization at several plants. In the Alabama, Kentucky, Tennessee district, a slightly more than 0.4-Mt decrease in clinker production reflected lower capacity utilization at several plants.

A plant's apparent annual clinker capacity is dependent upon total reported downtime for the plant's kiln(s). Therefore, without new kilns or the closure of kilns, reported small district-level changes in capacities likely were of no statistical significance.

Clinker production capacity utilization increased to an estimated 74% in 2017 from an estimated 72% in 2016 and was still well below the 85% in 2005. The reported subset for average days of routine maintenance increased by 2.7% to 27 days in 2017. Some multikiln plants continued to rely on a single (generally the newest and more energy-efficient) kiln for most of their clinker output. The continued idle or semi-idle status of the plant's older kilns may reflect barriers to their restart including unknown operational quirks, poor kiln condition, and the possibility of exceeding NESHAP limits. Thus, the active kiln count and plant capacities may be lower than those listed in table 5, although actual capacity utilization percentages might be higher. In some districts, kiln capacity utilization may have been constrained by increased reliance on cement imports in the local markets.

The U.S. cement industry's consumption of nonfuel raw materials for the production of clinker and cement increased to 128 Mt for clinker and 9.38 Mt for cement in 2017 from 126 Mt and 8.75 Mt for clinker and cement, respectively, in 2016 (table 6). A variety of raw materials can be substituted to make clinker at cement plants. For the major raw materials consumed, changes tend to parallel clinker production, whereas some minor raw materials may experience significant changes in the activity of just a few plants.

Table 6 lists the nonfuel raw materials used to produce cement and clinker in the United States. In 2017, the use of limestone for clinker and cement production increased slightly to 101 Mt and by 15% to 3.1 Mt, respectively, which was in line with increases in clinker production (table 5) and portland cement output (table 3). Use of cement kiln dust increased as a raw material for clinker and cement production. Use of GGBFS increased by 11%; however, sales of GGBFS blended cement (table 15) decreased. The decrease in sales may reflect a mischaracterization of sales or incomplete reporting. Fly ash consumed for clinker and cement increased by 18% to 2.4 Mt and by 16% to 0.16 Mt, respectively, in line with the increase in sales of blended cement containing fly ash (table 15).

Based on data collected through the USGS survey, total fly ash consumption for blended cement and clinker of 2.4 Mt was less than the 4.2 Mt reported by the American Coal Ash Association (ACAA), whereas the total bottom ash consumption of 1.7 Mt (table 6) was slightly more than the 1.5 Mt reported by the ACAA. The differences may reflect misidentification of various types of ashes and slag by USGS canvasses respondents but also could reflect the difference between tonnages sold for a specific purpose (ACAA) and tonnages actually consumed by the cement plants (table 6). The total synthetic gypsum consumption reported to the USGS, but not specifically listed in table 6, of 1.7 Mt was lower than the sales of 2.1 Mt to the cement industry reported by the ACAA (American Coal Ash Association, 2018).

Table 7 details fuel consumption by the U.S. cement industry. As with nonfuel raw materials, data shifts can reflect activities at just a few plants. Only consumption of petcoke increased in 2017, and consumption of all other fuel types remained the same or decreased.

In 2017, total unit heat consumption (gross heat basis) was 4.0 billion joules per metric ton of clinker (GJ/t) in 2017

compared with 4.1 GJ/t in 2016. Wet kiln plants averaged 7.6 GJ/t compared with 7.3 GJ/t in 2016. Dry kiln plants, responsible for 97% production in 2017, averaged 3.9 GJ/t compared with 4.0 GJ/t in 2016. In 2017, the leading fuel sources for total heat consumed were coal, 45%; petcoke, 21%; natural gas, 17%; waste fuels, 16%; and fuel oil, not including any reported with liquid wastes, less than 1%.

Electricity consumption in 2017 is shown in table 8. Average consumption increased for the remaining operational wet plants but decreased for dry plants. The closure of two wet kilns in 2016 and the rampup of more-energy-efficient dry kilns in 2017 had the most influence on these changes.

Industry Structure Changes

In recent years, a number of mergers and acquisitions have been made in the North American cement industry, and this continued in 2017. In early February, Groupo Argos, S.A. (Colombia) announced the purchase of Lehigh Hanson's Dorado (San Juan), PR, plant (Business News Americas Limitad, 2017). In mid-February, the sale of the Fairborn (Xenia), OH, plant by CEMEX (Mexico) to Eagle Materials was finalized (Tradeship Publications Ltd., 2017d). In late September, CEMEX completed the sale of its remaining direct interest in Grupo Cementos de Chihuahua, S.A.B. de C.V. (Mexico) (Tradeship Publications Ltd., 2017a).

In late September, CRH plc (Ireland) announced that it would purchase Ash Grove, subject to competition authorities' approvals (Tradeship Publications Ltd., 2017b). The sale was expected to be finalized in early 2018. In late November, CRH announced the purchase of Suwanee American Cement Co. from Votorantim Cimentos (Brazil) and Anderson Colombia Co., Inc. (Colombia) (Palladian Publications Ltd., 2017a).

A number of plant upgrades were underway or completed during the year. LafargeHolcim (Switzerland) completed kiln upgrades at its Ada, OK, (semidry) plant in June 2017 (Palladian Publications Ltd., 2017b) and at its Ravena, NY, (preheater-precalciner) plant in May 2017 (Tradeship Publications Ltd., 2017c). St. Marys Cement's plant expansion in Charlevoix, MI, was expected to be completed in 2018 (Tradeship Publications Ltd., 2018). Several other minor upgrades were ongoing across the country.

Consumption

Cement consumption data were reported in terms of sales (shipments) to final domestic customers. The data were derived from the USGS annual canvass (tables 1, 11, 12, and 14), which pertains to sales by location of the reporting entities, and monthly surveys (table 9), which represents sales by State. Sales in both datasets include domestically produced cement, from domestic and imported clinker, and imported cement.

In 2017, portland cement sales, based on monthly survey data, increased by 2.2% to 94.3 Mt (table 9). Masonry cement sales remained essentially unchanged at 2.4 Mt overall. Cement consumption can be broadly correlated with construction spending levels. However, some factors constrain the comparison, such as spending for repairs instead of new construction, lags in the construction spending timeframe and when actual cement is consumed, and the type of construction—with some requiring more portland cement concrete, and therefore more cement, than others.

The Portland Cement Association converts U.S. Census Bureau data on construction spending from current dollars to 2009 constant dollars. In these terms, 2017 construction spending was essentially unchanged at $1,032.4 billion (Portland Cement Association, 2019). The total cement "intensity" in 2017 increased slightly to 93.9 t of cement consumed per $1 million of construction spending. The largest sector of total construction spending was residential construction, which increased by 7.6% to $417.4 billion, including new construction, which increased by 4.1% to $262.5 billion. The major components of new construction were single family housing, which is masonry cement and brick and block dependent and increased by 6.7% to $214.8 billion, and multifamily housing, which is concrete dependent and decreased by 5.9% to $47.7 billion. Nonresidential building construction, which is concrete dependent, decreased by 2.2% to $248.5 billion. Public-sector construction decreased by 4.6% to $209.6 billion. Within public-sector construction, buildings were essentially unchanged at $94.4 billion and highways and streets decreased by 6% to $75.1 billion. The remaining public-sector categories decreased by a combined 10.5% to $40.1 billion.

In 2017, the quantity of reported cement sold to ready-mix concrete producers increased by 2.4% to 68.8 Mt, or 73% of total cement sold (table 14), in line with the percentage increase in sales of portland cement. The actual percentage was likely larger because some of the sales of cement to ready-mix concrete producers were reported in other sales categories, such as airport and road paving contractors, which use ready-mix concrete. The quantity of cement sold to concrete product manufacturers, including those categories itemized in footnote 8 of table 14, was essentially unchanged at 10.7 Mt. This included sales for precast and prestressed, which decreased by 5% to 3.6 Mt; sales for brick and block, which increased by 6.2% to 3.4 Mt; sales for other or unspecified uses, which may include uses in any of the other broken out categories and which decreased slightly to 2.7 Mt; and sales for pipe, which increased by 11% to 1.1 Mt.

Cement sold to contractors, including those categories itemized in footnote 9 of table 14, decreased slightly to 7.4 Mt (table 14). This included sales for road paving, which decreased by 11% to 3.5 Mt; sales for soil cement, which increased by 22% to 2.5 Mt; sales for other or unspecified uses, which may include uses in any of the other broken out categories and decreased by 6.7% to 1.4 Mt; and sales for airport uses, which increased by 44% to 0.09 Mt. Sales to building materials dealers increased by 9.1% to 3.4 Mt. Sales for oil well drilling, mining, and waste stabilization, itemized in footnote 10 of table 14, increased by 42% to 2.6 Mt. This included sales for oil well drilling, which increased by 58% to 2.1 Mt; sales for mining, which decreased by 5.3% to 0.32 Mt; and sales for waste stabilization, which increased by 13% to 0.18 Mt. The increase in sales for oil well drilling was in line with the 40% increase in the average weekly drill count during 2017 (Baker Hughes Inc., 2019).

Portland cement sales by type of cement are broken out in table 15. In 2017, sales of general use and moderate heat cements (Types I and II) and sulfate-resistant varieties (Type V

and Type II/V hybrids reported as Type V), including equivalent cements sold under ASTM International C1157 specifications, increased by 2.1% to 71.7 Mt and increased by 14% to 15 Mt, respectively. High early strength cement (Type III) sales decreased by 33% to 3.0 Mt, oil well cements (including non-API varieties) sales increased by 74% to 1.7 Mt, and white cement sales were essentially unchanged at 0.88 Mt. Total sales of blended cements increased by 6.3% to 2.0 Mt, including sales of 0.66 Mt of blended cement with GGBFS, a 3.5% decrease from that of 2016, and sales of 0.66 Mt of blended cement with fly ash, a 16% increase from that of 2016.

Stocks

Yearend stocks of clinker decreased slightly to 5.3 Mt (tables 1, 5). Yearend stocks of portland cement, including blended cement, increased by 7.6% to 7.5 Mt in 2017 (table 3). Yearend stocks of masonry cement decreased by 20% to 0.33 Mt (table 4). Ending stocks of clinker and cement are sensitive to market conditions, omission of stocks at terminals, weather-affected yearend sales, and stock buildups ahead of planned kiln shutdowns. Individual respondents sometimes report stocks at a plant that includes terminals across multiple districts that handle cement from more than one plant, which can affect the regional breakout of stocks.

Prices

U.S. cement prices (mill net values), broken out by white and gray portland cement, are listed in table 13. Price data by district for total portland and masonry cement are listed in tables 11 and 12, respectively. Mill net values are ex-factory average values for cement sold, including bagging and palletizing charges for cement sold in bags or packages. Most portland cement is sold in bulk and most masonry cement is sold in bags or packages (table 10). Mill net values, except for independently reporting terminals, which report on a "terminal net" basis, exclude charges to terminals where much of the cement was sold and are, thus, better viewed as price indexes rather than the purchase prices for cement. They mainly show general regional variations and trends over time, and small unit price differences are of little statistical significance. Unlike sales tonnages, price data include a significant component of estimates in some districts.

The estimated average price for portland cement increased by 5.0% to $115.50 per metric ton; gray portland increased by 5.0% to $114.50 per metric ton, whereas white portland was relatively unchanged at $216.50 per metric ton (table 13). The average price for masonry cement increased by 2.6% to $161.50 per metric ton. Because most masonry cement is sold in bag or packaged form, its average price is sensitive to even small shifts to bulk sales. Unit values for portland cement increased in all but two districts (table 11).

Foreign Trade

Export data from the U.S. Census Bureau are provided in table 16, and import data are in tables 17–21. Exports have been only a small fraction of the U.S. cement industry's sales but did reach the record-high 1.75 Mt in 2012; they have since declined as a result of increasing domestic cement sales. In 2017, exports decreased by 5.7% to 1.0 Mt (table 16), and reported shipments to final customers in foreign countries decreased by 10% to 0.6 Mt (table 9). Most United States cement exports were to Canada, which received 82% of exports in 2017 (table 16).

Total imports of cement and clinker increased slightly to 13.5 Mt (tables 1, 17) in 2017. Data have been adjusted by the USGS to include cement that was misreported by the importer as sand. The total in 2017 remained well below the record high of 35.6 Mt in 2006. Imports in 2017 supplied some of the growth in cement sales noted previously. Imports of gray portland cement increased by 3.6% to 10.5 Mt and accounted for 78% of total imports (table 19). The leading import sources of cement and clinker in 2017 were, in decreasing order of tonnage, Canada, Greece, China (adjusted), and Turkey.

Data for cement imports from Mexico were incomplete for 2016 and 2017, and all or most of the deficit related to gray portland cement entering the El Paso, TX, customs district (table 18). Most of what is shown for this district in table 18 is white cement. The missing cement, which was thought to have entered the United States on an informal basis, was estimated to be about 0.5 Mt in 2017.

White cement imports increased slightly to 1.3 Mt (table 20). White cement imports significantly exceeded the reported white cement sales in table 15. If the white cement sales that were produced domestically are removed, the imports-to-sales difference increases further. Thus, the data for white cement imports may include some gray cement or clinker; importers may have used the wrong tariff code. In addition, white cement may have been a significant fraction of the cement imported by importers that do not participate in the USGS survey.

Imports of clinker decreased by 19% to 1.2 Mt in 2017 (table 21). The decrease was largely the result of lower imports from Turkey resulting from the integrated plant in New York, which was responsible for most of the imports, starting to make clinker again. Imports from Canada remained the same but were likely underreported, by an estimated 0.1 Mt, because of sub-$2,500 truckloads that were registered as "informal entries." Clinker imports from France, 0.07 Mt, resumed in 2017 and in the past have been used to manufacture aluminous cement.

For cement and clinker combined, the 10 leading custom districts for imports in 2017 were, in descending order of tonnage, Houston-Galveston, TX; New York City, NY; Detroit, MI; San Francisco, CA; Seattle, WA; Columbia-Snake, OR and WA; Cleveland, OH; Miami, FL; Buffalo, NY; and Providence, RI, and accounted for 74% of total imports (table 18).

World Review

Production of hydraulic cement, by country or locality, is listed in table 22. For most countries and localities, the data include all forms of hydraulic cement and some may be based on reported exports of clinker. Some country or locality data may be incomplete. For the United States, data are for portland and masonry cement only.

World production of hydraulic cement in 2017 decreased slightly to 4.08 Gt from 4.15 Gt in 2016. China's production, which was 57% of the world total in 2017, decreased by 79 Mt to 2.33 Gt but still accounted for more than eight times the production of India, which had the second highest

production. The remaining top 15 producers in 2017 were, in descending order, the United States, Turkey, Vietnam, Indonesia, the Republic of Korea, Japan, Iran, Russia, Brazil, Egypt, Saudi Arabia, Mexico, and Pakistan. Altogether, cement was produced in 161 countries and localities, but output was very unevenly distributed. Cumulatively, the top 5 producers accounted for about 70% of total world output; the top 10 countries, about 77%; and the top 15 countries, about 83%.

In terms of regional production in 2017, Asia and the Pacific accounted for about 75% of the world total; the region included 7 of the 15 leading producing countries. Asia and the Pacific was followed by Western Europe (including Turkey), at 5.3%; Africa, 5.1%; the Middle East, 4.2%; North America (including Mexico), 3.5%; Central America and South America (including the Caribbean), 3.2%; the Commonwealth of Independent States, 2.5%; and Eastern Europe, 1.2%.

Outlook

Continued uncertainties in public-sector and housing construction are expected to constrain growth in cement sales in 2018 to less than 3%. Production of cement is expected to increase by about 2% in 2018, dependent upon increased levels of public-sector construction spending. Some plants are expected to continue to idle kilns, largely for environmental reasons. Because domestic production capacity is expected to be inadequate to meet the overall demand for cement, imports of cement are expected to continue to increase.

References Cited

American Coal Ash Association, 2018, 2017 coal combustion product (CCP) production and use survey report: Farmington Hills, MI, American Coal Ash Association, 1 p. (Accessed June 21, 2019, at https://www.acaa-usa.org/Portals/9/Files/PDFs/2017-Survey-Results.pdf.)

Baker Hughes Inc., 2019, North America rig count: Houston, TX, Baker Hughes Inc. (Accessed July 19, 2019, via http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reportsother.)

Business News Americas Limitad, 2017, In brief—Cementos Argos buys Essroc's Puerto Rico unit: Business News Americas Limitad, February 9. (Accessed November 15, 2019, via https://www.bnamericas.com/en/news/in-brief-cementos-argos-buys-essrocs-puerto-rico-unit.)

Federal Highway Administration, 2017, Fixing America's Surface Transportation Act or "FAST Act"—FY 2017 computational tables (Table 11, Part 1): Washington, DC, Federal Highway Administration. (Accessed June 20, 2019, via https://www.fhwa.dot.gov/fastact/comptables2017/table11p1.cfm.)

Hanle, Lisa, Maldonado, Pedro, Onuma, Eiichi, Tichy, Milos, and van Oss, H.G., 2006, Mineral industry emissions, chap. 2 *of* Eggleston, Simon, Buenda, Leandro, Miwa, Kyoko, Ngara, Todd, and Tanabe, Kiyoto, eds., Industrial processes and product use: Intergovernmental Panel on Climate Change, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, v. 3, CD–ROM.

Palladian Publications Ltd., 2017a, CRH to buy Floridian cement plant: World Cement, November 21. (Accessed November 15, 2019, via https://www.worldcement.com/the-americas/21112017/crh-to-buy-floridian-cement-plant/.)

Palladian Publications Ltd., 2017b, LafargeHolcim opens Ada plant modernisation: World Cement, June 5. (Accessed November 15, 2019, via https://www.worldcement.com/the-americas/05062017/lafargeholcim-opens-ada-plant-modernisation/.)

Portland Cement Association, 2019, Construction put in place: The Monitor, v. 29, no. 6, June, p. 15.

Tradeship Publications Ltd., 2017a, Cemex sells remaining direct GCC interest: CemNet, September 28. (Accessed November 15, 2019, via https://www.cemnet.com/News/story/162555/cemex-sells-remaining-direct-gcc-interest.html.)

Tradeship Publications Ltd., 2017b, CRH agrees US$3.5bn acquisition of Ash Grove Cement: CemNet, September 21. (Accessed November 15, 2019, via https://www.cemnet.com/News/story/162514/crh-agrees-us-3-5bn-acquisition-of-ash-grove-cement.html.)

Tradeship Publications Ltd., 2017c, Lafarge's Ravena cement plant upgrade is completed: CemNet, September 22. (Accessed November 15, 2019, via https://www.cemnet.com/News/story/162520/lafarge-s-ravena-cement-plant-upgrade-is-completed.html.)

Tradeship Publications Ltd., 2017d, USA—Cemex Fairborn plant and terminal is sold to Eagle Materials: CemNet, February 13. (Accessed November 15, 2019, via https://www.cemnet.com/News/story/161080/usa-cemex-fairborn-plant-and-terminal-is-sold-to-eagle-materials.html.)

Tradeship Publications Ltd., 2018, Revitalising St Marys Cement: CemNet, May 8. (Accessed November 15, 2019, via https://www.cemnet.com/Articles/story/164001/revitalising-st-marys-cement.html.)

U.S. Environmental Protection Agency, 2015, 40 CFR Parts 60 and 63—National emissions standards for hazardous air pollutants from the portland cement manufacturing industry and standards of performance for portland cement plants: Federal Register, v. 80, no. 143, July 27, p. 44772−44793.

U.S. Environmental Protection Agency, 2018, Greenhouse gas reporting program data sets—2017 data summary spreadsheets (as of August 19, 2018): U.S. Environmental Protection Agency. (Accessed June 20, 2019, via https://www.epa.gov/ghgreporting/ghg-reporting-program-data-sets.)

van Oss, H.G., 2005, Background facts and issues concerning cement and cement data: U.S. Geological Survey Open-File Report 2005–1152, 88 p. (Accessed July 19, 2019, at https://pubs.usgs.gov/of/2005/1152/2005-1152.pdf.)

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Cement. Ch. in Mineral Commodity Summaries, annual.
Cement. Mineral Industry Surveys, monthly.
Historical Statistics for Mineral and Material Commodities in the United States. Data Series 140.

Other

American Coal Ash Association, annual survey.
Cement. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Cement Americas, bimonthly.
Concrete Products, monthly.
European Cement Association, The.
Global Cement Magazine, monthly.
International Cement Review, monthly.
North American Cement Directory, Cement Americas, annual.
Portland Cement Association:
- Monitor, The, monthly.
- North American Cement Industry Annual Yearbook.
- U.S. and Canadian Portland Cement Industry, Plant Information Summary, annual.

Rock Products, monthly.
Slag Cement Association, annual survey.
World Cement, monthly.

TABLE 1
SALIENT CEMENT STATISTICS[1, 2]

(Thousand metric tons unless otherwise specified)

		2013	2014	2015	2016	2017
United States:						
Production:						
Cement[3]		76,804	82,535	84,405	84,695	86,356
Clinker		69,420	74,372	76,043	75,633	76,678
Shipments from mills and terminals:[3, 4]						
Quantity		81,700	88,900	92,000	94,300	96,900
Value[5]	thousand dollars	7,760,000	8,940,000	9,800,000	10,500,000	11,300,000
Average value[5]	dollars per metric ton	95.00	100.50	106.50	111.00	117.00
Stocks, yearend:						
Cement		6,570	6,140	7,230	7,420	7,870
Clinker		5,090	4,530	4,840	5,430	5,330
Exports		1,670	1,397	1,543	1,097 r	1,035
Imports:[6]						
Cement		6,289	7,584	10,376 [7]	11,742	12,288 [7]
Clinker		806	720	879 [8]	1,496 [8]	1,209
Total[9]		7,095	8,303	11,254 [7, 8]	13,237 [8]	13,497 [7]
Consumption, apparent[10]		81,750	89,220	92,150	95,150 r	97,160
World production[11]		4,030,000 r	4,150,000 r	4,070,000 r	4,150,000 r	4,080,000

rRevised.
[1]Table includes data available through January 2, 2020. Unless otherwise indicated, data are for portland (including blended) and masonry cements only. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.
[2]Excludes Puerto Rico.
[3]Includes imported cement and cement made from imported clinker. Includes less than 0.5% per year of double counted portland cement used to produce masonry cement; exact quantity is unknown owing to stockpiles.
[4]Shipments to final domestic customers. Data are from an annual survey of plants and terminals and may differ from the totals in table 9, which are based on consolidated monthly surveys from companies.
[5]Free on board mill or independently reporting terminal.
[6]All forms of hydraulic cement or clinker.
[7]Adjusted by the U.S. Geological Survey to include cement that was misregistered by the importer under the tariff code for another commodity.
[8]Adjusted by the U.S. Geological Survey to exclude granulated blast furnace slag misregistered by the importer under the tariff code for clinker.
[9]May not add to totals shown because of independent rounding.
[10]Production (including that from imported clinker) of cement plus imports of cement minus exports of cement minus the change in yearend cement stocks.
[11]Total hydraulic cement. May include clinker exports for some countries.

TABLE 2
COUNTY BASIS OF SUBDIVISION OF STATES IN CEMENT TABLES

State subdivision	Defining counties
California, northern	Alpine, Fresno, Kings, Madera, Mariposa, Monterey, Tulare, Tuolumne, and all counties farther north.
California, southern	Inyo, Kern, Mono, San Luis Obispo, and all counties farther south.
Illinois, excluding Chicago	All counties other than those in metropolitan Chicago.
Illinois, metropolitan Chicago	Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will Counties in Illinois.
New York, eastern	Delaware, Franklin, Hamilton, Herkimer, Otsego, and all counties farther east and south, except those within metropolitan New York.
New York, western	Broome, Chenango, Lewis, Madison, Oneida, St. Lawrence, and all counties farther west.
New York, metropolitan	New York City (Bronx, Kings, New York, Queens, and Richmond), Nassau, Rockland, Suffolk, and Westchester.
Pennsylvania, eastern	Adams, Cumberland, Juniata, Lycoming, Mifflin, Perry, Tioga, Union, and all counties farther east.
Pennsylvania, western	Centre, Clinton, Franklin, Huntingdon, Potter, and all counties farther west.
Texas, northern	Angelina, Bell, Concho, Crane, Culberson, El Paso, Falls, Houston, Hudspeth, Irion, Lampasas, Leon, Limestone, McCulloch, Reagan, Reeves, Sabine, San Augustine, San Saba, Tom Green, Trinity, Upton, Ward, and all counties farther north.
Texas, southern	Brazos, Burnet, Crockett, Jasper, Jeff Davis, Llano, Madison, Mason, Menard, Milam, Newton, Pecos, Polk, Robertson, San Jacinto, Schleicher, Tyler, Walker, Williamson, and all counties farther south.

TABLE 3
PORTLAND AND BLENDED CEMENT PRODUCTION, CAPACITY, AND STOCKS IN THE UNITED STATES, BY DISTRICT[1]

(Thousand metric tons unless otherwise specified)

	2016					2017				
District[2]	Number of plants	Production[3]	Grinding capacity[4]	Percent utilized[5]	Yearend stocks[6]	Number of plants	Production[3]	Grinding capacity[4]	Percent utilized[5]	Yearend stocks[6]
Maine and New York	4	1,770	3,707	47.8	181	4	1,846	3,258	56.7	213
Pennsylvania	7	3,819	6,130 [7]	62.3 [7]	318 [7]	7	3,629	5,790 [7]	62.7 [7]	264 [7]
Illinois	3	1,551	2,532	61.3	170	3	1,337	2,531	52.8	242
Indiana and Ohio	6	3,453	4,940 [7]	69.9 [7]	290	6	3,458	4,960 [7]	69.7 [7]	302
Michigan	3	4,095	4,945	82.8	448	3	3,773	4,973	75.9	408
Iowa, Nebraska, South Dakota	4	3,406	3,730 [7]	91.4 [7]	368	4	3,552	4,340 [7]	81.8 [7]	469
Kansas	2	2,226	3,172	70.2	163	2	2,302	3,172	72.6	175
Missouri	5	8,342	11,500 [7]	72.5 [7]	1,349	5	9,385	11,253	83.4	1,490
Florida	8	5,857	10,087	58.1	322	8	5,942	10,067	59.0	307
Georgia, Maryland, Virginia, West Virginia	6	5,748	7,358	78.1	342	6	5,904	7,738	76.3	386
South Carolina	3	2,858	5,085	56.2	210	3	2,972	6,100 [7]	48.7 [7]	177 [7]
Alabama, Kentucky, Tennessee	8	6,843	9,942	68.8	495	8	6,561	10,277	63.8	602
Arkansas and Oklahoma	4	2,597	3,729	69.6	211	4	2,368	3,760 [7]	63.0 [7]	226 [7]
Texas, northern	6	4,935	7,425	66.5	344	6	5,137	7,949	64.6	332
Texas, southern	5	5,931	7,730	76.7	313	5	6,187	7,730	80.0	417
Arizona and New Mexico	4	2,149	3,715	57.9	96	4	2,479	3,715	66.7	126
Colorado and Wyoming	4	3,032	4,419	68.6	211	4	3,130	4,138	75.6	303
Montana, Nevada, Utah	5	2,448	3,232	75.7	257	5	2,522	3,318	76.0	230
Alaska and Hawaii	--	--	--	--	96	--	--	--	--	70
California	8	9,597	11,324	84.7	449 [7]	8	9,957	11,454	86.9	477 [7]
Oregon and Washington	4	1,524	2,470 [7]	61.7 [7]	225 [7]	4	1,523	2,472	61.6	167
Importers[8]	--	--	--	--	144 [7]	--	--	--	--	153 [7]
Total[9]	99	82,181	117,000 [7]	70.1 [7]	7,000 [7]	99	83,963	119,000 [7]	70.6 [7]	7,530 [7]
Puerto Rico	2	458	1,780	25.7	49 [7]	2	443	1,780	24.9	52 [7]
Grand total[9]	101	82,639	119,000 [7]	69.5 [7]	7,050 [7]	101	84,406	121,000 [7]	69.8 [7]	7,590 [7]

-- Zero.

[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Includes data for white cement. Includes cement made from imported clinker.

[2]District assignation is the location of the reporting facilities. Specific districts include importers where district assignations were possible.

[3]Data include a small amount of portland cement subsequently consumed at the plant to make masonry cement; the amount thus double counted cannot be determined precisely because of the involvement of cement stockpiles, but is less than 0.5% of the grand totals listed.

[4]Based on fineness needed to produce a plant's normal output mix, including masonry cement, and allowing for downtime for routine maintenance.

[5]Calculated relative to portland cement output; utilization would be higher if calculated to include output of masonry cement.

[6]Includes imported cement and stocks of domestic and imported cement at mills and at terminals assigned to plants (some of which may be outside the district indicated), and in transit.

[7]Includes estimates for nonrespondents or facilities that provided incomplete information; data have been rounded to no more than three significant digits.

[8]Includes only those importers or terminals for which district assignations were not possible.

[9]May not add to totals shown because of independent rounding.

TABLE 4
MASONRY CEMENT PRODUCTION AND STOCKS IN THE UNITED STATES, BY DISTRICT[1]

(Thousand metric tons unless otherwise specified)

District[2]	2016			2017		
	Number of active plants	Production[3]	Yearend stocks[4]	Number of active plants	Production[3]	Yearend stocks[4]
Maine and New York	4	26	10	4	26	8
Pennsylvania	7	170	39 [5]	7	168	37 [5]
Indiana and Ohio	6	271	50	6	252	33
Michigan	3	83	43	3	74	34
Iowa, Nebraska, South Dakota	1	W	W	1	W	W
Kansas and Missouri	3	W	W	3	W	W
Florida	6	509	90	5	417	28
Georgia, Maryland, Virginia, West Virginia	5	276	27	5	287	30
South Carolina	3	185	17	3	174	15 [5]
Alabama, Kentucky, Tennessee	7	281	39	7	266	44
Arkansas and Oklahoma	4	126	11 [5]	4	130	19 [5]
Texas	6	287	18	6	287	17
Arizona and New Mexico	3	26	4	3	35	4
Colorado, Montana, Nevada, Utah, Wyoming	2	W	W	2	W	W
California	5	220	30	4	229	26
Importers[6]	--	--	8 [5]	--	--	5 [5]
Total[7]	65	2,514	417 [5]	63	2,392	332 [5]
Puerto Rico	--	--	--	--	--	--
Grand total[7]	65	2,514	417 [5]	63	2,392	332 [5]

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Includes masonry, portland-lime, plastic, and stucco cements.

[2]District assignation is the location of the reporting facilities. Specific districts include importers where district assignations were possible.

[3]Includes cement produced from imported clinker.

[4]Includes imported cement and stocks of domestic and imported cement at mills and at terminals assigned to plants (some of which may be outside the district indicated), and in transit.

[5]Includes estimates for nonrespondents or facilities that provided incomplete information.

[6]Includes only those importers or terminals for which district assignations were not possible.

[7]May not add to totals shown because of independent rounding.

TABLE 5
CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2017, BY DISTRICT[1]

District	Number of active plants[2]				Number of kilns[3]	Daily capacity[3, 4, 5] (thousand metric tons)	Average days of routine maintenance[6]	Apparent annual capacity[3, 7] (thousand metric tons)	Production (thousand metric tons)	Percent of capacity utilized	Yearend stocks (thousand metric tons)
	Process used										
	Dry	Wet	Both[4]	Total							
Maine and New York	3	--	--	3	3	8.8	42.8	2,807	1,419	50.6	165
Pennsylvania	5	2	--	7	11	17.0	33.0 [8]	5,590 [8]	3,363	60.1 [8]	250 [8]
Illinois	3	--	--	3	5	5.8	28.0	1,940 [8]	1,311	67.7 [8]	246
Indiana and Ohio	4 [9]	2	--	6	11	13.4	26.7	4,510	3,361	74.5	238
Michigan	2	--	--	2	6	11.2	38.2 [8]	3,660 [8]	2,815	76.8 [8]	140
Iowa, Nebraska, South Dakota	4	--	--	4	5	10.2	26.6	3,455	3,123	90.4	198
Kansas	2	--	--	2	3	7.8	35.7	2,575	2,150	83.5	63
Missouri	5	--	--	5	5	30.4	31.0	10,140	8,574	84.6	428
Florida	7	--	--	7	10	22.7	21.5	7,710	5,770	74.8 [8]	213
Georgia, Maryland, Virginia, West Virginia	5	--	--	5	5	20.2	21.6	6,962	5,439	78.1	281
South Carolina	3	--	--	3	3	12.2 [8]	26.7 [8]	4,110 [8]	2,789	67.8 [8]	94 [8]
Alabama, Kentucky, Tennessee	8	--	--	8	8	26.6	26.6	9,011	6,189	68.7	437
Arkansas and Oklahoma	3	--	1	4	9	11.8 [8]	13.3 [8]	4,100 [8]	2,171	52.9 [8]	160 [8]
Texas, northern	5 [9]	1	--	6	8	21.2	23.6 [8]	7,190 [8]	4,620	64.3 [8]	378
Texas, southern	5	--	--	5	7	20.3	19.9	7,007	5,616	80.1	594
Arizona and New Mexico	4	--	--	4	8	10.3	23.8	3,445	2,284	66.3	203
Colorado and Wyoming	4	--	--	4	5	11.9	29.0	3,944	2,824	71.6	204
Idaho, Montana, Nevada, Oregon, Utah, Washington	5	2	--	7	8	12.9	36.0 [8]	4,300 [8]	3,498	81.3 [8]	388
California	8	--	--	8	9	35.1	26.3 [8]	11,800 [8]	9,363	79.2 [8]	654
Total[10]	85 [9]	7	1	93	129	310.0 [8]	26.9 [8]	104,000 [8]	76,678	73.7 [8]	5,330 [8]
Puerto Rico	2	--	--	2	2	5.0	67.5 [8]	1,540 [8]	438	28.4 [8]	82
Grand total[10]	87 [9]	7	1	95	131	315.0 [8]	27.5 [8]	106,000 [8]	77,116	72.8 [8]	5,420 [8]

-- Zero.

[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Includes all plants (gray or white) that produced clinker for at least 1 day during the year, as well as idle facilities able to be restarted, fully permitted, in less than 6 months.

[3]Includes kilns active for at least 1 day during the year. For kilns idle all year, excludes those that cannot be restarted, fully permitted, in less than 6 months.

[4]Plants that can operate wet and dry kilns, whether or not both types were active during the year. Includes plants that converted from wet to dry technology during the year.

[5]Sum of reported kiln capacities for all plants in a district.

[6]Total days of routine maintenance (summed for all kilns) divided by the number of kilns.

[7]Sum of apparent annual capacities for all kilns. For each kiln, the statistic is calculated as 365 days minus days reported for routine maintenance and then multiplied by the unrounded daily capacity.

[8]Contains estimates for some facilities and have been rounded to no more than three significant digits.

[9]Includes one semiwet kiln in Indiana and one semidry kiln in northern Texas.

[10]May not add to totals shown because of independent rounding.

TABLE 6
RAW MATERIALS USED TO PRODUCE CLINKER AND CEMENT IN THE UNITED STATES[1, 2]

(Thousand metric tons)

Material	2016		2017	
	Clinker	Cement[3]	Clinker	Cement[3]
Calcareous:				
Limestone (aragonite, chalk, coral, marble)	99,500	2,670	101,000	3,070
Cement rock (includes marl)	9,330	--	9,260	35
Cement kiln dust (CKD)[4]	1	220	5	259
Lime[4]	25	12	228	9
Other	70	1	55	14
Aluminous:				
Clay	3,730	--	4,040	--
Shale and schist	2,610	22	2,660	39
Other[5]	710	--	690	--
Ferrous:				
Iron ore	768	--	785	--
Mill scale	552	--	703	--
Other[6]	23	--	11	--
Siliceous:				
Sand, calcium silicates	3,345	--	3,220	--
Sandstone, quartzite, soils, nonpozzolanic rocks	722	(7)	805	--
Fly ash	2,050	141	2,420	163
Other ash, including bottom ash	1,540	--	1,690	--
Granulated blast furnace slag[8]	--	261	--	289
Other blast furnace slag	7	--	6	--
Steel slag	457	--	289	--
Other slag	385	--	302	--
Natural rock pozzolans[9]	1	60	7	11
Other pozzolans[10]	90	10	64	2
Other:				
Gypsum and anhydrite	(11)	4,610	(11)	4,720
Miscellaneous[12]	22	29	14	30
Total[13]	126,000	8,030	128,000	8,650
Clinker, imported, raw materials equivalent[14]	--	722	--	734
Grand total[13]	126,000	8,750	128,000	9,380

-- Zero.
[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.
[2]Excludes Puerto Rico.
[3]Includes portland, blended, and masonry cements.
[4]Data are thought to be underreported.
[5]Includes alumina, aluminum dross, bauxite, spent catalysts, and other aluminous materials.
[6]Includes iron sludges, pyrite, and other ferrous materials.
[7]Less than ½ unit.
[8]Includes ground and unground material.
[9]Includes pozzolana and burned clays or shales (except where directly reported as clay or shale).
[10]Includes diatomite, silica fume, other microcrystalline silica, and other pozzolans, even if not used as such.
[11]Included with "Calcareous: Other."
[12]Includes fluorspar and other materials not listed above.
[13]May not add to totals shown because of independent rounding.
[14]Converted as 1.70 times the weight of foreign clinker consumed.

TABLE 7
CLINKER PRODUCED AND FUEL CONSUMED BY THE U.S. CEMENT INDUSTRY, BY KILN PROCESS[1, 2]

	Production			Conventional fuels[3]				Waste fuels[3]		
Kiln process	Number of plants[4]	Quantity (thousand metric tons)	Percent of total	Coal[5] (thousand metric tons)	Petcoke (thousand metric tons)	Oil[6] (thousand liters)	Natural gas[7] (thousand cubic meters)	Tires (thousand metric tons)	Solid (thousand metric tons)	Liquid (thousand liters)
2016:										
Wet	9	2,099	2.8	203	63	505	84,600	16	12	188,000
Dry[8]	83	73,676	97.2	5,150	1,920	45,200	1,360,000	361	1,140	758,000
Both[9]	--	--	--	--	--	--	--	--	--	--
Total[10]	92	75,775	100.0	5,350	1,980	45,700	1,440,000	378	1,150	947,000
2017:										
Wet	7	1,420	1.9	135	30	131	56,200	--	14	184,000
Dry[8]	84	75,259	98.1	5,200	2,000	34,900	1,390,000	359	1,140	706,000
Both[9, 11]	1	W	W	W	W	W	W	W	W	W
Total[10]	92	76,678	100.0	5,330	2,030	35,000	1,440,000	359	1,150	891,000

W Withheld to avoid disclosing company proprietary data. -- Zero.

[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Excludes Puerto Rico.

[3]All fuel data have been rounded to no more than three significant digits.

[4]Excludes idle plants that, although retained as active in terms of clinker capacity, had no production during 2016–17.

[5]All reported to be bituminous.

[6]Distillate and residual fuel oils. Excludes used oils that were reported under liquid wastes.

[7]Includes landfill gas and propane.

[8]Includes one semiwet plant and one semidry plant.

[9]Plants that can operate wet and dry kilns, whether or not both types were active during the year. Includes plants that converted from wet to dry technology during the year.

[10]May not add to totals shown because of independent rounding.

[11]Data for the category "Both" have been included in those for "Dry" plants to avoid disclosing company proprietary data.

TABLE 8
ELECTRICITY CONSUMED BY U.S. CEMENT PLANTS, BY PLANT PROCESS[1]

Plant process	Electricity consumed[2]							Cement produced[3] (thousand metric tons)	Average consumption (kilowatthours per ton of cement produced)
	Generated		Purchased		Total[4]				
	Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Percent of total		
2016:									
Integrated plants:									
Wet	--	--	9	378	9	378	3	3,105	122
Dry[5]	4	240	83	10,800	83	11,100	97	80,474	137
Both[6]	--	--	--	--	--	--	--	--	--
Total or average[4]	4	240	92	11,200	92	11,400	100	83,578	137
Grinding plants[7]	--	--	3	104	3	104	--	1,005	103
Exclusions[8]	--	--	2	XX	2	XX	--	112	XX
2017:									
Integrated plants:									
Wet	--	--	7	248	7	248	2	1,612	154
Dry[5]	3	210	84	11,300	85	11,500	98	83,628	135
Both[6, 9]	--	--	1	W	1	W	W	W	W
Total or average[4]	3	210	92	11,548	93	11,748	100	85,240	289
Grinding plants[7]	--	--	3	99	3	99	--	1,008	99
Exclusions[8]	--	--	2	XX	2	XX	--	108	XX

W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.
[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.
[2]Excludes Puerto Rico.
[3]Portland and masonry cement.
[4]May not add to totals shown because of independent rounding.
[5]Includes one semidry plant and one semiwet plant.
[6]Plants that can operate wet and dry kilns, whether or not both types were active during the year. Includes plants that converted from wet to dry technology during the year.
[7]Plants that did not produce clinker but ground clinker from outside sources. Excludes plants that only made masonry cement or just reground one type of portland cement into another, or which reported a substantial component of grinding of excess granulated blast furnace slag. Excludes two plants that were reported under "Dry" as noted in footnote 5.
[8]Plants at which production of portland cement was by regrinding of one type into another or which reported production only of masonry cement.
[9]Data for the category "Both" have been included in those for "Dry" plants to avoid disclosing company proprietary data.

TABLE 9
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN[1, 2]

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2016	2017	2016	2017
Destination:				
Alabama	1,115	1,161	81	79
Alaska[3]	142	132	--	--
Arizona	1,988	2,211	25	33
Arkansas	871	836	50	50
California, northern	3,317	3,741	27	41
California, southern	5,996	6,487	184	179
Colorado	2,258	2,441	6	5
Connecticut[3]	582	570	14	13
Delaware[3]	197	181	5	5
District of Columbia[3]	228	235	(4)	(4)
Florida	6,523	6,498	443	481
Georgia	2,964	3,053	155	148
Hawaii[3]	336	322	2	1
Idaho[3]	538	537	--	--
Illinois, excluding Chicago	1,406	1,319	8	7
Illinois, metropolitan Chicago[3]	1,707	1,595	20	16
Indiana	1,806	1,916	34	40
Iowa	1,907	1,984	(4)	(4)
Kansas	1,382	1,288	4	4
Kentucky	1,157	1,108	55	51
Louisiana[3]	1,898	1,744	47	47
Maine	210	215	1	1
Maryland	1,201	1,194	32	31
Massachusetts[3]	1,018	1,030	10	9
Michigan	2,068	2,106	54	55
Minnesota[3]	1,622	1,627	1	1
Mississippi[3]	734	678	39	36
Missouri	1,814	1,821	11	10
Montana	335	333	(4)	(4)
Nebraska	1,314	1,317	(4)	(4)
Nevada	1,316	1,319	5	4
New Hampshire[3]	190	198	6	6
New Jersey[3]	1,406	1,409	37	38
New Mexico	446	535	3	3
New York, eastern	550	498	7	6
New York, western[3]	648	672	11	10
New York, metropolitan[3]	1,741	1,802	41	47
North Carolina[3]	2,487	2,556	164	166
North Dakota[3]	764	561	1	1
Ohio	3,239	3,215	73	69
Oklahoma	1,614	1,707	35	27
Oregon	838	950	(4)	(4)
Pennsylvania, eastern	1,692	1,675	51	39
Pennsylvania, western	1,007	1,037	26	23
Rhode Island[3]	107	116	1	(4)
South Carolina	1,689	1,662	73	71
South Dakota	467	500	--	--
Tennessee	1,584	1,610	144	144
Texas, northern	6,418	7,232	117	124
Texas, southern	7,816	7,595	216	207
Utah	1,337	1,471	--	--
Vermont[3]	102	104	1	--
Virginia	1,835	1,908	70	66
Washington	1,740	1,735	(4)	(4)
West Virginia	386	433	9	8
Wisconsin[3]	1,959	1,852	10	10

See footnotes at end of table.

TABLE 9—Continued
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN[1, 2]

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2016	2017	2016	2017
Destination:—Continued				
Wyoming	252	282	--	--
Total[5]	92,263	94,316	2,406	2,411
Puerto Rico	516	512	--	--
Foreign countries and (or) localities[6]	704	632	(4)	(4)
Grand total[5]	93,483	95,460	2,406	2,411
Origin:				
United States	82,408	83,645	2,385	2,392
Puerto Rico	472	453	--	--
Foreign countries and (or) localities[7]	10,602	11,362	21	20
Total shipments[5]	93,483	95,460	2,406	2,411

-- Zero.
[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Includes cement produced from imported clinker and imported cement shipped by domestic producers and importers.
[2]Data are developed from consolidated monthly surveys of shipments by companies and may differ from data in tables 1, 10–12, and 14–15, which are from annual surveys of individual plants and importers.
[3]Has no cement plants.
[4]Less than ½ unit.
[5]May not add to totals shown because of independent rounding.
[6]Includes shipments to U.S. possessions and territories.
[7]Imported cement sold to final customers in the United States as reported by domestic producers and other importers. Data do not match the imports in tables 17–20.

TABLE 10
SHIPMENTS OF PORTLAND CEMENT IN THE UNITED STATES, BY TYPE OF CARRIER[1, 2]

(Thousand metric tons)

Type of carrier	Plant to terminal		Plant to customer		Terminal to customer		Total to customers[4]
	In bulk	In bags[3]	In bulk	In bags[3]	In bulk	In bags[3]	
2016:							
Railroad	12,000	9	758	--	99	6	863
Truck	4,200	56	47,200	762	42,600	303	90,900
Barge and boat	8,580	--	142	--	--	--	132
Total[4]	24,800	65	48,100	762	42,700	309	91,900 [5]
2017:							
Railroad	12,400	3	683	--	357	6	1,046
Truck	4,460	54	48,600	955	43,400	306	93,300
Barge and boat	9,700	--	109	--	11	--	120
Total[4]	26,600	56	49,400	955	43,800	312	94,500 [5]

-- Zero.
[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.
[2]Includes imported cement and cement made from imported clinker. Excludes Puerto Rico.
[3]Includes packages, bags, and supersacks.
[4]May not add to totals shown because of independent rounding.
[5]Shipments are based on an annual survey of plants and importers; may differ from totals in table 9, which are based on consolidated monthly data.

TABLE 11
PORTLAND CEMENT SHIPPED IN THE UNITED STATES, BY DISTRICT[1]

District[2]	2016			2017		
		Value[4]			Value[4]	
	Quantity[3] (thousand metric tons)	Total (thousands)	Average (per metric ton)	Quantity[3] (thousand metric tons)	Total (thousands)	Average (per metric ton)
Maine and New York	2,916	$305,915	$104.91	2,857	$344,513	$120.59
Pennsylvania	4,263	451,000 [5]	106.00 [5]	3,990 [5]	409,000 [5]	102.50 [5]
Illinois	1,540	176,717	114.74	1,322	157,440	119.05
Indiana and Ohio	3,941	437,885	111.11	3,652	437,392	119.76
Michigan[5]	4,590	572,000	124.50	4,530	530,000	117.00
Iowa, Nebraska, South Dakota	4,173	509,878	122.18	4,285	541,824	126.45
Kansas	1,681	168,657	100.30	1,695	172,951	102.04
Missouri	7,570 [5]	827,000 [5]	109.00 [5]	8,506	998,000 [5]	117.50 [5]
Florida	6,501	666,000 [5]	102.50 [5]	6,441	693,513	107.68
Georgia, Maryland, Virginia, West Virginia	5,850 [5]	586,000 [5]	100.00 [5]	6,002	651,566	108.55
South Carolina	3,131	328,000 [5]	105.00 [5]	3,050 [5]	368,000 [5]	121.00 [5]
Alabama, Kentucky, Tennessee	5,898	638,504	108.26	6,150	725,372	117.96
Arkansas and Oklahoma	2,345	244,575	104.28	2,315	250,302	108.13
Texas, northern	6,869	785,774	114.40	6,821	822,084	120.52
Texas, southern	6,749	790,778	117.16	6,563	767,784	116.99
Arizona and New Mexico	2,622	274,975	104.88	2,913	317,848	109.12
Colorado and Wyoming	2,737	363,560	132.85	2,625	363,821	138.62
Montana, Nevada, Utah	2,832	344,043	121.49	3,110	414,927	133.40
Alaska and Hawaii	436	68,379	156.98	415	67,329	162.15
California	9,865	933,000 [5]	94.50 [5]	10,782	1,103,796	102.37
Oregon and Washington	2,116	228,581	108.03	2,295	270,019	117.65
Importers[5, 6]	3,200	391,000	122.00	4,180	518,000	124.00
Total or average[5, 7]	91,900	10,100,000	110.00	94,500	10,900,000	115.50
Puerto Rico	506 [5]	W	W	504 [5]	W	W
Grand total[7]	92,400 [5]	W	W	95,000 [5]	W	W

W Withheld to avoid disclosing company proprietary data.

[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Includes gray and white portland cement. Includes cement made from imported clinker.

[2]The location of the reporting entities, not necessarily the location of sales (see table 9 for sales data, by State). Specific districts include shipments by importers where district assignations were possible.

[3]Tonnages are those reported by entities in the district but may include shipments into other districts. They differ from the data in table 9, which are the actual reported sales into the specific States.

[4]Values are mill net or ex-plant (free on board) valuations of total sales to final customers, including sales from plants' external distribution terminals. The data are ex-terminal for independently reporting terminals. Data include all varieties of portland cement and both bulk and bag shipments. Unless otherwise specified, data are presented unrounded. Unrounded or not, unit value data should be viewed as value indicators, accurate to no more than the nearest $0.50 or $1.00 per metric ton.

[5]Data are rounded to three significant digits (unit values to the nearest $0.50) because they include estimates.

[6]Importers for which district assignations were not possible.

[7]May not add to totals shown because of independent rounding.

TABLE 12
MASONRY CEMENT SHIPPED IN THE UNITED STATES, BY DISTRICT[1, 2]

	2016			2017		
		Value[5]			Value[5]	
District[3]	Quantity[4] (thousand metric tons)	Total (thousands)	Average (per metric ton)	Quantity[4] (thousand metric tons)	Total (thousands)	Average (per metric ton)
Maine and New York	34	$4,757	$138.18	33	$4,695	$141.33
Pennsylvania	164	25,300 [6]	154.50	142	23,100 [6]	162.50
Illinois, Indiana, Ohio	244	42,271	172.99	219	37,640	171.86
Michigan	78	13,000 [6]	168.00 [6]	79	12,800 [6]	162.00 [6]
Iowa, Nebraska, South Dakota	W	W	W	W	W	W
Kansas and Missouri	38	6,918	180.71	64	12,217	189.94
Florida	440	61,200 [6]	139.00 [6]	469	67,262	143.38
Georgia, Maryland, Virginia, West Virginia	298	61,197	205.07	252	53,869	213.43
South Carolina	189	29,100 [6]	154.50 [6]	193	29,300 [6]	151.50 [6]
Alabama, Kentucky, Mississippi, Tennessee	255	38,601	151.18	308	50,749	164.51
Arkansas and Oklahoma	101	12,141	120.28	96	13,104	136.99
Texas	309	52,300 [6]	169.50 [6]	280	49,000 [6]	175.00 [6]
Arizona and New Mexico	28	3,251	116.50 [6]	36	4,291	117.57
Colorado, Montana, Nevada, Utah, Wyoming	W	W	W	W	W	W
Alaska and Hawaii	2	525	348.74	1	514	350.10
California, Oregon, Washington	216	25,202	116.83	224	27,200 [6]	121.50 [6]
Importers[7]	20	4,280 [6]	218.00 [6]	24	5,010 [6]	212.00 [6]
Total or average[8]	2,422	381,000 [6]	157.50 [6]	2,429	392,000 [6]	161.50 [6]
Puerto Rico	--	--	--	--	--	--
Grand total or average[8]	2,422	381,000 [6]	157.50 [6]	2,429	392,000 [6]	161.50 [6]

W Withheld to avoid disclosing company proprietary data. -- Zero.
[1]Table includes data available through January 2, 2020. Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Shipments are those by cement companies to final customers and include imported cement and cement made from imported clinker. Excludes sales of masonry cement by portland cement final customers who made masonry cement from purchased portland cement.
[2]Data include true masonry, plastic, portland-lime, and stucco cements.
[3]District is the location of the reporting entities, not necessarily the location of sales (see table 9 for sales data, by State). Specific districts include shipments by importers where district assignations were possible.
[4]Tonnages are those reported by entities in the district but may include shipments into other districts. They differ from the data in table 9, which are the actual reported sales into the specific States.
[5]Values are mill net or ex-plant valuations of total sales to final customers, including sales from plants external distribution terminals. The data are ex-terminal for independently reporting terminals. Data include both bulk and bag shipments. Unless otherwise specified, data are presented unrounded. Unrounded or not, unit value data should be viewed as value indicators, accurate to no more than the nearest $0.50 or even $1.00 per metric ton.
[6]Data are rounded to no more than three significant digits (unit values to the nearest $0.50) because they include estimates.
[7]Importers for which district assignations were not possible.
[8]May not add to totals shown because of independent rounding.

TABLE 13
AVERAGE MILL NET VALUE OF CEMENT SOLD IN THE UNITED STATES[1, 2]

(Dollars per metric ton)

	Portland cement			Masonry	All
Year	Gray	White[3]	All	cement	cement
2016	109.00	215.50	110.00	157.50	111.00
2017	114.50	216.50	115.50	161.50	117.00

[1]Table includes data available through January 2, 2020. Values are average of sales to final customers, free on board the plant or independently reporting terminal. Values include any bagging charges, but exclude delivery charges to customers or to external terminals. Data exclude Puerto Rico.
[2]Data are rounded to the nearest $0.50 per metric ton.
[3]Data for white cement include a component of resales showing significant price markups.

TABLE 14
PORTLAND CEMENT SHIPMENTS IN 2017, BY DISTRICT AND TYPE OF CUSTOMER[1]

(Thousand metric tons)

District[2]	Ready-mixed concrete	Concrete product manufacturers	Contractors	Building material dealers	Oil well drilling, mining, waste stabilization	Government and other[3]	Total[4]
Maine and New York	2,184	341	63	190	13	65	2,857
Pennsylvania	2,124	1,015	456	251	32	111	3,990 [5]
Illinois	773	69	50	4	259	168	1,322
Indiana and Ohio	2,765	468	196	83	74	66	3,652
Michigan	3,538	388	446	137	6	14	4,529
Iowa, Nebraska, South Dakota	3,273	367	342	53	120	129	4,290 [5]
Kansas	1,280	150	191	48	26	--	1,695
Missouri	6,349	751	953	251	59	143	8,506
Florida	4,694	1,243	189	229	--	86	6,441
Georgia, Maryland, Virginia, West Virginia	4,194	954	329	363	22	141	6,002
South Carolina	2,310	366	305	52	--	15	3,049
Alabama, Kentucky, Tennessee	4,722	712	362	258	19	76	6,150
Arkansas and Oklahoma	1,699	162	301	34	104	15	2,320 [5]
Texas, northern	4,047	494	1,105	102	891	183	6,821
Texas, southern	4,417	694	819	227	348	59	6,563
Arizona and New Mexico	2,095	520	116	119	31	32	2,913
Colorado and Wyoming	2,031	150	196	71	161	16	2,625
Montana, Nevada, Utah	2,357	244	99	93	279	39	3,110
Alaska and Hawaii	407	7	1	--	--	--	415
California	8,331	1,079	592	671	100	10	10,800
Oregon and Washington	1,827	162	120	86	33	67	2,295
Importers[6]	3,387	399	206	35	16	135	4,180 [5]
Total[4]	68,800	10,700	7,440	3,360	2,590	1,570	94,500 [5]
Puerto Rico	295	27	15	167	--	(7)	504 [5]
Grand total[4]	69,100	10,800 [8]	7,450 [9]	3,520	2,590 [10]	1,570 [11]	95,000 [5]

-- Zero.

[1]Table includes data available through January 2, 2020. Except for district totals, totals have been rounded to three significant digits, but are likely accurate to only two significant digits. District totals are likely accurate to no more than three significant digits. Includes imported cement and cement made from imported clinker.

[2]The location of the reporting entity, not the location of sales (see table 9 for sales data, by State). Specific districts include shipments by importers where district assignations were possible.

[3]Includes shipments to miscellaneous customer types and for which customer types were not specified.

[4]May not add to totals shown because of independent rounding.

[5]Includes estimates for nonrespondents or facilities that provided incomplete information.

[6]Shipments by importers where district assignations were not possible.

[7]Less than ½ unit.

[8]Includes brick and block—3,420; precast and prestressed—3,610; pipe—1050; and other or unspecified—2,670.

[9]Includes airport—85; road paving—3,520; soil cement—2,460; and other or unspecified—1,390.

[10]Includes oil well drilling—2,090; mining—319; and waste stabilization—182.

[11]Includes other or unspecified—1,540.

TABLE 15
PORTLAND CEMENT SHIPMENTS IN THE UNITED STATES, BY TYPE OF CEMENT[1, 2, 3]

(Thousand metric tons)

Type of cement[4]	2016	2017
General use and moderate heat (Types I and II)[5, 6]	70,200	71,700
High early strength (Type III)	4,450	2,980
Sulfate resisting (Type V)[5]	13,200	15,000
Block	209	106
Oil well	971	1,690
White[7]	882	880
Blended:[8]		
Portland, natural pozzolans	51	44
Portland, ground granulated blast furnace slag	686	662
Portland, fly ash	569	661
Portland, other pozzolans[9]	614	672
Total blended[10]	1,920	2,040
Expansive and regulated fast setting	--	--
Miscellaneous[11]	66	24
Grand total[10]	91,900	94,500

-- Zero.
[1]Table includes data available through January 2, 2020. Includes sales of imported cement. Excludes Puerto Rico.
[2]Data are rounded to no more than three significant digits.
[3]Gray portland-type cements unless otherwise specified.
[4]Sold mostly under ASTM International specifications ASTM C150, ASTM C595, and ASTM C1157.
[5]Type II/V and similar sulfate-resisting hybrids are included within Type V, as are HS and similar cements in ASTM C1157.
[6]Includes ASTM C1157 general use and moderate heat cements that contain no pozzolans.
[7]White or colored portland-type cements. Most are Types I or II but may include Types III and V and block cements.
[8]Cements sold under ASTM C595 and those under ASTM C1157 that contain pozzolans.
[9]Includes blends with cement kiln dust, silica fume, other pozzolans, limestone and blends containing multiple pozzolans.
[10]May not add to totals shown because of independent rounding.
[11]Includes low heat (Type IV), waterproof, and other portland-type cements.

TABLE 16
U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Country or locality	2016		2017	
	Quantity	Value[2]	Quantity	Value[2]
Aruba	1	240	1	412
Australia	2	990	2	813
Bahamas, The	46	7,147 r	38	6,242
Barbados	3	693	(3)	124
Bermuda	(3)	84 r	3	249
Canada	877 r	127,162 r	846	120,923
Cayman Islands	1	430	2	585
Chile	3	553 r	3	749
China	5	941	2	1,802
Colombia	1	328	(3)	147
Costa Rica	1	77 r	(3)	124
Dominican Republic	1	501 r	1	548
Ecuador	2	116	(3)	148
Egypt	1	394	(3)	57
Guyana	6	788	1	259
Haiti	51	4,917	14	1,269
Honduras	(3)	307 r	1	128
Hong Kong	1	612	1	353
Ireland	(3)	114	1	441
Italy	1	349	(3)	144
Jamaica	(3)	105	1	155
Japan	16 r	2,306 r	14	2,283
Korea, Republic of	12	1,798	14	2,046
Marshall Islands	3	603	8	877
Mexico	37	7,934 r	56	11,197
Micronesia	1	75	1	74
Panama	2	781 r	3	1,159
Russia	3	844	2	574
Saudi Arabia	2	2,038 r	1	186
South Africa	(3)	69	1	312
Sweden	(3)	85	1	393
Taiwan	(3)	89	1	186
Thailand	8	166	(3)	12
Trinidad and Tobago	2	348	(3)	123
Turks and Caicos Islands	1	195	1	185
United Kingdom	1	769	1	588
Venezuela	2	843	7	3,974
Other [69 countries and (or) localities]	5	3,273 r	7	4,197
Total[4]	1,097 r	169,062 r	1,035	164,039
Puerto Rico:				
Aruba	8	688 r	24	1,188
Australia	1	136	--	--
Bahamas, The	14	901	--	--
Brazil	--	--	3	174
British Virgin Islands	18	2,411	19	2,331
Cayman Islands	2	148	--	--
Curacao	8	595	10	672
France	36	3,848	--	--
Guadeloupe	3	957	18	3,277
Martinique	11	693	14	2,581
Netherlands	14	930	14	672
Saint Kitts and Nevis	1	148	--	--
Turks and Caicos Islands	11	1,431	4	457
Other [3 countries and (or) localities]	(3)	34 r	(3)	28
Total[4]	127	12,920 r	106	11,380
Grand total[4]	1,224 r	181,982 r	1,141	175,420

See footnotes at end of table.

TABLE 16—Continued
U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

[r]Revised. -- Zero.
[1]Table includes data available through January 2, 2020. Data are unrounded but are thought to be accurate to no more than three significant digits. Includes portland and masonry cements.
[2]Free alongside ship (f.a.s.) value. The value of exports at the U.S. seaport or border point of export is based on the transaction price, including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier. The value excludes the cost of loading the carrier.
[3]Less than ½ unit.
[4]Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 17
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Brazil	--	--	--	4	2,131	2,141
Bulgaria	155	9,365	9,410	131	7,108	7,873
Canada[4]	4,512	362,908	371,390	4,352	435,713	445,018
China	1,740	84,702	118,359	2,036 [5]	97,834 [5]	132,908 [5]
Croatia	20	8,213	9,671	22	8,367	9,921
Denmark	159	20,111	26,630	190	22,467	30,743
Egypt	87	9,394	12,643	183	19,594	26,397
France	107	38,172	38,399	91	33,151	33,404
Germany	3	325	364	1	363	420
Greece	2,480	122,016	147,311	2,221	97,582	124,721
Italy	16 [6]	1,288 [6]	1,315 [6]	195	8,778	13,659
Japan	1	646	750	1	594	632
Korea, Republic of	759	32,361	44,854	646	25,025	35,693
Malta[7]	12	1,252	1,754	5	549	551
Mexico[4]	466	47,073	50,900	686	59,238	68,463
Morocco	--	--	--	8	410	485
Netherlands	3	2,859	3,074	3	3,122	3,414
Norway	8	395	685	--	--	--
Poland	(8)	168	208	4	3,338	3,776
Portugal	34	3,240	3,339	89	7,285	7,968
Spain	389 [9]	26,365 [9]	33,815 [9]	601	32,650	48,486
Sweden	322	17,284	23,136	271	14,736	20,585
Taiwan	345	18,677	25,490	305	16,007	21,772
Thailand	18	1,963	2,682	17	2,012	2,932
Trinidad and Tobago	3	316	318	--	--	--
Turkey[7]	1,597	73,225	94,584	1,433	76,351	104,322
United Kingdom	2	1,282	1,529	2	1,437	1,704
Other [6 countries and (or) localities]	(8)	67	98	(8)	177	179
Total[4, 10]	13,237 [6, 9]	883,669 [6, 9]	1,022,708 [6, 9]	13,497 [5]	976,019 [5]	1,148,165 [5]
Puerto Rico:						
Dominican Republic	(8)	11	11	16	1,260	1,438
Greece	--	--	--	100	6,636	8,437
Mexico	14	1,708	2,179	14	1,215	1,571
Portugal	7	1,018	1,242	7	62	86
Spain	170	8,541	10,806	--	--	--
Other [3 countries and (or) localities]	(8)	59 [r]	80 [r]	(8)	81	99
Total[10]	191	11,337	14,319	126	9,253	11,631
Grand total[4, 10]	13,429 [6, 9]	895,007 [6, 9]	1,037,027 [6, 9]	13,623 [5]	985,273 [5]	1,159,796 [5]

[r]Revised. -- Zero.

[1]Table includes data available through January 2, 2020. Data are unrounded but are thought to be accurate to no more than three significant digits. Includes portland, masonry and other hydraulic cements.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Data are underreported with respect to clinker from Canada, and cement from Mexico, owing to additional material coming in as “informal entries.”

[5]Adjusted by the U.S. Geological Survey to credit 27,816 metric tons of portland cement from China, with a customs value of $1,043,100 and a c.i.f. value of $1,068,000 that was misreported by the importer as sand.

[6]Adjusted by the U.S. Geological Survey to debit 61,493 metric tons of granulated blast furnace slag, with a customs value of $910,096 and a c.i.f. value of $930,096 that was misreported by the importer as clinker.

[7]Malta has no cement plants; material is believed to be from Turkey.

[8]Less than ½ unit.

[9]Adjusted by the U.S. Geological Survey to debit 58,707 metric tons of granulated blast furnace slag, with a customs value of $950,053 and a c.i.f. value of $971,053 that was misreported by the importer as clinker.

[10]Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 18

U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Customs district and country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Anchorage, AK:						
Canada	5	415	426	6	1,144	1,154
Korea, Republic of	110	4,605	7,088	88	3,377	5,481
Total[4]	115	5,020	7,515	94	4,521	6,635
Baltimore, MD:						
China	3	313	435	3	454	712
Sweden	1 r	342	405	(5)	189	224
Turkey	46	1,583	2,157	--	--	--
Other [2 countries and (or) localities]	(5)	2	3	(5)	20	22
Total[4]	50	2,241	2,999	4	663	959
Boston, MA:						
Canada	43	3,171	3,171	58	4,918	4,918
Greece	87	4,023	4,023	14	672	672
Other [4 countries and (or) localities]	(5)	6	6	(5)	49	60
Total[4]	129	7,201	7,201	73	5,639	5,650
Buffalo, NY:						
Canada	619	50,273	52,142	484	46,066	48,205
Germany	(5)	2	2	(5)	4	4
Total[4]	619	50,275	52,144	484	46,069	48,209
Charleston, SC:						
Turkey	11	488	641	30	1,342	1,428
Other [3 countries and (or) localities]	(5)	52	55	(5)	81	87
Total[4]	11	540	696	30	1,423	1,515
Chicago, IL:						
China	--	--	--	1	164	238
Germany	2	147	148	1	83	94
Other [7 countries and (or) localities]	(5)	511	569	(5)	256	282
Total[4]	2	658	717	2	503	614
Cleveland, OH:						
Canada	685	41,587	42,500	632	60,660	62,216
China	(5)	62	93	1	86	123
Morocco	--	--	--	2	87	102
Netherlands	1	1,234	1,318	1	1,041	1,140
Poland	(5)	143	179	1	912	1,117
Other [4 countries and (or) localities]	(5) r	270 r	283 r	1	409	505
Total[4]	687	43,296	44,373	637	63,195	65,203
Columbia-Snake, OR and WA:						
Canada	61	5,061	5,196	114	9,295	9,457
China	74	3,837	5,372	33	1,644	2,148
Korea, Republic of	446	18,909	26,200	557	21,358	29,914
Total[4]	582	27,806	36,768	704	32,297	41,519
Dallas-Fort Worth, TX:						
Italy	(5)	3	4	--	--	--
Poland	--	--	--	(5)	182	194
Total[4]	(5)	3	4	(5)	182	194
Detroit, MI:						
Canada[6]	1,247	92,410	94,625	1,306	115,788	117,953
Other [5 countries and (or) localities]	(5)	291	309	(5)	171	188
Total[4, 6]	1,247	92,700	94,934	1,307	115,960	118,140
El Paso, TX:						
China	1	109	110	(5)	147	148
Mexico[6]	121	18,011	19,114	230	25,085	29,561
Total[4, 6]	122	18,120	19,224	230	25,232	29,709
Great Falls, MT:						
Canada	22	1,938	1,986	92	12,231	12,414
Croatia	--	--	--	(5)	45	57
Total[4]	22	1,938	1,986	93	12,276	12,471

See footnotes at end of table.

TABLE 18—Continued
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Customs district and country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Honolulu, HI: Taiwan	345	18,677	25,490	305	16,002	21,766
Houston-Galveston, TX:						
China	592	22,970	37,251	352	12,505	21,301
Egypt	43	4,542	6,046	91	9,584	12,809
Greece	600	31,483	41,553	380	15,599	25,153
Italy	--	--	--	194	8,708	13,568
Korea, Republic of	48	2,208	3,408	--	--	--
Mexico	4	358	455	37	1,489	2,101
Poland	(5)	25	29	2	1,783	1,922
Portugal	34	3,240	3,339	63	6,091	6,245
Spain	208	10,118	12,914	453	19,364	26,281
Turkey	296	15,935	22,802	393	22,407	32,182
Other [7 countries and (or) localities]	1	188 r	251 r	(5)	236	280
Total[4]	1,825	91,068	128,048	1,965	97,766	141,842
Laredo, TX:						
Mexico	162	23,318	24,107	165	23,680	24,507
Turkey	--	--	--	14	589	1,122
Other [3 countries and (or) localities]	(5)	8	9	(5)	25	26
Total[4]	162	23,327	24,116	179	24,294	25,655
Los Angeles, CA:						
China	36	4,034	5,544	30	3,400	4,491
Egypt	5	536	786	19	2,082	3,032
Thailand	6	648	912	8	993	1,444
Turkey	26	2,921	5,313	31	3,469	6,344
Other [6 countries and (or) localities]	1	302	353	(5)	230	253
Total[4]	73	8,441	12,908	89	10,175	15,563
Miami, FL:						
Egypt	22	2,404	3,161	32	3,479	4,568
Mexico	24	1,398	2,150	32	1,657	2,332
Spain	121	12,467	15,735	105	10,339	13,027
Sweden	321	16,612	22,353	270	14,482	20,293
Thailand	1	64	107	--	--	--
Turkey	27	2,917	4,444	81	5,675	8,396
Other [5 countries and (or) localities]	(5)	3	3	(5)	17	15
Total[4]	516	35,864	47,951	520	35,650	48,631
Milwaukee, WI: Morocco	--	--	--	6	323	383
Minneapolis, MN:						
Canada	61	7,483	7,491	--	--	--
France	(5)	8	8	--	--	--
Turkey	18	1,378	1,380	44	3,560	3,565
Total[4]	79	8,869	8,879	44	3,560	3,565
Mobile, AL:						
Greece	203	12,485	15,095	45	2,824	3,436
Turkey	--	--	--	99	5,261	6,622
Other [2 countries and (or) localities]	(5)	117	138	(5)	23	25
Total[4]	203	12,601	15,233	144	8,108	10,083
New Orleans, LA:						
China	2	660	757	84	3,584	3,659
Croatia	19	7,457	8,742	19	7,250	8,556
Turkey	27	1,749	1,849	40	2,447	2,551
Other [4 countries and (or) localities]	(5)	11	12	1	186	192
Total[4]	48	9,877	11,359	144	13,467	14,957

See footnotes at end of table.

TABLE 18—Continued

U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Customs district and country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
New York City, NY:						
Denmark	13	1,494	2,015	20	2,282	3,051
Germany	1	3	3	(5)	5	6
Greece	817	33,803	41,616	891	36,910	47,026
Malta[7]	12	1,252	1,754	5	549	551
Norway	8	395	685	--	--	--
Spain	1	478	578	2	687	848
Turkey[7]	895	35,515	41,755	532	23,873	30,103
Other [4 countries and (or) localities]	(5)	262	298	1	366	437
Total[4]	1,747	73,202	88,704	1,450	64,672	82,021
Norfolk, VA:						
Brazil	--	--	--	4	2,131	2,141
Bulgaria	155	9,365	9,410	131	7,108	7,873
China	2	1,019	1,148	2	1,144	1,286
Egypt	1	90	137	--	--	--
France	107	37,965	38,169	91	32,998	33,224
Greece	23	1,264	1,667	101	4,077	5,614
Italy	6	287	299	--	--	--
Sweden	1	271	307	--	--	--
Turkey	21	864	1,274	--	--	--
United Kingdom	2	1,020	1,173	1	1,091	1,207
Other [4 countries and (or) localities]	(5)	39	46	(5)	351	394
Total[4]	317	52,185	53,630	331	48,900	51,738
Ogdensburg, NY:						
Canada	401	41,618	42,255	384	58,210	58,936
Other [2 countries and (or) localities]	--	--	--	(5)	25	28
Total[4]	401	41,618	42,255	384	58,235	58,964
Pembina, ND:						
Canada	238	18,071	18,440	179	24,717	25,055
Germany	--	--	--	(5)	5	5
Total[4]	238	18,071	18,440	179	24,721	25,060
Philadelphia, PA:						
China	(5)	12	17	1	155	214
Croatia	1	398	498	3	891	1,094
Egypt	4	430	625	25	2,721	3,732
Greece	169	6,906	7,392	294	12,147	12,236
Italy	10 [8]	959 [8]	969 [8]	--	--	--
Korea, Republic of	93	3,861	4,370	--	--	--
Netherlands	1	908	999	1	1,211	1,324
Spain	-- [9]	-- [9]	-- [9]	--	--	--
Turkey	108	4,414	4,808	5	612	741
Other [4 countries and (or) localities]	(5)	228 [r]	281 [r]	(5)	137	161
Total[4]	387 [8,9]	18,117 [8,9]	19,959 [8,9]	328	17,872	19,502
Portland, ME: Canada	15	2,022	2,235	13	1,909	2,096
Providence, RI:						
Canada	--	--	--	74	4,277	4,279
Greece	311	17,280	19,008	231	13,841	15,225
Turkey	120	5,133	7,624	140	5,702	9,106
Total[4]	430	22,414	26,632	446	23,820	28,610
San Diego, CA:						
Mexico	99	386	424	85	348	382
Other [2 countries and (or) localities]	(5)	14	14	(5)	5	5
Total[4]	99	400	438	85	353	387

See footnotes at end of table.

TABLE 18—Continued
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Customs district and country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
San Francisco, CA:						
China	705	34,707	43,705	1,143 [10]	54,247 [10]	71,934 [10]
Egypt	5	513	723	5	561	737
Mexico	--	--	--	126	6,277	8,597
Thailand	11	1,212	1,608	8	987	1,440
Turkey	3	325	531	2	278	491
Other	(5)	52	62	(5)	50	51
Total[4]	723	36,809	46,629	1,284 [10]	62,398 [10]	83,250 [10]
Savannah, GA:						
Egypt	8	880	1,166	11	1,149	1,488
Greece	113	8,318	8,391	18	1,743	1,755
Portugal	--	--	--	26	1,195	1,723
Spain	33	2,194	2,320	27	1,696	7,082
Turkey	--	--	--	23	1,115	1,644
Other [8 countries and (or) localities]	(5)	160	179	1	498	589
Total[4]	155	11,552	12,057	106	7,395	14,281
Seattle, WA:						
Canada[6]	909	73,219	74,069	863	73,842	74,522
China	324	16,717	23,622	386	20,103	26,430
Japan	(5)	89	119	1	268	268
Korea, Republic of	61	2,515	3,515	--	--	--
Other [6 countries and (or) localities]	1	95	152	1	113	167
Total[4, 6]	1,294	92,635	101,476	1,250	94,325	101,387
St. Albans, VT:						
Canada	205	25,641	26,855	146	22,656	23,814
Germany	(5)	2	2	--	--	--
Total[4]	205	25,643	26,857	146	22,656	23,814
St. Louis, MO: Other [4 countries and (or) localities]	(5)	352	396	(5)	255	285
Tampa, FL:						
China	(5)	60	69	--	--	--
Denmark	146	18,616	24,615	170	20,171	27,679
Greece	157	6,440	8,550	246	9,771	13,605
Mexico	54	3,601	4,651	12	702	984
Spain	26	1,096	2,254	--	--	--
Total[4]	384	29,814	40,138	429	30,643	42,267
U.S. Virgin Islands: Trinidad and Tobago	3	316	318	--	--	--
Wilmington, NC:						
Poland	--	--	--	(5)	2	2
Spain	--	--	--	14	557	1,239
Total[4]	--	--	--	14	559	1,241
U.S. total[4, 6]	13,237 [8, 9]	883,669 [8, 9]	1,022,708 [8, 9]	13,497 [10]	976,019 [10]	1,148,165 [10]
San Juan, PR:						
Dominican Republic	(5)	11	11	16	1,260	1,438
Greece	--	--	--	100	6,636	8,437
Mexico	14	1,708	2,179	10	1,215	1,571
Portugal	7	1,018	1,242	(5)	62	86
Spain	170	8,541	10,806	--	--	--
Other [3 countries and (or) localities]	(5)	59 [r]	80 [r]	(5)	81	99
Total[4]	191	11,337	14,319	126	9,253	11,631
Grand total[4, 6]	13,429 [8, 9]	895,007 [8, 9]	1,037,027 [8, 9]	13,623 [10]	985,273 [10]	1,159,796 [10]

See footnotes at end of table.

TABLE 18—Continued

U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

[r]Revised. -- Zero.

[1]Table includes data available through January 2, 2020. Includes all varieties of hydraulic cement and clicker. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Data may not add to totals shown because of independent rounding.

[5]Less than ½ unit.

[6]Data are underreported with respect to clinker from Canada and cement from Mexico owing to additional material coming in as "informal entries."

[7]Malta has no cement plants; material is thought to be from Turkey.

[8]Adjusted by the U.S. Geological Survey to debit 61,493 metric tons of granulated blast furnace slag, with a customs value of $910,096 and a c.i.f. value of $930,096 that was misreported by the importer as clinker.

[9]Adjusted by the U.S. Geological Survey to debit 58,707 metric tons of granulated blast furnace slag, with a customs value of $950,053 and a c.i.f. value of $971,053 that was misreported by the importer as clinker.

[10]Adjusted by the U.S. Geological Survey to credit 27,816 metric tons of portland cement from China, with a customs value of $1,043,100 and a c.i.f. value of $1,068,000 that was misreported by the importer as sand.

Source: U.S. Census Bureau.

TABLE 19
U.S. IMPORTS FOR CONSUMPTION OF GRAY PORTLAND CEMENT, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Bulgaria	155	9,365	9,410	131	7,108	7,873
Canada	3,378	272,989	279,283	3,053	314,698	321,514
China	1,685	77,136	108,594	1,988 [4]	90,661 [4]	123,672 [4]
Germany	2	171	182	1	94	110
Greece	2,368	117,203	142,473	2,117	91,843	118,978
Italy	16	1,252	1,275	195	8,755	13,633
Korea, Republic of	758	32,098	44,580	646	24,735	35,395
Malta[5]	6	506	748	--	--	--
Mexico[6]	57	3,762	4,887	325	18,204	25,576
Norway	--	--	--	8	410	485
Portugal	34	3,236	3,333	89	7,285	7,968
Spain	239	11,389	15,353	503	21,535	34,546
Sweden	321	16,628	22,372	270	14,482	20,293
Taiwan	345	18,677	25,490	305	16,007	21,772
Trinidad and Tobago	3	316	318	--	--	--
Turkey[5]	765	33,432	47,351	862	39,867	57,019
Other [6 countries and (or) localities]	(7)	2	3	(7)	22	22
Total[6, 8, 9]	10,131	598,163	705,650	10,493 [4]	655,705 [4]	788,856 [4]
Puerto Rico:						
Dominican Republic	(7)	11	11	8	683	843
Greece	--	--	--	75	4,818	6,167
Spain	101	5,790	7,427	--	--	--
Total[8, 9]	101	5,802	7,439	83	5,501	7,010
Grand total[6, 8, 9]	10,232	603,965	713,089	10,576 [4]	661,207 [4]	795,866 [4]

-- Zero.

[1]Table includes data available through January 2, 2020. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Adjusted by the U.S. Geological Survey to credit 27,816 metric tons of portland cement from China, with a customs value of $1,043,100 and a c.i.f. value of $1,068,000 that was misreported by the importer as sand.

[5]Malta has no cement plants; material is thought to be from Turkey.

[6]Data are underreported with respect to imports into the El Paso, TX, customs district owing to additional material coming in as "informal entries."

[7]Less than ½ unit.

[8]Total imports do not include gray portland cement that was misregistered by importers under the white cement tariff code; these quantities are included in table 20.

[9]Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 20
U.S. IMPORTS FOR CONSUMPTION OF WHITE CEMENT, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3, 4]	Quantity	Customs[2]	C.i.f.[3, 4]
Canada	343	44,017	45,102	293	37,547	38,558
China	46	4,958	6,667	36	3,912	5,230
Denmark	159	20,111	26,630	190	22,453	30,730
Egypt	86	9,319	12,544	182	19,546	26,332
Germany	1	7	7	(5)	9	10
Malta[6]	7	746	1,006	5	549	551
Mexico	315	30,348	32,057	277	29,863	30,785
Norway	8	395	685	--	--	--
Spain	115	12,271	15,478	95	9,927	12,481
Thailand	18	1,963	2,682	17	2,012	2,932
Turkey[6]	157	14,124	20,596	173	15,759	24,759
Other [5 countries and (or) localities]	(5)	52 r	62 r	--	--	--
Total[7]	1,254	138,312	163,517	1,268	141,576	172,367
Puerto Rico:						
Mexico	14	1,708	2,179	10	1,215	1,571
Portugal	7	1,018	1,242	(5)	62	86
Other [2 countries and (or) localities]	(5)	14	23	--	--	--
Total[7]	21	2,740	3,443	10	1,277	1,657
Grand total[7]	1,275	141,052	166,961	1,278	142,853	174,024

[r]Revised. -- Zero.
[1]Table includes data available through January 2, 2020. Data are unrounded but are thought to be accurate to no more than three significant digits.
[2]The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.
[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.
[4]Values of less than $100.00 (c.i.f.) per metric ton likely indicate the mistaken total or partial inclusion of data for gray portland or similar cement or clinker. This error happens when the importer records the wrong tariff number with the U.S. Customs and Border Protection. Values that exceed $200 per ton likely indicate misidentified specialty cement, not white cement.
[5]Less than ½ unit.
[6]Malta has no cement plants; material is thought to be from Turkey.
[7]Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 21
U.S. IMPORTS FOR CONSUMPTION OF CLINKER, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons and thousand dollars)

Country or locality	2016			2017		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Canada[4]	672	30,787	31,151	673	52,468	52,791
China	4	484	583	5	701	803
Croatia	(5)	7	10	--	--	--
Egypt	--	--	--	(5)	48	65
France	--	--	--	72	24,833	24,877
Greece	112	4,813	4,838	104	5,686	5,686
Italy	(5) [6]	2 [6]	2 [6]	--	--	--
Spain	32 [7]	1,682 [7]	1,732 [7]	--	--	--
Turkey	675	25,359	26,265	355	17,053	18,834
Other [5 countries and (or) localities]	(5)	44	72	--	--	--
Total[4, 8]	1,496 [6, 7]	63,178 [6, 7]	64,654 [6, 7]	1,209	100,789	103,056
Puerto Rico:						
Dominican Republic	--	--	--	7	475	475
Spain	70	2,748	3,377	--	--	--
Total[8]	70	2,748	3,377	7	475	475
Grand total[4, 8]	1,565 [6, 7]	65,926 [6, 7]	68,031 [6, 7]	1,217	101,264	103,531

-- Zero.

[1]Table includes data available through January 2, 2020. Data are unrounded but are thought to be accurate to no more than three significant digits. For all types of hydraulic cement. Excludes Puerto Rico, which had no imports of clinker for the years shown.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Data are underreported with respect to additional material coming in as "informal entries."

[5]Less than ½ unit.

[6]Adjusted by the U.S. Geological Survey to debit 61,493 metric tons of granulated blast furnace slag, with a customs value of $910,096 and a c.i.f. value of $930,096 that was misreported by the importer as clinker.

[7]Adjusted by the U.S. Geological Survey to debit 58,707 metric tons of granulated blast furnace slag, with a customs value of $950,053 and a c.i.f. value of $971,053 that was misreported by the importer as clinker.

[8]Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 22
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Thousand metric tons)

Country or locality	2013	2014	2015	2016	2017
Afghanistan	52	87	70	101	180
Albania	2,000	1,740	1,980	2,000 e	2,000 e
Algeria	18,500 e	21,000 e	23,000 e	23,000	26,900 e
Angola[e]	4,000	5,100	5,200	5,000	5,000
Argentina	11,892	11,408	11,000 e	11,000 e	11,000 e
Armenia	431	422	417	267 r	356
Australia[e]	8,400	9,000	9,500 r	9,600 r	9,700
Austria	4,385	4,400 r	4,810 r	4,600 e	4,600 e
Azerbaijan	2,296	2,941	2,683	2,310	2,955
Bahrain[e]	1,300	1,300	1,300	1,400	1,500
Bangladesh[3]	16,780	17,000 e	28,000 r, e	32,000 r, e	28,000 e
Barbados	160	160 e	160 e	160 e	160 e
Belarus	5,057	5,617	4,638	4,503	4,490
Belgium	6,119	6,364 r	6,275 r	6,255 r	6,380 e
Benin	1,422	1,396	1,382 r	1,356 r	1,360 e
Bhutan	570	690	791	940	894
Bolivia	3,061	3,337	3,468	3,601	3,611
Bosnia and Herzegovina	882	840	808	841	910
Botswana	15	15	15	15	15
Brazil	69,975	71,254	65,283	57,476 r	54,004
Brunei[e]	340	240	230	230	230
Bulgaria	1,812	1,785	2,114	1,994	2,117
Burkina Faso	580	403	263	300 e	300
Burma[4]	1,121	1,317	989 r	2,520 r	2,430 e
Burundi[e]	100	70	100	100	45
Cambodia	1,060	1,400	1,700 r, e	2,100 r, e	2,200 e
Cameroon	1,400 e	1,300	1,600	2,600 e	2,600 e
Canada	11,611	11,879	12,167	11,870	12,710
Chad[e]	180	200	200	200	250
Chile[e]	4,880	4,200 r	4,300 r	4,200 r	4,200
China	2,411,000	2,492,000	2,359,000	2,410,000	2,331,000
Colombia	11,252	12,384	13,153	12,495	12,500 e
Congo (Brazzaville)	250	460 e	700 e	950 e	1,050 e
Congo (Kinshasa)	447	330	399	253 r	900
Costa Rica	1,460 e	1,500 e	1,600 e	1,600	1,800 e
Côte d'Ivoire[e]	2,300 e	2,690	3,100	3,600	3,600 e
Croatia	2,333 r	2,359 r	2,340 r	2,267 r	2,490 e
Cuba	1,659	1,580	1,518	1,493	1,431
Cyprus	855	735	788	1,019 r	1,319
Czechia	3,211	3,511	3,781	3,937	4,043
Denmark	1,830	1,876	2,023 r	2,260 r	2,360
Djibouti[e]	150	170	180	180	180
Dominican Republic	4,246	5,018	5,181	5,171	5,254
Ecuador[e]	6,670	6,600	6,200 r	5,600	5,700
Egypt	50,000 e	52,080	53,940	55,000	53,000
El Salvador[e]	1,200	1,000	1,000	1,000	1,000
Eritrea	230	230 r, e	200 e	200 e	210 e
Estonia	457	447	390	399 r	503
Ethiopia[5]	4,493	5,424	7,500 e	8,300 e	9,000 e
Fiji	181	188	204	219 r	141
Finland[e]	1,300	1,250	1,300	1,300	1,300
France	18,018	16,400	15,600	15,900 r	16,000 e
French Guiana	94 e	87	76	91 r	80
Gabon	170 e	170 e	150 e	-- r	--
Georgia	1,619	1,626	1,759	1,809	1,800 e
Germany	31,308	32,099	31,150 r	32,737 r	33,991
Ghana	4,500 e	4,500 e	3,830	4,000 e	3,800 e
Greece	5,283 r	5,105 r	5,289 r	6,540 r	6,246
Guadeloupe[e]	300	300	300	300	300

See footnotes at end of table.

TABLE 22—Continued
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Thousand metric tons)

Country or locality	2013	2014	2015	2016	2017
Guatemala	2,970	3,500 e	3,500 e	3,600 r, e	3,700 e
Guinea	377	435	500 e	500	500 e
Guyana	--	2 e	100 e	400 e	400
Haiti[e]	100	200	200	200	200
Honduras[e]	1,700	1,700	1,700	1,700	1,700
Hong Kong	1,768	1,900 e	1,900 e	1,900 e	1,900 e
Hungary	1,350 r	1,530 r, e	1,570 r, e	1,280 r, e	1,660 e
India	231,000 r	240,000 r	260,000 r	280,000 r, e	281,000 e
Indonesia	56,690	56,760	59,850	62,000 e	65,000 e
Iran	68,700	66,700	58,600	55,000 e	55,000 e
Iraq[e]	12,000	9,000	10,000	10,000	10,000
Ireland[e]	2,000	2,000	2,500	2,500	2,500
Israel	6,398	6,603	6,904	7,150 r	6,361
Italy	23,100	21,400	21,000 r, e	19,300 r	20,000 e
Jamaica	825	830	808	911	910 e
Japan	57,962	57,913	54,827	53,255	55,195
Jordan	4,200	4,400	4,500	4,800	5,060 e
Kazakhstan	7,072	8,140	8,729	9,204	9,398
Kenya	5,059	5,883	6,353	6,715 r	6,163
Korea, North	6,600	6,680 r	6,700 r	7,080 r	6,840
Korea, Republic of	47,291	47,048	52,044	56,747 r	56,500 e
Kosovo[e]	560	480 r	590	710	840
Kuwait[e]	3,000	3,800	4,200	4,200 r	4,200
Kyrgyzstan	1,676	1,730	1,496	1,302 r	1,503
Laos	2,156 r	2,201 r	3,099 r	3,398 r	3,870 e
Latvia	1,000 e	1,100 e	1,100	1,000 r, e	500 e
Lebanon	5,831	5,517	5,043 r	5,247 r	5,149
Liberia	194	295	298	241	285
Libya	2,000 e	7,000	5,000	4,300 e	5,650 e
Lithuania	1,070	903	980	1,010	1,023
Luxembourg	1,093 r	1,058 r	1,080	1,100 e	1,100 e
Macau	580	590 e	600 e	-- r	--
Macedonia	730	660	672	855 r	901
Madagascar	230	240 e	240 e	240 e	240 e
Malawi	230	270	280	420 r, e	420 e
Malaysia	22,860 r	24,280 r	24,710 r	22,330 r	22,000 e
Mali	440	660	630	630 e	630 e
Martinique[e]	150	150	150	150	150
Mauritania	690	870	860	880	901
Mexico	34,612	36,597	39,613	40,577 r	41,601
Moldova	1,150	1,220 r, e	1,045 r	975 r	1,116
Mongolia	259	411	410	432 r	675
Morocco	16,870	15,700 e	16,100 r, e	15,800 r, e	16,400 e
Mozambique	1,299 [6]	1,512 [6]	1,585 [6]	2,446 r	2,350
Namibia	662	731	796	778 r	780 e
Nepal[e]	2,990	3,100	3,900 r	4,500 r	4,900
Netherlands	2,050	2,610	2,260	2,260 r, e	2,300 e
New Caledonia	119	106	112	112 r	104
New Zealand[e]	1,200	1,100	1,200	900	360
Nicaragua[e]	650	700	700	700	900
Niger	29	21	51	51 e	51 e
Nigeria[e]	20,000	20,000	21,000	22,000	19,000
Norway	1,700	1,700 e	1,800 e	1,850 e	1,900 e
Oman	5,800	5,100 e	5,300 e	5,500 r, e	5,300 e
Pakistan	31,460	31,960	33,232 r	37,020	38,900
Panama[e]	2,370 r	2,190	2,200	2,200	1,900
Papua New Guinea[e]	200	200	200	200	200
Paraguay[e]	960	1,000	1,200	1,300 r	1,400
Peru	10,527	10,676	10,410	10,094	9,980

See footnotes at end of table.

TABLE 22—Continued
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Thousand metric tons)

Country or locality	2013	2014	2015	2016	2017
Philippines	20,150	21,305	24,050	25,000 e	26,000 e
Poland	14,539	15,534	15,206	15,782 r	17,230
Portugal	5,000 e	5,400 r	5,600 e	4,200 e	4,720 e
Qatar	5,335	6,500 e	6,500 e	6,500 e	6,500 e
Reunion[e]	400	350	250	250	300
Romania	7,451	7,621	8,356	8,038	8,509
Russia	66,503	69,139	62,104	54,935 r	54,678
Rwanda[e]	130	140	180 r	350 r	390
Saudi Arabia	56,238	57,223	61,900	55,943 r	47,134
Senegal	5,191	4,899	4,615	5,149 r	5,197
Serbia	1,592	1,605	1,654	1,801	1,908
Sierra Leone	313	336	324	320 e	324 e
Slovakia	3,121	3,319	3,466	3,518	3,782
Slovenia	614	706	600 e	700 e	660 e
South Africa	12,168	12,068	12,992 r	13,000	14,000 e
Spain	13,736	14,587	15,000 e	15,000 e	14,500
Sri Lanka	1,929	1,885	2,287	2,695	2,819
Sudan	3,538	3,478	3,708	4,013	4,326
Suriname[e]	131	130 r	160 r	150	150
Sweden[e]	2,560	2,500	2,800	2,800	2,800
Switzerland	4,740	4,790	4,390	4,710 r	4,500
Syria	4,000 e	3,800	4,000	2,000	2,000 e
Taiwan	16,554	14,592	13,445	12,126	10,876
Tajikistan	384	1,150	1,418	1,361	3,100
Tanzania	2,346	2,809	3,140 r, e	4,071 r	4,200
Thailand	35,854	36,150 r	36,216	39,940	33,587
Togo[7]	1,800 e	1,700 e	1,500	1,500 e	1,500 e
Trinidad and Tobago	802	837	840	721 r	670
Tunisia, portland:					
Grey	6,964	8,676	9,089	8,495	7,650
White	540	451	418	532	403
Total	7,504	9,127	9,516	9,028	8,053
Turkey	71,337	71,239	71,419	75,403	80,552
Turkmenistan	2,650	2,900 e	3,300 e	3,500 e	3,600 e
Uganda	2,023	2,141	2,340	2,494	2,498
Ukraine	9,857	8,636	8,511	9,023	9,003
United Arab Emirates[e]	15,700 r	16,000 r	20,000	22,000 r	23,000
United Kingdom	8,203	8,958	9,600	9,400 r, e	9,500 e
United States[7]	77,415	83,124	84,940	85,153	86,799
Uruguay	850 e	820 e	730 e	740	817
Uzbekistan	6,990	7,350	7,900 e	8,300 e	8,490
Venezuela	8,846	7,940	8,210	7,300 r, e	8,030 e
Vietnam	57,516	60,982	67,645 r	74,457 r	78,843
Yemen	3,300	3,100 e	3,100 e	2,400 e	2,000 e
Zambia[e]	1,810	1,900 r	1,800 r	2,000 r	2,100
Zimbabwe	1,190 e	1,300 e	1,300 e	1,500 e	1,750
Grand total	4,030,000 r	4,150,000 r	4,070,000 r	4,150,000 r	4,080,000

[e]Estimated. [r]Revised. -- Zero.

[1]Table includes data available through March 12, 2019. All data are reported unless otherwise noted. Grand totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Even where presented unrounded, reported data are thought to be accurate to no more than three significant digits. Data are from a variety of sources, including the European Cement Association. Data may include clinker exports for some countries and (or) localities.

[3]Production is based on a fiscal year with a starting date of July 1 of the year listed.

[4]Production is based on a fiscal year with a starting date of April 1 of the year listed.

[5]Production is based on a fiscal year with an ending date of July 7 of the year listed.

[6]Cement sales from Cimentos de Moçambiqu SARL (Sociedade Anónima de Responsabilidade Limitada) only.

[7]Portland and masonry cements only. Includes a small (less than 0.3% per year) component of double counting where portland cement (not clinker) is consumed to make masonry cement; the exact quantity of double counting is unknown owing to cement stockpiles.