

CEMENT

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: Production of portland cement in 2017 in the United States increased slightly to about 83.5 million tons, and output of masonry cement was stagnant at 2.4 million tons. Cement was produced at 98 plants in 34 States, plus at 2 plants in Puerto Rico. Overall U.S. cement production continued to be well below the record level of 99 million tons reported in 2005, reflecting continued full-time idle status at a few plants, underutilized capacity at most others, production disruptions from plant upgrades, plant closures over the interim, and relatively inexpensive imports in some recent years. Sales of cement increased modestly in 2017. Overall, sales were 31.5 million tons lower than the record volume set in 2005. The overall value of sales was about \$12.4 billion. Most of the sales of cement were to make concrete, worth at least \$65 billion. In recent years, about 70% to 75% of cement sales have been to ready-mixed concrete producers, 8% to 10% to contractors (mainly road paving; much contractor work also involves ready-mixed concrete), about 10% to concrete product manufacturers, and 7% to 10% to other customer types. Texas, California, Missouri, Florida, and Pennsylvania were, in descending order, the five leading cement-producing States and accounted for nearly 50% of U.S. production.

Salient Statistics—United States: ¹	2013	2014	2015	2016	2017^e
Production:					
Portland and masonry cement ²	76,804	82,600	84,405	^e 84,500	85,900
Clinker	69,420	74,372	76,043	75,332	75,300
Shipments to final customers, includes exports	83,187	90,070	93,276	95,179	96,900
Imports of hydraulic cement for consumption	6,289	7,584	10,376	11,742	12,000
Imports of clinker for consumption	806	720	879	1,496	1,200
Exports of hydraulic cement and clinker	1,670	1,397	1,543	1,283	1,100
Consumption, apparent ³	81,800	89,200	92,100	^e 94,200	96,800
Price, average mill value, dollars per ton	95.00	100.50	106.50	^e 111.00	113.00
Stocks, cement, yearend	6,570	6,140	7,230	^e 8,000	8,000
Employment, mine and mill, number ^e	10,300	10,000	10,000	9,500	9,000
Net import reliance ⁴ as a percentage of apparent consumption	7	8	11	13	13

Recycling: Cement kiln dust is routinely recycled to the kilns, which also can make use of a variety of waste fuels and recycled raw materials such as slags and fly ash. Various secondary materials can be incorporated as supplementary cementitious materials (SCMs) in blended cements and in the cement paste in concrete. Cement is not directly recycled, but significant quantities of concrete are recycled for use as construction aggregate.

Import Sources (2013–16):⁵ Canada, 41%; Greece, 14%; Republic of Korea, 13%; China, 12%; and other, 20%.

Tariff: Item	Number	Normal Trade Relations 12–31–17
Cement clinker	2523.10.0000	Free.
White portland cement	2523.21.0000	Free.
Other portland cement	2523.29.0000	Free.
Aluminous cement	2523.30.0000	Free.
Other hydraulic cement	2523.90.0000	Free.

Depletion Allowance: Not applicable. Certain raw materials for cement production have depletion allowances.

Government Stockpile: None.

Events, Trends, and Issues: On a year-on-year basis, monthly sales of cement in 2017 were highly erratic, with an overall increase for the year of less than 2%. Although construction expenditures were higher during the year in the residential and nonresidential sectors, those for public sector construction continued a multiyear decline. Sales for oil well drilling benefitted from higher crude oil prices, especially in Texas. Hurricanes disrupted construction activities (hence cement sales) in several States, especially Texas, Florida, and Puerto Rico; Texas and Florida traditionally rank first and third, respectively, among the States in total cement sales. Production of cement remained well below capacity, with some multikiln plants continuing to rely primarily on a single kiln during the year. Unlike sales growth in 2013–15, when much of the increase was of imported cement, imports were stagnant in 2017 and the growth in sales was largely supplied by higher domestic production. Production remained well below full capacity levels, in part reflecting technical and environmental issues in returning long-idle kilns to full production at some plants.

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The trend of company mergers and individual plant sales that had characterized the previous 2 years continued in 2017. Early in the year, a foreign-owned cement plant in Ohio was sold to a domestic cement company. Later in the year, it was announced that the largest remaining domestically owned cement company would be sold to a European company, with the sale expected to close at yearend or early in 2018. The sale involved eight cement plants, accounting for about 7% of total U.S. production capacity. Shortly after the announcement of this sale, the same European company announced that it would buy a foreign-owned cement plant in northern Florida.

Plant upgrades to precalciner dry kiln technology were completed at one plant in Oklahoma and one in New York. These upgrades, and some others underway, were expected to improve the ability of individual plants to comply with the stringent emissions limits of the 2010 National Emissions Standards for Hazardous Air Pollutants (NESHAP) protocol for cement plants, which went into effect in September 2015. Many plants have installed emissions-reduction technologies to comply with the NESHAP, but it remained unclear if such modifications would be economic at all plants or for all individual kilns (some being of older technology) at multikiln plants. It remained possible that some kilns would be shut down, or used only sparingly, in light of the NESHAP limits, and thus constrain U.S. clinker production capacity.

World Production and Capacity:

	Cement production ^e		Clinker capacity ^e	
	2016	2017	2016	2017
United States (includes Puerto Rico)	85,000	86,300	107,000	109,000
Brazil	57,000	54,000	60,000	60,000
China	2,400,000	2,400,000	2,000,000	2,000,000
Egypt	55,000	58,000	46,000	48,000
India	280,000	270,000	280,000	280,000
Indonesia	63,000	66,000	78,000	78,000
Iran	55,000	56,000	79,000	80,000
Japan	53,300	53,000	53,000	53,000
Korea, Republic of	57,000	59,000	50,000	50,000
Russia	56,000	58,000	80,000	80,000
Saudi Arabia	62,000	63,000	75,000	75,000
Turkey	75,400	77,000	80,000	82,000
Vietnam	77,300	78,000	90,000	90,000
Other countries (rounded)	<u>724,000</u>	<u>750,000</u>	<u>625,000</u>	<u>721,000</u>
World total (rounded)	4,100,000	4,100,000	3,700,000	3,800,000

World Resources: Although reserves at individual plants are subject to exhaustion, limestone and other cement raw materials are geologically widespread and abundant, and overall shortages are unlikely in the future.

Substitutes: Most portland cement is used to make concrete, mortars, or stuccos, and competes in the construction sector with concrete substitutes, such as aluminum, asphalt, clay brick, fiberglass, glass, gypsum (plaster), steel, stone, and wood. A number of materials, especially fly ash and ground granulated blast furnace slag, develop good hydraulic cementitious properties by reacting with lime, such as that released by the hydration of portland cement. Where readily available (including as imports), these SCMs are increasingly being used as partial substitutes for portland cement in many concrete applications, and are components of finished blended cements.

^eEstimated.

¹Portland plus masonry cement unless otherwise noted; excludes Puerto Rico unless otherwise noted.

²Includes cement made from imported clinker.

³Defined as production of cement (including from imported clinker) + imports (excluding clinker) – exports + adjustments for stock changes.

⁴Defined as imports (cement and clinker) – exports.

⁵Hydraulic cement and clinker; includes imports into Puerto Rico.