

## CEMENT

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2015, domestic production of cement increased slightly to about 80.4 million tons of portland cement and 2.4 million tons of masonry cement; output was from 99 plants in 34 States. Cement also was produced at two plants in Puerto Rico. Production continued to be well below the record level of 99 million tons in 2005, and reflected continued full-time idle status at a few plants, underutilized capacity at many others, and plant closures in recent years. Cement sales increased significantly in 2015, with much of the increase accounted for by imports; overall, sales were still nearly 35 million tons lower than the record volume in 2005. The overall value of sales was about \$9.8 billion. Most of the sales of cement were to make concrete, worth at least \$50 billion. As in recent years, about 70% of cement sales went to ready-mixed concrete producers, 11% to concrete product manufacturers, 8% to contractors (mainly road paving), 4% each to oil and gas well drillers and to building materials dealers, and 3% to others. Texas, California, Missouri, Florida, and Alabama were, in descending order, the five leading cement-producing States and accounted for nearly 50% of U.S. production.

<b>Salient Statistics—United States:</b> <sup>1</sup>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015<sup>e</sup></b>
Production:					
Portland and masonry cement <sup>2</sup>	67,895	74,151	76,804	<sup>e</sup> 82,600	82,800
Clinker	61,241	67,173	69,420	<sup>e</sup> 74,400	75,800
Shipments to final customers, includes exports	73,402	79,951	83,187	90,047	92,700
Imports of hydraulic cement for consumption	5,812	6,107	6,289	7,584	10,000
Imports of clinker for consumption	606	786	806	720	900
Exports of hydraulic cement and clinker	1,414	1,749	1,670	1,397	1,300
Consumption, apparent <sup>3</sup>	72,200	77,900	81,700	<sup>e</sup> 89,200	93,000
Price, average mill value, dollars per ton	89.50	89.50	95.00	<sup>e</sup> 100.50	105.50
Stocks, cement, yearend	6,270	6,900	6,570	<sup>e</sup> 6,150	4,800
Employment, mine and mill, number <sup>e</sup>	11,500	10,500	10,300	10,000	10,000
Net import reliance <sup>4</sup> as a percentage of apparent consumption	7	7	7	8	10

**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 (2011–14):**<sup>5</sup> Canada, 50%; Republic of Korea, 18%; China, 8%; Greece, 7%; and other, 17%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–15</b>
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:** Cement sales continued to increase in 2015 but at a more moderate rate than had originally been expected. Although construction spending levels were generally higher during the year, low oil and gas prices led to a significant drop in exploration and production drilling, as well as reduced demand for general use and oil well cements used for such drilling; this, in turn, significantly reduced overall cement sales in Texas and in a number of other States that had recently been experiencing a boom in drilling. Production of cement remained well below capacity, with some multikiln plants continuing to rely primarily on a single kiln during the year. Much of the growth in cement sales in 2015 was of imported rather than domestic material; this may have reflected technical, economic, and environmental difficulties in restarting long-idle kilns at some plants. Imports resumed at several terminals that had been idle or substantially inactive during the recession, and cement imports came from more countries than in the recent past.

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The merger, announced in 2014, of two of the world's largest cement companies, was completed in 2015. In the United States, both partners were required to sell certain distribution terminals and concrete subsidiaries. In addition, the merger resulted in the sale by one partner of a cement plant in Montana and slag-grinding plants in Indiana and New Jersey, and the other partner sold a cement plant in Iowa. In 2015, a major international company announced its intention to purchase a smaller international company. Both companies operated in the United States, and were it to be approved, the takeover was expected to result in the sale of a cement plant in Indiana, where both companies had facilities, and of a plant in either Maryland or West Virginia, where the two companies had dominant market share. Both companies also owned cement plants in Pennsylvania, but the market there was sufficiently diverse to possibly not require a divestiture. In 2014, a former U.S. cement producer returned to cement making through its purchase of a U.S. cement company. The purchase involved two cement plants in California and two in Texas, and was followed by the sale in 2015 of the larger plant in California to another California producer and the closure of the smaller facility. Production resumed in 2015 at a small plant in Illinois that had been idle since early 2009. No new plants opened in 2015, but upgrades were underway at several plants, including in Maryland, New York, and Texas.

The 2010 National Emissions Standards for Hazardous Air Pollutants (NESHAP) protocol for cement plants went into effect in September 2015; it greatly reduces the acceptable emissions levels of mercury and certain other pollutants. Many plants installed emissions reduction technologies to comply with the NESHAP, but it was unclear if such modifications would be economic at all plants, or for all kilns (some being of older technology) at multikiln plants.

### World Production and Capacity:

	Cement production <sup>e</sup>		Clinker capacity <sup>e</sup>	
	<u>2014</u>	<u>2015</u>	<u>2014</u>	<u>2015</u>
United States (includes Puerto Rico)	83,200	83,400	105,600	106,000
Brazil	72,000	72,000	60,000	60,000
China	2,480,000	2,350,000	2,000,000	2,000,000
Egypt	50,000	55,000	46,000	46,000
Germany	32,000	32,000	31,000	31,000
India	260,000	270,000	280,000	280,000
Indonesia	65,000	65,000	59,000	59,000
Iran	65,000	65,000	78,600	79,000
Italy	22,000	23,000	46,000	46,000
Japan	53,800	55,000	55,000	55,000
Korea, Republic of	63,200	63,000	50,000	50,000
Mexico	35,000	35,000	42,000	42,000
Pakistan	32,000	32,000	44,000	44,000
Russia	68,400	69,000	80,000	80,000
Saudi Arabia	55,000	55,000	55,000	55,000
Thailand	35,000	35,000	50,000	50,000
Turkey	75,000	77,000	69,000	69,000
Vietnam	60,500	61,000	80,000	80,000
Other countries (rounded)	<u>573,000</u>	<u>603,000</u>	<u>369,000</u>	<u>368,000</u>
World total (rounded)	4,180,000	4,100,000	3,600,000	3,600,000

**World Resources:** Although individual plant reserves 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 in making concrete or mortars and competes in the construction sector with concrete substitutes, such as aluminum, asphalt, clay brick, fiberglass, glass, 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 the lime 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.

<sup>e</sup>Estimated.

<sup>1</sup>Portland plus masonry cement unless otherwise noted; excludes Puerto Rico.

<sup>2</sup>Includes cement made from imported clinker.

<sup>3</sup>Production of cement (including from imported clinker) + imports (excluding clinker) – exports + adjustments for stock changes.

<sup>4</sup>Defined as imports (cement and clinker) – exports.

<sup>5</sup>Hydraulic cement and clinker.