CEMENT

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2004, about 90 million tons of portland cement and almost 5 million tons of masonry cement were produced at 114 plants in 37 States and at 2 plants in Puerto Rico. Sales prices increased significantly during the year. The value of cement production, excluding Puerto Rico, was about $8 billion, and the value of total sales (including imported cement) was about $10 billion. Most of the cement was used to make concrete, worth at least $45 billion. Imported cement and clinker (to make cement) accounted for about 20% of the cement sold; total imports rose significantly, owing to very high demand coupled with production shortfalls. Clinker, the main intermediate product in cement manufacture, was produced at 108 plants, with a combined apparent annual capacity of about 101 million tons. Including several facilities that merely ground clinker produced elsewhere, total finished cement (grinding) capacity was about 115 million tons. California, Texas, Pennsylvania, Michigan, Missouri, and Alabama, in descending order, were the six leading producing States and accounted for about one-half of U.S. production. About 75% of cement sales went to ready-mixed concrete producers, 14% to concrete product manufacturers, 6% to contractors (mainly road paving), 3% to building materials dealers, and 2% to other users.

Salient Statistics—United States:[1]	**2000**	**2001**	**2002**	**2003**	**2004**[e]
Production:					
Portland and masonry cement[2]	87,846	88,900	89,732	92,843	95,000
Clinker	78,138	78,451	81,517	81,882	85,000
Shipments to final customers, includes exports	110,048	113,136	108,778	112,927	119,000
Imports of hydraulic cement for consumption	24,561	23,694	22,198	21,015	23,000
Imports of clinker for consumption	3,673	1,782	1,603	1,808	2,000
Exports of hydraulic cement and clinker	738	746	834	837	840
Consumption, apparent[3]	110,470	112,810	110,020	114,100	121,200
Price, average mill value, dollars per ton	78.56	76.50	76.00	75.00	85.00
Stocks, cement, yearend	7,566	6,600	7,680	6,610	2,600
Employment, mine and mill, number[e]	18,000	18,000	18,100	18,100	18,100
Net import reliance[4] as a percentage of apparent consumption	24	21	20	20	23

Recycling: Cement kiln dust is routinely recycled to the kilns, which also can burn a variety of waste fuels and recycled raw materials such as slags and fly ash. Fly ash and granulated blast furnace slag also can be incorporated in blended cements and in the cement paste in concrete. Cement is not directly recycled, but there is a small amount of recycling of concrete for use as aggregate.

Import Sources (2000-03):[5] Canada, 21%; Thailand, 17%; China, 11%; Venezuela, 7%; and other, 44%.

Tariff: Item	**Number**	**Normal Trade Relations 12-31-04**
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: Very low interest rates and continued strong residential construction spending in 2004 offset stagnant private nonresidential and public sector construction spending relative to 2003. Owing to strong cement demand at the beginning of 2004, cement companies were unable to build clinker stockpiles ahead of kiln maintenance shutdowns and, instead, delayed the shutdowns in expectation of a relaxation in cement demand that never came. Exceptionally strong construction demand for cement by late spring could not be satisfied owing to the need to conduct deferred maintenance and an inability to increase imports as much as necessary because of a shortage of ships and significantly higher shipping costs. Shortages and/or rationing of cement (and of concrete) resulted in at least 20 States, but especially in Florida (pre-hurricane season), the Carolinas, and California. Significant price increases happened during the year because of the tight supplies.

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A number of environmental issues, especially its large carbon dioxide emissions, affected the cement industry. Carbon dioxide reduction strategies by the cement industry were aimed at lowering emissions per ton of cement product rather than by plant. These strategies included installation of more fuel-efficient kiln technologies, partial substitution of noncarbonate sources of calcium oxide in the kiln raw materials, and partial substitution of cementitious additives for portland cement in the finished cement products.

Higher fossil fuel costs were of growing concern to the cement industry; stagnant cement prices prior to 2004 made the cost increases difficult to pass on to customers. Some cement companies burn waste materials in their kilns as a low-cost substitute for fossil fuels. Cement kilns can be an effective and benign way of destroying such wastes. The viability of the practice and the type of waste burned hinge on current and future environmental regulations and their associated costs. The trend appears to be toward increased use of waste fuels.

Although supplementary cementitious materials (SCM), such as pozzolans, are little used by cement companies in the United States, there is growing consumption of SCM directly by concrete manufacturers as partial replacements for portland cement. The United States lags behind many foreign countries in this practice. Pozzolans are materials that, in the presence of free lime, have hydraulic cementitious properties; examples include some volcanic ashes and industrial byproducts such as granulated blast furnace slag, fly ash, and silica fume. Inclusion of these materials in concrete mixes can yield performance advantages over straight portland cement concretes for certain applications. Because pozzolans do not require the energy-intensive clinker manufacturing (kiln) phase of cement production, their use reduces the unit monetary and environmental costs of the cement component of concrete.

World Production and Capacity:

	Cement production[e]		Yearend clinker capacity[e]	
	2003	2004	2003	2004
United States (includes Puerto Rico)	[6]94,300	*96,500	[6]102,000	103,000
Brazil	[6]38,000	38,000	45,000	45,000
China	[6]813,000	850,000	750,000	750,000
Egypt	29,100	35,000	35,000	35,000
France	20,000	19,000	22,000	22,000
Germany	30,000	28,000	31,000	31,000
India	110,000	110,000	120,000	130,000
Indonesia	35,000	30,000	50,000	50,000
Iran	30,000	30,000	33,000	35,000
Italy	38,000	38,000	46,000	46,000
Japan	71,000	69,000	78,000	78,000
Korea, Republic of	[6]59,200	60,000	62,000	62,000
Mexico	32,000	35,000	40,000	40,000
Russia	41,000	46,000	65,000	65,000
Saudi Arabia	23,000	25,000	24,000	24,000
Spain	42,000	40,000	40,000	40,000
Thailand	[6]32,500	35,000	49,000	50,000
Turkey	33,000	34,000	35,000	35,000
Other countries (rounded)	380,000	380,000	330,000	350,000
World total (rounded)	1,950,000	2,000,000	1,960,000	2,000,000

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

Substitutes: Virtually all portland cement is used either in making concrete or mortars and, as such, competes in the construction sector with concrete substitutes such as aluminum, asphalt, clay brick, rammed earth, fiberglass, glass, steel, stone, and wood. Pozzolans and similar materials, especially fly ash and ground granulated blast furnace slag, are increasingly being used as partial substitutes for portland cement in some concrete applications.

[e]Estimated. *Corrected on March 14, 2005.

[1]Portland plus masonry cement unless otherwise noted. Excludes Puerto Rico.

[2]Includes cement made from imported clinker.

[3]Production of cement (including from imported clinker) + imports (excluding clinker) – exports – changes in stocks.

[4]Defined as imports (revised to include clinker) – exports + adjustments for Government and industry stock changes.

[5]Hydraulic cement and clinker.

[6]Reported data rounded to three significant digits.