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CEMENT

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CEMENT

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Production, imports, and sales volumes and prices of cement all reached record high levels in 2005. Output of portland and masonry cements in the United States in 2005 rose by 1.9% to 99.3 million metric tons (Mt) (table 1). Production of clinker—the intermediate product in cement manufacturing—increased slightly to 87.4 Mt, also a record. The United States continued to rank third in the world in hydraulic cement production; world output in 2005 was about 2.3 billion metric tons (Gt). Notwithstanding disruptions caused by major hurricanes, sales of cement to domestic customers increased by 5.8% to about 127 Mt. Imports of cement increased by almost 20% to 30.4 Mt. Despite the higher domestic production and import levels, spot shortages of cement continued to be informally reported to the U.S. Geological Survey (USGS), although to a somewhat lower degree than in 2004. The continuing tight cement supplies and rising fuel costs led to large, although regionally variable, price increases (tables 11–12). Overall, the value of cement sales to domestic final customers increased almost 22% to about $11.6 billion (tables 1, 11–12). Based on typical portland cement mixing ratios in concrete, the delivered value of concrete (excluding mortar) in the United States in 2005 was estimated to be at least $51 billion.

Indications of percentage or other changes expressed in this report compare activity in 2005 with that of 2004 unless specified otherwise. Except where otherwise indicated, activity levels in this report exclude those in Puerto Rico. And except for some trade data, the cements covered in this report are limited to those hydraulic varieties broadly classified as portland and/or masonry cement. These cements are the binding agents in concrete and most mortars. Varieties included as portland cement are listed in table 15 and include blended cements[1]. Masonry cements include true masonry cements, portland-lime cements, and plastic cements; currently, the category does not include natural cement for mortar, minor production of which resumed in 2004 after a hiatus of 34 years. Certain other hydraulic cements (most notably aluminous cement) are included in the trade data in tables 16-18 and 21 (clinker) and within the world hydraulic cement production data given in table 22. Excluded from the U.S. data and, to the degree possible, from international data, are pure (unblended) supplementary cementitious materials (SCM) such as fly ash, other pozzolans, and ground granulated blast furnace slag (GGBFS). Although not finished cements in their own right, SCM are in common use as components of blended portland cements or as partial substitutes for portland cement in concrete. Detailed background information on cement and its manufacture is given in van Oss (2005§[2]).

The bulk of this report is based on data compiled from USGS annual questionnaires sent to cement and clinker manufacturing plants and associated distribution facilities and import terminals, some of which are independent of U.S. cement manufacturers. For 2005, forms were received from 146 of 150 facilities canvassed, a response rate of 97%. The responding facilities included all but three production sites and accounted for almost 98% of total cement sales. For 2004, forms were received from 148 of 150 facilities canvassed, a response rate of 99%. For missing or incomplete forms, telephone inquiries were made to obtain data, and 100% reporting of cement and clinker production tonnages was obtained for both years. Background information on the USGS cement canvasses is given in van Oss (2005§).

Legislation and Government Programs

Government economic policies and programs that affect the cement industry are those relating to cement and clinker trade, interest rates, and public sector construction spending. The major trade issue in 2005 continued to be that of antidumping tariffs against Japan and Mexico. For Mexico, the tariff rate in 2005 continued to be based on the 54.9% dumping margin determined by the U.S. Department of Commerce (DOC) for the 13th review period (August 2002 through July 2003) for gray portland cement and clinker. A preliminary determination announced August 31, 2005, for the 14th review period (August 2003 through July 2004) was for a lower, 40.54%, dumping margin, but the determination had not been finalized as of yearend. In any case, owing to widespread reports of cement shortages in 2004 and 2005, and notwithstanding the fact that imports of cement from Mexico in 2005 were already 52% higher than in 2004 and 145% higher than in 2003, there were calls from industry groups and some State Governments (Cement Americas, 2005a) to end or suspend the tariffs to encourage the importation of more cement from Mexico. Negotiations were underway towards this end between the DOC and the Mexican Government, and a resolution to this longstanding trade dispute was expected to be agreed to early in 2006.

The main Federal funding program in recent years relating to construction has been the $216.3 billion Transportation Equity Act for the 21st Century (TEA–21) and temporary funding continuations following its formal expiration in September 2003. Negotiations to reauthorize TEA–21 culminated with the August 10, 2005, signing into law of its replacement, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU). This Act authorized Federal funding of surface transportation projects for the period 2005–09 at a total guaranteed minimum funding level of $244.1 billion for the period.

The major environmental issues relating to cement are associated with the production of clinker. The most significant

[1]Sales data for blended cements (also called composite cements) listed separately from portland cement are available within the monthly cement reports of the USGS Mineral Industry Surveys series, starting with January 1998.

[2]References that include a section mark (§) are found in the Internet References Cited section.

emissions from clinker manufacture are of carbon dioxide (CO_2), slightly more than one-half of which is derived from the calcination of calcium carbonate raw materials, and the rest from the combustion of fuels. Overall, generation of CO_2 by the U.S. cement industry in 2005 amounted to about 84 Mt, or about 0.96 ton CO_2 per ton of clinker; this excluded emissions associated with the utility companies that generated the electricity used by the cement industry. The methodology for this calculation may be found in van Oss and Padovani (2003, p. 123-126). The cement industry was working on ways to reduce the unit emissions of CO_2, such as by encouraging the use of blended cements and of SCM in concrete. Also, the ASTM standard for portland cement was amended in 2004 to allow the incorporation of up to 5% ground limestone in the finished portland cement; this is reflected in the 2005 edition of the standard (ASTM C-150-05). As with adding SCM, this limestone addition potentially allows a commensurate increase to a plant's cement capacity without increasing the unit emissions of CO_2, provided that the limestone available to the plant does not adversely affect the cement quality. Widespread adoption of limestone addition was not expected unless the States' departments of transportation incorporate the practice into the otherwise similar American Association of State Highway and Transportation Officials (AASHTO) standard M85-89.

Production

In 2005, portland cement was produced in 37 States and Puerto Rico by 115 plants (table 3). Of these plants, 73 also produced masonry cement (table 4). Cement producers in the United States ranged widely in size and in the number of plants operated. Ranking companies in terms of output or capacity is difficult because of the existence of some common parent companies and joint ventures. With common parents combined under the larger subsidiary's name and with joint ventures apportioned, the 10 leading companies at yearend 2005 were, in descending order of cement production, Holcim (US) Inc.; Lafarge North America, Inc.; CEMEX, Inc.; Buzzi Unicem USA, Inc. (including Alamo Cement Co.); Lehigh Cement Co.; Ash Grove Cement Co.; Essroc Cement Corp.; Texas Industries Inc. (TXI); California Portland Cement Co.; and St. Marys Cement, Inc. The leading 5 of these had about 56% of total U.S. portland cement production, and the leading 10 together accounted for about 80% of total U.S. production. Of these named companies, all except Ash Grove and TXI were foreign owned as of yearend.

In 2005, output of portland cement increased by 1.6% to a new record of 93.9 Mt (table 3). The reported U.S. overall grinding (or cement) capacity and the capacity utilization percentage increased slightly, but the changes may not be statistically significant owing to issues of capacity data quality. The five leading producing States for portland cement in 2005 were, in descending order of tonnage produced, California, Texas, Pennsylvania, Florida, and Michigan. A majority of districts showed increased production levels. The increase in production in Florida was especially large, reflecting a full year of full capacity output by a plant that had completed a major upgrade in 2004. The large increase in Alabama appears related to a full year's output from a new finish mill installed in 2004 at one plant, and perhaps also the installation of a new clinker cooler at another. The large increase in output in Texas appears to be largely market driven. Elsewhere, the larger increases appear related to a combination of strong markets and technical upgrades at plants. District-level capacity utilization percentages did not change dramatically for most districts. The decline in output and in capacity utilization in the Georgia, Virginia, and West Virginia district appears to be mainly because of greatly reduced output by one plant, owing to the company servicing its customers from more modern plants elsewhere. The large decline in California overall is distributed among many of the plants and appears to be related to a combination of rising fuel costs and an increased availability of imported cement. Yearend stockpiles were up significantly, and this rise appears to reflect a combination of an increased availability of imported cement and disruptions to consumption related to hurricanes Katrina (end of August) and Rita (late September). However, the yearend sample is not indicative of the stockpile fluctuation throughout the year.

Data are not collected on the production of specific varieties of portland cement, but production levels would approximate the ratios among sales, by type, of portland cement (table 15). On this basis, production of Types I and II (or hybrids thereof) accounted for about 77% of total portland cement output in 2005, down from about 78% (revised) in 2004. This apparent relative decline, although small, reflects the growing market for sulfate-resistant cements (Types II and V; and II/V hybrids reported as Type V, and blended cements). Again by analogy to sales, Type V cements accounted for almost 15% of total output, compared with about 14% in 2004, and overall blended cement output was about 2.6% of the total portland cement production in 2005, compared with 1.6% in 2004. Ideally, these ratios should be adjusted for cement imports, which are dominantly of Types I, II, and V.

In 2005, masonry cement production increased by 8.3% to a record 5.4 Mt (table 4), reflecting the continued strong housing market. As in past years, however, this reported figure understates true output, primarily because a large, but unknown, tonnage of masonry cement (especially portland-lime cement) is directly blended at job sites using purchased portland cement and lime. Although not revealed in the tables, about 84% of the 2005 masonry cement production was reported as having been made directly from clinker rather than from finished portland cement. This was a significant decline from the 95% (from clinker) reported in 2004 and recent previous years, and the reason for this change (if not owing to assignation errors by respondents) is unclear.

Clinker production data are listed in table 5. Overall production during the year was a record 87.4 Mt; this, however, was an increase of only 0.9%. Although not apparent from table 5 (shows a single-year only), most districts showed only small changes in clinker output in 2005. Florida showed a significant increase, owing to a major upgrade at one plant the preceding year. A comparable upgrade in South Carolina in 2004 did not result in a large increase in clinker output in 2005 for the State because it was partly offset by production disruptions related to the upgrade of another plant in the State in 2005. A significant decline in production in the Georgia, Virginia, and West Virginia district was in-line with the 2004 closure of the kiln at one Georgia plant (it continued, however, to grind clinker brought in from another State). Other changes to the kiln counts were related to wet-to-dry technology changes (Florida, Maine, and

South Carolina in 2004, and South Carolina in 2005). Because table 5 shows all kilns active for at least 1 day during the year, kiln closures during the current year will not show up until the next year. The closure at yearend of four kilns at one plant in eastern Pennsylvania is thus not visible on the current table.

As with the kiln count, changes to apparent annual capacity and capacity utilization are also affected by plant upgrades. Large apparent capacity declines, but increases in capacity utilization, in Florida and in the Maine and New York district in 2005 merely reflect the replacement of two wet kilns by a dry kiln in Florida in 2004, and the 2004 kiln conversion, and hence replacement of wet kiln capacity by dry capacity, at the plant in Maine. In contrast, the approximately 1.2-million-metric-ton-per-year (Mt/yr) increase in capacity, but very low capacity utilization, in 2005 in South Carolina reflects the replacement of four wet kilns with one dry kiln at one plant during the year; the State's capacity will decline in 2006 accordingly, and the capacity utilization would be expected to increase significantly.

Except for States having new plants, plant shutdowns, or plant upgrades during the current or preceding year, annual variations in district-level apparent annual capacities (a calculated statistic) and capacity utilization rates are difficult to analyze because the statistics are dependent on the reported daily kiln capacities and the correct reporting of kiln downtimes for scheduled maintenance relative to total downtimes. For example, southern California showed a significant (0.2 Mt) decline in clinker output in 2005 and about a 0.3-Mt decline in apparent annual capacity, yet there were no plant closures or significant upgrades during the year, and the overall daily clinker capacity and average days for routine maintenance are essentially identical to those of 2004. The apparent annual capacity decline is because of more days of routine maintenance at a couple of the larger facilities; however, the longer maintenance is invisible on the table because of offsets by shorter maintenance periods at other plants in the district. The apparent annual capacity for the country overall declined by 1 Mt/yr to 102 Mt; this mostly reflects the removal of "artificial" capacity related to kiln conversions. The average capacity utilization increased 2% to 86.0%, but the increase may not be statistically significant. Given that total downtimes commonly exceed the downtimes for routine maintenance, a capacity utilization of about 85% or higher indicates that the plants were operating at full practicable capacity; this was the case in all districts (as noted above, South Carolina's low utilization rate is artificial). Based on the data in table 5, the average plant clinker capacity in 2005 was significantly unchanged at about 0.96 Mt/yr, and average kiln capacity rose slightly to 0.56 Mt/yr.

Yearend clinker stockpiles were about 3.5 Mt, down about 0.2 Mt, but it is unclear if this represents an actual net "operational" drawdown of stocks[3] and hence a proportional increase in availability of clinker for cement manufacture. Including the significant increase in clinker imports in 2005 (table 21), this apparent stockpile drawdown would appear to be in excess of that needed to account for the increase in portland and masonry cement production during the year and, therefore, caution should be used in interpreting yearend stockpile changes.

Nonfuel raw materials consumed to make clinker and cement are listed in table 6. Materials used to make clinker are burned in the kiln and are thus of potential environmental interest. In contrast, materials added in the finish mill are just ground and are associated with only minor, if any, emissions. The total raw materials to make clinker did not change in 2005, and the ratios among raw materials (as contributors of major oxides) appear to be broadly similar to those in 2004. Some classes of raw materials—notably the aluminous, ferrous, and secondary material (for example, ashes and slags) siliceous feeds—appear to have increased in percentage terms much more than the total clinker production increased, but while it is tempting to treat these changes in terms of a single, closed, system (X went up because Y went down), in fact the changes in some of the materials reflect changes at just a few plants. The increases seen in the consumption of SCM (fly ash, GGBFS, natural pozzolans, and other pozzolans) for finished cement are in accord with increases in sales of blended cements (table 15) and increased production of masonry cement (table 4). This may also be true for cement kiln dust (CKD) for cement, although the increase could merely reflect more complete reporting. The increase in ground limestone used to make cement would appear largely to reflect the higher output of masonry cement in 2005 rather than the change to the ASTM C-150 portland cement standard noted earlier.

The tonnages of other blast furnace slag and steel slag consumed to make clinker are in broad accord with sales (to make clinker) collected on the USGS canvass of ferrous slag processors (air-cooled blast furnace slag sales of 0.15 Mt in 2004 and 0.37 Mt in 2005; steel slag sales of 0.50 Mt in 2004 and 0.60 Mt in 2005). A comparison cannot be made for GGBFS, because most of the material sold by slag processors went directly to the concrete industry rather than to cement plants. By comparison to the sales levels for blended cements listed in table 15, the proportion of GGBFS in cement appears to have fallen to about 28% (component) from about 35% in 2004. This decline could be real, or it could represent a change in the amount of slag used as a grinding aid (in straight portland cement) or an increase in the incorporation of slag into masonry cement.

Likewise, relative to sales, the apparent component of fly ash in blended cements was about 42% in 2005, compared with about 22% in 2004. This shift appears to be real. The total fly ash consumption listed in table 6 (3.10 Mt), and that of other ash (1.21 Mt), are significantly higher than the 2.57 Mt of fly ash, 0.85 Mt of bottom ash, and 0.04 Mt of boiler slag reported by the American Coal Ash Association (ACAA) as having been sold in 2005 for cement and/or raw feed for clinker (American Coal Ash Association, 2006); the same held true for 2004. Although the higher tonnages in table 6 could represent material already resident in cement plant raw material stockpiles (i.e., purchased prior to 2004-05), it may be that the ACAA survey contains some distribution problems between material sold to the cement industry itself and material sold to concrete companies, especially where the concrete companies are subsidiaries of cement companies. Within the gypsum consumption tonnages listed in table 6 are 0.29 Mt of synthetic gypsum (also known as flue gas desulfurization or FGD gypsum) consumed in 2004 and 0.530

[3]Yearend stockpiles of clinker are an artifact of data collection convenience rather than a reflection of full-year market conditions or production capacity. Generally, if the clinker is not required for immediate cement market needs, a plant will try to build up its stocks of clinker prior to scheduled extended kiln shutdowns so as to provide continuity of clinker feed to the finish (cement) mill. These shutdowns can be at any time of the year.

Mt in 2005; however, because the USGS canvass does not require a differentiation between natural and synthetic gypsum, these synthetic gypsum tonnages are likely understated. In contrast, the ACAA survey shows sales to the cement industry of 0.41 Mt of FGD gypsum in 2004 and 0.36 Mt in 2005. The higher tonnage within table 6 for 2005 may reflect material already in stock at cement plants, or it may reflect an increase in the number of cement plants having sulfur oxide scrubbing systems.

Fuels consumed by the cement industry are listed in table 7. The quantity ratios among fuels and of fuels to clinker produced in 2005 appear to be broadly similar to those in 2004; specific shifts may be owing to changes at just a few plants. Some of the changes in fuels relative to kiln technology reflect the conversion of certain wet kiln facilities to dry kiln technology (plants undergoing this conversion are considered to be combination plants for the conversion year [denoted as "Both" in table 7] and will be listed with the dry plants the subsequent year). For the industry overall, the only significant fuel change appears to be apparent offset of the large decline in fuel oil consumption by a large increase in the consumption of liquid waste fuels. This reflects the continuing high cost of petroleum, but may in part also reflect changes in categorization of "off-spec" fuel oil (a fairly common fuel).

Although not listed in table 7, overall heat consumption in 2005 was about 4.4 billion joules (GJ)[4] per metric ton of clinker, about 2% lower than in 2004. Wet plants in 2005 averaged about 6.3 GJ per ton of clinker, about 2% higher than in 2004. Dry kiln plants averaged about 4.1 GJ per ton of clinker, about 2% lower than in 2004, and combination plants averaged 4.9 GJ per ton, up by about 5%. The changes primarily reflect conversions of wet to dry kiln technology.

Dry process plants have higher average electricity consumption per ton of cement product than wet process plants (table 8). This reflects the complex array of fans and blowers associated with modern dry kilns and clinker coolers. Declines were seen in average unit electricity consumption for wet and dry plants in 2005, but the consumption average rose significantly for combination plants. These changes reflected the reassignment of two plants (in Florida and Maine), listed within "Both" for 2004, to the dry category for 2005, and the assignment of a South Carolina plant undergoing conversion to the "Both" category for 2005; it had been a wet plant in 2004. Abnormally high unit electricity consumption is common during such conversions. For the same general technology, plants operating multiple kilns almost invariably have higher electrical power (and general energy) requirements per ton of overall output capacity than do plants with the same overall capacity but that operate a single kiln.

There were no plant openings or closures during the year, although Essroc Cement Corp. permanently shut down the kilns at its Nazareth III plant in eastern Pennsylvania at yearend; the facility will continue to operate its finish mill (will be a grinding plant). The company's nearby integrated (clinker and cement) Nazareth I and II facilities remain fully operational.

Although not mentioned in the previous edition of this report nor incorporated in the current report's tables, it is of historical interest to note that there has been limited production of natural cement in the United States since 2004, when production was resumed from raw material quarried at Rosendale, NY. Natural cement was the first cement type to be produced in the United States (1817) and was for many decades in common production, but over the years it was superseded for concrete applications by portland and related cements. Many natural cement plants converted to portland cement production in the early 20th century, and the remaining natural cement production and sales data were included within the masonry cement category. Natural cement was produced at Rosendale during the period 1825-1970, at which time the company there, Century Cement Co., closed; Century had been the last producer in the country. The manufacture of natural cement differs from that of portland cement primarily in two ways. First, natural cement is made by burning only argillaceous limestones ("cement rock") and does not have the artificial mixing of raw materials in the kiln feed (limestone plus clay or shale, etc.) that is almost ubiquitous for portland cement. Second, the processing temperatures in the kiln are lower for natural cement (at least that made in the United States), such that sintering or clinkering does not occur and thus alite or tricalcium silicate (essentially the defining mineral in portland cement) is not formed. In natural cement, the hydraulic reactivity is mainly from a lower-temperature phase called belite or dicalcium silicate (this is also present in portland cement), and possibly heat-activated clay pozzolans. The resumption of natural cement production in 2004 was by Edison Coatings, Inc., which processes Rosendale, NY, cement rock at a small kiln in Plainville, CT. The natural cement is used, primarily, for the restoration of historical buildings originally constructed with natural cement concrete and/or mortar. For this restoration work, the hydration properties of natural cement mortars are considered to be more compatible than mortars incorporating portland-cement-base masonry cements or hydraulic lime (Edison Coatings Inc., 2006§). Although current output of natural cement by Edison is currently only a small fraction of the plant's kiln capacity of about 10,000 tons per year, demand for the product is anticipated to increase. To this end, the company was attempting to reinstate the ASTM C-10 standard for natural cement. This standard was initially adopted in 1904 but was withdrawn in 1974 owing to lack of product availability (Edison, 2006).

On March 1, CEMEX S.A. de C.V. of Monterrey, Mexico, announced that it had completed the purchase of the worldwide assets of RMC Group plc of the United Kingdom (CEMEX S.A. de C.V., 2005a). This purchase included the RMC Pacific Materials, Inc. cement plant in Davenport, CA, and a number of concrete plants, but had the main impact of making CEMEX one of the largest world producers of ready-mixed concrete. Peripherally related to the RMC acquisition, CEMEX announced in November an agreement to sell its Dixon, IL, and Charlevoix, MI, plants, together with a number of terminals servicing the Great Lakes region, to Votorantim Participacões S.A. of Brazil (The sale was completed in March 2005 (CEMEX S.A. de C.V., 2005b). The plants were to be operated under Votorantim's Canadian subsidiary St. Marys Cement, Inc., which already operated grinding plants in Detroit, MI, and Milwaukee, WI, and which was a 50% joint-venture partner in Suwannee American Cement Co. in Branford, FL.

[4]The USGS canvass solicits information on heat consumption in terms of millions of British thermal units (MBtu), where 1 MBtu=1.055056 GJ, and data are based on high or gross heat values of fuels rather than low or net heats.

In January, Lehigh Cement Co. announced the completion of its purchase from Buzzi Unicem of the remaining 50% of Glens Falls Lehigh Cement Co. that Lehigh did not already own (Lehigh Cement Co., 2005). The purchase involved an integrated plant at Glens Falls, NY, and the Cementon grinding plant near Catskill, NY.

In May, Titan America formally inaugurated its new 1.8-Mt/yr dry kiln line at the Pennsuco integrated plant at Medley, FL. The new kiln had been first fired up in mid-2004 and replaced the plant's two wet kiln lines, which were shut later that year (Cement Americas, 2005b).

Following an April denial of a final permit related to waterborne shipping, St. Lawrence Cement Co. (the Canadian subsidiary of Holcim Group of Switzerland) announced that it had abandoned plans to build a 2-Mt/yr greenfields cement plant at Greenport, NY, on a site where the company already operated a large crushed stone quarry. The proposal to build a state-of-the art precalciner kiln plant at the Greenport plant had met with extended local environmental opposition, notwithstanding that it would have replaced the company's very old existing 0.7-Mt/yr wet kiln plant at Catskill, NY (Cement Americas, 2005c).

In March, Eagle Materials Inc. announced plans to upgrade its LaSalle, IL, cement plant through the installation of a precalciner onto its existing preheater kiln. The upgrade will raise the plant's clinker capacity by about 65% to 1.1 Mt/yr. The upgrade was expected to be completed at yearend 2006 (KHD Humboldt Wedag, Inc., 2005).

Giant Cement commissioned its new 1.1-Mt/yr precalciner kiln at Harleyville, SC, at the end of May. The new kiln replaced four wet kilns, totaling about 0.7 Mt/yr, which were permanently shut down during the year (World Cement, 2005).

Buzzi Unicem USA announced in December that it would upgrade its Selma, MO, plant by building a 2.3-Mt/yr precalciner kiln to replace the plant's existing long dry kilns (total capacity 1.3 Mt/yr). It was anticipated that the increased capacity would allow the company to reduce its imports of cement to supply customers along the Mississippi River (Buzzi Unicem SpA, 2005).

Monarch Cement Co. was nearing the completion of its project to install a precalciner on an existing kiln at its Humboldt, KS, plant, which will make that kiln identical in capacity to the company's other kiln, which was similarly upgraded in 2001. The upgrade was expected to be completed in March 2006, and would raise the plant's total capacity to about 1.1 Mt/yr (International Cement Review, 2005).

Texas Industries Inc. announced in April that it would modernize and expand its Oro Grande, CA, plant. The upgrade would replace the plant's existing 7 long dry kilns (total capacity about 1.2 Mt/yr of clinker) with a single precalciner dry kiln of about 2.1 Mt/yr capacity (Texas Industries, Inc., 2005). Currently, the Oro Grande plant produces an excess of clinker, which it then grinds at the company's Crestmore, CA, plant.

Consumption

Apparent consumption of portland and masonry cement rose 5.2% to about 128.3 Mt in 2005 (table 1). Because the data are available monthly from the USGS and show breakouts by State, the measure of consumption preferred by the cement industry for market analysis is that of cement shipments to final domestic customers (that is, sales). The full year summations of the monthly data are provided in table 9. The definition of "final customer" is left to the reporting cement producer but is generally understood to include the customer categories listed in table 14. Consumption measured as sales to final domestic customers increased in 2005 by 5.6% to a record 126.9 Mt.

In some years, significant differences have existed between the U.S. total portland cement sales amounts derived from annual canvasses, as listed in tables 1, 10-11, and 14-16, and the monthly-survey-based totals listed in table 9. The differences likely pertain to shipments (mainly of imported cement) by terminals that were missed by the annual survey but which were captured on the monthly surveys; the monthly surveys contain a lot of data submitted on a company-total rather than site-total basis. Owing to more complete annual canvassing, the tonnage differences for the past 5 years have became insignificant except for 2003 (1.7 Mt). In contrast to portland cement, data for masonry cement have not shown significant discrepancies between the monthly and annual reporting because little of this material is imported.

Superficial similarities between the national totals in table 9 and tables 12-13 hide important differences in their component data. Table 9 reveals the sales destinations and so directly provides the location and amounts of consumption. In contrast, the regional data in tables 11, 12, and 14 pertain to the location of the reporting entity (chiefly the production sites), not the location of consumption. It is very common for shipments to cross State lines.

Based on table 9, domestic portland cement consumption increased by 5.5% to a record 121.4 Mt in 2005 and would likely have been significantly higher had there not been severe disruptions to construction work caused by hurricanes Dennis (July), Katrina (August), Rita (September), and Wilma (October); Katrina also caused severe damage to ship unloading and general transportation infrastructure. Notwithstanding the hurricanes, the only individual months that showed declines in 2005 relative to 2004 were April (minor decline) and July (almost always a weak month). The import component of sales was about 23% of the total in 2005 compared with about 19% in 2004. Only about 11 States had significant declines in consumption in 2005 and almost all major consuming States showed large increases, including those impacted by the hurricanes. The leading 10 consuming States in 2005 were, in descending order, California, Texas, Florida, Arizona, Georgia, Illinois, Ohio, Pennsylvania, New York, and Michigan. The leading 5 States accounted for about 41% of total U.S. consumption, and the leading 10 States accounted for about 56% of the total.

Cement is a key construction material, and although cement consumption levels within a given category of construction will broadly reflect levels of construction spending, significant time lags may exist between the onset or cutoff of spending and changes in the consumption of cement or concrete. Lag times are particularly noticeable in sectors involving individual projects requiring high tonnages of concrete (for example, large office buildings, shopping complexes, and major public sector projects). According to U.S. Census Bureau data quoted by the Portland Cement Association (2006), overall construction spending levels in 2005 rose by 4.2% to about $755 billion

(constant 1996 dollars). As in 2004, this increase was dominated by an increase in overall residential building construction ($424 billion, up by 7.2%), which in turn continued to dominated largely by an increase in single-family housing ($286 billion, up by 8.2%). This spending reflected continued very low mortgage and general interest rates. Nonresidential private construction spending overall reversed a multiyear declining trend by increasing 2.9% to $131 billion; this was led by industrial buildings (up by 23% to $20.4 billion) and office buildings (up by 3.2% to $29.3 billion). Educational and religious buildings were among the few declines during the year, but both are categories of construction that might be expected to show a significant time lag behind housing construction. Public sector construction was about the same as in 2004, $163 billion, and was dominated by buildings ($72.4 billion, down by 1.9%), and roads ($43.4 billion, up by 2.8%); these categories had shown significant spending declines in 2004.

Some of the spending shifts do not accord well with the breakout of portland cement sales by customer type listed in table 14. Sales tonnages to ready-mixed concrete companies (which engage in many types of concrete construction) were up 7.8% in 2005 and sales overall to contractors (a category that tends to overlap ready-mixed concrete) were slightly up (0.5%). Within a 3.7% overall increase in sales to makers of concrete products were declines in sales for brick and block manufacture (down 1.1%) and pipe manufacture (down by 7.3%); at least the brick and block decline would be in contrast to the single-family residential spending increase noted earlier. On the other hand, sales to precast-prestressed product manufacturers were up 5.9%, which would be in accord with the increased spending for private sector nonresidential buildings. However, the miscellaneous and/or unspecified component of concrete product sales went up by 12.6%, and this could indicate less precise reporting in 2005. Among sales to contractors, airport construction tonnages went up by almost 21% in 2005. Sales to road paving companies declined 8.4%, a surprise given the spending level increases noted above, but the tonnage decline could be at least partly because of overlap with the ready-mixed concrete category (which increased). An almost 53% increase in sales tonnages to "Government and miscellaneous" customers may reflect increases in security and military spending. High prices for many metals and for crude petroleum and natural gas during the year spurred increased drilling and mining activity, which were reflected in the 2.8% increase in sales tonnages for "oil well" drilling and the almost 26% increase in sales to the mining industry.

At least some of the poor correlation between overall construction spending and cement consumption levels could be owing to lag times or to changes in use of concrete relative to competing construction materials. For example, increases in the number and average size of new homes being built would be expected to result in more concrete for house foundations, but might not translate to commensurate increases in brick and block consumption if the houses are being constructed of wallboard and plywood, and have vinyl siding, or if it is clay brick being used instead of concrete brick. Single-family construction use of brick and blocks might be especially sensitive to large cement price increases, such as in 2005 (tables 11-13). Overall, the effect of competing materials can be crudely evaluated through use of a calculated "penetration rate" for cement. This can be defined as the tonnage of cement consumed per $1 million in spending and ideally should be done for each type of construction. Changes in penetration rates can reflect cost or performance advantages of concrete over competing construction materials, the specific sizes and types of construction projects, promotional efforts by the concrete industry, shifts in spending between new construction and repairs to existing infrastructure, lag times between construction spending and concrete consumption, and total cement consumption underreported because of partial substitution in concrete mixes of portland cement by other cementitious materials. Using the apparent consumption data in table 1, the overall construction spending data (revised for 2001-04) show a generally increasing trend in penetration rates for 2001–05; $1 million in construction spending bought, in chronological order, about 158 t of cement in 2001; 156 t in 2002; 162 t in 2003; 169 t in 2004; and 170 t in 2005.

Sales to final customers of different types of portland cement are listed in table 15. As in past years, Types I and II cement were dominant, but their relative dominance was declining somewhat in favor of sulfate-resistant varieties of cement (Type V, Type II/V hybrids reported as Type V, and some blended cements). Sales of oil well cements rose by almost 10%, although understate the market somewhat because shallow wells can sometimes be handled with less specialized cements. Blended cement sales were up strongly (almost 70%), especially those varieties containing fly ash; indeed, 2005 was the first year in which blended cement sales exceeded 3 Mt (the USGS monthly data for blended cements suggest that sales were actually about 2.96 Mt, however). The higher sales of blended cement would appear to reflect success in promotional efforts by the cement industry and environmental agencies to gain acceptance for these cements, especially for public sector construction projects, both in environmental terms and in terms of overall concrete strength and durability.

Portland cement shipments by method of transportation are listed in table 10. These data are prone to more reporting errors by survey respondents than most other forms of data, and thus small changes year-to-year may not be real. It is clear from this table that the U.S. market is a bulk cement market. As in past years, truck transportation was by far the dominant form of cement shipping to customers in 2005. The significant drop in overall initial shipments from plant to terminal in 2005 (column 1 of table 10) probably reflects an increased availability of imported cement to the terminals. The reduction in shipments by rail and by barge in this column may also reflect hurricane damage to ship unloading and transfer facilities (particularly in the New Orleans customs district), and to rail infrastructure.

Consumption of masonry cement rose 6.1% to a record 5.5 Mt; this is in accord with the strong housing construction market (table 9). However, given the decline in sales of block cement or sales of portland cement to brick and block makers noted above, the strong masonry cement sales would suggest that clay brick was capturing most of the masonry market related to housing.

Data on the mill net values for shipments to final customers by plants and import terminals (terminal nets) are listed in tables 11-13. Except to differentiate overall gray from white portland cement sales, respondents to the USGS annual canvass do not provide value data broken out by the specific varieties of portland cement sold. Both gray and white sales are included in table

11 and only table 13 provides a white cement value breakout (for the national average). The value data make no distinction between bulk and container (bag or package) shipments; however, container shipments would be expected to have higher unit values. The average mill net value of portland cement in 2005 was about $89.00 per metric ton, up by about $11.00 per ton. The magnitude of the increase in 2005 reflects a combination of cement shortages in 2004-05 and the smaller than expected price increase in 2004 owing to the existence of yearlong contracts. Many of these contracts appear to have been renegotiated in 2005, with the result that many of the reported valuations in 2005 incorporate, in effect, 2 years of price increases. The average mill net for masonry cement rose $9.50 per ton (table 12 and 13), but the amount of the increase should be viewed with caution because the data include a significant component of estimates, and some respondents reported values apparently exclusive of bagging or packaging charges (they are supposed to be included).

The unit values in tables 11 and 12 are free on board (f.o.b.) the plant. A crude estimate of delivery costs to the customer can be made by comparison to the U.S. 20-city average delivered cement prices (for Type-I portland and masonry cements) reported monthly by the journal Engineering News-Record (ENR). For 2005, the average ENR price for Type I portland cement, converted to metric units, was $96.72 per ton, up by only $3.90 per ton. By comparison, the average mill net for gray portland cement was $88.50 per ton, up by $11.50 per ton (table 13). Not only was the ENR price increase surprisingly modest, it suggests a delivery charge component of only $8.22 per ton in 2005, compared with an apparent delivery charge component of $15 per ton in 2004. In the face of very high fuel costs in 2005, it is highly unlikely that delivery charges actually decreased. The ENR price for concrete averaged $84.00 per cubic yard, up by about $6.50 per cubic yard. The ENR price for masonry cement calculates to about $182 per ton, up by about $7 per ton. The large difference between this and the average mill net value (table 13) for masonry appears to incorporate a variety of handling charges for this mainly bagged commodity.

Foreign Trade

Trade data from the U.S. Census Bureau are listed in tables 16-21. Exports of hydraulic cement and clinker increased slightly in 2005 but, except for sales to Canada, remained insignificant (tables 1, 16). Almost all of the exported material was cement. Overall imports of hydraulic cement and clinker in 2005 increased dramatically to a record 33.3 Mt, up 23.1% (table 17) and 13.3% higher than the previous record of 29.4 Mt in 1999. The cement component of these imports (table 17 data minus the clinker data in table 21) increased by an apparent 19.7% to 30.4 Mt, also a new record, and the apparent clinker component of imports increased by 75.3% to 2.9 Mt (table 21). The use of the "apparent" qualifier is deliberate because the trade data for 2003-05 and for an unknown number of recent previous years are incomplete with regards to overland imports from Canada, as discussed below. The clinker data for 2002 and later years have been manually corrected to remove any "clinker" coming into the Honolulu, HI, district; the material was actually gray portland cement incorrectly registered with the tariff code for clinker. The Honolulu data have been transferred to table 20 (gray portland cement).

The data for clinker, and possibly also for cement, imports from Canada are incomplete. For clinker, the official trade data show insufficient clinker from Canada coming into the Detroit, MI; Milwaukee, WI; and Seattle, WA, customs districts to feed the grinding plants that are located in Michigan, Wisconsin, and Washington, respectively. These plants are essentially reliant on Canadian (and, for the Detroit district in 2004-05, Brazilian) clinker and do not purchase significant quantities of domestic clinker. The unreported Canadian clinker appears to be either material that has been given a tariff code for portland cement by mistake by the importer or is clinker coming in by truck, including material that may be transshipped after truck entry into the United States. Because the individual truckloads are worth less than $2,000 (customs value), the shipments are classified as "informal entries," and data on them are not routinely transmitted by the U.S. Customs Service to the U.S. Census Bureau for recordation into the official trade data (reproduced in tables 17-21). This recordation problem presumably does not exist for imports by rail or by barge or ship because these shipments are larger. Clinker imports from Canada have been estimated to be higher than those reported by about 0.6 Mt in 2004 and about 0.5 Mt in 2005 (tables 1, 21). Likewise, certain U.S. cement companies with plants in Canada near the U.S. border may allow some of their U.S. final customers to pick up cement at the Canadian plants. Although these sales, as listed in table 9, are being recorded correctly in the companies' monthly reporting to the USGS, an informal entry data recordation problem could exist for individual truckloads worth less than $2,000; this, however, is unlikely to have been an issue in 2005 because of the much higher cement prices. Given the large volumes of Canadian cement that do get recorded by the U.S. Census Bureau and the fact that the USGS monthly canvass form cannot distinguish the mode of entry of imported cement, the magnitude of the underreporting of cement imports in past years from Canada is difficult to estimate.

The 10 busiest customs districts of entry in 2005 were, in descending order, New Orleans, LA; Tampa, FL; Los Angeles, CA; Houston-Galveston, TX; San Francisco, CA; Miami, FL; Seattle, WA; Detroit, MI; New York, NY; and Charleston, SC (table 18). The 10 leading country suppliers of cement and clinker in 2005 were, in descending order, Canada, China, Thailand, Greece, the Republic of Korea, Venezuela, Mexico, Colombia, Taiwan, and Sweden. The largest increase in imports was from China, up by 2.6 Mt or 123%, but very large tonnage (and percentage) increases were also seen for Greece, Mexico, the Republic of Korea, Peru, and Taiwan. The imports from Asian countries were of especial interest because whereas they once were mainly into Pacific coast ports, they now are heavily present on the Gulf and Atlantic coasts as well. Imports from Mexico were up by 52% from those of 2004, which in turn were up 60% from those of 2003, and the increases were despite ongoing antidumping tariffs.

White cement import data are listed in table 20. Although no attempt has been made to correct the data, it is evident that a few of the country entries, notably entries for Brazil, the Dominican Republic, Greece (2005 only), Switzerland, and Venezuela, have

unit values that are too low to be white cement. It is likely that this relatively inexpensive material is actually gray portland cement or even gray clinker for which a white cement tariff code was recorded by the importer. Some other entries have values that seem slightly low, and these may contain a component of gray portland cement.

Owing to fuel cost increases and some shortages of ships, there were widespread reports in 2004 of substantially higher fuel-related shipping costs for imports as well as steep rises in the chartering rates for cement ships and other bulk carriers. Chartering rates were said to have been mixed in 2005, but ship availability much improved. The difference between the unit customs value and that on a cost, insurance, freight (c.i.f.) basis is a proxy for the shipping cost. For imported gray portland cement in 2004, this difference was $19.66 per ton (up by more than 50% from that in 2003), after deducting the imports (all or mostly overland) from Canada and Mexico. For 2005, the calculation yields a difference of $24.00 per ton, up by 22%. The average c.i.f. price for waterborne imports in 2005 was $67.51 per ton, up 17.7% and the average Customs value was $43.51, up 15.4%. Shipping costs as a percentage of the c.i.f. price averaged 35.6% for waterborne imports in 2005, against 34.3% in 2004.

World Review

World hydraulic cement production data are listed in table 22. Although the data are supposed to include all forms of hydraulic cement, the data for the United States are for portland plus masonry cement only, and the data for some other countries also may be incomplete. The data for some countries may include their exports of clinker.

World cement production increased by about 5% in 2005 to an estimated 2.3 Gt. More than 150 countries produced cement during the year; production was very unevenly distributed. China was once again the overwhelmingly largest producer, with an output for the first time exceeding 1 Gt; this was almost 45% of world output. The large increase in its exports to the United States was only part of a significant rise in total Chinese cement exports; China has become the world's leading cement exporter. The remaining top 15 producing countries were, in descending order, India, the United States, Japan, the Republic of Korea, Spain, Russia, Italy, Turkey, Thailand, Indonesia, Brazil, Mexico, Iran, and Germany. Cumulatively, the top 5 countries had about 61% of total world output; the top 10 countries, about 70%; and the top 15 countries, about 78%.

Regionally, Asia contributed about 65% of world production and included 6 of the 15 leading producing countries. Western Europe had about 9% of total output; North America, about 7%; the Middle East (including Turkey), about 6%; Central America and South America, about 4%; Africa, about 4%; the Commonwealth of Independent States, about 3%; and Eastern Europe, 2%.

Outlook

Interest (including mortgage) rates were expected to rise in 2006, and this was expected to have a significant negative impact on private sector construction, particularly for single-family housing. Because of the work disruptions and damage caused by the hurricanes (especially Katrina) in 2005, repair and catch up construction activity in at least the first quarter of 2006 was expected to be very high, and thus offset some of the housing construction decline in terms of cement consumption. Public sector construction spending, including that for transportation infrastructure, was expected to increase, but the degree was uncertain, including the ultimate degree of repair and restoration activity in the hurricane damaged regions. Overall, cement consumption in 2006 was expected to be 1% to 3% higher than that in 2005, absent unusually severe weather conditions. Although a number of companies had announced capacity expansion plans, this activity was not expected to contribute to clinker production in 2006 by very much, and so import levels were expected to increase to meet any excess demand. Ultimately, increased production capacity was expected to reduce the need for imports in the medium- to long-term. It appeared likely that import duties on imported Mexican cement would be significantly reduced in 2006, but it was unclear to what extent this would result in higher short-term imports (largely brought in by rail) from Mexico, given the already strong increases in imports from Mexico in 2004-05 and the U.S. rail infrastructure having little extra capacity. In any case, it was unlikely that increased Mexican imports would penetrate very far into the United States and so would not significantly alleviate cement shortages in most States.

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TABLE 1
SALIENT CEMENT STATISTICS[1]

(Thousand metric tons and thousand dollars unless otherwise specified)

	2001	2002	2003	2004	2005
United States:[2]					
Production:					
Cement[3]	88,900	89,732	92,843	97,434	99,319
Clinker	78,451	81,517	81,882	86,658	87,405
Shipments from mills and terminals:[4, 5]					
Quantity	112,510	108,500	111,000	120,000	127,000
Value[6]	8,600,000	8,250,000	8,340,000	9,520,000 r	11,600,000
Average value[7] dollars per metric ton	76.50	76.00	75.00	79.50	91.00
Stocks at mills and terminals, yearend	6,600	7,680	6,610	6,710	7,390
Exports of cement and clinker	746	834	837	749 r	766
Imports for consumption:					
Cement[8]	23,694	22,198	21,015	25,396	30,403
Clinker	1,782	1,603	1,808	1,630	2,858
Total[9]	25,474	23,801	22,823	27,026	33,261
Consumption, apparent[10]	112,810	110,020	114,090	121,980 r	128,280
World, production[e, 11]	1,740,000 r	1,850,000	2,030,000 r	2,190,000 r	2,310,000

eEstimated. rRevised.

[1]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 cement produced from imported clinker.

[4]Includes imported cement and cement made from imported clinker. Includes sales by import terminals.

[5]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.

[6]Value at mill or import terminal of cement shipments to final domestic customers.

[7]Total value at mill or import terminal divided by the total tonnage sold.

[8]All forms of hydraulic cement or clinker, respectively.

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

[10]Production (including that from imported clinker) of portland and masonry cement plus imports of hydraulic cement minus exports of cement minus 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.
Chicago, metropolitan	Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will Counties in Illinois.
Illinois	All counties other than those in metropolitan Chicago.
New York, eastern	Delaware, Franklin, Hamilton, Herkimer, Otsego, and all counties farther east and south, excepting 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, Reeves, Reagan, 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 CEMENT PRODUCTION, CAPACITY, AND STOCKS IN THE UNITED STATES, BY DISTRICT[1]

District[5]	2004					2005				
			Capacity[2]					Capacity[2]		
	Active plants	Production[3] (thousand metric tons)	Finish grinding (thousand metric tons)	Percentage utilized[6]	Stocks at yearend[4] (thousand metric tons)	Active plants	Production[3] (thousand metric tons)	Finish grinding (thousand metric tons)	Percentage utilized[6]	Stocks at yearend[4] (thousand metric tons)
Maine and New York	5	3,266	4,569	71.5	167	5	3,241	4,569	70.9	220
Pennsylvania, eastern[7]	7	4,706	5,378	87.5	209 [8]	7	4,715	5,410	87.2	270
Pennsylvania, western	3	1,522	1,704	89.3	105 [8]	3	1,573	1,719	91.5	126 [8]
Illinois	4	3,009	3,388	88.8	263	4	3,237	3,410 [8]	95.0	199 [8]
Indiana	4	3,077	3,723	82.6	253	4	3,058	3,723	82.2	223
Michigan and Wisconsin[9]	6	5,688	7,363	77.3	283	6	5,599	7,330 [8]	76.4	323 [8]
Ohio	2	1,020	1,333	76.6	49	2	986	1,333	74.0	57
Iowa, Nebraska, South Dakota	5	4,257	6,064	70.2	346	5	4,502	6,062	74.3	392
Kansas	4	2,687	3,042	88.3	196	4	2,887	3,110 [8]	92.8	146
Missouri	5	5,263	6,822	77.1	471	5	5,332	7,017	76.0	444
Florida[7]	7	5,232	7,370 [8]	71.0	420	7	5,726	7,301	78.4	537 [8]
Georgia, Virginia, West Virginia	4	2,832	3,847	73.6	168	4	2,370	3,440 [8]	68.9	268
Maryland	3	2,519	2,706	93.1	164	3	2,552	2,706	94.3	146
South Carolina	3	3,114	4,587	67.9	272	3	3,267	5,018	65.1	185
Alabama	5	4,796	5,173	92.7	299	5	5,123	5,948	86.1	270
Kentucky, Mississippi, Tennessee	4	3,232	3,587	90.1	335 [8]	4	3,311	3,679	90.0	304
Arkansas and Oklahoma	4	2,753	3,277	84.0	253	4	2,810	3,280 [8]	85.6	128
Texas, northern[7]	6	6,393	7,400 [8]	86.3	322	6	6,639	7,560 [8]	87.8	803
Texas, southern	5	4,791	5,534	86.6	214 [8]	5	4,916	5,620 [8]	87.5	211
Arizona and New Mexico	3	2,750	3,477	79.1	98	3	2,788	3,480 [8]	80.2	106
Colorado and Wyoming	3	2,706	3,281	82.5	146	3	2,648	3,025	87.5	185
Idaho, Montana, Nevada, Utah	6	2,973	3,770 [8]	78.9	180	6	3,085	3,740 [8]	82.6	203
Alaska and Hawaii	--	--	--	--	65	--	--	--	--	71
California, northern	3	2,656	2,944	90.2	153	3	2,696	2,944	91.6	127 [8]
California, southern[7]	8	9,272	10,500 [8]	88.4	331	8	8,868	10,200 [8]	86.6	217 [8]
Oregon and Washington	4	1,921	2,390	80.4	189 [8]	4	1,974	2,448	80.6	163
Independent importers, n.e.c.[9]	--	--	--	--	315 [8]	--	--	--	--	528 [8]
Total or average[10]	113	92,434	113,000 [8]	81.6	6,270 [8]	113	93,904	114,000 [8]	82.3	6,850 [8]
Puerto Rico	2	1,580	2,462	64.2	43	2	1,584	2,462	64.3	45
Grand total or average[10]	115	94,014	116,000 [8]	81.3	6,310 [8]	115	95,488	117,000 [8]	81.9	6,900 [8]

-- Zero.

[1]Even when presented unrounded, data are thought to be accurate to no more than three significant digits. Includes data for white cement.

[2]Reported grinding capacity is based on fineness needed to produce a plant's normal product mix, including masonry cement, and allowing for downtime for routine maintenance.

[3]Includes cement produced from imported clinker.

[4]Includes imported cement. Includes mills and terminals.

[5]District assignation is the location of the reporting facilities. Includes independent importers for which regional assignations were possible.

[6]Calculated relative to portland cement output.

[7]Data, except for stockpiles, exclude one plant that reported cement (clinker) grinding capacity but reported no production of portland cement.

[8]Data contain estimates for nonrespondent or incompletely reporting facilities.

[9]Not elsewhere classified. Data include only those importers or terminals for which regional assignations were not possible.

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

TABLE 4

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

	2004			2005		
District[4]	Active plants	Production[2] (thousand metric tons)	Stocks at yearend[3] (thousand metric tons)	Active plants	Production[2] (thousand metric tons)	Stocks at yearend[3] (thousand metric tons)
Maine and New York	4	127	20	4	119	18
Pennsylvania, eastern	6	289	37	6	399 [5]	60 [5, 6]
Pennsylvania, western	3	W	W	3	W [5]	W [5]
Indiana	4	W	W	4	555 [7]	72 [7]
Michigan	4	231	32	4	228	46 [5, 6]
Ohio	2	98	18	2	W [7]	W [7]
Iowa, Nebraska, South Dakota	2	W	W	2	W	W
Kansas	2	W	W	2	W	W
Missouri	1	W	W	2	W	W
Florida	5	763	45	5	902	35
Georgia, Virginia, West Virginia	5	419	49	5	543 [8]	51 [8]
Maryland	2	W	W	2	W [8]	W [8]
South Carolina	3	453	7	3	498	26
Alabama	4	430	56	4	475	77
Kentucky, Mississippi, Tennessee	3	W	W	3	W	W
Arkansas and Oklahoma	4	161	15	4	188	18
Texas, northern	4	161	22	5	213	21
Texas, southern	3	158	5 [6]	3	182	13
Arizona and New Mexico	3	W	W	3	W	W
Colorado and Wyoming	2	W	W	2	W	W
Idaho, Montana, Nevada, Utah	--	W	W	1	W	W
Alaska and Hawaii	--	--	--	--	--	--
California, northern	3	81	6	3	67	11
California, southern	4	605	12	4	627	12
Independent importers, n.e.c.[9]	--	--	5 [6]	--	--	4 [6]
Total[10]	73	5,000	441 [6]	76	5,415	532 [6]

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

[1]Includes masonry, portland-lime, and plastic cements. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Includes cement produced from imported clinker.

[3]Includes imported cement.

[4]District assignation is the location of the reporting facilities. Includes independent importers for which regional assignations were possible.

[5]For 2005, western Pennsylvania tonnages are included with eastern Pennsylvania.

[6]Data contain estimates for nonrespondent or incompletely reporting facilities.

[7]For 2005, Ohio tonnages are included with Indiana.

[8]For 2005, Maryland tonnages are included with Georgia, Virginia, and West Virginia.

[9]Not elsewhere classified.

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

TABLE 5

CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2005, BY DISTRICT[1]

District	Active plants[2]				Number of kilns[6]	Daily capacity[3] (thousand metric tons)	Average days of routine maintenance	Apparent annual capacity[4] (thousand metric tons)	Production (thousand metric tons)	Percentage of capacity utilized	Yearend stocks[5] (thousand metric tons)
	Process used										
	Wet	Dry	Both	Total							
Maine and New York	2	2	--	4	5	10.9 [7]	26.6	3,670 [7]	3,072	83.6 [7]	85
Pennsylvania, eastern	2	5	--	7	14	16.3 [7]	24.1	5,430 [7]	4,501	82.9 [7]	177
Pennsylvania, western	2	1	--	3	7	5.2	19.6 [7]	1,800 [7]	1,553	86.1 [7]	48
Illinois	--	4	--	4	8	8.6	14.5	2,980	2,721	91.4	148
Indiana[8]	1	3	--	4	8	10.6	21.1	3,640	3,161	86.8	115
Michigan	1	2	--	3	8	14.2	26.6	4,810	4,111	85.5	443 [7]
Ohio	1	1	--	2	3	3.4	18.3	1,190	1,010	84.7	71
Iowa, Nebraska, South Dakota	--	4	1	5	9	14.0	20.8	4,790	4,093	85.5	173
Kansas	1	3	--	4	9	9.0	20.0	3,130	2,792	89.1	97
Missouri	2	3	--	5	6	15.9	21.1	5,400	4,871	90.3	137
Florida	--	6	--	6	7	18.0	21.7	6,150	5,285	85.9	199
Georgia, Virginia, West Virginia	1	2	--	3	5	8.4	18.6 [7]	2,870 [7]	2,245	78.4 [7]	131
Maryland	1	2	--	3	4	8.1	18.3	2,760	2,458	89.1	79
South Carolina	--	2	1	3	7	14.3	18.4	4,880	3,147	64.5	163
Alabama	--	5	--	5	5	16.6	23.4	5,630	4,884	86.7	82
Kentucky, Mississippi, Tennessee	1	3	--	4	4	10.3 [7]	16.8	3,580 [7]	3,133	87.4 [7]	175
Arkansas and Oklahoma	2	2	--	4	10	8.3	15.7	2,890	2,628	90.9	62
Texas, northern	2	3	1	6	16	20.9	16.5	7,250	6,363	87.8	262
Texas, southern	--	4	1	5	6	13.9	17.4	4,830	4,385	90.8	199
Arizona and New Mexico	--	3	--	3	7	8.6	21.3	2,990	2,604	87.0	91
Colorado and Wyoming	--	3	--	3	4	8.9	19.3	3,030	2,409	79.5	56
Idaho, Montana, Nevada, Utah	3	3	--	6	8	8.4	15.2	2,930	2,797	95.5	24
California, northern	--	3	--	3	3	8.8	18.6	3,060	2,593	84.7	114
California, southern	--	8	--	8	17	29.4	23.2	9,860	8,873	90.0	352
Oregon and Washington	1	2	--	3	3	6.3	36.3	2,060	1,715	83.3	33
Total or average[9]	23	79	4	106	183	297.2 [7]	21.7 [7]	102,000 [7]	87,405	86.0 [7]	3,520 [7]
Puerto Rico	--	2	--	2	2	5.9	21.0 [7]	2,020 [7]	1,378	68.4 [7]	64
Grand total or average[9]	23	81	4	108	185	303.1 [7]	21.7 [7]	104,000 [7]	88,783	85.7 [7]	3,580 [7]

-- Zero.

[1]Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Includes white cement plants. Includes all plants active for at least one day during the year.

[3]Sum of reported daily kiln capacities for each plant in district.

[4]Sum of apparent annual kiln capacities; for each kiln calculated as 365 days (366 in leap years) minus days reported as shut down for routine maintenance and then multiplied by the reported (unrounded) daily capacity.

[5]Includes imported clinker and clinker stockpiles at grinding plants.

[6]Kilns active at least one day during year. Excludes idle kilns (full year) that cannot be restarted, fully permitted, in less than 6 months.

[7]Data contain estimates for nonrespondent or incompletely reporting facilities.

[8]Includes one semidry kiln.

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

TABLE 6

RAW MATERIALS USED IN PRODUCING CLINKER AND CEMENT IN THE UNITED STATES[1, 2]

(Thousand metric tons)

Raw materials	2004		2005	
	Clinker	Cement[3]	Clinker	Cement[3]
Calcareous:				
Limestone (includes aragonite, marble, chalk, coral)	113,000 [r]	1,810	114,000	2,230
Cement rock (includes marl)	12,700	2	11,300	2
Cement kiln dust (CKD)[4]	333	165	334	414
Lime[5]	24	29	9	30
Other	23	19	26	21
Aluminous:				
Clay	4,630 [r]	--	4,790	--
Shale	3,700	29	3,780	30
Other[6]	661	--	721	--
Ferrous, iron ore, pyrites, millscale, other	1,330 [r]	--	1,553	--
Siliceous:			--	--
Sand and calcium silicate	3,150	--	3,010	--
Sandstone, quartzite, soils, other	878	6	950	--
Fly ash	2,890	77	2,950	153
Other ash, including bottom ash	1,050	--	1,210	--
Granulated blast furnace slag[7]	104	345	144	521
Other blast furnace slag	189	--	255	--
Steel slag	401	--	525	--
Other slags	53	--	58	2
Natural rock pozzolans[8]	--	6	--	8
Other pozzolans[9]	114	19	222	62
Other:				
Gypsum and anhydrite	--	5,200 [r]	--	5,370
Other, n.e.c.[10]	106	98	84	108
Total[11]	146,000 [r]	7,810 [r]	146,000	8,940
Clinker, imported, raw materials equivalent[11]	--	4,400 [r]	--	4,750
Grand total[12]	146,000 [r]	12,200 [r]	146,000	13,700

[r]Revised. -- Zero.

[1]Nonfuel raw materials. Excludes Puerto Rico.

[2]Data have been rounded to three significant digits to reflect inherent reporting accuracy and the incorporation of estimates for some facilities.

[3]Includes portland, blended, and masonry cements.

[4]Data are underreported.

[5]Data are probably underreported, especially regarding incorporation within masonry cements.

[6]Includes alumina, aluminum dross, bauxite, catalysts, staurolite, and other materials.

[7]Includes both ground (GGBFS) and unground material.

[8]Includes pozzolana and burned clays and shales except where reported directly as clay or shale.

[9]Includes diatomite, silica fume, other microcrystalline silica, and other pozzolans, whether or not used as such

[10]Not elsewhere classified.

[11]Converted as the weight of foreign clinker consumed times 1.7.

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

TABLE 7

CLINKER PRODUCED AND FUEL CONSUMED BY THE CEMENT INDUSTRY IN THE UNITED STATES, BY PROCESS[1]

		Clinker produced[2]		Fuel consumed					Waste fuel	
Kiln process	Active plants	Quantity (thousand metric tons)	Percentage of total	Coal[3] (thousand metric tons)	Petroleum coke (thousand metric tons)	Oil[4] (thousand liters)	Natural gas (thousand cubic meters)	Tires (thousand metric tons)	Solid (thousand metric tons)	Liquid (thousand liters)
2004:										
Wet	24	14,165	16.3	1,730	584	29,300	36,700	61	38	771,000
Dry	78 [5]	67,160 [5]	77.5 [5]	7,230 [5]	1,600	74,600 [5]	299,000	312	71	186,000 [5]
Both[6]	5	5,333	6.2	700	77	691	60,000	5	16	40,400
Total[7]	107 [5]	86,658 [5]	100.0 [5]	9,660 [5]	2,260	105,000 [5]	396,000	377	125	997,000 [5]
2005:										
Wet	23	11,807	13.5	1,480	586	29,300	22,800	85	9	479,000
Dry	79	70,809	81.0	7,340	1,740	58,000	310,000	315	110	894,000
Both[6]	4	4,790	5.5	679	21	--	62,000	5	10	93,300
Total[7]	106	87,405	100.0	9,490	2,350	87,300	395,000	405	130	1,470,000

-- Zero.

[1]All fuel data have been rounded to three significant digits.

[2]Clinker data were all reported; although unrounded, data are thought to be accurate to no more than three significant digits.

[3]All reported to be bituminous.

[4]Distillate and residual fuel oils; excludes used oils included under liquid wastes.

[5]Revised to exclude Puerto Rico.

[6]Fuel quantities may not represent normal operating conditions owing to the inclusion of plants that were converted from wet to dry technology during the year.

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

TABLE 8

ELECTRIC ENERGY USED AT CEMENT PLANTS IN THE UNITED STATES, BY PROCESS

	Electric energy used[1]						Finished cement produced[3] (thousand metric tons)	Average consumption (kilowatthours per metric ton of cement produced)
	Generated at plant		Purchased		Total			
Plant process	Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Quantity[2] (million kilowatthours)	Percentage		
2004:								
Integrated plants:								
Wet	--	--	24	2,170	2,170	16.1 [4]	15,770	137
Dry	4	456	78 [4]	10,000 [4]	10,500 [4]	77.8 [4]	73,465 [4]	142 [4]
Both[5]	--	--	5	822	822	6.1 [4]	5,642	146
Total or average[2]	4	456	107 [4]	13,000 [4]	13,500 [4]	100.0	94,877 [4]	142
Grinding plants[6]	--	--	6	198	198	--	2,392	83
Exclusions[7]	--	--	2	NA	NA	--	165	NA
2005:								
Integrated plants:								
Wet	--	--	23	1,770	1,770	13.1	13,075	135
Dry	5	486	79	10,400	10,900	80.7	78,423	139
Both[5]	--	--	4	770	770	5.7	5,029	153
Total or average[2]	5	486	106	13,000	13,500	100.0	96,527	139
Grinding plants[6]	--	--	7	214	214	--	2,562	84
Exclusions[7]	--	--	2	NA	NA	--	229	NA

NA Not available. -- Zero.

[1]Electricity data are rounded because they include estimates for a number of nonrespondent plants or incomplete reporting by respondent facilities.

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

[3]Includes portland and masonry cements. Data are all reported and have not been rounded.

[4]Revised to exclude Puerto Rico.

[5]Electricity consumption may not represent normal operating conditions owing to the inclusion of plants that were converted from wet to dry technology during the year.

[6]Excludes plants that reported production only of masonry cement.

[7]Tonnage of cement produced by plants that reported production of masonry cement only.

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

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2004	2005	2004	2005
Destination:				
Alabama	1,643	1,738	172	183
Alaska[3]	175	173	--	--
Arizona	4,117	4,671	113	102
Arkansas	1,173	1,205	83	97
California, northern	5,044	5,377	125	148
California, southern	9,177	9,945	537	540
Colorado	2,440	2,521	30	33
Connecticut[3]	828	799	19	19
Delaware[3]	181	208	13	13
District of Columbia[3]	191	205	(4)	(4)
Florida	9,698	11,233	879	1,052
Georgia	4,109	4,395	354	357
Hawaii	380	431	5	7
Idaho	685	704	1	1
Illinois, excluding Chicago	2,068	2,437	27	28
Illinois, metropolitan Chicago[3]	1,919	1,669	65	70
Indiana	2,238	2,182	97	92
Iowa	1,842	1,933	6	6
Kansas	1,535	1,537	14	11
Kentucky	1,395	1,486	114	117
Louisiana[3]	1,882	1,935	66	65
Maine	234	234	5	5
Maryland	1,542	1,568	91	92
Massachusetts[3]	1,322	1,242	24	22
Michigan	3,175	2,924	146	135
Minnesota[3]	2,077	2,016	47	39
Mississippi	974	1,067	67	69
Missouri	2,623	2,816	49	52
Montana	407	380	1	1
Nebraska	1,308	1,356	9	6
Nevada	2,382	2,602	29	27
New Hampshire[3]	221	229	5	5
New Jersey[3]	2,036	1,964	89	94
New Mexico	940	901	9	8
New York, eastern	663	653	23	19
New York, western[3]	879	817	30	27
New York, metropolitan[3]	1,694	1,681	87	92
North Carolina[3]	2,743	2,900	326	352
North Dakota[3]	402	359	2	2
Ohio	3,999	3,893	191	171
Oklahoma	1,442	1,603	62	71
Oregon	1,119	1,237	1	1
Pennsylvania, eastern	2,230	2,214	73	71
Pennsylvania, western	1,166	1,096	60	56
Rhode Island[3]	178	188	4	3
South Carolina	1,742	1,778	147	166
South Dakota	512	483	2	2
Tennessee	1,875	2,111	256	278
Texas, northern	6,222	6,793	148	164
Texas, southern	6,874	7,680	219	257
Utah	1,373	1,526	(4)	(4)

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	
	2004	2005	2004	2005
Destination—Continued:				
Vermont[3]	144	129	3	3
Virginia	2,478	2,666	189	203
Washington	2,090	2,238	2	2
West Virginia	488	512	29	27
Wisconsin	2,329	2,348	28	25
Wyoming	463	466	(4)	1
Total[5]	115,066	121,448	5,172	5,489
Foreign countries[6]	492	424	1	(4)
Puerto Rico	1,879	1,857	--	--
Grand total[5]	117,435	123,730	5,172	5,489
Origin:				
United States	93,323	94,004	5,115	5,429
Puerto Rico	1,585	1,584	--	--
Foreign countries[7]	22,527	28,142	57	60
Total shipments[5]	117,435	123,730	5,172	5,489

-- Zero.

[1]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. Includes any revisions to monthly data available through August 31, 2005. Although presented unrounded, data are thought to be accurate to no more than three significant digits.

[3]Has no cement plants.

[4]Less than ½ unit.

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

[6]Includes shipments to U.S. possessions and territories.

[7]Imported cement distributed in the United States as reported by domestic producers and other importers. Data do not match the imports calculated from tables 17 and 21.

TABLE 10
SHIPMENTS OF PORTLAND CEMENT FROM MILLS IN THE UNITED STATES,
IN BULK AND IN CONTAINERS, BY TYPE OF CARRIER[1, 2]

(Thousand metric tons)

	Shipments from plant to terminal		Shipments to final domestic consumer				
			From plant to consumer		From terminal to consumer		Total shipments to consumer[4]
	In bulk	In containers[3]	In bulk	In containers[3]	In bulk	In containers[3]	
2004:							
Railroad	13,700	47	1,690	8	456 r	1	2,160 r
Truck	4,210 r	563	60,200 5	1,520 5	49,800 5	790 5	112,000 5
Barge and boat	9,100 r	10	99	--	--	--	99 r
Total[4]	27,000	620	62,000 5	1,530 5	50,300 5	791 5	115,000 5, 6
2005:							
Railroad	12,000	13	1,570	18	488	--	2,080
Truck	3,920	200	62,700	1,940	54,800	723	120,000
Barge and boat	8,970	--	80	--	--	--	80
Total[4]	24,900	214	64,400	1,960	55,200	723	122,000 6

[r]Revised. -- Zero.

[1]Includes imported cement and cement made from imported clinker.

[2]Data are rounded to no more than three significant digits because they include estimates.

[3]Includes packages, bags, and jumbo bags.

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

[5]Revised to exclude Puerto Rico.

[6]Shipments calculated on the basis of 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 BY PRODUCERS AND IMPORTERS IN THE UNITED STATES, BY DISTRICT[1]

District[3, 4]	2004			2005		
		Value[2]			Value[2]	
	Quantity (thousand metric tons)	Total (thousands)	Average (dollars per metric ton)	Quantity (thousand metric tons)	Total (thousands)	Average (dollars per metric ton)
Maine and New York	3,556	$269,944	75.91	3,434	$305,647	89.00
Pennsylvania, eastern	4,830 [5]	363,000 [5]	75.00 [5]	4,686	411,000 [5]	87.50 [5]
Pennsylvania, western	1,535	120,000 [5]	78.00 [5]	1,563	139,204	89.06
Illinois	3,052	235,921	77.31	3,280 [5]	291,000 [5]	88.50 [5]
Indiana	3,013	213,484	70.85	3,141	249,419	79.40
Michigan and Wisconsin	6,611	535,000 [5]	81.00 [5]	6,170 [5]	574,000 [5]	93.00 [5]
Ohio	1,005	81,000 [r, 5]	80.50 [r, 5]	984	89,069	90.48
Iowa, Nebraska, South Dakota	4,802	394,319	82.12	5,151	474,693	92.16
Kansas	2,222	175,000 [5]	79.00 [5]	2,376	200,526	84.41
Missouri	6,058	446,008	73.63	6,281	546,361	86.99
Florida	9,430 [5]	776,000 [5]	82.50 [5]	10,841	982,819	90.65
Georgia, Virginia, West Virginia	2,951	220,030	74.55	3,001	256,000 [5]	85.50 [5]
Maryland	2,733	189,628	69.38	2,842	234,227	82.41
South Carolina	3,491	220,162	63.06	3,827	289,278	75.59
Alabama	4,621	308,181	66.69	5,459	448,929	82.24
Kentucky, Mississippi, Tennessee	3,087	227,798	73.79	3,281	284,667	86.77
Arkansas and Oklahoma	2,658	198,487	74.68	2,998	250,345	83.51
Texas, northern	7,678	559,000 [5]	73.00 [5]	8,096	681,000 [5]	84.00 [5]
Texas, southern	6,270 [5]	435,000 [5]	69.50 [5]	6,674	534,932	80.15
Arizona and New Mexico	3,969	368,314	92.80	4,600 [5]	465,000 [5]	101.00 [5]
Colorado and Wyoming	2,786	206,658	74.19	2,704	237,000 [5]	87.50 [5]
Idaho, Montana, Nevada, Utah	3,245	268,775 [r]	82.82 [r]	3,473	323,457	93.13
Alaska and Hawaii	499	64,680	129.53	560	78,247	139.72
California, northern	4,257	369,806	86.88	4,518	443,260	98.11
California, southern	10,764	881,243	81.87	11,575	1,125,323	97.22
Oregon and Washington	2,690 [5]	207,000 [5]	77.00 [5]	3,040 [5]	268,000 [5]	88.00 [5]
Independent importers, n.e.c.[6, 7]	6,790 [5]	598,000 [5]	88.00 [5]	7,740 [5]	745,000 [5]	96.50 [5]
Total or average[8]	115,000 [5, 9]	8,930,000 [r, 5]	78.00 [5]	122,000 [5, 9]	10,900,000 [5]	89.00 [5]
Puerto Rico	1,868	W	W	1,867	W	W
Grand total[8]	116,000 [5, 9]	W	W	124,000 [5, 9]	W	W

[r]Revised. W Withheld to avoid disclosing company proprietary data.

[1]Includes portland cement (gray and white) and cement produced from imported clinker. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Values represent mill net or ex-plant (free on board plant) valuations of total sales to final customers, including sales from plant distribution terminals. The data are ex-terminal for independent terminals. All varieties of portland cement, and both bag and bulk shipments, are included. Unless otherwise specified, data are presented unrounded but may include cases where value data (only) were missing from survey forms and so were estimated. Accordingly, unrounded value data should be viewed as cement value indicators, good to no better than the nearest $0.50 or even $1.00 per metric ton.

[3]District is the location of the reporting facility, not the location of sales.

[4]Includes shipments by independent importers where regional assignations were possible.

[5]Data are rounded (unit values to the nearest $0.50) because they include estimated data.

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

[7]Not elsewhere classified.

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

[9]Shipments calculated on the basis of an annual survey of plants and importers; may differ from data in table 9, which are based on consolidated company monthly data.

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

District[4]	2004 Quantity (thousand metric tons)	2004 Value[3] Total (thousands)	2004 Value[3] Average (dollars per metric ton)	2005 Quantity (thousand metric tons)	2005 Value[3] Total (thousands)	2005 Value[3] Average (dollars per metric ton)
Maine and New York	122	$12,100 [5]	99.50 [5]	118	$12,751	108.06
Pennsylvania	345	39,767 [5]	115.50 [5]	342 [5]	42,600 [5]	124.50 [5]
Illinois, Indiana, Ohio	532	62,500 [5]	117.50 [5]	536	68,340	127.50
Michigan	255	30,000 [5]	117.50 [5]	232 [5]	28,000 [5]	120.50 [5]
Iowa, Nebraska, South Dakota	35	4,627	132.92	40	3,728	93.20
Kansas and Missouri	154	18,166	118.23	169	21,279	125.91
Florida	775	99,200 [5]	128.00 [5]	945	134,930	142.78
Georgia, Maryland, Virginia, West Virginia	455	66,000 [5]	145.00 [5]	476	75,800 [5]	159.50 [5]
South Carolina	400	44,073	110.06	473	51,539	108.96
Alabama	425	48,875	114.98	500	57,727	115.45
Kentucky, Mississippi, Tennessee	125	15,000	119.73	127	16,364	128.85
Arkansas and Oklahoma	157	16,724	106.61	190	20,508	107.94
Texas, northern	163	22,800 [5]	139.50 [5]	188	26,200 [5]	139.00 [5]
Texas, southern	172	17,111	99.75	186	19,814	106.53
Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming	147	15,513	105.71	156	18,706	119.91
Alaska and Hawaii	4	914	209.44	5	1,234	246.80
California, northern; Oregon; Washington	84	9,710 [5]	115.00 [5]	71	9,060 [5]	127.50 [5]
California, southern	599	57,115	95.30	628	72,178	114.93
Independent importers, n.e.c.[6, 7]	43 [5]	4,910 [5]	114.00 [5]	24 [5]	3,480 [5]	145.00 [5]
Total or average[8]	4,990 [5, 9]	585,000 [5]	117.00 [5]	5,410 [5, 9]	684,000	126.50

[1]Shipments are to final customers and include imported cement and cement made from imported clinker. Data exclude Puerto Rico, which did not record any masonry cement sales. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.
[2]Includes gray, white, and colored varieties of masonry, portland-lime, and plastic cements.
[3]Values represent ex-plant (free on board) valuations of total sales to final customers, including sales from distribution terminals. Even where presented unrounded, data should be viewed as cement value indicators, good to no better than the nearest $0.50 or even $1.00 per metric ton.
[4]District location is that of the reporting facilities, not necessarily the location of sales.
[5]Data are rounded (unit values to the nearest $0.50) because they include estimated data.
[6]Importers for which district assignations were not possible.
[7]Not elsewhere classified.
[8]Data may not add to totals shown because of independent rounding.
[9]Tonnages based on an annual survey of plants and terminals and may differ from the totals in table 9, which represent consolidated monthly surveys of companies.

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

(Dollars per metric ton)

Year	Gray portland cement	White portland cement[3]	All portland cement	Prepared masonry cement	All classes of cement
2004	77.00 [r]	164.00	78.00	117.00	79.50
2005	88.50	176.00	89.00	126.50	91.00

[r]Revised.
[1]Excludes Puerto Rico. Values are the average of sales to final customers, free on board plant or import terminal, less all discounts, allowances, and onward delivery charges to customers or distribution terminals, but inclusive of bagging charges.
[2]Data are rounded to the nearest $0.50 because they include estimates.
[3]The unit values for white cement include a component of resales showing significant price markups.

TABLE 14

PORTLAND CEMENT SHIPMENTS IN 2005, BY DISTRICT AND TYPE OF CUSTOMER[1]

(Thousand metric tons)

District[2, 3]	Ready-mixed concrete	Concrete product manufacturers[4]	Contractors[5]	Building material dealers	Oil well, mining, waste[6]	Government and miscellaneous[7]	Total[8, 9]
Maine and New York	2,710	355	67	254	--	49	3,434
Pennsylvania, eastern	2,880	1,300	145	265	--	98	4,686
Pennsylvania, western	1,100	265	159	1	18	18	1,563
Illinois	2,540	249	147	51	177	119	3,280
Indiana	2,420	457	162	75	11	17	3,141
Michigan and Wisconsin	4,840	744	175	179	44	186	6,170
Ohio	793	151	10	15	1	15	984
Iowa, Nebraska, South Dakota	3,620	605	562	99	95	172	5,151
Kansas	1,860	158	221	85	53	1	2,376
Missouri	5,150	376	621	96	5	38	6,281
Florida	8,010	2,000	176	626	1	27	10,841
Georgia, Virginia, West Virginia	2,140	634	162	38	11	13	3,001
Maryland	2,250	318	141	55	2	79	2,842
South Carolina	2,730	706	256	94	2	40	3,827
Alabama	4,150	686	241	163	16	201	5,459
Kentucky, Mississippi, Tennessee	2,530	514	168	30	17	20	3,281
Arkansas and Oklahoma	2,140	144	461	130	75	44	2,998
Texas, northern	5,160	566	1,120	150	673	428	8,096
Texas, southern	4,530	719	767	152	480	31	6,674
Arizona and New Mexico	3,430	596	259	130	161	144	4,600
Colorado and Wyoming	2,060	299	146	68	111	19	2,704
Idaho, Montana, Nevada, Utah	2,730	243	182	41	230	46	3,473
Alaska and Hawaii	460	66	23	--	6	4	560
California, northern	3,670	462	309	69	3	5	4,518
California, southern	8,150	2,710	266	388	64	2	11,575
Oregon and Washington	2,110	537	180	151	56	9	3,040
Independent importers, n.e.c.[10, 11]	6,190	910	248	223	27	144	7,740
Total[9]	90,300	16,800	7,380	3,630	2,340	1,970	122,000
Puerto Rico	1,100	191	52	525	--	--	1,867
Grand total[9]	91,400	17,000	7,430	4,160	2,340	1,970	124,000

-- Zero.

[1]Includes imported cement and cement ground from imported clinker. Except for district totals, data have been rounded to three significant digits but are likely to be accurate to only two significant digits. District totals are accurate to no more than three significant digits.

[2]District location is that of the reporting facilities and may include sales by them into other districts.

[3]Includes shipments by independent importers for which district assignations were possible.

[4]Grand total shipments to concrete product manufacturers include brick and block—6,320; precast and prestressed—3,790; pipe—2,030; and other or unspecified—4,810.

[5]Grand total shipments to contractors include airport—198; road paving—3,820; soil cement—1,410; and other or unspecified—2,000.

[6]Grand total shipments include oil well drilling—1,850; mining—273; and waste stabilization—121.

[7]Includes shipments for which customer types were not specified.

[8]District totals are not rounded except in accord with the data in table 11.

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

[10]Shipments by independent importers for which district assignations were not possible.

[11]Not elsewhere classified.

TABLE 15
PORTLAND CEMENT SHIPPED FROM PLANTS IN THE UNITED STATES TO DOMESTIC CUSTOMERS, BY TYPE[1, 2]

(Thousand metric tons)

Type	2004	2005
General use and moderate heat (Types I and II) (gray)[3]	90,000 [r]	93,900
High early strength (Type III)	3,820	3,960
Sulfate resisting (Type V)[3]	15,800	18,100
Block	609	555
Oil well	1,310	1,440
White[4]	1,130	1,190
Blended:		
Portland, natural pozzolans	49	40
Portland, granulated blast furnace slag	978	1,880
Portland, fly ash	343	362
Other blended cement[5]	486	883
Total[6]	1,860	3,160
Expansive and regulated fast setting	62	6
Miscellaneous[7]	32	2
Grand total[6, 8]	115,000 [r]	122,000

[r]Revised.

[1]Includes imported cement.

[2]Data are rounded to no more than three significant digits; may not add to totals shown.

[3]Cements classified as Type II/V hybrids are now commonly reported as Type V.

[4]Mostly Types I and II, but may include Types III-V and block varieties.

[5]Includes blends with other pozzolans, such as cement kiln dust and silica fume.

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

[7]Includes low heat (Type IV), waterproof, and other portland cements.

[8]Data are based on an annual survey of plants and importers; may differ from data on table 9, which are based on monthly consolidated data from companies.

TABLE 16

U.S. AND PUERTO RICO EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

	2004		2005	
	Quantity	Value[2]	Quantity	Value[2]
United States:				
Argentina	(3)	53	1	123
Australia	(3)	48	3	288
Azerbaijan	9	425	3	160
Bahamas	21	2,613	31	3,733
Brazil	(3)	41	1	124
Canada	639	48,034	650	52,313
Cayman Islands	1	198	1	162
China	6	645	4	461
Dominican Republic	2 [4]	188 [4]	4	216
Equatorial Guinea	2	71	--	--
France	(3)	117	1	102
Greece	1	179	2	202
Guatemala	(3)	102	1	164
Hong Kong	2	157	3	185
Indonesia	--	--	1	33
Israel	(3)	24	1	35
Jamaica	1	42	(3)	48
Japan	1	74	1	66
Korea, Republic of	1	87	2	140
Mexico	41	4,699	28	4,787
Netherlands	(3)	3	1	30
Netherlands Antilles	(3)	51	1	127
Panama	1	85	1	129
Peru	(3)	53	3	189
Saudi Arabia	(3)	24	9	907
Spain	(3)	8	1	26
Sweden	1	74	1	60
Taiwan	3	171	4	179
Trinidad and Tobago	1	165	1	129
Turks and Caicos Islands	(3)	44	(3)	33
United Arab Emirates	1	80	1	211
United Kingdom	(3)	6	1	32
Venezuela	5	275	1	127
Other	9 [4]	1,445 [4]	4	1,271
Total[5]	749	60,281	766	66,789
Puerto Rico:				
Bahamas, The	--	--	1	60
Dominican Republic	69	2,741	35	1,415
Turks and Caicos Islands	--	--	1	32
Other	(3)	19	(3)	6
Total[5]	70	2,760	37	1,513
Grand total[5]	818	63,041	803	68,302

-- Zero.

[1]Includes portland and masonry cements.

[2]Free alongside ship 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.

[3]Less than ½ unit.

[4]U.S. data may appear to be revised because Puerto Rico data are now shown separately.

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

Source: U.S. Census Bureau.

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

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States:						
Belgium	2 [4]	624 [4]	665 [4]	1	149	161
Brazil	442	18,206	22,359	467	25,153	29,837
Bulgaria	231	12,478	15,069	303	16,921	20,325
Canada	5,753	319,651	338,988	5,404	319,259	338,523
China[5]	2,119 [4]	72,644 [4]	114,209 [4]	4,726	202,089	319,988
Colombia	2,121 [4]	83,935 [4]	116,107 [4]	1,844	94,981	123,758
Croatia	25	4,668	5,671	34	6,659	8,103
Denmark	156 [4]	11,681 [4]	16,786 [4]	227	16,316	24,978
Dominican Republic	--	--	--	77	4,406	6,188
Egypt	339	17,147	26,166	569	33,419	48,355
France	79	15,163	17,710	74	16,509	19,508
Germany	14	2,029	3,779	3	926	1,918
Greece	2,011	65,398	105,253	2,786	104,910	172,406
Hong Kong	--	--	--	77	1,858	1,911
Indonesia	630	22,490	41,804	865	29,481	58,713
Japan	2	593	867	4	1,155	1,832
Korea, Republic of	1,729	48,014	80,415	2,526	87,370	144,854
Mexico	1,429 [4]	62,520 [4]	81,067 [4]	2,173	110,281	138,030
Netherlands	7	3,338	4,111	31	5,033	5,865
Norway	365	23,388	25,642	522	25,299	32,574
Peru	644	21,335	35,871	1,047	35,546	60,527
Philippines	301	8,360	13,293	312	9,728	18,220
Spain	408 [4]	19,477 [4]	28,380 [4]	236	16,497	22,895
Sweden	1,058	31,483	55,336	1,050	35,421	59,660
Taiwan	1,068	42,014	69,345	1,759	71,448	124,679
Thailand	2,808	90,620	148,475	2,893	117,719	193,668
Turkey	755 [4]	26,602 [4]	42,737 [4]	675	28,873	50,665
United Arab Emirates	2	126	204	5	468	698
United Kingdom	19	6,097	6,625	14	4,907	5,211
Venezuela	2,505	99,419	140,571	2,484	119,203	170,362
Other	4 [4]	596 [4]	650 [4]	76	5,213	6,063
Total[6]	27,026 [4]	1,130,098 [4]	1,558,154 [4]	33,261	1,547,198	2,210,475
Puerto Rico:						
Denmark	217	6,638	13,255	212	8,054	13,499
Korea, Republic of	--	--	--	146	5,130	9,410
Other	62	2,592	4,019	33	2,406	3,234
Total[6]	279	9,230	17,274	391	15,590	26,142
Grand total[6]	27,305	1,139,328	1,575,428	33,652	1,562,788	2,236,617

-- Zero.

[1]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 import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

[4]U.S. data may appear to be revised because Puerto Rico data are now shown separately.

[5]China may be underrepresented and it is believed that all or some imports from Japan should be assigned to China.

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

TABLE 18
U.S. AND PUERTO RICO IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY[1]

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Customs district and country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States:						
Anchorage, AK:						
Canada	11	731	1,350	8	449	898
Korea, Republic of	111	3,280	5,281	134	4,643	8,859
Total[4]	122	4,011	6,631	143	5,092	9,757
Baltimore, MD:						
Belgium	(5)	7	11	--	--	--
China	(5)	5	5	12	1,225	2,606
Germany	(5)	6	7	(5)	9	9
Netherlands	1	215	232	(5)	36	39
Norway	--	--	--	89	3,458	3,458
Taiwan	--	--	--	25	822	1,758
Venezuela	--	--	--	7	294	484
Total[4]	1	233	256	134	5,844	8,354
Boston, MA:						
Netherlands	(5)	83	102	(5)	48	51
Venezuela	127	4,756	6,634	132	5,292	8,246
Total[4]	128	4,839	6,737	132	5,339	8,298
Buffalo, NY:						
Canada	796	46,241	48,993	817	48,849	52,421
Croatia	--	--	--	(5)	76	112
Germany	(5)	12	13	--	--	--
United Kingdom	12	2,696	2,797	6	1,398	1,447
Total[4]	807 r	48,950	51,802	823	50,323	53,980
Charleston, SC:						
Brazil	--	--	--	37	2,126	2,151
China	6	758	1,062	--	--	--
Colombia	293	11,619	15,866	299	16,435	20,142
Greece	451	16,273	27,461	686	25,491	45,975
Italy	--	--	--	(5)	362	1,146
Netherlands	(5)	18	22	(5)	48	54
Spain	46	391	1,048	23	1,428	1,450
Sweden	(5)	58	68	(5)	13	16
Switzerland	--	--	--	(5)	12	15
United Kingdom	2	1,105	1,126	2	883	967
Venezuela	7	683	1,132	55	3,023	3,993
Total[4]	805 r	30,905	47,785	1,102	49,820	75,909
Chicago, IL:						
Canada	34	1,833	1,936	--	--	--
Japan	(5)	72	83	(5)	74	85
Netherlands	1	580	726	1	729	866
Spain	--	--	--	(5)	2	3
United Kingdom	--	--	--	(5)	3	3
Total[4]	35 r	2,485	2,745	1	809	958
Cleveland, OH:						
Canada	699	35,946	37,412	791	42,374	44,236
Mexico	(5)	7	11	--	--	--
Netherlands	(5)	278	319	(5)	360	411
United Kingdom	(5)	65	88	--	--	--
Total[4]	699	36,295	37,830	792	42,734	44,647

See footnotes at end of table.

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

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Customs district and country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States—Continued:						
Columbia-Snake, OR:						
Canada	128	6,720	7,224	111	5,277	5,787
China	506	16,053	22,564	672	23,704	39,359
Korea, Republic of	21	715	1,056	84	2,853	4,399
Total[4]	655 r	23,488	30,843	867	31,834	49,545
Detroit, MI:						
Brazil	127	5,454	5,504	53	2,298	2,318
Canada	1,320	82,765	85,106	1,263	79,344	81,192
Denmark	(5)	5	5	--	--	--
Germany	--	--	--	(5)	20	21
Netherlands	(5)	47	59	(5)	82	95
South Africa	--	--	--	(5)	8	9
United Kingdom	1	252	304	1	339	339
Total[4]	1,448	88,523	90,978	1,317	82,092	83,974
Duluth, MN, Canada	172	7,854	8,762	158	7,121	7,951
El Paso, TX, Mexico	368	17,004	20,703	724	30,161	37,437
Great Falls, MT:						
Canada	51	2,528	2,619	62	3,078	3,282
Japan	(5)	4	4	--	--	--
Total[4]	51	2,532	2,622	62	3,078	3,282
Honolulu, HI:						
China	55	1,757	3,257	39	1,221	2,362
Korea, Republic of	21	609	1,449	--	--	--
Philippines	301	8,360	13,293	312	9,728	18,220
Taiwan	--	--	--	77	2,541	4,524
Thailand	40	1,080	1,794	--	--	--
Total[4]	417	11,806	19,793	428	13,490	25,106
Houston-Galveston, TX:						
Chile	(5)	29	35	--	--	--
China	--	--	--	243	9,063	17,052
Colombia	119	7,511	7,944	116	8,371	9,462
Egypt	29	2,282	2,971	263	13,428	21,985
France	(5)	84	94	(5)	18	20
Germany	(5)	90	110	(5)	113	136
Greece	206	6,266	9,252	292	11,042	16,723
Korea, Republic of	1,138	31,751	49,999	1,259	45,315	70,928
Peru	31	1,141	1,576	47	1,013	1,603
Thailand	--	--	--	309	15,682	27,591
Turkey	69	2,158	3,360	44	2,024	3,265
United Arab Emirates	--	--	--	1	106	170
United Kingdom	(5)	158	190	1	249	249
Venezuela	375	16,464	22,446	44	2,462	3,552
Total[4]	1,969	67,934	97,977	2,619	108,886	172,737
Laredo, TX, Mexico	158	18,052	18,989	142	16,531	17,386
Los Angeles, CA:						
China	1,196	42,085	64,956	1,874	80,939	128,099
Colombia	2	176	257	1	165	290
Egypt	2	150	245	(5)	37	73
Indonesia	78	5,857	8,775	211	7,385	13,630
Japan	(5)	142	233	2	647	1,079

See footnotes at end of table.

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

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Customs district and country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States—Continued:						
Los Angeles, CA—Continued:						
Malaysia	--	--	--	(5)	4	4
Netherlands	--	--	--	(5)	17	22
Peru	1	86	128	2	196	294
Taiwan	260	10,487	14,904	214	9,694	14,053
Thailand	974	36,655	62,244	745	34,031	55,466
United Arab Emirates	1	79	114	3	308	437
United Kingdom	1	172	172	(5)	189	189
Total[4]	2,513	95,889	152,028	3,053	133,613	213,635
Miami, FL:						
Belgium	2	596	630	1	132	140
Brazil	(5)	6	9	--	--	--
China	--	--	--	85	3,231	6,250
Colombia	30	1,800	2,798	16	1,782	2,472
Denmark	4	862	1,369	51	3,647	5,536
Egypt	14	546	847	33	1,225	2,149
Germany	(5)	25	29	(5)	120	132
Greece	485	14,784	21,498	439	16,157	26,207
Guyana	1	384	387	--	--	--
Italy	--	--	--	(5)	14	17
Mexico	--	--	--	86	8,564	10,781
Peru	(5)	10	15	--	--	--
Spain	346	18,593	26,575	96	7,743	12,769
Sweden	1,055	28,737	52,156	1,006	32,229	55,452
Taiwan	--	--	--	13	941	1,448
Thailand	--	--	--	80	2,996	5,959
Turkey	248	7,546	10,905	238	9,189	15,442
United Kingdom	(5)	125	158	(5)	74	74
Venezuela	109	5,473	7,786	120	6,783	9,389
Total[4]	2,294	79,488	125,161	2,265	94,826	154,218
Milwaukee, WI, Canada	278	14,090	14,365	198	8,836	8,936
Minneapolis, MN, Canada	--	--	--	38	2,086	2,302
Mobile, AL:						
China	--	--	--	15	653	1,077
Colombia	231	7,761	13,351	137	5,977	8,988
Egypt	--	--	--	16	769	1,295
Greece	--	--	--	14	689	1,152
Korea, Republic of	--	--	--	15	631	1,017
Peru	61	1,858	3,902	--	--	--
Taiwan	--	--	--	8	352	612
Thailand	97	2,288	3,763	61	2,711	4,786
Turkey	12	351	626	--	--	--
United Kingdom	(5)	45	62	--	--	--
Venezuela	128	5,512	7,602	248	12,760	16,706
Total[4]	528 r	17,815	29,307	514	24,542	35,632
New Orleans, LA:						
China	5	542	760	552	29,337	38,095
Colombia	213	6,865	9,068	180	6,937	9,141
Croatia	25	4,663	5,666	33	6,230	7,544
Egypt	268	13,102	20,069	153	13,371	14,892

See footnotes at end of table.

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

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Customs district and country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States—Continued:						
New Orleans, LA—Continued:						
Greece	370	11,530	19,002	245	9,553	17,018
Korea, Republic of	437	11,659	22,630	897	29,316	52,462
Netherlands	(5)	58	72	--	--	--
Norway	29	2,875	5,129	--	--	--
Peru	550	18,240	30,249	998	34,336	58,631
Spain	--	--	--	78	5,652	6,533
Taiwan	--	--	--	528	16,179	40,089
Thailand	464	12,887	25,976	238	7,511	15,827
Turkey	137	7,526	13,006	102	6,647	11,095
United Kingdom	(5)	6	7	(5)	177	177
Venezuela	52	2,303	3,387	90	5,658	7,162
Total[4]	2,551	92,255	155,023	4,095	170,906	278,666
New York, NY:						
China	--	--	--	8	281	611
Colombia	1	90	155	1	125	176
Croatia	(5)	5	5	--	--	--
France	--	--	--	(5)	5	5
Germany	11	1,040	1,232	--	--	--
Greece	255	7,910	14,699	403	14,728	25,929
Netherlands	(5)	102	123	26	2,194	2,443
Norway	336	20,513	20,513	432	21,841	29,116
Poland	(5)	85	90	(5)	59	62
Sweden	3	2,273	2,652	7	1,812	2,164
Taiwan	--	--	--	37	1,194	2,490
Thailand	10	230	250	--	--	--
Turkey	31	1,054	2,018	159	6,023	11,573
United Kingdom	2	952	1,055	1	719	723
Venezuela	190	7,317	10,642	190	10,891	14,172
Total[4]	839	41,571	53,435	1,265	59,872	89,464
Nogales, AZ, Mexico	546 r	25,276	39,130	1,068	46,007	63,252
Norfolk, VA:						
Bulgaria	231	12,478	15,069	303	16,921	20,325
Canada	10	322	538	--	--	--
China	--	--	--	36	1,306	2,753
Colombia	163	5,549	7,948	156	7,509	10,618
France	79	15,080	17,616	74	16,486	19,483
Germany	(5)	32	37	(5)	91	101
Greece	--	--	--	33	1,205	2,263
Netherlands	(5)	166	212	(5)	170	205
Sweden	1	415	460	11	511	578
United Kingdom	(5)	191	216	1	346	421
Venezuela	26	915	1,370	84	3,447	6,277
Total[4]	511	35,149	43,467	697	47,992	63,025
Ogdensburg, NY:						
Canada	384	26,212	26,654	336	24,042	24,402
Germany	(5)	4	4	(5)	5	5
United Kingdom	(5)	2	2	--	--	--
Total[4]	384	26,219	26,661	336	24,047	24,407
Pembina, ND, Canada	181	8,799	9,570	178	8,686	9,081

See footnotes at end of table.

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

(Thousand metric tons and thousand dollars)

Customs district and country	2004			2005		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States—Continued:						
Philadelphia, PA:						
Belgium	(5)	21	24	(5)	18	21
China	(5)	13	17	--	--	--
Germany	3	694	2,195	2	401	1,270
Netherlands	3	1,355	1,719	2	993	1,257
Switzerland	--	--	--	74	4,598	4,618
Thailand	404	9,673	10,826	417	11,535	13,941
Total[4]	410	11,755	14,780	494	17,545	21,106
Portland, ME:						
Canada	98	9,624	9,653	156	18,254	19,168
Venezuela	31	1,667	1,677	--	--	--
Total[4]	128 r	11,291	11,330	156	18,254	19,168
Providence, RI:						
China	--	--	--	103	3,787	6,536
Turkey	--	--	--	82	3,120	5,908
Venezuela	648	22,773	33,043	555	22,125	34,829
Total[4]	648	22,773	33,043	740	29,031	47,274
San Diego, CA:						
Mexico	58	2,181	2,234	153	9,019	9,175
Taiwan	545	22,464	31,726	549	27,211	38,988
Thailand	76	2,955	3,932	15	1,468	1,999
Total[4]	678 r	27,600	37,892	717	37,698	50,162
San Francisco, CA:						
China	351	11,424	21,572	671	31,530	47,192
Denmark	(5)	13	14	--	--	--
Indonesia	553	16,634	33,029	654	22,096	45,082
Israel	--	--	--	(5)	8	8
Japan	--	--	--	(5)	3	3
Taiwan	263	9,063	22,716	200	8,128	13,149
Thailand	561	19,696	31,386	837	33,716	53,981
United Arab Emirates	1	47	89	1	55	91
United Kingdom	(5)	78	92	(5)	87	87
Total[4]	1,728 r	56,955	108,898	2,363	95,623	159,593
Savannah, GA:						
Colombia	3	263	385	79	4,309	5,420
Germany	(5)	127	152	--	--	--
Netherlands	(5)	143	168	(5)	25	26
Romania	(5)	3	3	--	--	--
United Kingdom	1	248	357	1	392	460
Total[4]	4	783	1,065	81	4,726	5,907
Seattle, WA:						
Canada	1,469	64,454	73,179	1,153	56,704	63,696
China	--	--	--	119	4,626	7,069
Germany	--	--	--	(5)	167	242
Japan	1	374	548	1	431	665
Korea, Republic of	--	--	--	136	4,612	7,189
Netherlands	(5)	11	12	(5)	14	17
Taiwan	--	--	--	51	2,097	3,236
Thailand	184	5,157	8,304	28	808	1,386
Total[4]	1,654	69,996	82,043	1,489	69,459	83,502

See footnotes at end of table.

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

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Customs district and country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States—Continued:						
St. Albans, VT, Canada	123	11,532	11,628	134	14,160	15,172
St. Louis, MO:						
China	(5)	6	10	(5)	9	17
Croatia	--	--	--	1	353	447
Netherlands	(5)	284	344	(5)	318	379
Total[4]	1	290	353	1	681	842
Tampa, FL:						
Australia	--	--	--	(5)	37	37
Brazil	315	12,745	16,846	377	20,729	25,368
China	(5)	2	6	297	11,178	20,911
Colombia	932	37,284	51,443	586	29,828	39,721
Denmark	152	10,801	15,398	177	12,669	19,442
Egypt	27	1,066	2,034	103	4,589	7,961
Greece	244	8,635	13,340	675	26,044	37,140
Hong Kong	--	--	--	77	1,858	1,911
Spain	16	493	756	39	1,672	2,139
Sweden	--	--	--	25	856	1,451
Taiwan	--	--	--	57	2,288	4,332
Thailand	--	--	--	163	7,260	12,732
Turkey	258	7,967	12,821	50	1,869	3,382
United Kingdom	--	--	--	(5)	49	73
Venezuela	652	25,004	35,194	852	41,566	58,773
Total[4]	2,595	103,997	147,839	3,478	162,493	235,374
U.S. Virgin Islands:						
Bangladesh	2	95	134	--	--	--
Barbados	--	--	--	2	111	147
Venezuela	79	3,063	4,274	63	2,684	3,721
Total[4]	81	3,158	4,408	65	2,795	3,868
Wilmington, NC:						
Colombia	134	5,017	6,891	270	13,543	17,328
United Arab Emirates	--	--	--	77	4,406	6,188
Venezuela	83	3,490	5,384	42	2,217	3,057
Total[4]	217	8,506	12,275	390	20,166	26,573
U.S. total[4]	27,026 [6]	1,130,098 [6]	1,558,154 [6]	33,261	1,547,198	2,210,475
Puerto Rico, San Juan, PR:						
Argentina	--	--	--	(5)	4	4
Belgium	3	226	456	1	39	95
China	25	523	1,231	--	--	--
Colombia	3	238	319	5	589	806
Costa Rica	(5)	38	41	(5)	3	4
Denmark	217	6,638	13,255	212	8,054	13,499
Dominican Republic	(5)	11	11	--	--	--
Honduras	--	--	--	15	578	588
Korea, Republic of	--	--	--	146	5,130	9,410
Mexico	10	1,032	1,412	12	1,189	1,733
Panama	(5)	15	17	--	--	--
Spain	4	222	226	(5)	4	4
Turkey	16	288	308	--	--	--
Total[4]	279	9,230	17,274	391	15,590	26,142
Grand total[4]	27,305	1,139,328	1,575,428	33,652	1,562,788	2,236,617

See footnotes at end of table.

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

[r]Revised. -- Zero.

[1]Includes all varieties of hydraulic cement and clicker.

[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 import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

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

[5]Less than ½ unit.

[6]U.S. data may appear to be revised because Puerto Rico data are now shown separately.

Source: U.S. Census Bureau.

TABLE 19
U.S. AND PUERTO RICO IMPORTS FOR CONSUMPTION OF GRAY PORTLAND CEMENT, BY COUNTRY

(Thousand metric tons and thousand dollars)

Country	2004			2005		
		Value			Value	
	Quantity	Customs[1]	C.i.f.[2]	Quantity	Customs[1]	C.i.f.[2]
United States:						
Brazil	315	12,745	16,846	377	20,729	25,368
Bulgaria	231	12,478	15,069	303	16,921	20,325
Canada	4,744	247,821	264,773	4,301	242,961	260,188
China[3]	2,052 [4]	69,477 [4]	109,802 [4]	4,149	169,832	277,318
Colombia	1,874	71,964	100,591	1,599	78,333	103,969
Denmark	14 [4]	577 [4]	934 [4]	--	--	--
Egypt	291	13,359	20,841	350	15,843	27,309
Greece	2,007	64,313	104,168	2,755	103,952	171,448
Indonesia	630	22,490	41,804	865	29,481	58,713
Korea	1,729	48,014	80,415	2,443	84,944	141,159
Mexico	1,193	35,662	52,577	1,856	75,290	99,365
Norway	304	17,006	17,006	504	23,645	30,562
Peru	543	19,040	31,578	671	25,497	42,607
Philippines	301 [4]	8,360 [4]	13,293 [4]	312	9,728	18,220
Spain	253 [4]	6,614 [4]	10,223 [4]	52	1,882	3,033
Sweden	1,055	28,737	52,156	1,031	33,085	56,902
Taiwan	1,068	42,014	69,345	1,759	71,448	124,679
Thailand	2,726	86,160	140,787	2,864	113,556	188,138
Turkey	671 [4]	21,061 [4]	33,327 [4]	581	22,759	40,446
Venezuela	1,953	74,662	106,281	1,682	76,026	113,914
Other	13	1,185	1,390	98	3,533	3,663
Total[5]	23,968 [4]	903,741 [4]	1,283,206 [4]	28,551	1,219,444	1,807,328
Puerto Rico:						
China	25	523	1,231	--	--	--
Denmark	204	5,140	11,605	202	7,192	11,822
Korea	--	--	--	78	3,240	5,824
Spain	4	222	226	(6)	4	4
Turkey	16	288	308	--	--	--
Other	(6)	26	29	(6)	6	8
Total[5]	250	6,198	13,398	280	10,442	17,658
Grand total[5]	24,218	909,939	1,296,604	28,832	1,229,886	1,824,986

-- Zero.

[1]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.

[2]Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

[3]China may be underrepresented and it is thought that all or some imports from Japan should be assigned to China.

[4]U.S. data may appear to be revised because Puerto Rico data are now shown separately.

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

[6]Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 20
U.S. AND PUERTO RICO IMPORTS FOR CONSUMPTION OF WHITE CEMENT, BY COUNTRY

(Thousand metric tons and thousand dollars)

Country	2004			2005		
		Value			Value	
	Quantity	Customs[1]	C.i.f.[2, 3]	Quantity	Customs[1]	C.i.f.[2, 3]
United States:						
Australia	--	--	--	(4)	37	37
Belgium	2 [5]	603 [5]	641 [5]	1	132	140
Brazil	(4)	6	9	37	2,126	2,151
Canada	308	35,247	36,802	329	39,057	40,454
Chile	(4)	29	35	--	--	--
China	--	--	--	17	1,672	3,408
Colombia	27 [5]	2,735 [5]	3,533 [5]	42	4,112	5,507
Denmark	142 [5]	11,091 [5]	15,839 [5]	227	16,316	24,978
Dominican Republic	--	--	--	77	4,406	6,188
Egypt	48	3,788	5,325	24	2,200	2,780
Germany	(4)	23	27	(4)	34	36
Greece	3	1,085	1,085	31	958	958
Israel	--	--	--	(4)	8	8
Japan	--	--	--	(4)	10	10
Malaysia	--	--	--	(4)	4	4
Mexico	186 [5]	22,417 [5]	23,569 [5]	251	29,302	32,353
Netherlands	1	173	181	7	592	815
Norway	61	6,382	8,636	17	1,653	2,012
Peru	1	96	143	2	196	294
Spain	155	12,863	18,157	73	6,903	11,231
Switzerland	--	--	--	74	4,598	4,618
Thailand	23	2,939	4,354	29	4,163	5,530
Turkey	84	5,532	9,401	94	6,114	10,219
United Arab Emirates	2	126	204	5	468	698
Venezuela	125	5,774	8,914	121	7,007	9,628
Total[6]	1,168 [5]	110,910 [5]	136,855 [5]	1,457	132,067	164,055
Puerto Rico:						
Belgium	3	226	456	1	39	95
Colombia	3	238	319	5	589	806
Denmark	13	1,498	1,650	10	862	1,677
Mexico	10	1,032	1,412	12	1,189	1,733
Total[6]	29	2,994	3,836	28	2,680	4,311
Grand total[6]	1,197	113,904	140,691	1,485	134,747	168,366

-- Zero.

[1]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.

[2]Cost, insurance, and freight. The import value represents the customs value plus insurance, freight and other delivery charges to the first port of entry.

[3]Values of less than $90.00 (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 Service. Values that exceed $200 per ton likely indicate misidentified specialty cement, not white cement.

[4]Less than ½ unit.

[5]U.S. data may appear to be revised because Puerto Rico data are now shown separately.

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

Source: U.S. Census Bureau.

TABLE 21

U.S. AND PUERTO RICO IMPORTS FOR CONSUMPTION OF CLINKER, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

	2004			2005		
		Value			Value	
Country	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
United States:						
Brazil	127	5,454	5,504	53	2,298	2,318
Canada	639	30,869	31,283	740	33,792	34,176
China	11	1,244	1,751	557	29,966	38,458
Colombia	220	9,237	11,982	203	12,536	14,282
Croatia	--	--	--	(4)	64	94
Egypt	--	--	--	184	12,379	14,627
France	77	13,614	15,953	72	15,250	18,106
Korea, Republic of	--	--	--	83	2,427	3,695
Peru	100	2,199	4,150	374	9,853	17,626
Spain	--	--	--	33	2,061	2,098
Sweden	--	--	--	15	542	599
Thailand	59	1,521	3,334	--	--	--
Venezuela	398	17,419	22,962	543	27,360	36,078
Total[5]	1,630 r	81,557	96,919	2,858	148,528	182,158
Puerto Rico:						
Honduras	--	--	--	15	578	588
Korea, Republic of	--	--	--	69	1,891	3,586
Total[5]	--	--	--	83	2,469	4,174
Grand total[5]	1,630 r	81,557	96,919	2,941	150,996	186,332

rRevised. -- Zero.

[1]For all types of hydraulic cement.

[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 import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

[4]Less than ½ unit.

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

Source: U.S. Census Bureau.

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

(Thousand metric tons)

Country	2001	2002	2003	2004	2005[e]
Afghanistan[e]	50	60	70	70	60
Albania	--	--	578	573	575 [3]
Algeria[e]	8,300	9,000	9,000	9,000	9,000
Angola	550 [r]	597 [r]	700 [r]	754 [r]	760
Argentina	5,545	3,911 [r]	5,217 [r]	6,254	7,595 [3]
Armenia	300	355	384	501 [r]	605 [3]
Australia[e]	7,500	7,550	8,000	8,000	9,000
Austria	3,802 [r]	3,918 [r]	3,886 [r]	3,976 [r]	4,736 [3]
Azerbaijan	523 [r]	848	1,013	1,428 [r]	1,538 [3]
Bahrain	89	67	129 [r]	153 [r]	191 [3]
Bangladesh[e]	5,005 [3, 4]	5,000	5,000	5,000	5,100
Barbados	250	298	325 [r]	322 [r]	320
Belarus	1,803	2,171	2,472	2,731 [r]	3,131 [3]
Belgium	7,157 [r]	6,980 [r]	6,550 [r]	6,715 [r]	7,000
Benin[e]	250	250	250	250	250
Bhutan[e]	160	160	160	170	170
Bolivia	983	1,010	1,138	1,276	1,440 [3]
Bosnia and Herzegovina	704	913	891	1,045	1,000
Brazil	38,927	38,027	34,010	34,413 [r]	36,673 [3]
Brunei	227	241	236 [r]	242 [r]	240
Bulgaria[e]	2,088 [3]	2,137 [3]	2,100	2,100	2,100
Burkina Faso[e]	50	30	30	30	30
Burma[5]	378	471 [r]	572	519 [r]	543 [3]
Cameroon	980 [r]	937 [r]	949 [r]	1,032 [r]	1,000
Canada	12,793 [r]	13,079 [r]	13,416 [r]	13,863 [r]	14,179 [3]
Chile	3,513	3,462	3,622	3,798	3,999 [3]
China	661,040	725,000	862,080	970,000 [r]	1,038,300 [p]
Colombia	6,830	6,064 [r]	7,337 [r]	7,822 [r]	9,959 [3]
Congo (Kinshasa)	201	265	331	403 [r]	410
Costa Rica[e]	1,200	1,200	1,600 [r]	1,900 [r]	2,000
Côte d'Ivoire[e]	650	650	650	650	650
Croatia	3,246	3,378	3,654	3,811	3,520 [3]
Cuba	1,324	1,327	1,346 [r]	1,366 [r]	1,370
Cyprus	1,369	1,438	1,637	1,689	1,805 [3]
Czech Republic	3,550	3,217	3,465	3,829 [r]	3,978 [3]
Denmark	2,047	2,028 [r]	1,953 [r]	2,150 [r]	2,200
Dominican Republic	2,746	3,050	2,783 [r]	2,636	2,640
Ecuador[e]	2,920 [3]	3,000	3,100	3,100	3,100
Egypt	25,700	28,155	26,639	28,763 [r]	29,000
El Salvador	1,174	1,318	1,390	1,256 [r]	1,400
Eritrea[e]	45	45	45	45	45
Estonia	405	466	506	615	650
Ethiopia[6]	900	900	1,130 [r]	1,316 [r]	1,568 [3]
Fiji[e]	95	95	100	100	100
Finland	1,325	1,198	1,493 [r]	1,691 [r]	1,321 [3]
France	19,839	19,437 [r]	19,655 [r]	20,962 [r]	21,277 [3]
French Guiana[e]	58 [3]	62 [3]	60 [r]	60 [r]	60
Gabon[e]	240 [r, 3]	257 [r, 3]	260 [r]	260 [r]	260
Georgia	335	347	345 [r]	425 [r]	450
Germany	32,118	31,009	32,749 [r]	31,854 [r]	30,629 [3]
Ghana[e]	1,900	1,900	1,900	1,900 [r]	1,900
Greece	14,819 [r]	14,282 [r]	14,638 [r]	15,039 [r]	15,000
Guadeloupe	265	230	230	230	230
Guatemala[e]	2,000	1,800	1,800 [r]	1,800 [r]	1,800

See footnotes at end of table.

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

(Thousand metric tons)

Country	2001	2002	2003	2004	2005[e]
Guinea[e]	315 [3]	360	360	360	360
Haiti[e]	204 [3]	290 [3]	300	300	300
Honduras[e]	1,321 [3]	1,360	1,400	1,800 [r]	2,000
Hong Kong	1,279	1,206	1,189 [r]	1,039 [r]	1,005 [3]
Hungary	3,452	3,510	3,573	3,349 [r]	3,500
Iceland	125	83 [r]	90 [r]	90 [r, e]	95
India[e]	105,000	115,000	123,000 [3]	130,000 [r]	145,000
Indonesia	31,300	34,640	35,500 [r]	36,000 [e]	37,000
Iran	26,640	28,600	30,460 [r]	32,198 [r]	32,650 [3]
Iraq[e]	6,000	6,834 [3]	1,901 [r, 3]	2,500 [r]	3,000
Ireland	3,450 [r]	3,320 [r]	3,830 [r]	4,000 [r]	4,000
Israel	4,700 [e]	4,584	4,632	4,494	4,700
Italy	39,804	41,416 [r]	43,433 [r]	46,045 [r]	46,404 [3]
Jamaica	596	614	608	808 [r]	845 [3]
Japan	76,550	71,828	68,766	67,376 [r]	69,629 [3]
Jordan	3,173	3,558	3,515	3,908	4,046 [3]
Kazakhstan	2,029	2,129	2,570	3,662 [r]	3,975 [3]
Kenya	1,319	1,463	1,658	1,789	2,123 [3]
Korea, North[e]	5,160	5,320	5,540	5,630 [r]	5,700
Korea, Republic of	52,046	55,514	59,194	54,330 [r]	51,391 [3]
Kuwait	921	1,584	1,863 [r]	2,635 [r]	2,700
Kyrgyzstan	469	533	757	800 [e]	900
Laos[e]	92	240	250	250	350
Latvia	W	260	295	284	280
Lebanon	2,890	2,852	3,000 [r, e]	3,100 [r, e]	3,300
Liberia	63	54	25 [r]	40 [r]	40
Libya[e]	3,000	3,300	3,500 [3]	3,600	3,600
Lithuania	529	606	597	753	832 [3]
Luxembourg	729 [r]	728 [r]	714 [r]	797 [r]	750
Macedonia	630	600 [e]	768	820	800
Madagascar[e]	52 [3]	35 [r]	80 [r]	130 [r]	180
Malawi	181	174	24 [r]	120 [r]	120
Malaysia	13,820	14,336	17,243	15,690 [r]	17,860 [3]
Martinique[e]	255 [3]	221 [3]	220 [r]	220 [r]	220
Mauritania[e]	200	200	200	300 [r, 3]	300
Mexico	32,110	33,372	33,593	34,992	36,000
Moldova	200	300	255 [r]	440 [r]	500
Mongolia	68	148	162	62 [r]	112 [3]
Morocco[e]	10,000	10,200	10,400	11,000 [r]	11,000
Mozambique	265	285	362	370 [r, e]	400
Nepal[e, 4]	285	290	295	285	290
Netherlands	3,380 [r]	3,085 [r]	2,450 [r]	2,380 [r]	2,400
New Caledonia	93	100	100 [e]	100 [e]	100
New Zealand[e]	1,080 [3]	1,090	1,100	1,110 [3]	1,100
Nicaragua	514	549	590	600 [r, e]	610
Niger[e]	47 [r]	54 [r]	55 [r]	55 [r]	55
Nigeria[e]	2,400	2,100	2,300	2,300	2,400
Norway	1,642 [r]	1,631 [r]	1,650 [r]	1,420 [r]	1,500
Oman[e]	1,370 [3]	1,700	2,100	2,500	2,500
Pakistan[e]	11,000	11,000	13,000	16,000	18,000
Panama[e]	820	770	800 [r]	820 [r]	840
Paraguay[e]	650 [3]	650	660	650 [r]	650
Peru	3,950	3,980	4,000	4,590	4,600
Philippines	8,653	12,614	13,060 [r]	13,050 [r]	13,000

See footnotes at end of table.

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

(Thousand metric tons)

Country	2001	2002	2003	2004	2005[e]
Poland	11,918	10,948	11,653	12,566 [r]	12,646 [3]
Portugal	10,162 [r]	9,759 [r]	8,567 [r]	8,843 [r]	9,000
Qatar[e]	1,240	1,340	1,400	1,400	1,400
Réunion[e]	380	380	380	380	380
Romania	5,668	5,680	5,992	6,239 [r]	7,032 [3]
Russia	35,300	37,700	41,000	45,700 [r]	48,700 [3]
Rwanda	91	101	105	104	105
Saudi Arabia[e]	20,608 [3]	22,000	23,000	25,400 [r]	26,064 [3]
Senegal	1,539	1,653 [r]	1,694 [r]	1,700 [r, e]	1,700
Serbia and Montenegro	2,418	2,396	2,075	2,240	2,200
Sierra Leone	113	144	169 [r]	180 [r]	180
Singapore[e]	600	200	150 [3]	-- [r]	--
Slovakia	3,123	3,141	3,147	3,158	3,499 [3]
Slovenia	1,237 [r]	1,178 [r]	1,370 [r]	1,186 [r]	1,200
South Africa, sales[7]	8,036	8,525	8,883 [r]	12,348	13,000
Spain, including Canary Islands	40,512	42,417	44,747 [r]	46,593 [r]	50,347 [3]
Sri Lanka	1,108	1,018	1,164	1,150 [r, e]	1,180
Sudan	190	205	272	307 [r]	310
Suriname[e]	65 [3]	65	65	65	65
Sweden	2,645 [r]	2,642 [r]	2,476 [r]	2,588 [r]	2,600
Switzerland	3,950 [r]	3,771	3,613 [r]	3,851 [r]	4,022 [3]
Syria	5,005 [r]	4,679 [r]	4,824 [r]	4,757 [r]	4,800
Taiwan	18,128	19,363	18,474	19,050	19,891 [3]
Tajikistan	70	100	166 [r]	194 [r]	253 [3]
Tanzania	900	1,026	1,186	1,281 [r]	1,375 [3]
Thailand	27,913	31,679	32,530	35,626	37,872 [3]
Togo[e]	800	800	800	800	800
Trinidad and Tobago	697	744	766	768 [r]	770
Tunisia	5,721	6,022	6,038	6,358	6,500
Turkmenistan[e]	450	450	450	450	450
Turkey	30,125	32,577	35,077	38,796 [r]	42,787 [3]
Uganda	431	506	507	559 [r]	650
Ukraine	5,800	7,142	8,900	10,600	12,183 [3]
United Arab Emirates[e]	6,100	7,000	8,000	8,000	8,000
United Kingdom	11,854	11,265 [r]	11,650 [r]	11,730 [r]	11,470 [3]
United States, including Puerto Rico[8]	90,450 [9]	91,266	94,329	99,015	100,903 [3]
Uruguay[e]	1,015 [3]	1,000	1,050	1,050	1,050
Uzbekistan[e]	4,000	4,000	4,000	4,800 [r]	5,068 [3]
Venezuela[e]	8,700	7,000	7,700	9,000	10,000
Vietnam	16,073	21,121	24,127 [r]	25,320	29,000 [3]
Yemen	1,493 [r]	1,561 [r]	1,541 [r]	1,546	1,550
Zambia[e]	215 [3]	230 [3]	350 [r]	480 [e]	435
Zimbabwe[e]	800	600	400	400	400
Total	1,740,000 [r]	1,850,000	2,030,000 [r]	2,190,000 [r]	2,310,000

See footnotes at end of table.

TABLE 22—Continued

HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY[1, 2]

[e]Estimated. [p]Preliminary. [r]Revised. W Withheld to avoid disclosing company proprietary data; not included in "Total." -- Zero.

[1]World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown. Even where presented unrounded, reported data are believed to be accurate to no more than three significant digits.

[2]Table includes data available through October 6, 2006. Data may include clinker exports for some countries.

[3]Reported figure.

[4]Data for year ending June 30 of that stated.

[5]Data are for fiscal year ending March 31 of the following year.

[6]July 7 of the year listed.

[7]Data are revised to remove sales of cementitious materials other than finished cement. Material sales removed (mostly fly ash and ground granulated blast furnace slag) amounted to: 2001—1,129; 2002—1,099; 2003—1,190; 2004—1,436; and 2005—1,440 (estimated).

[8]Portland and masonry cements only.

[9]Tonnage has been rounded to four significant digits.