

# CEMENT

By Hendrik G. van Oss

**Domestic survey data and tables were prepared by Armand Marquardt, statistical assistant, and the world production table was prepared by Regina R. Coleman, international data coordinator.**

With the exception of some trade data, the cements covered in this report are limited to those hydraulic varieties 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.<sup>1</sup> Masonry cements include true masonry cements, portland-lime cements, and plastic cements. Certain other hydraulic cements (most notably aluminous cement) are included within the world hydraulic cement production data given in table 22 and the trade data in tables 16–18 and 21 (clinker). 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. Indications of percentage or other changes expressed in this report compare activity in 2004 with that of 2003 unless specified otherwise. Except where otherwise indicated, activity levels in this report exclude those in Puerto Rico. Detailed background information on cement and its manufacture is available in van Oss (2005§<sup>2</sup>).

Production of portland and masonry cements in the United States in 2004 rose by almost 5% to a new record high of 97.4 million metric tons (Mt) (table 1). Output of clinker—the intermediate product in cement manufacturing—increased by almost 6% to a new record high of 86.7 Mt. The United States continued to rank third in the world in hydraulic cement production; world output in 2004 was about 2.1 billion metric tons (Gt). Sales of cement to domestic customers increased by 6.9% to a new record high of about 120 Mt; the previous record was in 2001. Imports of cement increased by almost 21% to 25.4 Mt but were still reported to be below demand in States heavily dependent on imports. During the year, spot shortages of cement (domestic and imported) in many States, but particularly Arizona, California, Florida, and Texas, were informally reported to the U.S. Geological Survey (USGS). Tight cement supplies and rising fuel costs led to significant, although regionally variable, price increases (tables 11–12). Overall, the value of cement sales to domestic final customers increased by 14.4% to about \$9.5 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 2004 was estimated to be at least \$47 billion.

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 2004, forms were received for 148 of 151 facilities canvassed, a response rate of 98%. The responding facilities included all but two production sites and accounted for almost 99% of total cement production and sales. For 2003, forms were received for 144 of 151 facilities canvassed, a response rate of 95%. The responding facilities accounted for 99% of the U.S. cement production in 2003. For missing or incomplete forms, telephone inquiries were made to obtain data and 100% reporting of both cement and clinker production 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 affecting cement trade, interest rates, and public sector construction spending. The major trade issue in 2004 continued to be that of antidumping tariffs against Japan and Mexico. For Mexico, the tariff rate in 2004 was based on the 54.97% 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. In light of reported cement shortages, there were calls during the year for the DOC to lift, if only temporarily, the tariffs to encourage the importation of more cement from Mexico.

The major Government construction funding program in 2004 remained the Transportation Equity Act for the 21st Century (TEA–21), which authorized \$216.3 billion in funding for the 6-year period from 1998 to 2003 to upgrade the country's transportation infrastructure. The TEA–21 expired on September 30, 2003, but the U.S. Congress authorized continuation of its funding at 2003 levels throughout 2004, pending reconciliation of conflicting congressional funding level proposals for its full-scale reauthorization.

The major environmental issues relating to cement stem from the production of clinker (van Oss and Padovani, 2003). The most significant emissions from clinker manufacture are of carbon dioxide (CO<sub>2</sub>), amounting to nearly 1 metric ton (t) of CO<sub>2</sub> per ton of clinker, about 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<sub>2</sub> by the U.S. cement industry in 2004 amounted to about 83 Mt; this excluded emissions associated with the utility companies that generated the electricity used by the cement industry. The cement industry was working on ways to reduce the unit emissions of CO<sub>2</sub>, such as by encouraging the use of blended cements and of SCM in concrete.

## Production

Portland cement in 2004 was produced in 37 States and Puerto Rico at a total of 115 plants. Of these plants, 73 also produced

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

<sup>2</sup>A reference that includes a section mark (§) is found in the Internet Reference Cited section.

masonry cement (tables 3–4). 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 made difficult by the existence of some common parent companies and joint ventures. If companies with common parents are combined under the larger subsidiary's name, with joint ventures apportioned, then the leading 10 companies at yearend 2004, in descending order of cement production, were Holcim (US) Inc.; CEMEX, Inc.; Lafarge North America, 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 Eagle Materials, Inc. The leading 5 of these had about 57% of total U.S. portland cement production, and the leading 10 together accounted for about 81% of total U.S. production. Of these companies, all except Ash Grove, Eagle Materials, and TXI were foreign-owned as of yearend.

Production of portland cement in 2004 increased by about 5% to a new record of 92.4 Mt (table 3). As in 2003, the five leading producing States for portland cement in 2004, in descending order, were California, Texas, Pennsylvania, Michigan, and Missouri. Significant production increases were seen in almost all States, but that for Florida was especially large owing to the reaching of full capacity output by a new plant that started in 2003 and by the startup of a new kiln at another plant. Finish (cement) grinding capacity showed some regional changes and increased slightly for the country overall; capacity utilization also increased. Although yearend portland cement stockpiles were up slightly for the country overall, most coastal States showed declines in yearend stocks; this was in accord with widespread reports during the year of tight cement supplies and/or shortages, especially of imported material.

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 79% of total portland cement output in 2004, down from about 83% in 2003. The relative decline reflects the growing market for sulfate-resistant cements (Types II and V, and II/V hybrids reported as Type V); Type V cements accounted for about 14% of total output, up from about 10% in 2003. Ideally, these ratios should be adjusted for cement imports, which are dominantly of Types I, II, and V.

Masonry cement production in 2004 increased by 5.5% to 5.0 Mt (table 4). 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. As in recent years, about 95% of the (reported) masonry cement output continued to be reported as having been made directly from clinker rather than from finished portland cement.

Data related to clinker production are listed in table 5. Overall production rose by 5.8% to a record 86.7 Mt, with increases seen in all but two districts. As with cement production, the largest increase was in Florida. Daily output capacity (a reported statistic) was substantially unchanged in most districts. Florida's daily capacity showed a large increase owing to the addition of a large new dry kiln (and the continued inclusion of its wet kilns) at one plant. The daily capacity for the Maine-New York district also rose substantially, owing to the midyear conversion of a wet kiln to a dry kiln at the

plant in Maine. The daily capacity for South Carolina showed a large decrease owing to the exclusion of two wet kilns that were dismantled in 2003, and a decrease in the capacity for Idaho-Montana-Nevada-Montana is because of the 2003 closure of one small plant in Nevada. Apparent annual capacities (a calculated statistic) showed significant variations among district but are dependent on the reporting of downtimes for scheduled maintenance; overall capacity rose by 3% to 103 million metric tons per year (Mt/yr). Capacity utilization also rose overall but is also dependent on the reported downtimes for scheduled maintenance. 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 for virtually all districts. The utilization declines seen in the Maine-New York district and in Florida reflect additional downtimes or production interruptions related to the plant upgrades mentioned above. Based on the data in table 5, the average plant clinker capacity in 2004 rose by about 3% to 0.96 Mt/yr, and average kiln capacity rose by about 2% to 0.55 Mt/yr. Yearend clinker stockpiles<sup>3</sup> showed a decline of about 0.7 Mt (16%). The increase in clinker production was itself more than adequate to support the increase in cement production noted earlier, even in light of an apparent decline in clinker imports, as detailed in table 21, without recourse to a net, long-term, drawdown of stocks. Consequently, the yearend stockpile decline may reflect the high level of cement consumption in December, which may have prevented or postponed the routine buildup of clinker stockpiles ahead of planned kiln shutdowns in early 2005 for routine maintenance.

Nonfuel raw materials consumed to make clinker and cement are listed in table 6. Materials used to make clinker are of environmental interest because they are burned in the kiln and are thus associated with various chemical changes and emissions. Materials added in the finish mill are just ground. Overall the ratios among raw materials consumed in 2004 did not change significantly from those in 2003. By comparison to the sales levels for blended cements listed in table 15, the proportion of granulated blast furnace slag in cement appears to have fallen to about 35% (component) from about 45% in 2003. 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. In contrast, the apparent component of fly ash in blended cements, at about 22%, was significantly higher than the 16% in 2003. The total fly ash consumption in 2004 (2.97 Mt) listed in table 6, and that of other ash (1.05 Mt, mainly bottom ash) is significantly higher than the 2.13 Mt of fly ash, 0.56 Mt of bottom ash, and 0.03 Mt of boiler slag reported by the American Coal Ash Association (ACAA) (2005) as having been sold in 2004 for use in clinker and/or cement manufacture; the differences could represent material already in stock at cement plants. In contrast, the ACAA's reported sales of synthetic gypsum (recovered via flue gas desulfurization) to the cement industry (0.41 Mt) are significantly higher than the 0.29 Mt reported to the USGS (this is a component of the gypsum consumption in table 6), but the USGS

---

<sup>3</sup>Yearend stockpiles of clinker are an artifact of data collection convenience rather than reflecting 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.

canvass does not require a reporting distinction between synthetic and natural gypsum.

Fuels consumed by the cement industry are listed in table 7. The quantity ratios among fuels in 2004 appear to be similar to those in 2003. Although not listed in table 7, overall heat consumption in 2004 averaged about 4.3 million British thermal units (MBtu) per metric ton of clinker, about 2% lower than in 2003. Wet plants in 2004 averaged 5.9 MBtu per ton of clinker, down by about 11%. The decline in wet and overall heat consumptions reflects a conversion or replacement (Florida and Maine) of some wet kilns to dry technology. Dry plants in 2004 averaged 3.8 MBtu per ton, essentially unchanged.

As in past years, dry process plants had 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. Shifts in average unit consumption of electricity from 2003 to 2004 appear to be related in the conversion of two plants from wet to dry technology (temporarily resident, in 2004, in the combination category "Both"). 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, but a number of company mergers and/or name changes were announced. Following the merger in 2003 of Lone Star Industries, Inc. and RC Cement Co., Inc. (both subsidiaries of Buzzi Unicem S.p.A. of Italy) under the name RC Lonestar, Inc., the name of the new company was changed in January 2004 to Buzzi Unicem USA, Inc. As of yearend, the merger did not include the Buzzi Unicem subsidiary Alamo Cement Co. of San Antonio, TX.

In January, Centex Construction Products, Inc. split off its cement (and concrete) plants to a new company, Eagle Materials, of Dallas, TX. The transfer involved all four cement plants owned wholly or partially by Centex—Illinois Cement Co. in LaSalle, IL (in which Centex had a 50% share); Mountain Cement Co. in Laramie, WY; Nevada Cement Co. in Fernley, NV; and Texas-Lehigh Cement Co. LP in Buda, TX (50% share). In November, Eagle Materials purchased the remaining 50% of Illinois Cement from Raam Cement Co.

In late September, CEMEX S.A. de C.V. of Monterrey, Mexico, announced that it had reached an agreement with RMC Group plc of the United Kingdom to purchase the worldwide assets of RMC. Apart from gaining a number of cement plants worldwide, the acquisition would position CEMEX as a leading worldwide producer of ready-mixed concrete. In the United States, RMC assets purchased included the RMC Pacific Materials, Inc. cement plant in Davenport, CA, and a number of concrete plants (Cement Americas, 2004a). The purchase was expected to be completed in early 2005. CEMEX expected that regulatory examination of the merger agreement would result in some recommended or mandated divestitures of facilities. In mid-November, CEMEX announced that it had signed a letter of intent to sell its Dixon, IL, and Charlevoix, MI, plants, together with a number of terminals servicing the Great Lakes region, to Votorantim Cimentos Ltda. of Brazil (CEMEX S.A. de C.V., 2004). The sale was expected to be completed in early 2005. CEMEX had, itself, acquired the

Dixon plant in September 2003. The plants would 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.

In November, an agreement was announced for Lehigh Cement Co. to acquire 100% ownership in Glens Falls Lehigh Cement Co. by purchasing the 50% share in Glens Falls owned by Buzzi Unicem (Lehigh Cement, 2004). The purchase involved an integrated plant at Glens Falls, NY; the Cementon grinding plant near Catskill, NY; and a number of terminals, and was expected to be completed in January 2005.

Ash Grove announced plans to build a 1.5-Mt/yr integrated plant just northeast of Las Vegas, NV; construction was expected to begin in 2006 and be completed in early 2008 (Cement Americas, 2004b). The Las Vegas market is currently supplied largely with production from various plants in southern California. Two major plant upgrades came online during the year. In June, Dragon Products Co. completed the conversion of its Thomaston, ME, integrated plant's wet kiln to dry, preheater-precalsiner technology; the wet kiln had been shut down for this purpose in April. The upgraded plant would have a capacity of approximately 0.7 Mt/yr—about 30% higher than that of wet plant (Dragon Products Co., 2004). In June, Titan America fired-up the new dry kiln at the Pennsuco integrated plant at Medley, FL. The new 1.8-Mt/yr kiln line replaced two wet kiln lines (total capacity of about 0.9 Mt/yr) that were shut shortly after the dry kiln became operational. The new plant was formally inaugurated in May 2005 (Cement Americas, 2005).

## Consumption

Apparent consumption of portland and masonry cement increased by 6.9% to about 122 Mt in 2004 (table 1). The measure of consumption preferred by the cement industry for its market analyses, however, is that of cement shipments to final customers (that is, sales). 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. The data for shipments are published monthly by the USGS and are summed in table 9. By this metric, total consumption of cement in 2004 increased by 6.9% to a record 120.2 Mt.

In some years, significant differences have existed between U.S. portland cement sales totals 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 pertained 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 data contain a lot of data submitted on a company-total rather than site-total basis). A number of terminals have been added to the annual canvass, with the result that the tonnage differences became insignificant for 2001–02 and again for 2004. A difference of 1.7 Mt exists for the total 2003 sales, however, but the reason for this is unclear. 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 table 9 and tables 12–13 belie key differences in their component data. Table 9 reveals the

shipment 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 (sales or shipments to final customers) increased by 6.8% to 115.1 Mt, a new record that, based on reports to the USGS of cement shortages, would likely have been significantly higher still had additional imports of cement been available. Overall consumption increased in all months except January and October. The import component of sales was about 19% of the total in 2004 compared with about 17% in 2003. Most States showed consumption increases, with the largest increases being in Arizona, California, Florida, and Georgia. The 13% overall increase in Florida (driven by increases in all months except September) was especially noteworthy given that the State experienced several hurricanes during the year. The leading 10 consuming States in 2004 were, in descending order, California, Texas, Florida, Arizona, Georgia, Ohio, Illinois, Pennsylvania, New York, and Michigan. The leading 5 States accounted for about 39% of total U.S. consumption, and the leading 10 States accounted for about 55% of the total.

Cement being a key construction material, it may be expected that cement consumption levels will broadly reflect levels of construction spending, although 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 (2005), overall construction spending levels in 2004 rose by 2% to about \$714 billion (constant 1996 dollars). This was almost entirely driven by a 6.8% increase in overall residential building construction, fed largely by an 11.5% increase in single-family housing (\$265 billion), and which reflected continued very low mortgage and general interest rates. Virtually all other construction categories showed spending declines in 2004. Nonresidential private construction (for example, office buildings and factories) continued a multiyear trend by declining in 2004 by 1.2% to about \$121 billion. Public sector construction spending fell by 3.5% to about \$168 billion, led by a 4.7% fall in public building construction to about \$75 billion and a 2.7% decline in the highways and street construction to about \$47 billion.

It is difficult to reconcile some of the construction spending changes with the overall increases in cement consumption tonnages and with the breakout of sales by customer type (table 14). For example, overall sales to ready-mixed concrete producers (which feed many forms of concrete construction) were up by 6.1% in 2004, and increases were also seen for sales to manufacturers of brick and block (up by 2.6%) and pipe (up by 15.9%), and to building material dealers (5.8%)—these increases would be in accord with increased spending for residential construction. But sales to road paving contractors were also up (by 15.8%, but there is significant overlap between this category and ready-mixed concrete), as were sales to soil cement contractors (74.2%). Even accounting for possible reporting errors, these increases would not seem to be in accord with the declines in nonresidential and public sector

construction spending. Only the 6.0% drop in sales to manufacturers of precast and prestressed concrete products would seem to reflect the nonresidential building and public sector spending declines. At least some of the poor correlation between overall construction spending and cement consumption levels could be owing to lag times or to significantly higher use of concrete relative to competing construction materials. The latter 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 underreported cement consumption 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 show a generally increasing trend in penetration rates for 2000–04; \$1 million in construction spending bought, in chronological order, about 154 t of cement in 2000; 160 t in 2001; 157 t in 2002; 163 t in 2003; and 171 t in 2004.

Sales to final customers of different types of portland cement are listed in table 15. As in past years, Types I and II cement remained dominant, although consumption increased significantly for 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 20%, reflecting higher levels of exploration and development drilling associated with rapidly rising prices for crude petroleum and natural gas. Overall cement sales (including some regular portland cement) to oil well drillers increased by 51% (table 14).

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 grey 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 a color differentiation is provided only for the national average in table 13. 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 2004 was about \$78.00 per metric ton, up by about \$4.50 per ton. The magnitude of the increase in 2004 was smaller than expected given the widespread report of cement shortages and price increases, significantly higher unit prices for imports (table 17), and the fact that the 2003 price was actually about \$1 per ton lower than in 2002. It is possible that average prices in 2004 would have been higher but for the existence of long-term supply contracts. The average mill net value for masonry cement in 2004 was \$117 per ton, up by \$8 (table 12), but the magnitude 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 2004, the monthly U.S. average Type-I portland cement delivered price for the year was calculated (after conversion to metric units) to be \$92.82 per ton (up by \$1.52 only); a comparison of this with the average gray portland mill net value of \$77.50 per ton in table 13 suggests an average delivery cost of about \$15 per ton, considerably lower than the \$19 per ton apparent delivery charge calculated for 2003, and not in accord with higher fuel costs during the year. This suggests the possibility that some of the ENR data now incorporate some f.o.b. plant prices instead of delivered prices. The ENR price for masonry cement averaged about \$175 per ton, up by about \$3 per ton. The large difference between this and the average mill net value 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 declined slightly in 2004 but, except for sales to Canada, remained insignificant (tables 1, 16). Almost all of the exported material was cement. Overall imports (including into Puerto Rico) of hydraulic cement and clinker in 2004 appear to have increased by 14.0% to 27.3 Mt (tables 17, 18). This was the third highest import level to date (the record was 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 16.2% to 25.7 Mt, a new record, and the apparent clinker component decreased by 12.7% to 1.6 Mt (table 21). The use of the “apparent” qualifier is deliberate because the trade data for 2003–04 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 2002–04 have been manually corrected to remove “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 evidence for this is that 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 Detroit in 2004, 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 transhipped 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 0.4 Mt for 2003 and about 0.6 Mt in 2004 (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. 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 from Canada is difficult to estimate.

The busiest customs districts of entry in 2004 were, in descending order, Tampa, FL; New Orleans, LA; Los Angeles, CA; Miami, FL; and Houston-Galveston, TX (table 18). The leading country suppliers of cement and clinker in 2004 were, in descending order, Canada, Thailand, Venezuela, China, Colombia, Greece, the Republic of Korea, Mexico, Taiwan, and Sweden. Cement imports from Mexico rose by 72% in 2004, notwithstanding large antidumping tariffs on the cement.

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 the United Arab Emirates (in 2003) and for Venezuela (2003–04), 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 too 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 2003–04 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. 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 2003, this difference was \$12.71 per ton (up by only 5.4% from the difference in 2002), after deducting the imports (all or mostly overland) from Canada and Mexico. But for 2004, the calculation yields a difference of \$19.32 per ton, up by 52%, and thus shipping cost increases were a major part of the overall 21% increase in c.i.f. unit values for waterborne imports in 2004 (the customs values increased by only 8.4%). The relatively modest shipping cost increases in 2003 were likely owing to the existence of long-term import contracts. Many shipping contracts came due for renegotiation (upwards) in the first quarter of 2004, and it was right after that time that numerous inquiries began to come into the USGS concerning tight cement supplies and price increases.

## World Review

The world hydraulic cement production data listed in table 22 were derived from data collected by USGS country specialists from a variety of sources. The data for some countries may include their exports of clinker. 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 not be all-inclusive. World cement production increased by about 5% in 2004 to an estimated 2.1 Gt.

More than 150 countries produced cement during the year. In terms of country rankings in 2004, China was again by far the leading cement producer with a provisional production of about 934 Mt, or about 44% of the world total. The remaining top 15 countries were, in descending order, India; the United States; Japan; the Republic of Korea; Spain; Russia; Brazil, Italy, and Turkey (tied); Indonesia; Thailand; Mexico; Germany; and Iran. Cumulatively, the top 5 countries had about 60% of total world output; the top 10 countries, about 70%; and the top 15 countries, about 78%.

Regionally, Asia contributed about 64% of world production and included 6 of the 15 leading producing countries. Western Europe had almost 10% 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

Demand for cement in the United States was expected to remain at or near record levels owing to a continued strong housing market, itself spurred by low interest rates. Mortgage and general interest rates were expected to rise in 2005, but not likely to a point where construction levels would be significantly adversely affected. Spending for public sector transportation projects, and hence related concrete demand, was expected to increase once the U.S. Congress passed a reauthorization of the TEA-21 transportation infrastructure funding bill; passage was expected in 2005. Spot shortages of cement and concrete were expected to continue, although shipping costs and general import availability problems of imported cement were anticipated to abate somewhat. In the light of high import levels and general availability of cement from more than 30 countries in 2004, it was unclear if calls to reduce or eliminate antidumping duties on imported Mexican cement would be acted upon. Given the difficulties in getting new capacity permitted, especially entirely new plants, and given rising costs of domestic production (especially for fuels), it was expected that the United States would continue to rely heavily on imports to meet large, short-term increases in cement demand, and that imports in 2005 would be at record levels. Some of the increased demand for cement was expected to be met through increased use of SCM in concrete.

## References Cited

American Coal Ash Association, 2005, ACAA 2004 coal combustion product (CCP) production and use survey: Aurora, CO, American Coal Ash Association fact sheet, 2 p.

- Cement Americas, 2004a, RMC takeover would transform CEMEX into 20 million+ yd. U.S. ready mixed giant: Cement Americas, September/October, p. 2.
- Cement Americas, 2004b, Ash Grove plans \$250 million Vegas-area greenfield plant: Cement Americas, July/August, p. 2.
- Cement Americas, 2005, Pennsuco plant modernization heralds clear skies for the Sunshine State: Cement Americas, July/August, p. 16–22.
- CEMEX S.A. de C.V., 2004, CEMEX announces plans to divest U.S. assets: Monterrey, Mexico, CEMEX S.A. de C.V. press release, November 15, 2 p.
- Dragon Products Co., 2004, Dragon Cement and Concrete completes \$50 million modernization of Thomaston plant: Portland, ME, Dragon Products Co. press release, August 26, 3 p.
- Lehigh Cement Co., 2004, Lehigh Cement Company will acquire Buzzi Unicem's interest in Glens Falls Lehigh Cement Company: Allentown, PA, Lehigh Cement Co. press release, November 12, 2 p.
- Portland Cement Association, 2005, Construction put in place: Monitor, v. 15, nos. 5–6, May–June, p. 18.
- van Oss, H.G., and Padovani, A.C., 2003, Cement manufacture and the environment—Part II—Environmental challenges and opportunities: Journal of Industrial Ecology, v. 7, no. 1, p. 93–126.

## Internet Reference Cited

van Oss, H.G., 2005, Background facts and issues concerning cement and cement data, U.S. Geological Survey Open File 2005–1152, accessed January 18, 2006, via URL <http://minerals.usgs.gov/minerals/pubs/commodity/cement>.

## GENERAL SOURCES OF INFORMATION

### U.S. Geological Survey Publications

Cement. Ch. in Mineral Commodity Summaries, annual.

Cement. Mineral Industry Surveys, monthly.

### Other

- American Coal Ash Association, annual survey.
- Cement. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
- Cement Americas, bimonthly.
- Cement Americas, North American Cement Directory. Intertec Publishing, annual.
- Concrete Products, monthly.
- Engineering News-Record, weekly.
- International Cement Review, monthly.
- Portland Cement Association:
- Monitor, The, monthly.
  - U.S. and Canadian Portland Cement Industry, Plant Information Summary, annual.
- Slag Cement Association, annual survey.
- Rock Products, monthly.
- World Cement, monthly.
- World Cement Directory. The European Cement Association, 2002.
- Zement-Kalk-Gyps International, monthly.

TABLE 1  
SALIENT CEMENT STATISTICS<sup>1</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

	2000	2001	2002	2003	2004
United States: <sup>2</sup>					
Production:					
Cement <sup>3</sup>	87,846	88,900	89,732	92,843	97,434
Clinker	78,138	78,451	81,517	81,882	86,658
Shipments from mills and terminals: <sup>4,5</sup>					
Quantity	105,557	112,510	108,500	111,000	120,000
Value <sup>6</sup>	8,292,625 <sup>7</sup>	8,600,000	8,250,000	8,340,000	9,540,000
Average value <sup>8</sup> dollars per metric ton	78.56	76.50	76.00	75.00	79.50
Stocks at mills and terminals, yearend	7,566	6,600	7,680	6,610	6,710
Exports of cement and clinker	738	746	834	837	818
Imports for consumption:					
Cement <sup>9</sup>	24,561	23,694	22,198	21,015	25,396
Clinker	3,673	1,782	1,603	1,808	1,630
Total <sup>10</sup>	28,234	25,474	23,801	22,823	27,026
Consumption, apparent <sup>11</sup>	110,470	112,810	110,020	114,090	121,910
World, production <sup>c, 12</sup>	1,660,000	1,750,000 <sup>r</sup>	1,850,000 <sup>r</sup>	2,020,000 <sup>r</sup>	2,130,000

<sup>c</sup>Estimated. <sup>r</sup>Revised.

<sup>1</sup>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.

<sup>2</sup>Excludes Puerto Rico.

<sup>3</sup>Includes cement produced from imported clinker.

<sup>4</sup>Includes imported cement and cement made from imported clinker. Includes sales by import terminals.

<sup>5</sup>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.

<sup>6</sup>Value at mill or import terminal of cement shipments to final domestic customers.

<sup>7</sup>Although presented unrounded, the data contain estimates for survey nonrespondents.

<sup>8</sup>Total value at mill or import terminal divided by the total tonnage sold.

<sup>9</sup>All forms of hydraulic cement or clinker, respectively.

<sup>10</sup>Data may not add to totals shown because of independent rounding.

<sup>11</sup>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.

<sup>12</sup>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<sup>1</sup>

District <sup>3</sup>	2003						2004					
	Active plants	Production <sup>4</sup> (thousand metric tons)	Capacity <sup>2</sup>		Stocks at yearend <sup>6</sup> (thousand metric tons)	Active plants	Production <sup>4</sup> (thousand metric tons)	Capacity <sup>2</sup>		Stocks at yearend <sup>6</sup> (thousand metric tons)		
			Finish grinding (thousand metric tons)	Percentage utilized <sup>5</sup>				Finish grinding (thousand metric tons)	Percentage utilized <sup>5</sup>			
Maine and New York	5	3,117	4,480 <sup>7</sup>	69.5 <sup>7</sup>	277 <sup>7</sup>	5	3,266	4,569	71.5	167		
Pennsylvania, eastern <sup>8</sup>	7	4,327	5,320	81.3	321	7	4,706	5,378	87.5	209 <sup>7</sup>		
Pennsylvania, western	3	1,393	1,660 <sup>7</sup>	83.8 <sup>7</sup>	128	3	1,522	1,704	89.3	105 <sup>7</sup>		
Illinois	4	2,925	3,390 <sup>7</sup>	86.2 <sup>7</sup>	243	4	3,009	3,388	88.8	263		
Indiana	4	2,928	3,663	79.9	177	4	3,077	3,723	82.6	253		
Michigan and Wisconsin <sup>9</sup>	6	5,541	7,510 <sup>7</sup>	73.7 <sup>7</sup>	370 <sup>7</sup>	6	5,688	7,363	77.3	283		
Ohio	2	1,032	1,530 <sup>7</sup>	67.4	36	2	1,020	1,333	76.6	49		
Iowa, Nebraska, South Dakota	5	4,390	5,962	73.6	384	5	4,257	6,064	70.2	346		
Kansas	4	2,270	3,024	75.1	193	4	2,687	3,042	88.3	196		
Missouri	5	5,182	6,823	75.9	384	5	5,263	6,822	77.1	471		
Florida <sup>8</sup>	7	4,190	7,390 <sup>7</sup>	56.7 <sup>7</sup>	452	7	5,232	7,370 <sup>7</sup>	71.0	420		
Georgia, Virginia, West Virginia	4	2,803	3,820 <sup>7</sup>	73.5 <sup>7</sup>	200 <sup>7</sup>	4	2,832	3,847	73.6	168		
Maryland	3	2,203	2,388	92.3	126	3	2,519	2,706	93.1	164		
South Carolina	3	3,148	4,340 <sup>7</sup>	72.6	136	3	3,114	4,587	67.9	272		
Alabama	5	4,332	5,220 <sup>7</sup>	83.0 <sup>7</sup>	218	5	4,796	5,173	92.7	299		
Kentucky, Mississippi, Tennessee	4	3,151	3,490 <sup>7</sup>	90.3 <sup>7</sup>	196	4	3,232	3,587	90.1	335 <sup>7</sup>		
Arkansas and Oklahoma	4	2,742	3,330 <sup>7</sup>	82.4 <sup>7</sup>	142	4	2,753	3,277	84.0	253		
Texas, northern <sup>8</sup>	6	6,400	7,410 <sup>7</sup>	86.4 <sup>7</sup>	302	6	6,393	7,400 <sup>7</sup>	86.3	322		
Texas, southern	5	4,652	5,450 <sup>7</sup>	85.3	241	5	4,791	5,534	86.6	214 <sup>7</sup>		
Arizona and New Mexico	3	2,618	3,035	86.3	102	3	2,750	3,477	79.1	98		
Colorado and Wyoming	3	2,470	3,310 <sup>7</sup>	74.6 <sup>7</sup>	115	3	2,706	3,281	82.5	146		
Idaho, Montana, Nevada, Utah	7	2,992	4,060 <sup>7</sup>	73.7 <sup>7</sup>	304 <sup>7</sup>	6	2,973	3,770 <sup>7</sup>	78.9	180		
Alaska and Hawaii	--	--	--	--	35	--	--	--	--	65		
California, northern	3	2,489	2,880	86.4	185 <sup>7</sup>	3	2,656	2,944	90.2	153		
California, southern <sup>8</sup>	8	9,103	10,300 <sup>7</sup>	88.3 <sup>7</sup>	315 <sup>7</sup>	8	9,272	10,500 <sup>7</sup>	88.4	331		
Oregon and Washington	4	1,707	2,432	70.2	213	4	1,921	2,390	80.4	189 <sup>7</sup>		
Independent importers, n.e.c. <sup>9</sup>	--	--	--	--	382 <sup>7</sup>	--	--	--	--	315 <sup>7</sup>		
Total or average <sup>10</sup>	114	88,106	112,000 <sup>7</sup>	78.5 <sup>7</sup>	6,180 <sup>7</sup>	113	92,434	113,000 <sup>7</sup>	81.6	6,270 <sup>7</sup>		
Puerto Rico	2	1,485	2,462	60.3	64	2	1,580	2,462	64.2	43		
Grand total or average <sup>10</sup>	116	89,592	115,000 <sup>7</sup>	78.1 <sup>7</sup>	6,240 <sup>7</sup>	115	94,014	116,000 <sup>7</sup>	81.3	6,310 <sup>7</sup>		

<sup>1</sup>Revised. ---Zero.

<sup>2</sup>Even when presented unrounded, data are thought to be accurate to no more than three significant digits. Includes data for white cement.

<sup>3</sup>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.

<sup>4</sup>District assignment is the location of the reporting facilities. Includes independent importers for which regional assignments were possible.

<sup>5</sup>Includes cement produced from imported clinker.

<sup>6</sup>Calculated relative to portland cement output.

<sup>7</sup>Includes imported cement. Includes mills and terminals.

<sup>8</sup>Data, even where they appear to be unrounded, contain estimates for nonrespondent or incompletely reporting facilities.

<sup>9</sup>Data, except for stockpiles, exclude one plant that reported cement (clinker) grinding capacity but reported no production of portland cement.

<sup>10</sup>Not elsewhere classified. Data include only those importers or terminals for which regional assignments were not possible.

<sup>11</sup>Data may not add to totals shown because of independent rounding.



TABLE 4  
MASONRY CEMENT PRODUCTION AND STOCKS IN THE UNITED STATES, BY DISTRICT<sup>1</sup>

District <sup>2</sup>	2003			2004		
	Active plants	Production <sup>3</sup> (thousand metric tons)	Stocks at yearend <sup>4</sup> (thousand metric tons)	Active plants	Production <sup>3</sup> (thousand metric tons)	Stocks at yearend <sup>4</sup> (thousand metric tons)
Maine and New York	4	117	15 <sup>5</sup>	4	127	20
Pennsylvania, eastern	6	246	44	6	289	37
Pennsylvania, western	3	96	9	3	W	W <sup>5</sup>
Indiana	4	W	W	4	W	W
Michigan	5	237	37	4	231	32
Ohio	2	75	12	2	98	18
Iowa, Nebraska, South Dakota	2	W	W	2	W	W
Kansas	2	W	W	2	W	W
Missouri	1	W	W	1	W	W
Florida	5	674	35	5	763	45
Georgia, Virginia, West Virginia	5	371 <sup>5</sup>	38 <sup>5</sup>	5	419	49
Maryland	2	W	W	2	W	W
South Carolina	3	425	23	3	453	7
Alabama	4	565	51	4	430	56
Kentucky, Mississippi, Tennessee	3	W	W	3	W	W
Arkansas and Oklahoma	4	149	14	4	161	15
Texas, northern	4	155	11	4	161	22
Texas, southern	3	152	7	3	158	5 <sup>5</sup>
Arizona and New Mexico	3	W	W	3	W	W
Colorado and Wyoming	2	W	W	2	W	W
Idaho, Montana, Nevada, Utah	1	W	W	--	W	W
Alaska and Hawaii	1	4	--	--	--	--
California, northern, Oregon, Washington <sup>6</sup>	3	73	8	3	81	6
California, southern	4	519	9	4	605	12
Independent importers, n.e.c. <sup>7</sup>	--	--	5 <sup>5</sup>	--	--	5 <sup>5</sup>
Total <sup>8</sup>	76	4,737 <sup>5,9</sup>	434 <sup>5</sup>	73	5,000	441 <sup>5</sup>

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

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

<sup>2</sup>District assignment is the location of the reporting facilities. Includes independent importers for which regional assignments were possible.

<sup>3</sup>Includes cement produced from imported clinker.

<sup>4</sup>Includes imported cement.

<sup>5</sup>Data, even where they appear unrounded, contain estimates for nonrespondent or incompletely reporting facilities.

<sup>6</sup>Oregon and Washington reported zero production and stocks in 2004.

<sup>7</sup>Not elsewhere classified.

<sup>8</sup>Data may not add to totals shown because of independent rounding.

<sup>9</sup>Production from clinker accounted for 95% of the total. Production from finished cement accounted for the remainder.

TABLE 5  
CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2004, BY DISTRICT<sup>1</sup>

District	Active plants <sup>2</sup>			Number of kilns <sup>3</sup>	Daily capacity <sup>4</sup> (thousand metric tons)	Average days of routine maintenance	Apparent annual capacity <sup>5</sup> (thousand metric tons)	Production (thousand metric tons)	Percentage of capacity utilized	Yearend stocks <sup>6</sup> (thousand metric tons)
	Process used									
	Wet	Dry	Both							
Maine and New York	2	1	1	4	12.8	19.9	4,390	3,055	69.5	107
Pennsylvania, eastern	2	5	--	7	16.5	36.6	5,440	4,486	82.5	185
Pennsylvania, western	2	1	--	3	5.0	29.8 <sup>7</sup>	1,700	1,442	85.0 <sup>7</sup>	45
Illinois	--	4	--	4	8.6	21.1	2,910	2,654	91.1	205
Indiana	1	3 <sup>8</sup>	--	4	10.6	23.3	3,650	3,163	86.7	87
Michigan	1	2	--	3	13.9	26.6	4,730	4,077	86.2	375
Ohio	1	1	--	2	3.4	18.6	1,200	1,015	84.8	31
Iowa, Nebraska, South Dakota	--	4	1	5	13.9	21.9	4,710	3,849	81.7	153
Kansas	1	3	--	4	8.9	11.6	3,150	2,608	82.7	123
Missouri	2	3	--	5	15.9	13.7	5,570	5,015	90.1	124
Florida	--	5	1	6	21.3	19.2	7,370	4,758	64.6	182 <sup>7</sup>
Georgia, Virginia, West Virginia	1	3	--	4	9.6	19.1	3,310	2,421	73.1	198
Maryland	1	2	--	3	8.1	13.5	2,830	2,495	88.2	85
South Carolina	1	2	--	3	11.0	19.8	3,680	3,145	85.4	118
Alabama	--	5	--	5	16.4	18.2	5,690	5,048	88.7	184
Kentucky, Mississippi, Tennessee	1	3	--	4	10.2	21.8	3,510	3,108	88.5	230
Arkansas and Oklahoma	2	2	--	4	8.3	15.6	2,900	2,536	87.4	73
Texas, northern	2	3	1	6	21.3	19.7	7,380	6,312	85.6	204
Texas, southern	--	4	1	5	13.7	20.5	4,750	4,417	93.0	232
Arizona and New Mexico	--	3	--	3	8.6	14.1	3,020	2,566	84.9	112
Colorado and Wyoming	--	3	--	3	8.7	13.7	3,050	2,486	81.6	68
Idaho, Montana, Nevada, Utah	3	3	--	6	8.3	21.1	2,880	2,777	96.4	72
California, northern	--	3	--	3	8.9	21.8	3,070	2,623	85.3	114
California, southern	--	8	--	8	29.5	23.4	10,190	8,970	88.1	357
Oregon and Washington	1	2	--	3	6.3	56.6	1,920	1,632	85.1	68
Total or average <sup>9</sup>	24	78	5	107	186	299.7	103,000	86,658	84.1	3,730
Puerto Rico	--	2	--	2	6.0	11.0	2,130	1,533	72.1	97
Grand total or average <sup>9</sup>	24	80	5	109	188	305.7	105,000	88,190	83.9	3,830

-- Zero.

<sup>1</sup>Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

<sup>2</sup>Includes white cement plants. Includes all plants active for at least one day during the year.

<sup>3</sup>Kilns active at least one day during year. Excludes idle kilns (full year) that cannot be restarted, fully permitted, in less than 6 months.

<sup>4</sup>Sum of reported daily kiln capacities for each plant in district.

<sup>5</sup>Sum of apparent annual kiln capacities; for each kiln calculated as 365 days (366 in leap years) minus reported days as shut down for routine maintenance and then multiplied by the reported (unrounded) daily capacity.

<sup>6</sup>Includes imported clinker and clinker stockpiles at grinding plants.

<sup>7</sup>Data, even where apparently unrounded, contain estimates for nonrespondent or incompletely reporting facilities.

<sup>8</sup>Includes one semidry kiln.

<sup>9</sup>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<sup>1,2</sup>

(Thousand metric tons)

Raw materials	2003		2004	
	Clinker	Cement <sup>3</sup>	Clinker	Cement <sup>3</sup>
<b>Calcareous:</b>				
Limestone (includes aragonite, marble, chalk, coral)	109,000	1,530	125,000	1,810
Cement rock (includes marl)	12,700	44	12,700	2
Cement kiln dust (CKD) <sup>4</sup>	289	149	333	165
Lime <sup>5</sup>	22	27	24	29
Other	235	32	23	19
<b>Aluminous:</b>				
Clay	3,950	--	4,740	--
Shale	2,630	8	3,700	29
Other <sup>6</sup>	618	--	661	--
<b>Ferrous, iron ore, pyrites, millscale, other</b>				
	1,340	--	1,340	--
<b>Siliceous:</b>				
Sand and calcium silicate	2,860	2	3,150	--
Sandstone, quartzite soils, other	587	2	878	6
Fly ash	2,250	39	2,890	77
Other ash, including bottom ash	1,100	--	1,050	--
Granulated blast furnace slag <sup>7</sup>	17	333	104	345
Other blast furnace slag	214	--	189	--
Steel slag	448	--	401	--
Other slags	113	--	53	--
Natural rock pozzolans <sup>8</sup>	--	25	--	6
Other pozzolans <sup>9</sup>	129	49	114	19
<b>Other:</b>				
Gypsum and anhydrite	--	5,000	--	5,300
Other, n.e.c. <sup>10</sup>	70	68	106	98
Total <sup>11</sup>	139,000	7,300	157,000	7,910
Clinker, imported, raw materials equivalent <sup>11</sup>	--	4,240	--	7,530
Grand total <sup>12</sup>	139,000	11,500	157,000	15,400

-- Zero.

<sup>1</sup>Nonfuel raw materials. Includes Puerto Rico.

<sup>2</sup>Data have been rounded to three significant digits to reflect inherent reporting accuracy and the incorporation of estimates for some facilities.

<sup>3</sup>Includes portland, blended, and masonry cements.

<sup>4</sup>Data are underreported.

<sup>5</sup>Data are probably underreported, especially regarding incorporation within masonry cements.

<sup>6</sup>Includes alumina, aluminum dross, bauxite, catalysts, staurolite, and other materials.

<sup>7</sup>Includes both ground (GGBFS) and unground material.

<sup>8</sup>Includes pozzolana and burned clays and shales except where reported directly as clay or shale.

<sup>9</sup>Includes diatomite, silica fume, other microcrystalline silica, and other pozzolans, whether or not used as such.

<sup>10</sup>Not elsewhere classified.

<sup>11</sup>Data may not add to totals shown because of independent rounding.

<sup>12</sup>Converted as the weight of foreign clinker consumed times 1.7.

TABLE 7  
CLINKER PRODUCED AND FUEL CONSUMED BY THE CEMENT INDUSTRY IN THE UNITED STATES, BY PROCESS<sup>1,2</sup>

Kiln process	Clinker produced <sup>3</sup>			Fuel consumed					Waste fuel		
	Active plants	Quantity	Percentage of total	Coal <sup>4</sup> (thousand metric tons)	Coke <sup>5</sup> (thousand metric tons)	Petroleum		Natural gas (thousand cubic meters)	Tires (thousand metric tons)	Solid	
		(thousand metric tons)				coke (thousand metric tons)	Oil <sup>6</sup> (thousand liters)			(thousand metric tons)	Liquid (thousand liters)
2003:											
Wet	26	13,259	15.9	1,830	--	528	24,300	33,400	92	234	686,000
Dry	79	65,201	78.3	6,940	3	1,420	61,200	286,000	291	52	185,000
Both <sup>7</sup>	4	4,855	5.8	696	--	26	--	58,100	5	31	39,000
Total <sup>8</sup>	109	83,315	100.0	9,460	3	1,980	85,400	377,000	387	317	910,000
2004:											
Wet	24	14,165	16.1	1,730	--	584	29,300	36,700	61	38	771,000
Dry	80	68,693	77.9	7,420	--	1,600	75,200	299,000	312	71	188,000
Both <sup>7</sup>	5	5,333	6.0	700	--	77	691	60,000	5	16	40,400
Total <sup>8</sup>	109	88,190	100.0	9,850	--	2,260	105,000	396,000	377	125	999,000

-- Zero.

<sup>1</sup>All fuel data have been rounded to three significant digits.

<sup>2</sup>Includes Puerto Rico.

<sup>3</sup>Clinker data were all reported; although unrounded, data are thought to be accurate to no more than three significant digits.

<sup>4</sup>All reported to be bituminous.

<sup>5</sup>Data are likely to be all or mostly misreported petroleum coke.

<sup>6</sup>Distillate and residual fuel oils; excludes used oils included under liquid wastes.

<sup>7</sup>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.

<sup>8</sup>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<sup>1</sup>

Plant process	Electric energy used <sup>2</sup>						Finished cement produced <sup>4</sup> (thousand metric tons)	Average consumption (kilowatthours per metric ton of cement produced)
	Generated at plant		Purchased		Total			
	Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Quantity <sup>3</sup> (million kilowatthours)	Percentage		
2003:								
Integrated plants:								
Wet	--	--	26	2,190	2,190	16.5	15,618	140
Dry	5	526	79	9,760	10,300	77.4	72,895	141
Both <sup>5</sup>	--	--	4	814	814	6.1	5,816	140
Total or average <sup>3</sup>	5	526	109	12,800	13,300	100.0	94,329	141
Grinding plants <sup>6</sup>	--	--	6	166	166	--	2,169	77
Exclusions <sup>7</sup>	--	--	2	--	--	--	139	--
2004:								
Integrated plants:								
Wet	--	--	24	2,170	2,170	15.8	15,770	137
Dry	4	456	80	10,300	10,700	78.2	75,045	143
Both <sup>5</sup>	--	--	5	822	822	6.0	5,642	146
Total or average <sup>3</sup>	4	456	109	13,300	13,700	100.0	96,457	142
Grinding plants <sup>6</sup>	--	--	6	198	198	--	2,392	83
Exclusions <sup>7</sup>	--	--	2	--	--	--	165	--

-- Zero.

<sup>1</sup>Includes Puerto Rico.

<sup>2</sup>Electricity data are rounded because they include estimates for a number of nonrespondent plants or incomplete reporting by respondent facilities.

<sup>3</sup>Data may not add to totals shown because of independent rounding.

<sup>4</sup>Includes portland and masonry cements. Data are all reported and have not been rounded.

<sup>5</sup>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.

<sup>6</sup>Excludes plants that reported production only of masonry cement.

<sup>7</sup>Tonnage of cement produced by plants that reported production of masonry cement only.

TABLE 9  
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN<sup>1,2</sup>

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2003	2004	2003	2004
Destination:				
Alabama	1,599 <sup>r</sup>	1,643	162	172
Alaska <sup>3</sup>	165	175	(4)	--
Arizona	3,608	4,117	109	113
Arkansas	1,094	1,173	69	83
California, northern	4,681	5,044	111	125
California, southern	8,574	9,177	450	537
Colorado	2,290	2,440	27	30
Connecticut <sup>3</sup>	757	828	15	19
Delaware <sup>3</sup>	173 <sup>r</sup>	181	11	13
District of Columbia <sup>3</sup>	195	191	(4)	(4)
Florida	8,589 <sup>r</sup>	9,698	767 <sup>r</sup>	879
Georgia	3,446 <sup>r</sup>	4,109	321	354
Hawaii	340	380	5	5
Idaho	590	685	1	1
Illinois, excluding Chicago	1,756	2,068	26	27
Illinois, metropolitan Chicago <sup>3</sup>	2,234	1,919	62	65
Indiana	2,176	2,238	93	97
Iowa	1,717 <sup>r</sup>	1,842	7	6
Kansas	1,540	1,535	15	14
Kentucky	1,337	1,395	107	114
Louisiana <sup>3</sup>	1,832	1,882	62	66
Maine	219	234	5	5
Maryland	1,344 <sup>r</sup>	1,542	85	91
Massachusetts <sup>3</sup>	1,265 <sup>r</sup>	1,322	20	24
Michigan	3,052	3,175	142	146
Minnesota <sup>3</sup>	2,068	2,077	50	47
Mississippi	984 <sup>r</sup>	974	64	67
Missouri	2,664	2,623	47	49
Montana	375	407	1	1
Nebraska	1,208 <sup>r</sup>	1,308	8	9
Nevada	2,026	2,382	23	29
New Hampshire <sup>3</sup>	233	221	5	5
New Jersey <sup>3</sup>	1,886	2,036	75	89
New Mexico	813	940	9	9
New York, eastern	645	663	26	23
New York, western <sup>3</sup>	819	879	29	30
New York, metropolitan <sup>3</sup>	1,685	1,694	75	87
North Carolina <sup>3</sup>	2,469	2,743	305	326
North Dakota <sup>3</sup>	330	402	3	2
Ohio	3,830	3,999	189	191
Oklahoma	1,480 <sup>r</sup>	1,442	54	62
Oregon	1,005	1,119	1	1
Pennsylvania, eastern	1,948	2,230	61	73
Pennsylvania, western	1,165 <sup>r</sup>	1,166	68	60
Rhode Island <sup>3</sup>	197	178	3	4
South Carolina	1,499	1,742	138	147
South Dakota	452	512	2	2
Tennessee	1,884 <sup>r</sup>	1,875	223	256
Texas, northern	6,680	6,222	192	148
Texas, southern	6,359	6,874	191	219
Utah	1,200	1,373	(4)	(4)

See footnotes at end of table.

TABLE 9—Continued  
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN<sup>1,2</sup>

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2003	2004	2003	2004
Destination—Continued:				
Vermont <sup>3</sup>	136	144	3	3
Virginia	2,100	2,478	169	189
Washington	1,903	2,090	2	2
West Virginia	432	488	27	29
Wisconsin	2,229	2,329	30	28
Wyoming	424	463	1	(4)
Total <sup>5</sup>	107,701 <sup>r</sup>	115,066	4,745	5,172
Foreign countries <sup>6</sup>	483	492	(4)	1
Puerto Rico	1,858	1,879	--	--
Grand total <sup>5</sup>	110,042 <sup>r</sup>	117,435	4,745	5,172
Origin:				
United States	89,598	93,323	4,701	5,115
Puerto Rico	1,484	1,585	--	--
Foreign countries <sup>7</sup>	18,960	22,527	44	57
Total shipments <sup>5</sup>	110,042	117,435	4,745	5,172

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Includes cement produced from imported clinker and imported cement shipped by domestic producers and importers.

<sup>2</sup>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.

<sup>3</sup>Has no cement plants.

<sup>4</sup>Less than ½ unit.

<sup>5</sup>Data may not add to totals shown because of independent rounding.

<sup>6</sup>Includes shipments to U.S. possessions and territories.

<sup>7</sup>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<sup>1,2</sup>

(Thousand metric tons)

	Shipments from plant to terminal		Shipments to final domestic consumer				Total shipments to consumer <sup>4</sup>
	In bulk	In containers <sup>3</sup>	From plant to consumer		From terminal to consumer		
			In bulk	In containers <sup>3</sup>	In bulk	In containers <sup>3</sup>	
2003:							
Railroad	12,200	7	1,770	--	411	19	2,200
Truck	4,380	142	56,800	2,030	46,300	745	106,000
Barge and boat	7,910	--	141	1	44	--	186
Total <sup>4</sup>	24,400	149	58,700	2,030	46,800	764	108,000 <sup>5</sup>
2004:							
Railroad	13,700	47	1,690	8	409	1	2,108
Truck	4,910	563	61,300	2,080	48,800	847	113,000
Barge and boat	8,400	10	99	--	1,290	--	1,390
Total <sup>4</sup>	27,000	620	63,100	2,090	50,500	848	116,000 <sup>5</sup>

-- Zero.

<sup>1</sup>Includes Puerto Rico. Includes imported cement and cement made from imported clinker.

<sup>2</sup>Data are rounded to no more than three significant digits because they include estimates.

<sup>3</sup>Includes packages, bags, and jumbo bags.

<sup>4</sup>Data may not add to totals shown because of independent rounding.

<sup>5</sup>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<sup>1</sup>

District <sup>3,4</sup>	2003			2004		
	Quantity (thousand metric tons)	Value <sup>2</sup>		Quantity (thousand metric tons)	Value <sup>2</sup>	
		Total (thousands)	Average (dollars per metric ton)		Total (thousands)	Average (dollars per metric ton)
Maine and New York	2,142	\$158,000 <sup>5</sup>	74.00 <sup>5</sup>	3,556	\$269,944	75.91
Pennsylvania, eastern	4,336	317,000 <sup>5</sup>	73.00 <sup>5</sup>	4,830 <sup>5</sup>	363,000 <sup>5</sup>	75.00 <sup>5</sup>
Pennsylvania, western	1,404	106,000 <sup>5</sup>	75.50 <sup>5</sup>	1,535	120,000 <sup>5</sup>	78.00 <sup>5</sup>
Illinois	2,988	215,000 <sup>5</sup>	72.00 <sup>5</sup>	3,052	235,921	77.31
Indiana	2,830 <sup>5</sup>	196,379	69.39	3,013	213,484	70.85
Michigan and Wisconsin	6,600 <sup>5</sup>	490,000 <sup>5</sup>	74.00 <sup>5</sup>	6,611	535,000 <sup>5</sup>	81.00 <sup>5</sup>
Ohio	1,078	85,872	79.64	1,005	84,700 <sup>5</sup>	84.00 <sup>5</sup>
Iowa, Nebraska, South Dakota	4,869	378,034	77.65	4,802	394,319	82.12
Kansas	2,051	156,000 <sup>5</sup>	76.00 <sup>5</sup>	2,222	175,000 <sup>5</sup>	79.00 <sup>5</sup>
Missouri	6,291	426,931	68.87	6,058	446,008	73.63
Florida	8,289	638,000 <sup>5</sup>	77.00 <sup>5</sup>	9,430 <sup>5</sup>	776,000 <sup>5</sup>	82.50 <sup>5</sup>
Georgia, Virginia, West Virginia	2,730	193,000 <sup>5</sup>	70.50 <sup>5</sup>	2,951	220,030	74.55
Maryland	2,483	165,935	66.82	2,733	189,628	69.38
South Carolina	3,210	198,000 <sup>5</sup>	61.50 <sup>5</sup>	3,491	220,162	63.06
Alabama	4,275	269,000 <sup>5</sup>	63.00 <sup>5</sup>	4,621	308,181	66.69
Kentucky, Mississippi, Tennessee	3,183	218,000 <sup>5</sup>	68.50 <sup>5</sup>	3,087	227,798	73.79
Arkansas and Oklahoma	2,797	196,459	70.24	2,658	198,487	74.68
Texas, northern	6,660 <sup>5</sup>	449,000 <sup>5</sup>	67.50 <sup>5</sup>	7,678	559,000 <sup>5</sup>	73.00 <sup>5</sup>
Texas, southern	6,020 <sup>5</sup>	408,030	67.78	6,270 <sup>5</sup>	435,000 <sup>5</sup>	69.50 <sup>5</sup>
Arizona and New Mexico	3,676	342,180	93.08	3,969	368,314	92.80
Colorado and Wyoming	2,329	169,619	72.82	2,786	206,658	74.19
Idaho, Montana, Nevada, Utah	3,097	245,000 <sup>5</sup>	79.00 <sup>5</sup>	3,245	281,775	86.83
Alaska and Hawaii	454	58,952	129.80	499	64,680	129.53
California, northern	3,751	302,695	80.69	4,257	369,806	86.88
California, southern	9,881	740,801	74.97	10,764	881,243	81.87
Oregon and Washington	1,897	145,334	76.61	2,690 <sup>5</sup>	207,000 <sup>5</sup>	77.00 <sup>5</sup>
Independent importers, n.e.c. <sup>6,7</sup>	7,140 <sup>5</sup>	555,000 <sup>5</sup>	78.00 <sup>5</sup>	6,790 <sup>5</sup>	598,000 <sup>5</sup>	88.00 <sup>5</sup>
Total or average <sup>8</sup>	106,000 <sup>5,9</sup>	7,820,000 <sup>5</sup>	73.50 <sup>5</sup>	115,000 <sup>5,9</sup>	8,950,000 <sup>5</sup>	78.00 <sup>5</sup>
Puerto Rico	1,848	W	W	1,868	W	W
Grand total <sup>8</sup>	108,000 <sup>5,9</sup>	W	W	116,000 <sup>5,9</sup>	W	W

W Withheld to avoid disclosing company proprietary data.

<sup>1</sup>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.

<sup>2</sup>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 ton.

<sup>3</sup>District is the location of the reporting facility, not the location of sales.

<sup>4</sup>Includes shipments by independent importers where regional assignments were possible.

<sup>5</sup>Data are rounded (unit values to the nearest \$0.50) because they include estimated data.

<sup>6</sup>Importers for which district assignments were not possible.

<sup>7</sup>Not elsewhere classified.

<sup>8</sup>Data may not add to totals shown because of independent rounding.

<sup>9</sup>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<sup>1,2</sup>

District <sup>4</sup>	2003			2004		
	Quantity (thousand metric tons)	Value <sup>3</sup>		Quantity (thousand metric tons)	Value <sup>3</sup>	
		Total (thousands)	Average (dollars per metric ton)		Total (thousands)	Average (dollars per metric ton)
Maine and New York	112 <sup>5</sup>	\$11,600 <sup>5</sup>	104.00 <sup>5</sup>	122	\$12,100 <sup>5</sup>	99.50 <sup>5</sup>
Pennsylvania, eastern	317 <sup>5,6</sup>	36,700 <sup>5,6</sup>	116.00 <sup>5,6</sup>	254	29,200 <sup>5</sup>	115.00 <sup>5</sup>
Pennsylvania, western	W	W	W	91	10,600 <sup>5</sup>	116.50 <sup>5</sup>
Illinois, Indiana, Ohio	494	57,040	115.43	532	62,500 <sup>5</sup>	117.50 <sup>5</sup>
Michigan	269	27,500 <sup>5</sup>	102.50 <sup>5</sup>	255	30,000 <sup>5</sup>	117.50 <sup>5</sup>
Iowa, Nebraska, South Dakota	32	5,291	165.72	35	4,627	132.92
Kansas and Missouri	146	13,804	94.76	154	18,166	118.23
Florida	675	83,093	123.04	775	99,200 <sup>5</sup>	128.00 <sup>5</sup>
Georgia, Maryland, Virginia, West Virginia	428	53,200 <sup>5</sup>	124.50 <sup>5</sup>	455	66,000 <sup>5</sup>	145.00 <sup>5</sup>
South Carolina	416	42,767	102.71	400	44,073	110.06
Alabama	488	48,100 <sup>5</sup>	98.50 <sup>5</sup>	425	48,875	114.98
Kentucky, Mississippi, Tennessee	118	13,500 <sup>5</sup>	114.00 <sup>5</sup>	125	15,000	119.73
Arkansas and Oklahoma	159	15,220	95.52	157	16,724	106.61
Texas, northern	130	17,500 <sup>5</sup>	134.50 <sup>5</sup>	163	22,800 <sup>5</sup>	139.50 <sup>5</sup>
Texas, southern	160	16,586	103.45	172	17,111	99.75
Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming	148	14,500 <sup>5</sup>	98.00 <sup>5</sup>	147	15,513	105.71
Alaska and Hawaii	4	724	173.05	4	914	209.44
California, northern; Oregon; Washington	76	6,487	85.08	84	9,710 <sup>5</sup>	115.00 <sup>5</sup>
California, southern	535	48,379	90.51	599	57,115	95.30
Independent importers, n.e.c. <sup>7,8</sup>	28	3,600 <sup>5</sup>	130.00 <sup>5</sup>	43 <sup>5</sup>	4,910 <sup>5</sup>	114.00 <sup>5</sup>
Total or average <sup>9</sup>	4,740 <sup>5,10</sup>	516,000 <sup>5</sup>	109.00 <sup>5</sup>	4,990 <sup>5,10</sup>	585,000 <sup>5</sup>	117.00 <sup>5</sup>

W Withheld to avoid disclosing company proprietary data; included in "Pennsylvania, eastern."

<sup>1</sup>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.

<sup>2</sup>Includes gray, white, and colored varieties of masonry, portland-lime, and plastic cements.

<sup>3</sup>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.

<sup>4</sup>District location is that of the reporting facilities, not necessarily the location of sales.

<sup>5</sup>Data are rounded (unit values to the nearest \$0.50) because they include estimated data.

<sup>6</sup>Data include "Pennsylvania, western."

<sup>7</sup>Importers for which district assignments were not possible.

<sup>8</sup>Not elsewhere classified.

<sup>9</sup>Data may not add to totals shown because of independent rounding.

<sup>10</sup>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<sup>1,2</sup>

(Dollars per metric ton)

Year	Gray portland cement	White portland cement <sup>3</sup>	All portland cement	Prepared masonry cement	All classes of cement
2003	72.50	159.00	73.50	109.00	75.00
2004	77.50	164.00	78.00	117.00	79.50

<sup>1</sup>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

<sup>2</sup>Data are rounded to the nearest \$0.50 because they include estimates.

<sup>3</sup>The unit values for white cement include a component of resales showing significant price markups.



TABLE 14  
PORTLAND CEMENT SHIPMENTS IN 2004, BY DISTRICT AND TYPE OF CUSTOMER<sup>1</sup>

(Thousand metric tons)

District <sup>2,3</sup>	Ready-mixed concrete	Concrete product manufacturers <sup>4</sup>	Contractors <sup>5</sup>	Building material dealers	Oil well, mining, waste <sup>6</sup>	Government and miscellaneous <sup>7</sup>	Total <sup>8,9</sup>
Maine and New York	2,680	485	90	274	--	31	3,556
Pennsylvania, eastern	3,050	1,270	164	250	2	91	4,830
Pennsylvania, western	1,080	259	157	5	16	16	1,535
Illinois	2,280	373	113	40	139	105	3,052
Indiana	2,300	436	182	73	10	16	3,013
Michigan and Wisconsin	5,110	770	371	182	18	163	6,611
Ohio	788	132	47	29	1	9	1,005
Iowa, Nebraska, South Dakota	3,660	589	358	74	108	9	4,802
Kansas	1,650	131	322	72	45	1	2,222
Missouri	4,850	418	662	99	7	22	6,058
Florida	6,750	1,920	123	632	--	11	9,430
Georgia, Virginia, West Virginia	2,270	437	180	37	21	9	2,951
Maryland	1,950	462	167	52	5	96	2,733
South Carolina	2,250	701	312	140	1	87	3,491
Alabama	3,570	662	201	141	16	36	4,621
Kentucky, Mississippi, Tennessee	2,500	383	125	63	11	2	3,087
Arkansas and Oklahoma	1,790	132	565	105	61	8	2,658
Texas, northern	4,960	560	1,070	137	731	228	7,678
Texas, southern	4,240	611	729	204	455	32	6,270
Arizona and New Mexico	2,820	622	238	121	21	145	3,969
Colorado and Wyoming	2,170	314	179	55	65	5	2,786
Idaho, Montana, Nevada, Utah	2,590	238	116	40	228	38	3,245
Alaska and Hawaii	419	65	11	1	--	4	499
California, northern	3,560	279	114	302	--	4	4,257
California, southern	7,330	2,620	351	375	84	3	10,764
Oregon and Washington	1,960	390	178	114	41	3	2,690
Independent importers, n.e.c. <sup>10, 11</sup>	5,220	986	216	206	44	117	6,790
Total <sup>9</sup>	83,800	16,200	7,340	3,820	2,130	1,290	115,000
Puerto Rico	1,090	173	81	527	--	--	1,868
Grand total <sup>9</sup>	84,900	16,400	7,420	4,350	2,130	1,290	116,000

-- Zero.

<sup>1</sup>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.

<sup>2</sup>District location is that of the reporting facilities and may include sales by them into other districts.

<sup>3</sup>Includes shipments by independent importers for which district assignments were possible.

<sup>4</sup>Grand total shipments to concrete product manufacturers include brick and block—6,390; precast and prestressed—3,580; pipe—2,190; and other or unspecified—4,270.

<sup>5</sup>Grand total shipments to contractors include airport—164; road paving—4,170; soil cement—1,150; and other or unspecified—1,930.

<sup>6</sup>Grand total shipments include oil well drilling—1,800; mining—217; and waste stabilization—116.

<sup>7</sup>Includes shipments for which customer types were not specified.

<sup>8</sup>District totals are not rounded except in accord with the data in table 11.

<sup>9</sup>Data may not add to totals shown because of independent rounding.

<sup>10</sup>Shipments by independent importers for which district assignments were not possible.

<sup>11</sup>Not elsewhere classified.

TABLE 15  
 PORTLAND CEMENT SHIPPED FROM PLANTS IN THE UNITED STATES TO  
 DOMESTIC CUSTOMERS, BY TYPE<sup>1,2</sup>

(Thousand metric tons)

Type	2003	2004
General use and moderate heat (Types I and II) (gray) <sup>3</sup>	89,500	91,800
High early strength (Type III)	3,750	3,820
Sulfate resisting (Type V) <sup>3</sup>	10,600	15,800
Block	752	609
Oil well	1,090	1,310
White <sup>4</sup>	985	1,130
Blended:		
Portland, natural pozzolans	142	49
Portland, granulated blast furnace slag	747	978
Portland, fly ash	240	343
Other blended cement <sup>5</sup>	438	486
Total <sup>6</sup>	1,570	1,860
Expansive and regulated fast setting	52	62
Miscellaneous <sup>7</sup>	88	32
Grand total <sup>6,8</sup>	108,000	116,000

<sup>1</sup>Includes Puerto Rico. Includes imported cement.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Cements classified as Type II/V hybrids are now commonly reported as Type V.

<sup>4</sup>Mostly Types I and II, but may include Types III-V and block varieties.

<sup>5</sup>Includes blends with other pozzolans, such as cement kiln dust and silica fume.

<sup>6</sup>Data may not add to totals shown because of independent rounding.

<sup>7</sup>Includes low heat (Type IV), waterproof, and other portland cements.

<sup>8</sup>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. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country of destination	2003		2004	
	Quantity	Value <sup>2</sup>	Quantity	Value <sup>2</sup>
Aruba	1	228	(3)	51
Azerbaijan	(3)	6	9	425
Bahamas, The	11	1,416	21	2,613
Bolivia	1	23	--	--
Brazil	1	108	(3)	41
Canada	720	50,291	639	48,034
Cayman Islands	(3)	72	1	198
China	4	251	6	645
Dominican Republic	24	1,672	71	2,929
Egypt	1	54	(3)	9
El Salvador	1	98	(3)	8
Equatorial Guinea	--	--	2	71
Finland	2	75	(3)	5
Greece	1	190	1	179
Haiti	(3)	36	1	27
Hong Kong	1	97	2	157
Israel	1	40	(3)	24
Jamaica	(3)	59	1	42
Japan	1	109	1	74
Korea, Republic of	3	156	1	87
Mexico	35	3,817	41	4,699
Nigeria	1	30	1	24
Oman	8	401	1	81
Panama	1	97	1	85
Peru	1	45	(3)	53
Poland	--	--	1	53
Russia	1	34	(3)	12
Saudi Arabia	1	33	(3)	24
Singapore	1	23	(3)	15
Spain	1	99	(3)	8
Sweden	(3)	5	1	74
Switzerland	1	59	(3)	32
Taiwan	2	158	3	171
Thailand	1	22	(3)	22
Trinidad and Tobago	1	124	1	165
Turks and Caicos Islands	6	305	(3)	44
United Arab Emirates	1	101	1	80
Venezuela	2	338	5	275
Other	5 <sup>r</sup>	920 <sup>r</sup>	6	1,505
Total <sup>4</sup>	837	61,596	818	63,041

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Includes portland and masonry cements.

<sup>2</sup>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.

<sup>3</sup>Less than ½ unit.

<sup>4</sup>Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 17  
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country of origin	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
Belgium	5	574	826	6	850	1,120
Brazil	266	8,927	11,677	442	18,206	22,359
Bulgaria	151	6,318	7,770	231	12,478	15,069
Canada	6,319 <sup>r</sup>	327,191 <sup>r</sup>	362,502 <sup>r</sup>	5,753	319,651	338,988
China <sup>4</sup>	1,823	58,315	80,752	2,145	73,168	115,440
Colombia	1,766	65,167	85,618	2,123	84,173	116,426
Croatia	36	6,700	8,122	25	4,668	5,671
Denmark	433	19,581	29,497	373	18,319	30,041
Egypt	58	2,972	4,177	339	17,147	26,166
France	90	9,535	10,703	79	15,163	17,710
Greece	1,188	36,602	50,550	2,011	65,398	105,253
Indonesia	--	--	--	630	22,490	41,804
Korea, Republic of	1,745	46,463	69,511	1,729	48,014	80,415
Mexico	891	41,950	53,767	1,439	63,552	82,479
Netherlands	5	3,021	3,630	7	3,338	4,111
Norway	471	20,479	20,561	365	23,388	25,642
Peru	459	14,101	20,419	644	21,335	35,871
Philippines	206	5,353	8,151	301	8,360	13,293
Spain	355	17,799	23,855	412	19,699	28,605
Sri Lanka	8	273	274	--	--	--
Sweden	924	29,521	38,298	1,058	31,483	55,336
Switzerland <sup>5</sup>	29	839	1,198	--	--	--
Taiwan	395	14,674	18,095	1,068	42,014	69,345
Thailand	3,344	98,199	149,254	2,808	90,620	148,475
Turkey	1,077	35,246	50,672	771	26,889	43,045
United Arab Emirates	6	396	406	2	126	204
United Kingdom	13	4,066	4,738	19	6,097	6,625
Venezuela	1,664	57,397	81,472	2,505	99,419	140,571
Other	233 <sup>r</sup>	8,495 <sup>r</sup>	12,574 <sup>r</sup>	19	3,282	5,364
Total <sup>6</sup>	23,959 <sup>r</sup>	940,154 <sup>r</sup>	1,209,069 <sup>r</sup>	27,305	1,139,328	1,575,428

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Includes portland, masonry, and other hydraulic cements. Includes imports into Puerto Rico.

<sup>2</sup>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.

<sup>3</sup>Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

<sup>4</sup>China may be underrepresented and it is believed that all or some imports from Japan should be assigned to China.

<sup>5</sup>The country origin of these imports is thought to be misreported.

<sup>6</sup>Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 18  
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
<b>Anchorage, AK:</b>						
Canada	10	596	1,149	11	731	1,350
Korea, Republic of	132	3,947	5,854	111	3,280	5,281
Total <sup>4</sup>	142	4,543	7,004	122	4,011	6,631
<b>Baltimore, MD:</b>						
Belgium	--	--	--	(5)	7	11
China	--	--	--	(5)	5	5
Germany	--	--	--	(5)	6	7
Netherlands	1	988	1,129	1	215	232
Total <sup>4</sup>	1	988	1,129	1	233	256
<b>Boston, MA:</b>						
Netherlands	(5)	88	106	(5)	83	102
Venezuela	176	6,148	8,230	127	4,756	6,634
Total <sup>4</sup>	176	6,237	8,336	128	4,839	6,737
<b>Buffalo, NY:</b>						
Canada	704	41,222	43,558	796	46,241	48,993
France	(5)	35	36	--	--	--
Germany	--	--	--	(5)	12	13
United Kingdom	7	1,387	1,574	12	2,696	2,797
Total <sup>4</sup>	711	42,644	45,168	808	48,950	51,802
<b>Charleston, SC:</b>						
China	8	761	1,011	6	758	1,062
Colombia	506	17,839	24,721	293	11,619	15,866
Egypt	39	1,523	2,120	--	--	--
Greece	272	8,586	12,103	451	16,273	27,461
Netherlands	(5)	32	40	(5)	18	22
Spain	7	223	524	46	391	1,048
Sri Lanka	8	273	274	--	--	--
Sweden	--	--	--	(5)	58	68
United Kingdom	3	1,144	1,287	2	1,105	1,126
Venezuela	--	--	--	7	683	1,132
Total <sup>4</sup>	843	30,381	42,081	806	30,905	47,785
<b>Chicago, IL:</b>						
Canada	35	1,872	1,962	34	1,833	1,936
Japan	(5)	43	49	(5)	72	83
Netherlands	1	343	423	1	580	726
Total <sup>4</sup>	37	2,258	2,434	36	2,485	2,745
<b>Cleveland, OH:</b>						
Canada	697	36,531	37,923	699	35,946	37,412
Mexico	--	--	--	(5)	7	11
Netherlands	--	--	--	(5)	278	319
United Kingdom	1	248	319	(5)	65	88
Total <sup>4</sup>	698	36,779	38,242	699	36,295	37,830
<b>Columbia-Snake, ID-OR-WA:</b>						
Canada	56	2,712	2,854	128	6,720	7,224
China	481	15,305	21,222	506	16,053	22,564
Korea, Republic of	--	--	--	21	715	1,056
Total <sup>4</sup>	538	18,017	24,075	656	23,488	30,843
<b>Detroit, MI:</b>						
Brazil	50	2,132	2,165	127	5,454	5,504
Canada	1,553	91,252	99,513	1,320	82,765	85,106
Denmark	--	--	--	(5)	5	5

See footnotes at end of table.

TABLE 18—Continued  
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
<b>Detroit, MI—Continued:</b>						
France	(5)	3	3	--	--	--
Netherlands	(5)	19	24	(5)	47	59
Norway	23	910	920	--	--	--
Sweden	(5)	5	9	--	--	--
United Kingdom	--	--	--	1	252	304
Total <sup>4</sup>	1,626	94,321	102,634	1,448	88,523	90,978
Duluth, MN, Canada	189	8,865	10,093	172	7,854	8,762
El Paso, TX, Mexico	189	10,245	11,913	368	17,004	20,703
<b>Great Falls, MT:</b>						
Canada	14	585	741	51	2,528	2,619
France	(5)	5	5	--	--	--
Japan	--	--	--	(5)	4	4
Total <sup>4</sup>	14	590	746	51	2,532	2,622
<b>Honolulu, HI:</b>						
China	32	835	1,206	55	1,757	3,257
Korea, Republic of	--	--	--	21	609	1,449
Philippines	206	5,353	8,151	301	8,360	13,293
Thailand	77	2,097	3,498	40	1,080	1,794
Total <sup>4</sup>	314	8,285	12,856	417	11,806	19,793
<b>Houston-Galveston, TX:</b>						
Belgium	(5)	9	12	--	--	--
Brazil	3	369	394	--	--	--
Chile	--	--	--	(5)	29	35
Colombia	140	6,844	9,289	119	7,511	7,944
Egypt	19	1,447	2,053	29	2,282	2,971
France	(5)	121	149	(5)	84	94
Germany	(5)	146	182	(5)	90	110
Greece	--	--	--	206	6,266	9,252
Korea, Republic of	1,393	37,139	54,894	1,138	31,751	49,999
Peru	312	10,843	15,293	31	1,141	1,576
Thailand	79	3,154	4,114	--	--	--
Turkey	--	--	--	69	2,158	3,360
United Arab Emirates	6	396	406	--	--	--
United Kingdom	(5)	198	247	(5)	158	190
Venezuela	73	2,557	3,570	375	16,464	22,446
Total <sup>4</sup>	2,026	63,223	90,602	1,969	67,934	97,977
Laredo, TX, Mexico	124	13,840	14,580	158	18,052	18,989
<b>Los Angeles, CA:</b>						
China	709	22,708	30,636	1,196	42,085	64,956
Colombia	2	208	301	2	176	257
Egypt	(5)	3	4	2	150	245
Indonesia	--	--	--	78	5,857	8,775
Italy	(5)	25	26	--	--	--
Japan	223	7,059	9,759	(5)	142	233
Peru	--	--	--	1	86	128
Taiwan	395	14,674	18,095	260	10,487	14,904
Thailand	646	19,304	29,278	974	36,655	62,244
United Arab Emirates	--	--	--	1	79	114
United Kingdom	(5)	58	73	1	172	172
Total <sup>4</sup>	1,976	64,039	88,172	2,513	95,889	152,028

See footnotes at end of table.

TABLE 18—Continued

U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
<b>Miami, FL:</b>						
Belgium	2	315	334	2	596	630
Brazil	--	--	--	(5)	6	9
Colombia	32	1,673	2,245	30	1,800	2,798
Denmark	17	539	706	4	862	1,369
Egypt	--	--	--	14	546	847
Germany	(5)	11	14	(5)	25	29
Greece	318	9,599	12,567	485	14,784	21,498
Guyana	--	--	--	1	384	387
Ireland	(5)	10	14	--	--	--
Jamaica	(5)	3	3	--	--	--
Peru	--	--	--	(5)	10	15
Spain	326	16,878	22,370	346	18,593	26,575
Sweden	913	28,133	36,632	1,055	28,737	52,156
Turkey	388	11,123	15,043	248	7,546	10,905
United Kingdom	1	125	162	(5)	125	158
Venezuela	71	2,557	3,742	109	5,473	7,786
Total <sup>4</sup>	2,067	70,967	93,833	2,294	79,488	125,161
<b>Milwaukee, WI, Canada</b>						
	270	14,605	14,988	278	14,090	14,365
<b>Mobile, AL:</b>						
Colombia	53	1,681	2,180	231	7,761	13,351
Peru	--	--	--	61	1,858	3,902
Thailand	287	6,846	11,182	97	2,288	3,763
Turkey	--	--	--	12	351	626
United Kingdom	(5)	25	43	(5)	45	62
Venezuela	27	800	1,126	128	5,512	7,602
Total <sup>4</sup>	368	9,352	14,530	529	17,815	29,307
<b>New Orleans, LA:</b>						
China	16	1,374	1,672	5	542	760
Colombia	22	773	1,055	213	6,865	9,068
Croatia	35	6,551	7,955	25	4,663	5,666
Egypt	--	--	--	268	13,102	20,069
Greece	104	3,114	4,474	370	11,530	19,002
Korea, Republic of	220	5,377	8,762	437	11,659	22,630
Netherlands	(5)	23	27	(5)	58	72
Norway	--	--	--	29	2,875	5,129
Peru	116	2,312	3,746	550	18,240	30,249
Thailand	768	21,401	36,558	464	12,887	25,976
Turkey	242	11,771	16,336	137	7,526	13,006
United Kingdom	(5)	46	61	(5)	6	7
Venezuela	--	--	--	52	2,303	3,387
Total <sup>4</sup>	1,523	52,742	80,646	2,551	92,255	155,023
<b>New York City, NY:</b>						
Brazil	(5)	17	20	--	--	--
Colombia	(5)	30	51	1	90	155
Croatia	(5)	149	167	(5)	5	5
France	(5)	2	2	--	--	--
Germany	(5)	10	12	11	1,040	1,232
Greece	274	8,414	11,853	255	7,910	14,699
Italy	(5)	5	5	--	--	--
Netherlands	1	774	945	(5)	102	123

See footnotes at end of table.

TABLE 18—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
New York City, NY—Continued:						
Norway	448	19,568	19,641	336	20,513	20,513
Poland	3	65	69	(5)	85	90
Sweden	1	1,052	1,239	3	2,273	2,652
Switzerland	(5)	6	6	--	--	--
Thailand	--	--	--	10	230	250
Turkey	190	4,765	8,214	31	1,054	2,018
United Kingdom	1	729	819	2	952	1,055
Venezuela	20	715	1,052	190	7,317	10,642
Total <sup>4</sup>	941	36,301	44,094	839	41,571	53,435
Nogales, AZ:						
Australia	(5)	6	8	--	--	--
Germany	(5)	6	6	--	--	--
Mexico	571	17,081	26,343	847	25,276	39,130
Netherlands	(5)	9	14	--	--	--
Total <sup>4</sup>	572	17,102	26,371	847	25,276	39,130
Norfolk, VA:						
Bulgaria	151	6,318	7,770	231	12,478	15,069
Canada	78	2,536	2,909	10	322	538
Colombia	131	4,264	5,288	163	5,549	7,948
France	90	9,369	10,508	79	15,080	17,616
Germany	(5)	11	13	(5)	32	37
Netherlands	1	437	542	(5)	166	212
Sweden	--	--	--	1	415	460
United Kingdom	(5)	18	23	(5)	191	216
Venezuela	69	2,771	3,590	26	915	1,370
Total <sup>4</sup>	520	25,723	30,643	511	35,149	43,467
Ogdensburg, NY:						
Canada	361	20,276	20,840	384	26,212	26,654
Germany	--	--	--	(5)	4	4
Netherlands	(5)	12	12	--	--	--
United Kingdom	--	--	--	(5)	2	2
Total <sup>4</sup>	361	20,288	20,853	384	26,219	26,661
Pembina, ND, Canada	239	9,823	18,480	181	8,799	9,570
Philadelphia, PA:						
Belgium	(5)	3	3	(5)	21	24
China	--	--	--	(5)	13	17
Germany	3	787	1,953	3	694	2,195
Netherlands	(5)	267	331	3	1,355	1,719
Sweden	(5)	88	115	--	--	--
Thailand	235	5,411	6,276	404	9,673	10,826
Total <sup>4</sup>	239	6,556	8,678	410	11,755	14,780
Portland, ME:						
Canada	92	8,796	8,805	98	9,624	9,653
Venezuela	--	--	--	31	1,667	1,677
Total <sup>4</sup>	92	8,796	8,805	129	11,291	11,330
Providence, RI:						
Turkey	115	3,352	4,959	--	--	--
Venezuela	486	17,271	24,696	648	22,773	33,043
Total <sup>4</sup>	601	20,623	29,654	648	22,773	33,043

See footnotes at end of table.



TABLE 18—Continued  
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
<b>San Diego, CA:</b>						
Mexico	--	--	--	58	2,181	2,234
Taiwan	--	--	--	545	22,464	31,726
Thailand	466 <sup>r</sup>	17,785	23,343	76	2,955	3,932
Total <sup>4</sup>	466	17,785	23,343	679	27,600	37,892
<b>San Francisco, CA:</b>						
China	478	14,695	20,642	351	11,424	21,572
Denmark	--	--	--	(5)	13	14
Indonesia	--	--	--	553	16,634	33,029
Taiwan	--	--	--	263	9,063	22,716
Thailand	554	15,911	25,118	561	19,696	31,386
United Arab Emirates	--	--	--	1	47	89
United Kingdom	--	--	--	(5)	78	92
Total <sup>4</sup>	1,033	30,607	45,760	1,729	56,955	108,898
<b>San Juan, PR:</b>						
Belgium	4	247	477	3	226	456
China	99	2,637	4,362	25	523	1,231
Colombia	20	757	1,030	3	238	319
Costa Rica	(5)	5	7	(5)	38	41
Denmark	277	8,955	14,141	217	6,638	13,255
Dominican Republic	--	--	--	(5)	11	11
Mexico	7	784	931	10	1,032	1,412
Panama	1	15	17	(5)	15	17
Spain	(5)	6	7	4	222	226
Turkey	--	--	--	16	288	308
Venezuela	12	376	514	--	--	--
Total <sup>4</sup>	419	13,782	21,486	279	9,230	17,274
<b>Savannah, GA:</b>						
Brazil	(5)	26	55	--	--	--
Colombia	1	166	224	3	263	385
Germany	--	--	--	(5)	127	152
Netherlands	(5)	29	36	(5)	143	168
Romania	--	--	--	(5)	3	3
United Kingdom	(5)	75	116	1	248	357
Venezuela	29	860	1,130	--	--	--
Total <sup>4</sup>	32	1,157	1,562	4	783	1,065
<b>Seattle, WA:</b>						
Canada	1,905 <sup>r</sup>	78,301 <sup>r</sup>	89,039 <sup>r</sup>	1,469	64,454	73,179
Japan	1	176	277	1	374	548
Netherlands	--	--	--	(5)	11	12
Thailand	147	3,968	6,189	184	5,157	8,304
Total <sup>4</sup>	2,053 <sup>r</sup>	82,445 <sup>r</sup>	95,505 <sup>r</sup>	1,654	69,996	82,043
<b>St. Albans, VT:</b>						
Canada	115	9,134	9,534	123	11,532	11,628
United Kingdom	(5)	13	15	--	--	--
Total <sup>4</sup>	115	9,146	9,549	123	11,532	11,628
<b>St. Louis, MO:</b>						
China	--	--	--	(5)	6	10
Netherlands	--	--	--	(5)	284	344
Total <sup>4</sup>	--	--	--	1	290	353

See footnotes at end of table.

TABLE 18—Continued

U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Customs district and country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
Tampa, FL:						
Brazil	213	6,383	9,043	315	12,745	16,846
Canada	3	85	113	--	--	--
China	--	--	--	(5)	2	6
Colombia	803	29,077	36,594	932	37,284	51,443
Denmark	139	10,087	14,650	152	10,801	15,398
Egypt	--	--	--	27	1,066	2,034
Greece	220	6,888	9,554	244	8,635	13,340
Peru	31	946	1,381	--	--	--
Spain	19	578	793	16	493	756
Sweden	9	242	304	--	--	--
Switzerland	29	833	1,192	--	--	--
Thailand	86	2,322	3,698	--	--	--
Turkey	142	4,236	6,120	258	7,967	12,821
Venezuela	651	21,370	30,938	652	25,004	35,194
Total <sup>4</sup>	2,344	83,049	114,379	2,595	103,997	147,839
U.S. Virgin Islands:						
Bangladesh	1	62	87	2	95	134
Barbados	1	48	67	--	--	--
Spain	2	114	160	--	--	--
Trinidad And Tobago	(5)	4	4	--	--	--
Venezuela	44	1,682	2,478	79	3,063	4,274
Total <sup>4</sup>	48	1,909	2,796	81	3,158	4,408
Wilmington, NC:						
Colombia	56	1,854	2,640	134	5,017	6,891
Venezuela	7	290	407	83	3,490	5,384
Total <sup>4</sup>	63	2,143	3,047	217	8,506	12,275
Grand total <sup>4</sup>	23,959 <sup>r</sup>	940,154 <sup>r</sup>	1,209,069 <sup>r</sup>	27,305	1,139,328	1,575,428

<sup>r</sup>Revised. -- Zero.<sup>1</sup>Includes all varieties of hydraulic cement and clinker.<sup>2</sup>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.<sup>3</sup>Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.<sup>4</sup>Data may not add to totals shown because of independent rounding.<sup>5</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 19  
U.S. IMPORTS FOR CONSUMPTION OF GRAY PORTLAND CEMENT, BY COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
Brazil	213	6,413	9,078	315	12,745	16,846
Bulgaria	151	6,318	7,770	231	12,478	15,069
Canada	5,038 <sup>r</sup>	244,919 <sup>r</sup>	272,187 <sup>r</sup>	4,744	247,821	264,773
China <sup>4</sup>	1,768 <sup>r</sup>	55,255 <sup>r</sup>	76,734 <sup>r</sup>	2,077	70,001	111,033
Colombia	1,660	60,531	78,882	1,874	71,964	100,591
Denmark	283	8,323	13,604	218	5,717	12,539
Egypt	39	1,523	2,120	291	13,359	20,841
Greece	992	30,453	42,148	2,007	64,313	104,168
Indonesia	--	--	--	630	22,490	41,804
Korea, Republic of	1,745	46,463	69,511	1,729	48,014	80,415
Mexico	694	20,534	30,844	1,193	35,662	52,577
Norway	422	17,334	17,380	304	17,006	17,006
Peru	312	10,843	15,293	543	19,040	31,578
Philippines	90 <sup>r</sup>	2,350 <sup>r</sup>	4,039 <sup>r</sup>	263	7,331	11,860
Spain	217	6,487	9,025	257	6,836	10,449
Sweden	922	28,381	36,945	1,055	28,737	52,156
Taiwan	395	14,674	18,095	1,068	42,014	69,345
Thailand	3,162	91,450	139,885	2,726	86,160	140,787
Turkey	1,042	32,999	46,880	687	21,349	33,635
Venezuela	1,557	53,565	76,531	1,953	74,662	106,281
Other	236 <sup>r</sup>	7,469 <sup>r</sup>	10,187 <sup>r</sup>	13	1,210	1,418
Total <sup>5</sup>	20,939 <sup>r</sup>	746,283 <sup>r</sup>	977,137 <sup>r</sup>	24,180	908,910	1,295,172

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Includes imports into Puerto Rico.

<sup>2</sup>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.

<sup>3</sup>Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

<sup>4</sup>China may be underrepresented and it is thought that all or some imports from Japan should be assigned to China.

<sup>5</sup>Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 20  
U.S. IMPORTS FOR CONSUMPTION OF WHITE CEMENT, BY COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3,4</sup>		Customs <sup>2</sup>	C.i.f. <sup>3,4</sup>
Belgium	5	562	811	6	829	1,097
Brazil	3	395	449	(5)	6	9
Canada	243	29,850	30,982	308	35,247	36,802
Chile	--	--	--	(5)	29	35
Colombia	20	2,012	2,588	30	2,972	3,852
Costa Rica	(5)	5	7	--	--	--
Denmark	149	11,258	15,894	155	12,589	17,489
Egypt	19	1,450	2,057	48	3,788	5,325
Germany	--	--	--	(5)	23	27
Greece	--	--	--	3	1,085	1,085
Italy	(5)	25	26	--	--	--
Jamaica	(5)	3	3	--	--	--
Mexico	150	17,477	18,516	196	23,449	24,981
Netherlands	(5)	504	534	1	173	181
Norway	26	2,235	2,261	61	6,382	8,636
Peru	--	--	--	1	96	143
Spain	138	11,312	14,830	155	12,863	18,157
Switzerland	(5)	6	6	--	--	--
Thailand	34	3,512	3,777	23	2,939	4,354
Turkey	36	2,248	3,791	84	5,532	9,401
United Arab Emirates	6	396	406	2	126	204
United Kingdom	(5)	13	15	--	--	--
Venezuela	17	655	955	125	5,774	8,914
Total <sup>6</sup>	848	83,914	97,909	1,197	113,904	140,691

-- Zero.

<sup>1</sup>Includes imports into Puerto Rico.

<sup>2</sup>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.

<sup>3</sup>Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

<sup>4</sup>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.

<sup>5</sup>Less than ½ unit.

<sup>6</sup>Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 21  
U.S. IMPORTS FOR CONSUMPTION OF CLINKER, BY COUNTRY<sup>1</sup>

(Thousand metric tons and thousand dollars)

Country	2003			2004		
	Quantity	Value		Quantity	Value	
		Customs <sup>2</sup>	C.i.f. <sup>3</sup>		Customs <sup>2</sup>	C.i.f. <sup>3</sup>
Brazil	49	2,120	2,150	127	5,454	5,504
Canada	965	45,383	51,972	639	30,869	31,283
China	47 <sup>r</sup>	2,209 <sup>r</sup>	2,878 <sup>r</sup>	11	1,244	1,751
Colombia	86	2,624	4,148	220	9,237	11,982
France	89	8,216	9,235	77	13,614	15,953
Greece	196	6,149	8,401	--	--	--
Norway	23	910	920	--	--	--
Peru	147	3,257	5,127	100	2,199	4,150
Switzerland	29	833	1,192	--	--	--
Thailand	148	3,238	5,592	59	1,521	3,334
Venezuela	90	3,173	3,982	398	17,419	22,962
Total <sup>4</sup>	1,869 <sup>r</sup>	78,112 <sup>r</sup>	95,597 <sup>r</sup>	1,631	81,557	96,919

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>For all types of hydraulic cement. Includes imports into Puerto Rico.

<sup>2</sup>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.

<sup>3</sup>Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

<sup>4</sup>Data may not add to totals shown because of independent rounding.

Source: U.S. Census Bureau.

TABLE 22  
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Thousand metric tons)

Country	2000	2001	2002	2003 <sup>e</sup>	2004 <sup>e</sup>
Afghanistan <sup>e</sup>	50	50	60	70	70
Albania	180 <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	578 <sup>r,3</sup>	573 <sup>3</sup>
Algeria <sup>e</sup>	8,300	8,300	9,000	9,000	9,000
Angola <sup>e</sup>	201 <sup>3</sup>	200	250	250	250
Argentina	6,121 <sup>r</sup>	5,545	3,910	5,218 <sup>r,3</sup>	6,254 <sup>3</sup>
Armenia	219	300	355 <sup>r</sup>	384 <sup>r,3</sup>	400
Australia <sup>e</sup>	7,500	7,500	7,550	8,000	8,000
Austria	3,776	3,863	3,800 <sup>e</sup>	3,800	3,800
Azerbaijan	200 <sup>e</sup>	500	848 <sup>r</sup>	1,013 <sup>r,3</sup>	1,400
Bahrain	89	89	67	70	75
Bangladesh <sup>4</sup>	3,580	5,005	5,000 <sup>e</sup>	5,000	5,000
Barbados	268	250	298	330 <sup>r</sup>	330
Belarus	1,847	1,803	2,171	2,472 <sup>3</sup>	2,500
Belgium <sup>e</sup>	7,150 <sup>3</sup>	7,500	8,152 <sup>r,3</sup>	8,000	8,000
Benin <sup>e</sup>	250	250	250	250	250
Bhutan <sup>e</sup>	150	160	160	160	170
Bolivia	1,072	983	1,010	1,138 <sup>r,3</sup>	1,276 <sup>3</sup>
Bosnia and Herzegovina	628 <sup>r</sup>	704 <sup>r</sup>	913 <sup>r</sup>	891 <sup>r,3</sup>	1,045 <sup>3</sup>
Brazil	39,208	38,927	38,027	34,010 <sup>r,3</sup>	38,000
Brunei	232	227	241	235 <sup>3</sup>	240 <sup>3</sup>
Bulgaria	2,209	2,088	2,137	2,100 <sup>3</sup>	2,100
Burkina Faso <sup>e</sup>	100	50	30	30	30
Burma	393	378	450 <sup>r,e</sup>	572 <sup>r,3</sup>	600
Cameroon <sup>e</sup>	890 <sup>3</sup>	930	950	930 <sup>r</sup>	930
Canada	12,612	12,986	13,710 <sup>r</sup>	13,424 <sup>r,3</sup>	14,017 <sup>3</sup>
Chile	3,377 <sup>r</sup>	3,513 <sup>r</sup>	3,462 <sup>r</sup>	3,622 <sup>r,3</sup>	3,798 <sup>3</sup>
China	597,000	661,040	725,000	862,080 <sup>r,3</sup>	933,690 <sup>p</sup>
Colombia <sup>e</sup>	9,750	6,830	6,604 <sup>3</sup>	7,300 <sup>r</sup>	8,000
Congo (Brazzaville) <sup>e</sup>	20	-- <sup>3</sup>	--	--	--
Congo (Kinshasa)	169 <sup>r</sup>	201 <sup>r</sup>	265 <sup>r</sup>	331 <sup>r</sup>	400
Costa Rica	1,050 <sup>r</sup>	1,200 <sup>r</sup>	1,200 <sup>r,e</sup>	1,320 <sup>r</sup>	1,300
Côte d'Ivoire <sup>e</sup>	650	650	650	650	650
Croatia	2,852	3,246	3,378	3,654 <sup>3</sup>	3,811 <sup>3</sup>
Cuba	1,633	1,324	1,327	1,700 <sup>r</sup>	1,700
Cyprus	1,398	1,369	1,438 <sup>r</sup>	1,637 <sup>r,3</sup>	1,689 <sup>3</sup>
Czech Republic	4,093	3,550	3,217 <sup>r</sup>	3,465 <sup>r,3</sup>	3,709 <sup>3</sup>
Denmark	2,009	2,047 <sup>r</sup>	2,010 <sup>e</sup>	2,020 <sup>3</sup>	2,050
Dominican Republic	2,505	2,746	3,050	2,907 <sup>3</sup>	2,636 <sup>p</sup>
Ecuador <sup>e</sup>	2,800	2,920 <sup>3</sup>	3,000	3,100	3,100
Egypt	24,143	24,700 <sup>r</sup>	28,155 <sup>r</sup>	26,639 <sup>r</sup>	28,000
El Salvador	1,064	1,174	1,318	1,390 <sup>r</sup>	1,400
Eritrea <sup>e</sup>	45	45	45	45	45
Estonia	329	405	466	506 <sup>3</sup>	615 <sup>3</sup>
Ethiopia	880	900	900	1,200	1,300
Fiji <sup>e</sup>	95	95	95	100	100
Finland	1,422	1,325	1,198 <sup>r</sup>	1,360 <sup>3</sup>	1,400
France	20,137	19,839	19,450 <sup>r</sup>	19,660 <sup>r,3</sup>	20,960 <sup>3</sup>
French Guiana <sup>e</sup>	88	58 <sup>3</sup>	62	62	62
Gabon	210	304	350 <sup>e</sup>	350	350
Georgia	348	335	347	300 <sup>3</sup>	300
Germany	35,414 <sup>r</sup>	32,118 <sup>r</sup>	31,009 <sup>r</sup>	32,349 <sup>r,3</sup>	31,954 <sup>3</sup>
Ghana <sup>e</sup>	1,950 <sup>3</sup>	1,900	1,900	1,900	2,000
Greece	15,463 <sup>r</sup>	15,500 <sup>r,e</sup>	15,000 <sup>r</sup>	15,300 <sup>r</sup>	15,000
Guadeloupe	265 <sup>r</sup>	265 <sup>r</sup>	230	230 <sup>3</sup>	230

See footnotes at end of table.

TABLE 22—Continued  
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Thousand metric tons)

Country	2000	2001	2002	2003 <sup>e</sup>	2004 <sup>e</sup>
Guatemala	1,960 <sup>r</sup>	2,000 <sup>r</sup>	1,800 <sup>r</sup>	1,900 <sup>r</sup>	1,900
Guinea	300	315	360	360	360
Haiti	--	204	290	300 <sup>r</sup>	300
Honduras	1,284 <sup>r</sup>	1,321 <sup>r</sup>	1,360 <sup>r,e</sup>	1,400 <sup>r</sup>	1,400
Hong Kong	1,284	1,279	1,206	1,250	1,250
Hungary	3,326	3,452	3,510	3,573 <sup>r,3</sup>	3,580 <sup>3</sup>
Iceland	144	125	130 <sup>e</sup>	135 <sup>3</sup>	140
India <sup>e</sup>	95,000	105,000 <sup>r</sup>	115,000 <sup>r</sup>	123,000 <sup>r,3</sup>	125,000
Indonesia	27,789	31,300	34,640	35,000	36,000
Iran	23,880	26,640	28,600	30,000	30,000
Iraq <sup>e</sup>	6,000	6,000	6,834 <sup>3</sup>	1,000	3,000
Ireland <sup>e</sup>	2,620 <sup>3</sup>	2,600	2,500	2,500	2,500
Israel	5,703	4,700 <sup>e</sup>	4,584 <sup>r</sup>	4,632 <sup>r,3</sup>	4,494 <sup>3</sup>
Italy	38,925	39,804	40,000 <sup>e</sup>	38,000	38,000
Jamaica	521	596	614	608 <sup>r,3</sup>	610
Japan	81,097	76,550	71,828	68,766 <sup>r,3</sup>	67,369 <sup>3</sup>
Jordan	2,640	3,173	3,558	3,515 <sup>3</sup>	3,908 <sup>3</sup>
Kazakhstan	1,175	2,029	2,129	2,570 <sup>3</sup>	3,000
Kenya	1,367	1,319	1,463	1,658 <sup>r,3</sup>	1,789 <sup>3</sup>
Korea, North <sup>e</sup>	4,600	5,160	5,320	5,540 <sup>r</sup>	5,500
Korea, Republic of	51,255	52,046	55,514	59,194 <sup>r,3</sup>	53,900 <sup>3</sup>
Kuwait	1,187 <sup>r</sup>	921 <sup>r</sup>	1,584 <sup>r</sup>	1,600	1,660 <sup>3</sup>
Kyrgyzstan	500	469	533	757 <sup>r,3</sup>	800
Laos <sup>e</sup>	92	92	240	250	250
Latvia	W	W	260 <sup>r</sup>	295 <sup>r</sup>	284 <sup>3</sup>
Lebanon	2,808	2,890	2,852	2,900 <sup>r</sup>	2,900
Liberia	71 <sup>e</sup>	63	54	30	30
Libya <sup>e</sup>	3,000	3,000	3,300	3,500 <sup>r,3</sup>	3,600
Lithuania	570	529	606 <sup>r</sup>	597 <sup>r,3</sup>	753 <sup>3</sup>
Luxembourg <sup>e</sup>	749 <sup>3</sup>	750	750	750	750
Macedonia	585	630 <sup>r</sup>	600 <sup>r,e</sup>	768 <sup>r,3</sup>	820 <sup>3</sup>
Madagascar	51	52	33 <sup>e</sup>	70 <sup>r</sup>	110
Malawi	156	181	174	190	190
Malaysia	11,445	13,820	14,336	17,243 <sup>3</sup>	18,000
Martinique	255 <sup>r</sup>	255 <sup>r</sup>	221 <sup>r</sup>	225 <sup>r</sup>	225
Mauritania <sup>e</sup>	120 <sup>r</sup>	200 <sup>r</sup>	200 <sup>r</sup>	200 <sup>r</sup>	200
Mexico	33,228 <sup>r</sup>	32,110 <sup>r</sup>	33,372 <sup>r</sup>	33,593 <sup>r,3</sup>	34,992 <sup>3</sup>
Moldova	222	200	300	300	300
Mongolia	92	68	148	162 <sup>r</sup>	170
Morocco <sup>e</sup>	8,100 <sup>3</sup>	10,000	10,200	10,400	10,400
Mozambique	270	265	285	362 <sup>3</sup>	350
Nepal <sup>e,4</sup>	300	285	290	295	285
Netherlands <sup>e</sup>	3,450 <sup>3</sup>	3,450	3,400	3,400	3,400
New Caledonia	100 <sup>e</sup>	93	100	100	100
New Zealand	1,070	1,080	1,090 <sup>e</sup>	1,100	1,110 <sup>3</sup>
Nicaragua	530 <sup>r</sup>	514	549 <sup>r</sup>	590 <sup>r</sup>	590
Niger <sup>e</sup>	40	40	40 <sup>r</sup>	40 <sup>r</sup>	40
Nigeria <sup>e</sup>	2,500	2,400	2,100	2,300 <sup>r</sup>	2,300
Norway	1,851	1,870 <sup>e</sup>	1,850 <sup>e</sup>	1,860 <sup>3</sup>	1,900
Oman	1,238	1,370	1,700 <sup>r,e</sup>	2,100 <sup>r</sup>	2,500
Pakistan <sup>e</sup>	9,900	11,000 <sup>r</sup>	11,000 <sup>r</sup>	13,000 <sup>r</sup>	16,000
Panama <sup>e</sup>	950 <sup>r</sup>	820 <sup>r</sup>	770 <sup>r</sup>	770	770
Paraguay	650	650	650 <sup>e</sup>	660 <sup>r</sup>	660
Peru	3,906	3,950	3,980 <sup>r</sup>	4,000 <sup>r,3</sup>	4,590 <sup>3</sup>

See footnotes at end of table.

TABLE 22—Continued  
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Thousand metric tons)

Country	2000	2001	2002	2003 <sup>e</sup>	2004 <sup>e</sup>
Philippines	11,959	8,653	12,614	10,000	11,000
Poland	15,046	11,918	10,948 <sup>r</sup>	11,653 <sup>r,3</sup>	12,837 <sup>3</sup>
Portugal <sup>e</sup>	10,343 <sup>3</sup>	10,300	10,000	10,000	10,000
Qatar <sup>e</sup>	1,210	1,240 <sup>r</sup>	1,340 <sup>r</sup>	1,400	1,400
Réunion <sup>e</sup>	380	380	380	380	380
Romania	6,058	5,668	5,680	5,992 <sup>r,3</sup>	6,210 <sup>3</sup>
Russia	32,400	35,300	37,700	41,000	43,000
Rwanda	71	91	101	105 <sup>r,3</sup>	104 <sup>3</sup>
Saudi Arabia	18,107	20,608	22,000	23,000	23,200 <sup>3</sup>
Senegal	1,341 <sup>r</sup>	1,539 <sup>r</sup>	2,150 <sup>e</sup>	2,150	2,150
Serbia and Montenegro	2,117	2,418	2,396	2,075 <sup>r,3</sup>	2,240 <sup>3</sup>
Sierra Leone	73	113	144	170 <sup>3</sup>	170
Singapore <sup>e</sup>	1,150 <sup>3</sup>	600	200	150 <sup>3</sup>	150
Slovakia	3,045	3,123	3,141 <sup>r</sup>	3,147 <sup>r,3</sup>	3,158 <sup>3</sup>
Slovenia <sup>e</sup>	1,300	1,300	1,250	1,300 <sup>r,3</sup>	1,300 <sup>3</sup>
South Africa, sales <sup>5</sup>	7,971	8,036	8,525	8,973 <sup>r,3</sup>	12,348 <sup>3</sup>
Spain, including Canary Islands	38,154 <sup>r</sup>	40,512	42,417 <sup>r</sup>	45,000 <sup>r</sup>	46,790 <sup>3</sup>
Sri Lanka	1,008	1,108	1,018	1,164 <sup>r,3</sup>	1,400
Sudan	146	190	205 <sup>r</sup>	272 <sup>r,3</sup>	280
Suriname <sup>e</sup>	60	65 <sup>3</sup>	65	65	65
Sweden	2,651	2,600	2,700 <sup>e</sup>	2,650 <sup>3</sup>	2,700 <sup>3</sup>
Switzerland	3,771	3,920 <sup>r</sup>	3,771 <sup>r</sup>	3,800 <sup>3</sup>	3,898 <sup>3</sup>
Syria	4,631	5,428	5,450 <sup>e</sup>	5,250 <sup>r</sup>	4,800 <sup>3</sup>
Taiwan	17,572	18,128	19,363	18,474 <sup>3</sup>	19,050 <sup>3</sup>
Tajikistan	50	70	100	120	150 <sup>3</sup>
Tanzania	833	900	1,026	1,186 <sup>3</sup>	1,287 <sup>3</sup>
Thailand	25,499	27,913	31,679 <sup>r</sup>	32,530 <sup>3</sup>	35,626 <sup>3</sup>
Togo <sup>e</sup>	700	800	800	800	800
Trinidad and Tobago	743	697 <sup>r</sup>	744	766 <sup>r,3</sup>	765
Tunisia	5,657	5,721	6,022	6,038 <sup>3</sup>	6,358 <sup>3</sup>
Turkmenistan <sup>e</sup>	450	450	450	450	450
Turkey	35,825	30,125	32,577	35,077 <sup>r,3</sup>	38,019 <sup>3</sup>
Uganda	367 <sup>r</sup>	431 <sup>r</sup>	506 <sup>r</sup>	507 <sup>r,3</sup>	520 <sup>3</sup>
Ukraine	5,311	5,800	7,142	8,900 <sup>r</sup>	10,600
United Arab Emirates <sup>e</sup>	6,100	6,100	7,000 <sup>r</sup>	8,000 <sup>r</sup>	8,000
United Kingdom	12,702 <sup>r</sup>	11,854	11,089 <sup>r</sup>	11,215 <sup>r,3</sup>	11,250 <sup>3</sup>
United States, including Puerto Rico <sup>6</sup>	89,510	90,450 <sup>7</sup>	91,266	94,329 <sup>3</sup>	99,015 <sup>3</sup>
Uruguay <sup>e</sup>	700	1,015 <sup>3</sup>	1,000	1,050	1,050
Uzbekistan <sup>e</sup>	3,521 <sup>3</sup>	4,000	4,000	4,000	4,000
Venezuela <sup>e</sup>	8,600	8,700	7,000	7,700 <sup>r</sup>	9,000
Vietnam	13,298	16,073 <sup>r</sup>	21,121 <sup>r</sup>	23,282 <sup>r,3</sup>	25,320 <sup>3</sup>
Yemen <sup>e</sup>	1,400	1,400	1,400	1,400	1,546 <sup>3</sup>
Zambia <sup>e</sup>	380	215 <sup>3</sup>	230 <sup>3</sup>	480	480
Zimbabwe <sup>e</sup>	1,000	800	600	400	400
Total	1,660,000	1,750,000 <sup>r</sup>	1,850,000 <sup>r</sup>	2,020,000 <sup>r</sup>	2,130,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; not included in "Total." -- Zero.

<sup>1</sup>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.

<sup>2</sup>Table includes data available through August 17, 2005. Data may include clinker exports for some countries.

<sup>3</sup>Reported figure.

<sup>4</sup>Data for year ending June 30 of that stated.

<sup>5</sup>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: 2000—1,020; 2001—1,129; 2002—1,099; 2003—1,190 (revised); and 2004—1,436.

<sup>6</sup>Portland and masonry cements only.

<sup>7</sup>Data are rounded to four significant digits.