



2008 Minerals Yearbook

CEMENT [ADVANCE RELEASE]

CEMENT

By Hendrik G. van Oss

Domestic survey tables were prepared by Michelle B. Blackwell, statistical assistant, and the world production table was prepared by Glenn J. Wallace, international data coordinator.

Portland and masonry cement production in the United States in 2008 was 86.3 million metric tons (Mt), down by 9.6% from that of 2007 (table 1). Consumption of cement as measured by cement sales to domestic final customers fell by nearly 16% to 96.8 Mt (table 9); these sales were 31.1 Mt or about 24% lower than the record high sales of 2005. At 10.7 Mt, imports of cement were only one-half of those of 2007. Despite the large drop in sales volumes, cement prices fell only modestly on average (tables 1, 11–13); sales overall totaled about \$10 billion on a mill net valuation basis. Based on typical portland cement mixing ratios in concrete, the delivered value of concrete (excluding mortar) in the United States in 2008 was estimated to be at least \$47 billion.

Percentage or other changes expressed in this report compare activity in 2008 with that of 2007 unless specified otherwise. Except where otherwise indicated, activity levels in this report exclude those in Puerto Rico. Except for some trade data, cements covered in this report are limited to those hydraulic varieties broadly classified as portland cement (including blended cement and other varieties listed in table 15) and/or masonry cement (including portland-lime and plastic cements); these are the binding agents in concrete and most mortars. Other hydraulic cements (notably aluminous cement) are included only in the trade data in tables 16–18 and 21 (clinker) and within the world production data in table 22. Excluded are pure (unblended) supplementary cementitious materials (SCM), such as fly ash, other pozzolans, and ground granulated blast furnace slag (GGBFS). Sales data for blended (also called composite) cements listed separately from portland cement are available in the monthly Mineral Industry Surveys reports of the U.S. Geological Survey (USGS).

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 2008, questionnaires were received from 149 of 152 facilities canvassed, a response rate of 98%, which included all production sites. For 2007, forms were received for 151 of the 153 facilities canvassed, including all production sites. If missing data could not be obtained by followup telephone inquiry, they were estimated based on monthly data or past annual reporting. For both years, the data exclude several importers that have yet to participate in the surveys. To the degree that they are selling independently of the participating companies, sales by the missing importers for 2007 and 2008 are estimated to be equivalent to an additional 1% of the total portland cement sales tonnages shown in this report. Background information on cement and its manufacture and on the USGS cement canvasses is given in van Oss (2005).

Government Programs and Environmental Issues

Environmental issues associated with the cement industry mostly result from the manufacture of the intermediate product called clinker. In clinker manufacture, the burning of large amounts of raw materials and fuels leads, or can lead, to significant emissions of carbon dioxide (CO₂), nitrogen oxides (NO_x), sulfur oxides (SO_x), mercury and some other metals, volatile organic carbon compounds, and particulates. Increasingly, these emissions are regulated or are being considered for regulation or reregulation. The largest volume emissions are of CO₂. Overall, generation of CO₂ by the U.S. cement industry in 2008 was in the range of 0.89 to 0.93 metric ton (t) of CO₂ per ton of clinker; the high end reflecting fuel combustion emissions derived using “standard” heat values for the fuels consumed (table 7) and the low end reflecting heat values actually reported by the individual plants. Both ends of the range include a standard emissions factor from calcination of limestone of 0.51 t of CO₂ per ton of clinker as detailed by the Intergovernmental Panel on Climate Change (Hanle and others, 2006), but exclude any correction for cement kiln dust (CKD) not recycled to the kiln (for which data are lacking). The calcination component of CO₂ emissions can be reduced in proportion to the calcium oxide contributed by noncarbonate alternative raw materials, such as ferrous slags and coal combustion ashes. This reduction was about 2.7% (nearly 1.1 Mt of CO₂) in 2008 and about 3.0% (1.3 Mt of CO₂) in 2007. Relative reductions can be significantly larger at the subset of individual plants that actually burn these alternative raw materials. Some types of fuels, including alternative or waste fuels, can either directly reduce plant-level emissions or may lead to reductions in reported emissions from combustion because the fuels are considered to be carbon-neutral (certain biofuels) or because there may be credits allowed for their use (certain waste fuels). Plant-level emissions can also be reduced through upgrading to more efficient kiln line technology. Unit (per ton of product) emissions can also be reduced by use of SCM in finished cement and in concrete to reduce the clinker content of these products and allowing the addition of “inert” fillers to boost cement output without simultaneously boosting clinker output. In regard to the latter, both the ASTM International standard for portland cement (ASTM C–150–05) and the similar American Association of State Highway and Transportation Officials (AASHTO) standard M85 were amended to allow for the addition of up to 5% ground limestone in the finish mill.

In June, the U.S. Environmental Protection Agency (EPA) released a study evaluating the potential for increased use in federally funded infrastructure projects of so-called recovered

mineral components (such as coal combustion ashes, silica fume, and ferrous slags) to reduce the clinker content of cement or the portland cement content of concrete and so reduce the unit emissions of CO₂ associated with these construction materials (U.S. Environmental Protection Agency, 2008). The study concluded that significant emissions reductions were possible by the use of these alternative materials and recommended mandating their use. The EPA was also formulating new regulations that would mandate reductions in mercury emissions by U.S. cement plants; the new emissions limits were expected to be published in early 2009.

Production

In response to continued sharp declines in sales, domestic production of portland cement fell by 8.6% in 2008 to just 83.3 Mt (table 3). This was the lowest output since 1999. The decline was aggravated by the continued availability of large cement stockpiles and was despite a major curtailment of cement imports (table 1). The size of the production drop was in sharp contrast to the modest (1.8%) decline in 2007; lower sales volumes in that year had been largely accommodated by large reductions in imports. Regionally, production declines in 2008 were experienced in all but two districts. Production capacity for the country increased modestly owing to the startup of a new plant in Colorado and of a new kiln at an existing plant in southern Texas. The 2008 capacities listed in table 3 do not reflect the fact that several plants closed permanently or were idled indefinitely during the year, and that many plants operated a reduced number of kilns during all or part of the year. Instead, these developments are reflected in greatly reduced capacity utilization throughout the country. Masonry cement output fell by nearly 30%, reflecting ongoing weakness in the housing construction sector and a significant drawdown of stockpiles.

With common parents combined under the larger subsidiary's name and with joint ventures apportioned, the 10 leading companies at yearend 2008, in descending order of portland cement production, were Holcim (US) Inc., CEMEX, Inc., Lafarge North America Inc., Lehigh Cement Co., Buzzi Unicem USA Inc. (including Alamo Cement Co.), Ash Grove Cement Co., Texas Industries, Inc. (TXI), Essroc Cement Corp., CalPortland Co., and St. Marys Cement Inc. The listing was unchanged from that of 2007. The U.S. industry continued to be heavily consolidated—the leading 5 cement companies, combined, had 60% of total U.S. portland cement production, and the leading 10 companies accounted for 88% of total production. Of the above named companies, all except Ash Grove and TXI were foreign owned as of yearend, and for the industry overall, about 81% of total cement output was by foreign-owned companies.

Clinker production in 2008 fell by 9.0% to 78.4 Mt (table 5). This was the lowest level since 2000. Production fell in all months but March. Only three districts recorded production increases; one of these had a new plant come online during the

year and another commissioned a new kiln. Yearend stocks¹ rose by nearly 8%, possibly as buildup ahead of extended shutdowns of kilns anticipated for 2009. Although the average number of days for routine kiln maintenance was only slightly higher for the country overall, some districts showed significant increases in this metric and, while not revealed in table 5, most districts showed large increases in downtimes for other purposes (including for slow sales); accordingly, the average capacity utilization percentage fell significantly to just 73% from 85% in 2007. The utilization statistic is dependent on the reported breakout of downtime for scheduled routine maintenance and this is not always reported correctly; nevertheless, the drop in 2008 was substantial. Most plants have total downtimes in excess of routine maintenance; thus an overall capacity utilization of 85% or higher is considered to indicate a plant (or district) operating more or less at full practicable capacity.

Nonfuel raw materials consumed to make clinker and cement are listed in table 6. The 2008 ratios among clinker raw materials (as contributors of major oxides) appear to be broadly similar to those in 2007. Direct comparison of ratios among raw materials should be done with caution; tonnage and tonnage ratio changes could reflect widespread raw material substitution, activities at just a few plants, or even errors in reporting.

For fly ash and bottom ash, a comparison can be made between the data in table 6 and those published for sales (by coal-fired electric utilities) of coal combustion products (for cement or as raw feed for clinker) by the American Coal Ash Association (ACAA). For fly ash, table 6 lists consumption of 2.7 Mt of fly ash for clinker and cement, combined, in 2008; the corresponding ACAA number is about 2.9 Mt (American Coal Ash Association, 2009). For bottom ash, consumption was about 0.95 Mt for clinker only (“other ash,” table 6), and the ACAA reported 0.55 Mt of bottom ash sales. The difference in the two datasets probably reflects a difference between consumption (table 6)—which is from a mix of ongoing purchases and drawdown of stockpiles—and sales (ACAA data) and the fact that the ACAA data are extrapolated. Of the consumption of gypsum in table 6, at least 0.64 Mt in 2008 was of synthetic gypsum; the differentiation from natural gypsum is not required on the USGS canvass. This was higher than the 0.38 Mt noted by the ACAA; part of the difference could reflect the likelihood that the ACAA data do not include synthetic gypsum produced by the cement plants themselves.

Data for fuel quantities consumed by the cement industry are listed in table 7. As with the nonfuel raw materials, data shifts can reflect activities at just a few plants. In terms of overall mass ratios among fuels (in total) and overall to clinker production, significant changes in 2008 were not evident for coal and

¹Yearend stockpiles of clinker are an artifact of data collection convenience rather than a reflection of full-year market conditions or production capacity. Generally, if the clinker is not required for immediate cement production, 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 happen at any time of the year.

petroleum coke, but showed significant declines for natural gas and fuel oil (likely owing to price increases for these), and increases for tires and solid wastes.

Although not revealed in table 7, overall heat consumption (gross heat basis) in 2008 was about 4.3 billion joules (GJ) per metric ton of clinker, down by 1.5% from that in 2007 and (if significant) likely reflects some idling of less efficient kilns during the year at some plants. Wet plants were significantly unchanged at an average of about 6.5 GJ per ton of clinker, as were dry kiln plants at 4.0 GJ per ton of clinker. As in past years, the largest share of heat energy used in 2008 was from coal (about 65%) and petroleum coke (21%).

The average unit electricity consumption increased in 2008 (table 8); this most likely reflects increases in the total amount of downtime at a majority of plants. Modern dry process plants have for many years reported higher average electricity consumption per ton of cement product than many wet process plants because of a complex array of blowers and fans associated with the modern kiln lines, but the difference has essentially vanished in recent years, largely owing to relatively high electricity consumption levels at the remaining wet plants.

There were no significant ownership changes in the U.S. cement industry in 2008. In January, Holcim took over U.S. operational and sales management of its Canadian subsidiary, St. Lawrence Cement Group, and St. Lawrence took over management of the Holcim operations in Canada. In particular, this affected two integrated plants in the United States (Catskill, NY, and Hagerstown, MD).

Two new cement plants were completed during 2008. In February, GCC Rio Grande began producing clinker and then cement at its new 0.9-million-metric-ton-per-year (Mt/yr) plant at Pueblo, CO. Towards yearend, a new company, American Cement Co., LLC, finished construction of its new cement plant at Sumterville, FL. The company was a joint venture between Oldcastle Materials, Inc., and New Jersey-based Trap Rock Industries, Inc. Plant capacity was about 1.0 Mt/yr (Cohrs, 2008), and the facility was expected to begin cement production in early 2009.

Poor sales during the year and prospects for more of the same in 2009 led to a number of plants, or at least their production facilities, being permanently closed or put into idle status indefinitely. For some plants, environmental issues, especially those involving emissions, were a contributing factor to the shutdowns. In many of these cases, however, the facilities continued to be used as storage, packaging, and transshipment terminals.

Buzzi Unicem closed its granulated slag-grinding and cement-lending plant in New Orleans, LA, in June, permanently ended production at its 0.4-Mt/yr cement plant at Independence, KS, in September, and idled its 0.6-Mt/yr cement plant at Oglesby, IL, in November. Towards yearend, CEMEX closed the smaller of its two cement plants at Brooksville, FL, preferring to rely on the more modern Brooksville-South facility that it had purchased in 2007 and that was being enlarged. At yearend, CEMEX idled indefinitely its 0.9-Mt/yr plant at Davenport, CA, after the facility had been cited for hexavalent chromium content in its fugitive dust. Essroc closed the 0.4-Mt/yr kiln at its plant at Frederick, MD, in November, and the

plant's finish mill was expected to be shut down in early 2009 when the remaining clinker supply had run out. The Frederick closure, albeit somewhat advanced in timing, had been expected given diminishing limestone reserves and because the company was undertaking a major expansion project at its nearby Martinsburg, WV, cement plant. At yearend, St. Marys indefinitely idled its 0.6-Mt/yr plant at Dixon, IL. In March, TXI shut the remaining white clinker kiln at its Crestmore, CA, plant because of hexavalent chromium in the dust; the other white clinker kiln there was shut down in December 2007. However, grinding of gray clinker brought in from TXI's Oro Grande, CA, plant continued until yearend, at which point the gray cement finish mill was idled. With the closure of the Crestmore plant, Lehigh's York, PA, and Waco, TX, plants became the only white cement plants remaining in operation in the United States.

In November, Holcim announced that, in response to low sales levels, the company was planning to close its Dundee, MI, and Clarksville, MO, plants by early 2009 (Holcim, Ltd., 2008). The Dundee plant operated two wet kilns, and Clarksville, a single wet kiln. The two plants had a combined capacity of approximately 2.2 Mt/yr of clinker. Clarksville's kiln was notable in that, at nearly 232 meters (m) length and about 8.5 m in diameter, it was thought to be the largest in the world. In terms of net capacity, the Clarksville closure was to be more than offset by Holcim's plans to open, at about the same time, a new 4-Mt/yr-capacity plant in St. Genevieve County, MO. The new plant's capacity was to be based on a single precalciner kiln, giving it the largest capacity kiln in the world.

Upgrade or expansion projects of varying complexity were underway at a number of plants, although some projects were being postponed entirely or extended owing to projected slow sales conditions. A few projects were completed in 2008. In September, CEMEX first fired the new 1.1-Mt/yr precalciner kiln at its Balcones, TX, plant. In November, CEMEX completed the new 0.9-Mt/yr precalciner kiln at its Brooksville-South, FL, plant (CEMEX USA, 2008).

In January, TXI Riverside Cement Co. fired the new 1.4 Mt/yr precalciner kiln at its Oro Grande, CA, plant; construction of the new kiln had been completed in December 2007. The new kiln line replaced the plant's existing seven long dry kilns, of total capacity of approximately 1.2 Mt/yr, which were shut down in March (Arment and others, 2008).

In August, Buzzi Unicem commissioned a new 190-metric-ton-per-hour finish mill at its Festus, MO, cement plant. The mill was to supplement the existing finish mills in anticipation of commissioning a new approximately 2-Mt/yr, precalciner kiln in 2009 (Keim, 2008). Also in August, Continental Cement Co. fired up the new 1.0-Mt/yr precalciner kiln at its Hannibal, MO, plant (Maxwell-Cook, 2008, p. 90.). The plant permanently shut down its wet kiln in October.

In April, Carolinas Cement Co., LLC (a subsidiary of Titan America, LLC) announced plans to build a new cement plant at Castle Hayne, NC. The plant, targeted to come online in late 2011 or 2012, was to have a clinker capacity of about 2.0 Mt per-year (Mt/yr) (Environmental Quality Management, Inc., 2008).

Consumption

The consumption data used by the cement industry for market analysis are monthly cement shipments (sales) tonnages to final domestic customers, by State; these data are published monthly by the USGS and have been summarized in table 9. Although the national sales totals in table 9 are similar to the shipments totals in tables 11, 12, and 14, only the table 9 breakout tonnages represent State-level consumption. The regional breakouts in tables 11, 12, and 14 simply pertain to the locations of the reporting entities (chiefly the production sites), not the locations of consumption. It is very common for shipments to cross State lines.

The U.S. cement market throughout 2008 continued a steady decline begun in early-to-mid 2006 and largely related to the continued combined effects of the decline in new home construction, a tight loan market, and declines in State property tax revenues. Declines (relative to 2007) were experienced in all months during the year. Overall, domestic portland cement consumption in 2008 fell by about 15% to 93.8 Mt (table 9), the lowest level since 1997. Only Kansas, Louisiana, North Dakota, Oklahoma, and Wyoming registered overall consumption increases during the year. Combined, consumption of portland cement in the three traditionally leading consuming States (California, Florida, and Texas), were down by about 16% in 2008. Masonry cement consumption fell by nearly 29% to just 3.0 Mt, the lowest level since 1993.

Sales by some importers that did not participate in the USGS monthly and annual surveys were not included in the portland cement consumption data in this report. An estimate of these missing importers' sales can be made by comparing official (U.S. Census Bureau) trade data (tables 17 and 21) with the import origins of sales (table 9). The official cement imports were about 1.5 Mt higher than the foreign origin tonnages in 2008 and 1.2 Mt higher than those in 2007. After accounting for these differences for cement varieties that are in the trade tables but not covered by the USGS canvasses (chiefly aluminous cement) and for apparent drawdown of stocks (which cannot fully distinguish between imported and domestic cement), it becomes evident that the annual tables are missing 1.0 to 1.2 Mt of sales for 2007 and 2008. It is possible to estimate the missing import tonnages for only a few regions. In Texas, company-specific cement tax data published by the Texas Comptroller of Public Accounts indicate that the USGS sales data for Texas overall (table 9) understate the consumption by approximately 0.28 Mt in 2007 and 0.33 Mt in 2008, mostly representing material imported from Colombia. At other locations, USGS data appear to be missing an additional 0.2 to 0.3 Mt of Colombian cement. The USGS consumption data are also missing imports into the Philadelphia, PA, customs district (table 18), amounting to 0.31 Mt in 2007 and 0.19 Mt in 2008.

As the binder in concrete, cement consumption levels within a given category of construction 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. In terms of 1996 constant dollars, overall construction spending in 2008 fell by 7.5% to \$657 billion (Portland Cement Association, 2010). Within this spending, the residential construction sector was dominant at

\$231 billion, down by about 25%; the decline continued a trend begun in 2006. The largest component of the 2008 decline was in new, single-family housing, which was down by nearly 37% to \$120 billion. The private nonresidential construction sector, in contrast, was up by 8.6% overall to \$177 billion, continuing a trend begun in 2006 and, apparently, continuing to reflect lag effects of the very strong housing sector in 2005 and early 2006. Public sector construction was up by just 2.8% to about \$186 billion. The increase was owing largely to higher expenditures for buildings (up by 6.1% to \$76.3 billion); the road construction sector declined slightly to \$47.4 billion.

Portland cement sales broken out by customer type are listed in table 14. Sales to ready-mixed concrete producers accounted for about 72% of total shipments, but the true tonnage for this type of concrete was larger because some of it was recorded under other customer categories, such as road paving contractors. As listed, the sales to ready-mixed customers declined by 17%, a somewhat higher percentage drop than that for overall portland cement sales. The decrease in residential construction funding noted earlier is at least qualitatively reflected in a 12% decline in sales tonnages to brick and block manufacturers (table 14) as well as the large drop in masonry cement sales (table 12). As in 2007, the 8.5% decline in 2008 sales to precast and prestressed concrete contractors was not in accord with the overall increase in spending levels for private nonresidential construction and for public sector construction. Sales to road paving contractors were up by 5% (compared with revised data for 2007), despite the slight decline in road construction expenditures. Sales to mining companies fell by nearly 13%, which was in accord with reduced mineral commodity prices in 2008, but the volumes may be underreported. Cement sales for oil and gas well drilling increased by 22%.

A breakout of the sales of different types of portland cement is given in table 15. As in past years, sales were dominated by Types I and II cements and sulfate-resistant varieties of cement (Type V and Type II/V hybrids reported as Type V). Although the sales of the largest category (Types I and II) fell proportionately to the 15% decline in overall portland sales, those of Type V fell by 18% and reflected the severe construction falloff in California and other Southwestern States. Sales of oil-well cements fell by 4.5% but reflected only a component of total sales to "oil well drillers" (table 14); relatively shallow oil and gas drilling can use standard types of portland cement.

Blended cement sales declined, but by a smaller percentage than for portland cement sales overall; this may indicate some growth in the market share of blended cement. Sales of blended cements that contained fly ash increased by about 57%, apparently at the expense of blends containing GGBFS. Availability of GGBFS was somewhat uncertain during the year, owing in part to the closure of a major slag-grinding facility at midyear.

Data on the mill net values for shipments to final customers by plants and import terminals (terminal nets) are provided in tables 11 to 13. Despite significantly reduced sales tonnages, the average mill net values of portland and masonry cement declined only slightly in 2008.

Foreign Trade

Trade data from the U.S. Census Bureau are presented in tables 16–21. Exports were again very small compared with imports, and Canada continued to be by far the dominant recipient of the exports. Overall, exports of hydraulic cement and clinker fell by about 7% to 0.82 Mt; 2007 data have been corrected to remove an apparent excess (0.65 Mt) of aluminous cement exports to Mexico through Laredo, TX (table 16). Imports of cement and clinker in 2007 fell by about 49% to just 11.4 Mt (tables 1, 17, 18); this followed a nearly 37% drop in 2007. Imports in 2008 were the lowest since 1994 and represented a decline of 24.2 Mt from the record level of 2006. The dominant component of imports was gray portland cement, imports of which fell by 51% to 9.6 Mt (table 19). Overall, imports from Asian countries (especially China, Taiwan, and Thailand) were down well in excess of the overall average, while overland imports from Canada and Mexico declined less severely.

Official imports of clinker fell by 36% to just 0.6 Mt (table 21), the lowest level since 1982. The clinker data continued to be incomplete, however, with regard to overland imports from Canada; the tonnages listed were insufficient to supply the grinding plants in Michigan and Washington (all of which imported their clinker from Canada). The unreported Canadian clinker appeared mostly to be coming in by truck, at a value of less than \$2,000 (customs value) per truckload; such 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 problem presumably does not exist for imports by rail or by ship because these shipments are larger. Clinker imports from Canada were estimated to be higher than those reported in tables 1 and 21 by about 0.6 Mt in 2007 and about 0.7 Mt in 2008.

With the falloff of imports, especially from Asia, many of the once-busiest import locations have fallen from prominence, and overland import locations have become relatively dominant. For cement and clinker combined, the 10 busiest customs districts of entry in 2008, in descending order, were Houston-Galveston, TX; Seattle, WA; Detroit, MI; Columbia-Snake, OR and WA; Buffalo, NY; Los Angeles, CA; Cleveland, OH; San Francisco, CA; Ogdensburg, NY; and El Paso, TX (table 18). These leading districts accounted for about 67% of the total imports for the year.

World Review

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

World cement output in 2008 was an estimated 2.84 billion metric tons (Gt), up by only about 1%; this was a significantly lower growth rate than that in 2007 (7.7%). Production was from more than 150 countries. China was again the world’s leading producer by far, with an output of nearly 1.4 Gt or about

49% of the world total. The remaining top 20 producers (a grouping that happens to correspond in 2008 with a production threshold of 20 Mt or more), in descending order, were India, the United States, Japan, the Republic of Korea, Russia, Brazil, Turkey, Mexico, Iran, Italy, Spain, Egypt, Pakistan, Indonesia and Vietnam (tied), Thailand, Germany, Saudi Arabia, and France. Cumulatively, the top 5 countries had about 62% of total world output, the top 10 countries, about 71%, and the top 20 countries, about 84%.

Regionally, Asia contributed about 67% of world production, included 8 of the 20 leading producing countries, and continued to experience the greatest growth rate of all regions. Western Europe had about 8% of total output; the Middle East (including Turkey), about 6%; North America, about 5%; Africa, about 4%; Central America and South America, combined, about 4%; the Commonwealth of Independent States, about 3%; and Eastern Europe, about 2%.

Outlook

There was little expectation of much increase in overall spending levels in the construction sector in 2009. Portland cement consumption was expected to continue to decline, but the rate of decline was expected to be lower because of anticipated Government economic stimulus spending. Lower revenues to the States from property taxes were expected to continue to hamper State contributions to construction projects funded jointly by the State and Federal Governments. An overall year-over-year increase in cement consumption was not expected until 2010 at the earliest, and a return to levels approaching the record years of 2005 and 2006 was not expected for at least 5 more years. Imports were expected to decline further, but such declines were not expected to be able to significantly shield domestic producers from the potential need to reduce output. Further plant closures or indefinite idlings were expected in 2009, especially at plants that were either very small or operated energy-inefficient (especially wet) kiln technology. It was unclear how many of the indefinitely idled facilities in 2008 would ever reopen. New, lower limits on mercury emissions were expected to be released by the EPA in 2009 and were of concern to the industry. Mercury enters the kilns from both the fuels and the raw materials and, as with CO₂, the emissions are not easily technologically controlled. Some form of mandatory accounting of CO₂ emissions was expected to be implemented in the near future. There was concern that popular strategies for reducing unit emissions of CO₂, such as incorporating SCM into the finished cement or concrete or by burning alternative raw materials and fuels, might be constrained by restrictions on mercury emissions. Some of the SCM, especially fly ash, typically have elevated concentrations of this metal.

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TABLE 1
SALIENT CEMENT STATISTICS FOR THE UNITED STATES^{1, 2}

(Thousand metric tons unless otherwise specified)

	2004	2005	2006	2007	2008
Production:					
Cement ³	97,434	99,319	98,167	95,464	86,310
Clinker	86,658	87,405	88,555	86,130	78,382
Shipments from mills and terminals: ^{3, 4, 5}					
Quantity	120,000	128,000	127,000	114,000	96,700
Value ⁶	9,520,000	11,700,000	12,900,000	11,900,000 ^r	9,990,000
Average value ⁶	79.50	91.00	101.50	104.00 ^r	103.50
Stocks, yearend	6,740	7,450	9,380	8,890 ^r	8,360
Exports	749	766	723 ⁷	886 ⁷	823
Imports: ⁸					
Cement	25,396	30,403	32,141	21,496	10,744
Clinker	1,630	2,858	3,425	972	621
Total ⁹	27,026	33,261	35,566	22,468	11,365
Consumption, apparent ¹⁰	121,950	128,250	127,660	116,550	96,760
World production ¹¹	2,190,000	2,350,000	2,610,000 ^r	2,810,000 ^r	2,840,000

^rRevised.

¹Unless 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.

²Excludes Puerto Rico.

³Includes cement made from imported clinker.

⁴Includes imported cement.

⁵Shipments 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.

⁶Value free on board mill or independently reporting terminal.

⁷Official export data have been corrected to remove an apparent excess of aluminous cement from Laredo, TX, of 943,939 metric tons in 2006 and 653,255 metric tons in 2007.

⁸All forms of hydraulic cement or clinker.

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

¹⁰Production (including that from imported clinker) of cement plus imports of hydraulic cement minus exports of hydraulic cement minus the change in yearend cement stocks.

¹¹Total 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.
Illinois, metropolitan Chicago	Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will Counties in Illinois.
Illinois, excluding Chicago	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, Reagan, Reeves, 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 AND BLENDED CEMENT PRODUCTION, CAPACITY, AND STOCKS IN THE UNITED STATES, BY DISTRICT¹

(Thousand metric tons unless otherwise specified)

District ³	2007						2008					
	Number of plants	Capacity ²			Year-end stocks ⁶	Number of plants	Capacity ²			Year-end stocks ⁶	Number of plants	
		Production ⁴	Grinding	Percentage utilized ⁵			Production ⁴	Grinding	Percentage utilized ⁵			
Maine and New York	5	3,149	4,165	75.6	307 ⁷	5	3,061	4,204	72.8	234 ⁷		
Pennsylvania, eastern	7	4,070	5,520 ⁷	73.8	304	7	3,826	5,140 ⁷	74.5	285		
Pennsylvania, western	3	1,591	1,805	88.1	135	3	1,327	1,805	73.5	140		
Illinois	4	3,116	3,417	91.2	285	4	2,655	3,390	78.3	268		
Indiana	4	2,981	3,740	79.7	254	4	2,587	3,653	70.8	237		
Michigan	5	5,486	7,330 ⁷	74.9	292 ⁷	5	4,928	7,332	67.2	287		
Ohio	2	916	1,198	76.5	35	2	762	1,166	65.4	64		
Iowa, Nebraska, South Dakota	5	4,436	6,007	73.8	453	5	3,987	5,840 ⁷	68.3	458		
Kansas	4	2,757	3,230 ⁷	85.4	242	4	2,396	3,230 ⁷	74.2	247		
Missouri	5	5,229	6,958	75.1	695	5	4,651	7,230	64.3	532		
Florida ⁸	7	5,512	7,301	75.5	520	7	4,979	7,301	68.2	389 ⁷		
Georgia, Maryland, Virginia, West Virginia	7	5,292	6,456	82.0	596	7	5,057	6,780 ⁷	74.6	595 ⁷		
South Carolina	3	3,681	5,082	72.4	295 ⁷	3	2,925	5,085	57.5	137 ⁷		
Alabama	5	5,061	7,075	71.5	348	5	4,635	7,074	65.5	242		
Kentucky, Mississippi, Tennessee	4	3,420	3,736	91.5	330	4	3,045	3,702	82.3	282		
Arkansas and Oklahoma	4	2,613	3,136	83.3	216	4	2,623	3,130 ⁷	83.9	198		
Texas, northern	6	6,294	7,600	82.8	682	6	6,303	7,618	82.7	1,324		
Texas, southern	6	4,627	5,830 ⁷	79.3	315	6	4,778	6,330 ⁷	75.5	260 ⁷		
Arizona and New Mexico	3	2,633	3,116	84.5	136	3	2,097	3,116	67.3	102		
Colorado and Wyoming	3	2,538	3,542	71.7	173	4	2,610	4,449	58.7	173		
Idaho, Montana, Nevada, Utah	6	3,002	3,753	80.0	251	6	2,727	3,728	73.1	221 ⁷		
Alaska and Hawaii	--	--	--	--	59	--	--	--	--	82		
California, northern	3	2,210	2,853	77.5	233	3	1,678	2,853	58.8	188		
California, southern	8	8,623	11,047	78.1	311	8	8,201	10,855	75.6	310 ⁷		
Oregon and Washington	4	1,908	2,591	73.6	294 ⁷	4	1,443	2,435	59.3	248 ⁷		
Importers ⁹	--	--	--	--	413 ⁷	--	--	--	--	310 ⁷		
Total ¹⁰	113	91,144	116,000 ⁷	78.2	8,170 ⁷	114	83,283	117,000 ⁷	70.9	7,810 ⁷		
Puerto Rico	2	1,386	1,898	73.0	52	2	1,301	1,898	68.5	44		
Grand total ¹⁰	115	92,530	118,000 ⁷	78.2	8,230 ⁷	116	84,584	119,000 ⁷	70.9	7,860 ⁷		

--Zero.

¹Even where presented unrounded, data are thought to be accurate to no more than three significant digits. Includes data for white cement.
²Grinding capacity is based on fineness needed to produce a plant's normal output mix, including masonry cement, and allowing for downtime for routine maintenance.
³District assignment is the location of the reporting facilities. Specific districts include importers for which district assignments were possible.
⁴Includes cement made from imported clinker.
⁵Calculated relative to portland cement output; utilization would be higher if calculated to include output of masonry cement.
⁶Includes imported cement. Includes stocks at mills, terminals, and in transit.
⁷Data contain estimates for nonrespondent or incompletely reporting facilities and have been rounded to no more than three significant digits.
⁸Production and capacity data exclude a plant that produced only masonry cement.

TABLE 3—Continued
PORTLAND AND BLENDED CEMENT PRODUCTION, CAPACITY, AND STOCKS IN THE UNITED STATES, BY DISTRICT¹

⁹Data include only those importers or terminals for which district assignments were not possible.
¹⁰Data may not add to totals shown because of independent rounding.

TABLE 4
MASONRY CEMENT PRODUCTION AND STOCKS IN THE UNITED STATES, BY DISTRICT¹
(Thousand metric tons unless otherwise specified)

District ²	2007			2008		
	Number of plants	Production ³	Yearend stocks ⁴	Number of plants	Production ³	Yearend stocks ⁴
Maine and New York	4	101	20	4	69	17
Pennsylvania	9	304	61 ⁵	9	254	56
Indiana and Ohio	6	462	74	6	332	73
Michigan	4	149	45	4	99	34
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	524	40	5	310	65
Georgia, Maryland, Virginia, West Virginia	7	468	59	6	367	53
South Carolina	3	491	34	3	323	31
Alabama	4	450	75	4	303	63
Kentucky, Mississippi, Tennessee	3	W	W	3	W	W
Arkansas and Oklahoma	4	148	20	4	125	18
Texas	8	368	155	7	274	20
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	1	W	W
California, northern	3	76	10	3	59	19
California, southern	4	446	22	5	278	23
Importers ⁶	--	--	3 ⁵	--	--	3 ⁵
Total ⁷	75	4,320	724 ⁵	74	3,027	549 ⁵

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

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

²District assignment is the location of the reporting facilities. Specific districts include importers for which district assignments were possible.

³Includes cement produced from imported clinker.

⁴Includes imported cement.

⁵Data contain estimates for nonrespondents or incompletely reporting facilities.

⁶Data include only those importers or terminals for which district assignments were not possible.

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

TABLE 5
CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2008, BY DISTRICT¹

(Data on capacity, production, and stocks are in thousand metric tons)

District	Number of active plants ²			Number of kilns ⁴	Daily capacity ^{4,5}	Average days of routine maintenance ⁶	Apparent annual capacity ^{4,7}	Production	Percentage of capacity utilized	Yearend stocks ⁸
	Process used		Total							
	Wet	Dry	Both ³							
Maine and New York	2	2	--	5	11.2 ⁹	34.4	3,700 ⁹	2,753	74.5	220
Pennsylvania, eastern	2	4	--	10	14.6 ⁹	22.4	4,990 ⁹	3,660	73.3	310
Pennsylvania, western	2	1	--	7	5.0	24.9	1,700	1,387	81.6	133
Illinois	--	4 ¹⁰	--	7	9.6	25.9 ⁹	3,270 ⁹	2,404	73.6	179
Indiana	1	3	--	8	10.2	22.0 ⁹	3,470 ⁹	2,667	76.8	285
Michigan	1	2	--	8	14.1	32.6	4,649	3,546	76.3	376
Ohio	1	1	--	3	3.3	29.9	1,136	746	65.7	94
Iowa, Nebraska, South Dakota	--	4	1	9	14.3	20.6	4,859	3,676	75.7	339
Kansas	1	3	--	9	9.4	29.1 ⁹	3,197 ⁹	2,306	72.1	107
Missouri	1	3	1	7	19.1	24.7	6,527	4,464	68.4	355
Florida	--	6	--	8	20.2	21.0	6,892	4,749	68.9	352
Georgia, Maryland, Virginia, West Virginia	2	4	--	9	17.8	23.1	6,017	4,833	80.3	282
South Carolina	--	3	--	3	12.3	22.3	4,246	2,899	68.3	319
Alabama	--	5	--	5	16.9	27.6	5,714	4,521	79.1	276
Kentucky, Mississippi, Tennessee	1	3	--	4	10.5	17.5	3,663	2,955	80.7	128
Arkansas and Oklahoma	2	2	--	10	8.0 ⁹	24.2	2,730 ⁹	2,447	89.5	83 [#]
Texas, northern	2	3	1	16	22.2	14.1 ⁹	7,720 ⁹	6,055	78.4	727
Texas, southern	--	5	--	6	16.3	15.7	5,708	4,386	76.8	405
Arizona and New Mexico	--	3	--	7	8.6	24.0	2,974	1,981	66.6	387
Colorado and Wyoming	--	4	--	5	11.5	17.0 ⁹	3,967	2,548	64.2	269
Idaho, Montana, Nevada, Utah	3	3	--	8	8.3	22.7	2,823	2,587	91.7	244
California, northern	--	3	--	3	8.8	17.0	3,040 ⁹	1,631	53.7	175
California, southern	--	8	--	18	36.1	17.4	11,916	7,942	66.7	970
Oregon and Washington	1	2	--	3	6.0	30.8	2,019	1,239	61.3	56
Total ¹¹	22	81	3	178	314.0 ⁹	22.5 ⁹	107,000 ⁹	78,382	73.3	7,070 [#]
Puerto Rico	--	2	--	2	5.5	51.5	1,727	1,217	70.5	87
Grand total ¹¹	22	83	3	180	320.0 ⁹	22.8 ⁹	109,000 ⁹	79,599	73.3	7,160 ⁹

-- Zero.

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

²Includes white cement plants. Includes all plants that produced clinker for at least one day during the year.

³Plants that can operate both wet and dry kilns, whether or not both types were active during the year.

⁴Includes kilns active for at least one day during the year. For kilns idle all year, excludes those that cannot be restarted, fully permitted, in less than 6 months.

⁵Sum of reported kiln capacities for each plant in a district.

⁶Total days of routine maintenance (summed for all kilns) divided by the number of kilns.

⁷Sum of apparent annual capacities for each kiln. For each kiln, the statistic is calculated as 366 days (leap year) minus days reported for routine maintenance and then multiplied by the reported, unrounded, daily capacity.

⁸Includes imported clinker and clinker stockpiles at grinding plants.

TABLE 5—Continued
CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2008, BY DISTRICT¹

⁹Data contain estimates for nonrespondents and incompletely reporting facilities and have been rounded to no more than three significant digits.

¹⁰Includes one semiwet kiln.

¹¹Data may not add to totals shown because of independent rounding.

TABLE 6
RAW MATERIALS USED TO PRODUCE CLINKER AND CEMENT IN THE UNITED STATES^{1,2}

(Thousand metric tons)

Materials	2007		2008	
	Clinker	Cement ³	Clinker	Cement ³
Calcareous:				
Limestone (aragonite, chalk, coral, marble)	112,000	2,150	101,000	1,920
Cement rock (includes marl)	10,800	6	10,900	50
Cement kiln dust (CKD) ⁴	629	336	425	304
Lime ⁴	292	38	248	15
Other	23	--	41	--
Aluminous:				
Clay	4,300	--	3,780	--
Shale and schist	3,670	16	3,290	20
Other ⁵	712	--	849	--
Ferrous:				
Iron ore	584	--	609	--
Mill scale	1,080	--	702	--
Other ⁶	47	--	65	--
Siliceous:				
Sand, calcium silicates	3,940	--	3,970	--
Sandstone, quartzite, soils, nonpozzolanic rocks	986	--	693	--
Fly ash	2,940 ^r	84	2,620	83
Other ash, including bottom ash	1,050	--	948	--
Granulated blast furnace slag ⁷	323	540	81	328
Other blast furnace slag	290 ^r	--	262	--
Steel slag	547	--	428	--
Other slag	113 ^r	8	67	30
Natural rock pozzolans ⁸	--	11	--	9
Other pozzolans ⁹	98	6	79	3
Other:				
Gypsum and anhydrite	--	5,160	--	4,640
Other ¹⁰	131	98	115	90
Total ¹¹	145,000	8,450	131,000	7,470
Clinker, imported, raw materials equivalent ¹²	--	2,650	--	1,810
Grand total ¹¹	145,000	11,100	131,000	9,280

^rRevised. -- Zero.

¹Excludes Puerto Rico.

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

³Includes portland, blended, and masonry cements.

⁴Data are probably underreported.

⁵Includes alumina, aluminum dross, bauxite, spent catalysts, and other aluminous materials.

⁶Includes iron sludges, pyrite, and other ferrous materials.

⁷Includes both ground (GGBFS) and unground material.

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

⁹Includes diatomite, silica fume, other microcrystalline silica, and other pozzolans, even if not used as such.

¹⁰Includes fluorspar and all other materials not listed earlier.

¹¹Data may not add to totals shown because of independent rounding.

¹²Converted as the weight of foreign clinker consumed times 1.7.

TABLE 7
CLINKER PRODUCED AND FUEL CONSUMED BY THE U.S. CEMENT INDUSTRY, BY KILN PROCESS¹

Kiln process	Clinker production ²			Conventional fuels ³				Waste fuels ³		
	Number of plants	Quantity (thousand metric tons)	Percentage of total	Coal ⁴ (thousand metric tons)	Petcoke (thousand metric tons)	Oil ⁵ (thousand liters)	Natural gas ⁶ (thousand cubic meters)	Tires (thousand metric tons)	Solid (thousand metric tons)	Liquid (thousand liters)
2007:										
Wet	23	11,608	13.5	1,470	574	39,200	29,800	90	20	549,000
Dry	80	71,204	82.7	7,210 ^r	1,780 ⁷	47,800	275,000 ^r	355	275	396,000
Both ⁸	2	3,318	3.9	529	--	--	38,900	--	--	38,600
Total ⁹	105	86,130	100.0	9,200 ^r	2,360 ⁷	87,000	344,000 ^r	446	296	984,000
2008:										
Wet	22	9,930	12.7	1,230	518	24,300	23,200	91	10	370,000
Dry	81	64,664	82.5	6,440	1,610	28,000	218,000	341	335	354,000
Both ⁸	3	3,788	4.8	561	--	--	38,900	6	9	67,200
Total ⁹	106	78,382	100.0	8,240	2,130	52,300	280,000	438	354	791,000

¹Revised. -- Zero.

¹Data exclude Puerto Rico.

²Clinker production data are all reported. Although unrounded, data are thought to be accurate to no more than three significant digits.

³All fuel data have been rounded to no more than three significant digits.

⁴Essentially all reported to be bituminous.

⁵Distillate and residual fuel oils. Excludes used oils that were reported under liquid wastes.

⁶Includes landfill gas.

⁷Includes a minor quantity (less than 0.03 units) reported as metallurgical coke (from coal).

⁸Plants that can operate both wet and dry kilns, whether or not both types were active during the year.

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

TABLE 8
ELECTRICITY CONSUMED BY U.S. CEMENT PLANTS, BY KILN PROCESS¹

Plant process	Electricity consumed ²							Average consumption (kilowatthours per ton of cement produced)
	Generated			Purchased			Total ³	
Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Number of plants	Quantity (million kilowatthours)	Percentage of total	Cement produced ⁴ (thousand metric tons)	
2007:								
Integrated plants:								
Wet	(5)	23	1,750	23	1,750	13.2	12,446	141
Dry	435	81 ^{r,5}	10,600	81 ^{r,5}	11,100	83.1	77,702	142
Both ⁶	--	2	495	2	495	3.7	3,291	150
Total or average ³	436	106 ^{r,5}	12,900	106 ^{r,5}	13,300	100.0	93,439	142
Grinding plants ⁷	--	6 ^r	147	6 ^r	147	--	1,756 ^r	84 ^r
Exclusions ⁸	--	3 ^r	XX	3 ^r	XX	--	269 ^r	XX
2008:								
Integrated plants:								
Wet	--	22	1,530	22	1,530	12.4	10,598	145
Dry	236	83 ⁹	9,960	83 ⁹	10,200	82.9	70,279	145
Both ⁶	--	3	563	3	563	4.6	3,736	151
Total or average ³	236	108 ⁹	12,100	108 ⁹	12,300	100.0	84,612	145
Grinding plants ⁷	--	5	130	5	130	--	1,481	88
Exclusions ⁸	--	3	XX	3	XX	--	216	XX

¹Revised. XX Not applicable. -- Zero.

²Data exclude Puerto Rico.

³Electricity data are rounded to no more than three significant digits because they contain estimates.

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

⁵Portland and masonry cement. Data are all reported and are unrounded.

⁶Includes one grinding plant whose data were included with an integrated plant.

⁷Plants that can operate both wet and dry kilns, whether or not both types were active during the year.

⁸Plants that did not produce clinker but ground clinker from outside sources. Excludes plants that only made masonry cement or just reground one type of portland cement into another.

⁹Plants whose production of portland cement was by simply regrinding of one type into another, or which reported production only of masonry cement, or which also reported a significant component of grinding excess granulated blast furnace slag.

¹⁰Includes two grinding plants whose data were included with the integrated plants.

TABLE 9
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN^{1,2}

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2007	2008	2007	2008
Destination:				
Alabama	1,771	1,559	174	122
Alaska ³	222	148	--	--
Arizona	3,822	2,778	77	44
Arkansas	1,074	902	68	49
California, northern	4,095	3,179	104	73
California, southern	8,273	6,189	373	238
Colorado	2,411	2,156	17	14
Connecticut ³	756	640	15	12
Delaware ³	233	217	10	7
District of Columbia ³	177	168	1	(4)
Florida	7,886	5,875	616	351
Georgia	4,014	3,112	340	235
Hawaii ³	441	397	6	4
Idaho	682	507	1	1
Illinois, excluding Chicago	1,919	1,656	19	13
Illinois, metropolitan Chicago ³	2,074	1,636	53	31
Indiana	2,166	1,719	74	56
Iowa	1,803	1,658	3	2
Kansas	1,360	1,430	11	10
Kentucky	1,250	1,085	88	68
Louisiana ³	2,470	2,477	72	62
Maine	299	239	4	3
Maryland	1,468	1,223	78	59
Massachusetts ³	1,022	919	17	15
Michigan	2,189	1,858	74	59
Minnesota ³	1,683	1,374	20	13
Mississippi	1,186	1,063	75	59
Missouri	2,376	2,079	35	26
Montana	404	349	1	1
Nebraska	1,222	1,134	4	3
Nevada	2,223	1,651	23	15
New Hampshire ³	301	269	7	4
New Jersey ³	1,740	1,594	74	59
New Mexico	843	709	7	9
New York, eastern	619	573	16	13
New York, western ³	772	748	21	23
New York, metropolitan ³	1,770	1,637	90	73
North Carolina ³	2,969	2,343	337	229
North Dakota ³	353	391	1	1
Ohio	3,357	2,817	121	99
Oklahoma	1,500	1,570	56	54
Oregon	1,240	923	1	1
Pennsylvania, eastern	1,977	1,722	57	48
Pennsylvania, western	1,160	1,082	45	42
Rhode Island ³	169	139	2	2
South Carolina	1,617	1,242	157	103
South Dakota	463	453	1	1
Tennessee	2,214	1,692	251	164
Texas, northern	6,635	6,580	141	123
Texas, southern	8,245	7,668	239	198
Utah	1,683	1,313	(4)	(4)

See footnotes at end of table.

TABLE 9—Continued
CEMENT SHIPMENTS TO FINAL CUSTOMER, BY DESTINATION AND ORIGIN^{1,2}

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2007	2008	2007	2008
Destination—Continued:				
Vermont ³	132	116	3	3
Virginia	2,370	2,019	159	118
Washington	2,587	2,044	1	1
West Virginia	522	504	24	21
Wisconsin ³	1,892	1,729	18	13
Wyoming	460	497	(4)	(4)
Total ⁵	110,563	93,751	4,282	3,047
Foreign countries ⁶	581	564	(4)	(4)
Puerto Rico	1,704	1,397	--	--
Grand total ⁵	112,848	95,710	4,282	3,047
Origin:				
United States	90,776	83,178	4,209	2,995
Foreign countries ⁷	20,580	11,197	73	52
Puerto Rico	1,492	1,335	--	--
Total shipments ⁵	112,848	95,710	4,282	3,047

-- Zero.

¹Includes cement produced from imported clinker and imported cement shipped by domestic producers and importers.

²Data 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. Although presented unrounded, data are thought to be accurate to no more than three significant digits.

³Has no cement plants.

⁴Less than ½ unit.

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

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

⁷Imported cement sold to final customers in the United States as reported by domestic producers and other importers. Data do not match the imports in tables 17–20.

TABLE 10
SHIPMENTS OF PORTLAND CEMENT IN THE UNITED STATES, BY TYPE OF CARRIER^{1,2}

(Thousand metric tons)

	Plant to terminal		Plant to customer		Terminal to customer		Total to customers
	In bulk	In bags ³	In bulk	In bags ³	In bulk	In bags ³	
2007:							
Railroad	11,100	19	1,830	--	725	4	2,560
Truck	5,420	210	56,700	1,470	48,400	605	107,000
Barge and boat	9,350	11	211	--	17	--	229
Total ⁴	25,900	239	58,800	1,470	49,100	610	110,000 ⁵
2008:							
Railroad	10,700	108	1,870	3	438	2	2,310
Truck	5,350	308	49,000	1,310	39,900	644	90,900
Barge and boat	7,230	3	323	43	37	--	403
Total ⁴	23,300	419	51,200	1,360	40,400	647	93,600 ⁵

-- Zero.

¹Includes imported cement and cement made from imported clinker. Data exclude Puerto Rico. Data are for domestic sales only.

²Data are rounded to no more than three significant digits because they contain estimates.

³Includes packages, bags, and supersacks.

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

⁵Shipments are based on 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 IN THE UNITED STATES, BY DISTRICT¹

District ⁴	2007			2008		
	Quantity ³ (thousand metric tons)	Value ²		Quantity ³ (thousand metric tons)	Value ²	
		Total (thousands)	Average (per metric ton)		Total (thousands)	Average (per metric ton)
Maine and New York	3,866	\$412,000 ⁵	\$106.50 ⁵	3,820 ⁵	\$403,000 ⁵	\$105.50 ⁵
Pennsylvania, eastern	4,222	423,000 ⁵	100.00 ⁵	3,838	382,000 ⁵	99.50 ⁵
Pennsylvania, western	1,458	147,000 ⁵	100.50 ⁵	1,248	121,000 ⁵	97.00 ⁵
Illinois	3,301	331,000 ⁵	100.50 ⁵	2,810	279,000 ⁵	99.00 ⁵
Indiana	2,958	260,849	88.18	2,346	205,153	87.46
Michigan	5,660 ⁵	554,000 ⁵	98.00 ⁵	4,986	508,000 ⁵	102.00 ⁵
Ohio	882	88,935	100.83	733	71,200	97.20
Iowa, Nebraska, South Dakota	4,843	508,000 ⁵	105.00 ⁵	4,366	453,124	103.79
Kansas	2,182	223,403	102.37	2,115	217,519	102.85
Missouri	5,411	533,000 ⁵	98.50 ⁵	5,058	490,008	96.89
Florida	7,693	786,380	102.22	5,763	599,000 ⁵	104.00 ⁵
Georgia, Virginia, West Virginia	2,596	273,404	105.33	2,299	243,026	105.71
Maryland	3,207	283,459	88.38	2,957	240,275	81.25
South Carolina	3,710	358,000 ⁵	96.50 ⁵	2,756	267,411	97.02
Alabama	5,089	489,000 ⁵	96.00 ⁵	4,444	432,000 ⁵	97.00 ⁵
Kentucky, Mississippi, Tennessee	3,197	328,018	102.61	2,673	268,412	100.43
Arkansas and Oklahoma	2,709	259,000 ⁵	95.50 ⁵	2,643	262,806	99.44
Texas, northern	7,359	723,000 ⁵	98.00 ⁵	7,316	733,000 ⁵	100.00 ⁵
Texas, southern	6,953	671,111	96.52	6,417	645,641	100.61
Arizona and New Mexico	4,158	509,493	122.54	3,106	391,316	125.97
Colorado and Wyoming	2,614	280,594	107.36	2,554	273,303	107.02
Idaho, Montana, Nevada, Utah	3,381	372,865	103.18	2,589	260,250	100.53
Alaska and Hawaii	576	98,284	170.61	497	86,882	174.79
California, northern	3,286	354,038	107.74	2,481	256,000 ⁵	103.00 ⁵
California, southern	9,755	1,080,000 ⁵	110.50 ⁵	7,540	784,938	104.10
Oregon and Washington	2,779	283,193	99.34	2,196	212,013	96.53
Importers ⁶	6,160 ⁵	686,000 ^{r,5}	111.50 ^{r,5}	4,060 ⁵	478,000 ⁵	117.50 ⁵
Total or average ⁷	110,000 ^{5,8}	11,300,000 ^{r,5}	102.50 ^{r,5}	93,600 ^{5,8}	9,560,000 ⁵	102.00 ⁵
Puerto Rico	1,597	W	W	1,381	W	W
Grand total ⁷	112,000 ^{5,8}	W	W	95,000 ^{5,8}	W	W

¹Revised. W Withheld to avoid disclosing company proprietary data.

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

²Values are mill net or ex-plant (free on board) valuations of total sales to final customers, including sales from plants external distribution terminals. The data are ex-terminal for independently reporting terminals. Data include all varieties of portland cement and both bulk and bag shipments. Unless otherwise specified, data are presented unrounded. Unrounded or not, unit value data should be viewed as value indicators, good to no better than the nearest \$0.50 or \$1.00 per metric ton.

³Tonnages are those by reporting entities in the district but may include shipments into other districts. They differ from the data in table 9, which are the actual reported sales into the specific States.

⁴District is the location of the reporting entities, not necessarily the location of sales (see table 9 for sales data, by State). Specific districts include shipments by importers where district assignments were possible.

⁵Data are rounded (unit values to the nearest \$0.50) because they include estimates.

⁶Importers for which district assignments were not possible.

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

⁸Shipments are based on an annual survey of plants and importers; may differ from totals in table 9, which are based on consolidated monthly data.

TABLE 12
MASONRY CEMENT SHIPPED IN THE UNITED STATES, BY DISTRICT^{1,2}

District ⁵	2007			2008		
	Quantity ⁴ (thousand metric tons)	Value ³		Quantity ⁴ (thousand metric tons)	Value ³	
		Total (thousands)	Average (per metric ton)		Total (thousands)	Average (per metric ton)
Maine and New York	109	\$13,500 ⁶	\$124.00 ⁶	82	\$10,100 ⁶	\$124.50 ⁶
Pennsylvania	281	37,500 ⁶	133.00 ⁶	241	32,300 ⁶	134.00 ⁶
Illinois, Indiana, Ohio	455	65,359	143.68	335	47,725	142.55
Michigan	142	19,300 ⁶	135.50 ⁶	136	16,400 ⁶	121.00 ⁶
Iowa, Nebraska, South Dakota	24	2,823	115.27	19	2,161	114.53
Kansas and Missouri	123	16,827	136.83	84	13,427	159.64
Florida	525	86,200 ⁶	164.00 ⁶	282	42,800 ⁶	151.50 ⁶
Georgia, Maryland, Virginia, West Virginia	429	76,220	177.77	320	57,900 ⁶	180.50 ⁶
South Carolina	444	54,228	122.20	305	39,409	129.07
Alabama	470	62,000 ⁶	131.50 ⁶	353	44,247	125.38
Kentucky, Mississippi, Tennessee	111	16,365	147.71	80	11,784	146.57
Arkansas and Oklahoma	146	17,031	116.28	125	15,070	120.65
Texas, northern	179	28,500 ⁶	159.50 ⁶	155	26,100 ⁶	168.00 ⁶
Texas, southern	176	21,751	123.34	146	18,300 ⁶	125.50 ⁶
Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming	104	14,584	140.79	67	9,259	137.47
Alaska and Hawaii	4	1,114	260.45	3	946	279.55
California, northern; Oregon; Washington	74	9,464	127.14	51	6,511	128.31
California, southern	447	59,408	132.94	279	36,213	129.87
Importers ⁷	14 ⁶	2,520 ⁶	178.50 ⁶	10 ⁶	1,950 ⁶	196.00 ⁶
Total or average ⁸	4,260 ^{6,9}	605,000 ⁶	142.00 ⁶	3,070 ^{6,9}	433,000 ⁶	140.50 ⁶

¹Shipments are those by cement companies to final customers and include imported cement and cement made from imported clinker. Sales are those by cement plants and exclude masonry cement made by portland cement customers from purchased portland cement and which was then resold and/or consumed. 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.

²Data include true masonry, plastic, portland-lime, and stucco cements.

³Values are mill net or ex-plant (free on board) valuations of total sales to final customers, including sales from plants external distribution terminals. The data are ex-terminal for independently reporting terminals. Data include both bulk and bag shipments.

Unless otherwise specified, data are presented unrounded. Unrounded or not, unit value data should be viewed as value indicators, good to no better than the nearest \$0.50 or even \$1.00 per metric ton.

⁴Tonnages are those by reporting entities in the district but may include shipments into other districts. They differ from the data in table 9, which are the actual reported sales into the specific States.

⁵District is the location of the reporting entities, not necessarily the location of sales (see table 9 for sales data, by State). Specific districts include importers for which district assignments were possible.

⁶Data are rounded (unit values to the nearest \$0.50) because they include estimates.

⁷Importers for which district assignments were not possible.

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

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

TABLE 13
AVERAGE MILL NET VALUE OF CEMENT SOLD IN THE UNITED STATES^{1,2}

(Dollars per metric ton)

Year	Portland cement			Masonry cement	All cement
	Gray	White ³	Total		
2007	101.50 [†]	197.00	102.50 [†]	142.00	104.00 [†]
2008	101.00	221.50	102.00	141.00	103.50

[†]Revised.

¹Values are average of sales to final customers, free on board the plant or independently reporting terminal. Values include any bagging charges, but exclude delivery charges to customers or to external terminals. Data exclude Puerto Rico.

²Data are rounded to the nearest \$0.50 per metric ton because they contain estimates.

³Data for white cement include a component of resale's showing significant price markups.

TABLE 14
PORTLAND CEMENT SHIPMENTS IN 2008, BY DISTRICT AND TYPE OF CUSTOMER¹

(Thousand metric tons)

District ²	Ready- mixed concrete	Concrete product manufacturers	Contractors	Building material dealers	Oil well, mining, waste stabilization	Government and other ³	Total ^{4,5}
Maine and New York	2,930	419	147	252	--	78	3,820
Pennsylvania, eastern	2,310	1,040	148	219	--	118	3,838
Pennsylvania, western	878	191	117	18	18	25	1,248
Illinois	1,910	287	205	7	281	120	2,810
Indiana	1,850	322	81	44	9	44	2,346
Michigan and Wisconsin	3,780	534	440	131	57	46	4,986
Ohio	572	98	44	17	2	--	733
Iowa, Nebraska, South Dakota	3,380	483	271	36	84	113	4,366
Kansas	1,620	192	159	58	76	8	2,115
Missouri	4,010	378	477	46	11	136	5,058
Florida	3,970	1,190	368	212	--	26	5,763
Georgia, Virginia, West Virginia	1,670	496	48	79	1	5	2,299
Maryland	2,260	390	130	69	3	107	2,957
South Carolina	1,970	291	203	103	3	192	2,756
Alabama	3,360	570	274	123	19	99	4,444
Kentucky, Mississippi, Tennessee	2,030	289	178	65	35	76	2,673
Arkansas and Oklahoma	1,780	124	471	121	125	24	2,643
Texas, northern	4,270	484	1,040	102	939	486	7,316
Texas, southern	4,160	687	726	206	623	19	6,417
Arizona and New Mexico	2,260	462	202	158	24	4	3,106
Colorado and Wyoming	1,800	198	200	12	252	90	2,554
Idaho, Montana, Nevada, Utah	1,920	200	104	57	237	75	2,589
Alaska and Hawaii	440	53	--	--	--	4	497
California, northern	1,940	269	148	116	--	5	2,481
California, southern	5,740	1,260	228	212	103	1	7,540
Oregon and Washington	1,700	275	83	106	30	4	2,196
Importers ⁶	2,910	536	307	129	57	121	4,060
Total ⁵	67,400	11,700	6,800	2,700	2,990	2,030	93,600
Puerto Rico	779	132	33	436	--	--	1,381
Grand total ⁵	68,200	11,900 ⁷	6,830 ⁸	3,130	2,990 ⁹	2,030	95,000

-- Zero.

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

²District is the location of the reporting entity, not the location of sales (see table 9 for sales data, by State). Specific districts include shipments by importers for which district assignments were possible.

³Includes shipments to miscellaneous customer types and for which customer types were not specified.

⁴District totals are unrounded except in accord with table 11.

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

⁶Shipments by importers for which district assignments were not possible.

⁷Grand total shipments to concrete product manufacturers include, in thousand metric tons, brick and block—4,690; precast and prestressed—3,220; pipe—1,120; and other or unspecified—2,830.

⁸Grand total shipments to contractors include, in thousand metric tons, airport—121; road paving—3,750; soil cement—1,350; and other or unspecified—1,610.

⁹Grand total shipments include, in thousand metric tons, oil well drilling—2,510; mining—236; and waste stabilization—244.

TABLE 15
 PORTLAND CEMENT SHIPMENTS IN THE UNITED STATES,
 BY TYPE OF CEMENT^{1, 2, 3}

(Thousand metric tons)

Type ⁴	2007	2008
General use and moderate heat (Types I and II) ⁵	86,600 ^{r, 6}	73,600
High early strength (Type III)	3,760 ^{r, 6}	3,450
Sulfate resisting (Type V) ⁵	14,400	11,800
Block	469	509
Oil well	1,540	1,470
White ⁷	1,020	823
Blended: ⁸		
Portland, natural pozzolans	68	38
Portland, ground granulated blast furnace slag	1,090	981
Portland, fly ash	243	381
Portland, other pozzolans ⁹	756	563
Total blended ¹⁰	2,160	1,960
Expansive and regulated fast setting	29	36
Miscellaneous ¹¹	18 ^{r, 6}	(12)
Grand total ¹⁰	110,000	93,600

^rRevised.

¹Includes sales of imported cement. Excludes Puerto Rico.

²Data are rounded to no more than three significant digits.

³Gray portland-type cements unless otherwise specified.

⁴Sold mostly under specifications ASTM C-150, ASTM C-595, and ASTM C-1157.

⁵Type II/V and similar hybrids are included within Type V.

⁶Revised to include in Type I and II some ASTM C-1157 general use cement that contained no pozzolans but which was formerly reported as blended cement or miscellaneous portland cement.

⁷White or colored portland-type cements. Most are Types I or II but may include Types III and V and block cements.

⁸Cements sold under ASTM C-590 and those under ASTM C-1157 that contain pozzolans.

⁹Includes blends with cement kiln dust, silica fume, or other pozzolans, and blends containing multiple pozzolans.

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

¹¹Includes low heat (Type IV), waterproof, and other portland-type cements.

¹²Less than 500 metric tons.

TABLE 16
U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	2007		2008	
	Quantity	Value ²	Quantity	Value ²
United States:				
Angola	--	--	1	183
Anguilla	2	259	1	42
Aruba	1	437	1	352
Australia	3	238	(3)	127
Bahamas	24	3,679	28	3,853
Belize	1	78	1	224
Brazil	(3)	24	1	136
British Virgin Islands	(3)	53	(3)	190
Brunei	1	57	--	--
Canada	729	75,088	711	82,814
Cayman Islands	1	107	3	293
China	3	564	1	354
Colombia	1	354	1	675
Cook Island	--	--	(3)	7
Cyprus	3	212	(3)	171
Denmark	--	--	(3)	22
Dominican Republic	11	604	3	322
Ecuador	1	66	(3)	107
El Salvador	1	57	(3)	17
Estonia	--	--	(3)	28
Fiji	--	--	(3)	338
France	1	85	--	--
Gabon	--	--	(3)	5
Ghana	--	--	(3)	5
Greece	2	191	7	352
Guatemala	(3)	9	(3)	90
Hong Kong	3	224	(3)	98
India	1	80	(3)	141
Indonesia	--	--	(3)	6
Ireland	1	175	(3)	101
Israel	2	149	(3)	107
Italy	1	45	(3)	110
Jamaica	4	170	(3)	25
Japan	(3)	30	(3)	26
Korea, Republic of	1	61	(3)	169
Mexico	32 ⁴	5,667 ⁴	23	4,540
Netherlands Antilles	(3)	136	1	187
New Zealand	1	57	(3)	95
Niger	--	--	2	114
Oman	2	523	(3)	139
Panama	11	856	3	413
Paraguay	--	--	(3)	4
Peru	1	167	1	255
Saudi Arabia	1	144	1	259
Singapore	(3)	290	(3)	140
Spain	(3)	39	(3)	33
Sri Lanka	--	--	(3)	9
Sweden	1	81	1	90
Taiwan	3	241	1	366
Thailand	--	--	(3)	5
Trinidad and Tobago	3	362	(3)	101
Turks and Caicos Islands	1	204	1	267
Ukraine	12	562	(3)	3

See footnotes at end of table.

TABLE 16—Continued
 U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	2007		2008	
	Quantity	Value ²	Quantity	Value ²
United States—Continued:				
United Arab Emirates	16	753	(3)	226
Venezuela	(3)	47	(3)	225
Other	4	1,073	30	3,501
Total ⁴	886 ⁴	94,298 ⁴	823	102,466
Puerto Rico:				
Antigua and Barbuda	(3)	15	--	--
Aruba	2	134	--	--
British Virgin Islands	8	901	13	1,778
Dominica	--	--	(3)	4
Guyana	5	206	--	--
Haiti	1	520	--	--
Netherlands Antilles	1	112	1	332
Trinidad and Tobago	--	--	(3)	69
Turks and Caicos Islands	5	309	8	545
Other	10	790	12	904
Total ⁵	33	2,986	34	3,631
Grand total ⁵	919 ⁴	97,284 ⁴	858	106,097

-- Zero.

¹Includes portland and masonry cements.

²Free 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.

³Less than ½ unit.

⁴Official export data have been corrected to remove an apparent excess of aluminous cement exports from Laredo, TX, of 653,255 metric tons and \$28,829 million in 2007.

⁵Data 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 COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States:						
Brazil	579	37,245	47,530	36	2,780	3,225
Bulgaria	53	3,261	3,862	--	--	--
Canada	5,326	386,922	410,735	4,104	338,225	356,325
China	5,337	243,760	389,869	2,020	103,055	164,401
Colombia	1,552	104,506	134,402	964	67,117	90,608
Croatia	26	7,011	8,490	34	10,048	13,061
Denmark	239	19,441	28,735	99	9,768	14,898
Dominican Republic	12	837	1,116	11	786	1,082
Egypt	95	6,469	10,491	57	4,873	7,331
France	111	19,148	20,157	108	22,266	24,999
Greece	703	35,516	52,160	213	11,717	18,514
India	1	240	342	1	98	153
Japan	5	1,954	3,003	6	773	1,038
Korea, Republic of	2,505	113,076	162,474	1,229	50,550	85,899
Mexico	1,684	113,673	136,115	1,071	84,714	99,673
Netherlands	4	3,283	3,707	4	3,894	4,800
Norway	122	6,114	6,117	20	897	897
Peru	326	18,571	30,097	92	4,727	7,509
Spain	29	3,032	4,434	1	4	4
Sweden	457	25,005	39,364	261	13,192	24,583
Switzerland	42	2,119	3,327	--	--	--
Taiwan	2,168	98,841	166,729	855	36,424	55,867
Thailand	730	33,053	51,794	77	5,165	7,909
Turkey	138	9,366	13,828	96	5,257	12,201
United Arab Emirates	(4)	29	47	--	--	--
United Kingdom	5	2,002	2,462	4	1,712	2,076
Venezuela	218	13,621	18,080	--	--	--
Other	1	479	570	1	845	1,155
Total ⁵	22,468	1,308,574	1,750,033	11,365	778,888	998,208
Puerto Rico:						
Brazil	2	1,380	2,335	--	--	--
China	40	1,977	3,086	78	3,270	5,701
Colombia	3	400	519	4	529	665
Dominican Republic	18	1,469	1,621	--	--	--
Korea, Republic of	181	8,140	14,664	54	3,861	5,812
Mexico	16	1,846	2,570	17	1,981	2,808
Other	(4)	84	92	(4)	39	51
Total ⁵	261	15,296	24,887	153	9,681	15,037
Grand total ⁵	22,729	1,323,870	1,774,920	11,519	788,569	1,013,244

-- Zero.

¹Includes portland, masonry, and other hydraulic cements.

²Customs 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.

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

⁴Less than ½ unit.

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

TABLE 18
 U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
 AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States:						
Anchorage, AK:						
Canada	10	549	2,094	7	419	1,479
China	--	--	--	1	98	106
Japan	--	--	--	5	187	282
Korea, Republic of	91	4,380	7,947	102	4,471	8,689
Total ⁴	101	4,929	10,040	114	5,175	10,556
Baltimore, MD:						
China	(5)	58	78	--	--	--
Colombia	25	1,818	1,818	--	--	--
Germany	(5)	18	19	(5)	13	15
India	(5)	9	12	--	--	--
Korea, Republic of	(5)	17	24	--	--	--
Netherlands	(5)	213	241	(5)	229	259
Sweden	(5)	368	400	--	--	--
United Kingdom	(5)	47	54	--	--	--
Total ⁴	26	2,547	2,646	(5)	242	274
Boston, MA:						
Canada	110	6,066	8,697	45	2,537	4,584
Venezuela	3	212	300	--	--	--
Total ⁴	114	6,278	8,996	45	2,537	4,584
Buffalo, NY:						
Canada	808	62,976	66,036	707	57,564	60,681
China	1 ^r	130	133	--	--	--
France	--	--	--	(5)	60	61
Germany	--	--	--	(5)	3	3
Japan	(5)	31	31	--	--	--
Total ⁴	809	63,137	66,200	708	57,627	60,744
Charleston, SC:						
Colombia	18	978	1,376	--	--	--
Greece	43	1,964	2,989	--	--	--
Netherlands	(5)	16	18	--	--	--
South Africa	(5)	13	17	--	--	--
Taiwan	269	10,544	23,836	--	--	--
Total ⁴	330	13,516	28,236	--	--	--
Chicago, IL:						
Belgium	(5)	18	25	--	--	--
Croatia	--	--	--	(5)	38	53
Denmark	--	--	--	(5)	15	16
France	--	--	--	(5)	3	25
Germany	--	--	--	(5)	2	3
Honduras	(5)	15	17	--	--	--
Japan	(5)	149	179	(5)	220	259
Netherlands	(5)	185	213	(5)	231	296
Poland	(5)	23	25	(5)	41	44
Total ⁴	(5)	390	458	1	551	696

See footnotes at end of table.

TABLE 18—Continued
 U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
 AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
Cleveland, OH:						
Canada	766	59,239	61,272	485	40,608	41,506
China	(5)	37	43	(5)	13	17
Croatia	(5)	43	62	1	261	354
Italy	(5)	14	15	--	--	--
Netherlands	(5)	253	285	(5)	37	57
Turkey	(5)	9	9	--	--	--
Total ⁴	766	59,594	61,687	485	40,919	41,935
Columbia-Snake, OR-WA						
Canada	117	6,083	6,550	135	8,012	8,756
China	1,077	42,000	65,329	653	26,857	44,713
Thailand	(5)	5	7	(5)	2	4
Total ⁴	1,194	48,088	71,887	788	34,872	53,473
Dallas, Fort Worth, TX:						
China	(5)	13	25	--	--	--
Italy	--	--	--	(5)	3	4
Norway	(5)	4	7	--	--	--
Total ⁴	(5)	17	31	(5)	3	4
Detroit, MI:						
Canada	1,020	86,321	87,734	837	76,193	77,285
China	(5)	19	24	--	--	--
Croatia	1	288	317	--	--	--
France	(5)	28	28	--	--	--
Germany	(5)	3 ^r	3 ^r	(5)	5	5
Netherlands	(5)	244	272	(5)	260	356
Total ⁴	1,021	86,902	88,378	838	76,457	77,645
El Paso, TX, Mexico	612	36,060	41,955	384	31,680	35,277
Great Falls, MT:						
Canada	8	447	466	9	9	503
China	(5)	27	27	(5)	(5)	32
Germany	--	--	--	(5)	(5)	21
Japan	(5)	2	2	--	--	--
Total ⁴	8	476	495	9	9	556
Honolulu, HI:						
China	194	7,820	13,107	10	705	1,597
Japan	(5)	24	28	--	--	--
Taiwan	265	10,583	17,290	373	16,848	25,388
Thailand	18	841	1,116	(5)	3	6
Total ⁴	477	19,267	31,542	383	17,556	26,991
Houston-Galveston, TX:						
Algeria	--	--	--	1	94	122
Belgium	(5)	3	3	--	--	--
Brazil	117	6,425	8,498	--	--	--
China	839	34,346	55,857	93	4,219	6,940
Colombia	406	31,171	38,496	403	30,692	39,484
Croatia	(5)	8	16	(5)	11	12
Denmark	(5)	16	17	--	--	--
Egypt	33	2,674	4,607	22	1,892	2,774

See footnotes at end of table.

TABLE 18—Continued
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
Houston-Galveston, TX—Continued:						
France	(5)	110	123	(5)	69	79
Germany	(5)	81	102	(5)	109	133
India	(5)	6	7	--	--	--
Korea, Republic of	1,378	56,906	87,952	799	31,413	51,352
Mexico	39	2,352	3,449	108	6,076	8,957
Netherlands	(5)	20	24	--	--	--
Peru	31	2,015	2,989	--	--	--
Sweden	(5)	65	70	--	--	--
Taiwan	422	16,367	23,725	449	16,972	27,229
Thailand	84	4,148	9,280	--	--	--
Turkey	(5)	2	3	1	58	89
United Kingdom	(5)	17	20	--	--	--
Total ⁴	3,350	156,732	235,239	1,876	91,605	137,171
Laredo, TX, Mexico	160	19,258	20,277	133	15,994	16,939
Los Angeles, CA:						
Algeria	--	--	--	2	179	328
China	1,506	76,966	124,648	505	23,241	42,027
Colombia	1	87	128	(5)	28	43
Croatia	(5)	20	24	(5)	109	180
Egypt	--	--	--	11	964	1,667
Germany	(5)	17	20	(5)	188	206
India	1	140	180	--	--	--
Japan	3	1,054	1,619	(5)	36	51
Lithuania	(5)	29	30	(5)	13	13
Taiwan	183	9,339	14,159	--	--	--
Thailand	155	8,170	13,631	19	2,285	3,521
United Kingdom	(5)	14	14	(5)	12	12
Total ⁴	1,848	95,836	154,452	538	27,055	48,048
Miami, FL:						
Algeria	--	--	--	1	43	70
Argentina	(5)	3	5	--	--	--
Brazil	23	1,095	2,003	--	--	--
Canada	41	2,165	3,721	--	--	--
China	20	929	1,527	(5)	23	36
Colombia	34	2,900	4,040	11	1,464	1,837
Denmark	23	1,704	2,791	3	414	529
Egypt	23	1,866	3,189	23	1,971	2,811
Greece	66	3,070	4,157	--	--	--
Italy	--	--	--	(5)	2	2
Mexico	106	11,147	14,022	98	9,869	12,580
Peru	12	463	942	--	--	--
Portugal	(5)	25	37	--	--	--
Spain	27	2,867	4,269	--	--	--

See footnotes at end of table.

TABLE 18—Continued
 U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
 AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
Miami, FL—Continued:						
Sweden	445	22,044	35,937	239	10,596	20,770
Switzerland	42	2,119	3,327	--	--	--
Taiwan	148	4,878	12,245	--	--	--
Turkey	36	1,763	2,733	--	--	--
United Kingdom	(5)	3	3	--	--	--
Total ⁴	1,046	59,040	94,947	375	24,382	38,636
Minneapolis, MN:						
Canada	170	14,563	14,961	154	17,524	17,541
Denmark	--	--	--	(5)	6	6
United Kingdom	--	--	--	(5)	11	11
Total ⁴	170	14,563	14,961	154	17,541	17,558
Mobile, AL, Peru	2	166	269	--	--	--
New Orleans, LA:						
China	58	3,374	5,200	26	5,076	6,461
Colombia	146	6,411	8,518	--	--	--
Croatia	21	5,086	6,337	27	7,929	9,887
Germany	(5)	4	4	--	--	--
Korea, Republic of	729	36,155	44,165	45	1,506	2,412
Peru	36	2,235	2,253	62	3,205	4,652
Turkey	79	6,170	8,945	95	5,199	12,112
United Kingdom	(5)	4	4	--	--	--
Total ⁴	1,069	59,438	75,427	256	22,915	35,525
New York, NY:						
Canada	153	8,050	8,050	--	--	--
China	42	1,606	3,768	--	--	--
Colombia	4	907	944	16	777	1,650
Croatia	2	597	686	(5)	9	11
Denmark	56	5,521	5,524	38	4,440	6,564
France	(5)	24	32	--	--	--
Germany	(5)	114	139	(5)	14	19
Greece	424	22,017	32,386	213	11,717	18,514
Japan	(5)	164	387	--	--	--
Mexico	38	3,369	3,369	--	--	--
Netherlands	(5)	375	415	(5)	336	398
Norway	122	6,111	6,111	20	897	897
Poland	(5)	16	17	--	--	--
Sweden	3	2,084	2,260	3	1,670	1,856
Taiwan	38	1,281	1,281	--	--	--
Turkey	24	1,422	2,139	--	--	--
United Kingdom	--	--	--	(5)	41	72
Venezuela	26	2,106	2,106	--	--	--
Total ⁴	933	55,763	69,614	291	19,902	29,982
Nogales, AZ, Mexico	716	40,502	52,046	348	21,095	25,919
Norfolk, VA:						
Brazil	127	9,086	10,597	--	--	--
Bulgaria	53	3,261	3,862	--	--	--

See footnotes at end of table.

TABLE 18—Continued
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
Norfolk, VA—Continued:						
Canada	(5)	--	--	113	8,044	8,940
China	82	6,819	9,279	(5)	9	11
Colombia	28	1,762	2,138	--	--	--
France	111	18,978	19,965	108	22,121	24,818
Germany	--	--	--	(5)	14	17
Greece	5	252	383	--	--	--
Netherlands	(5)	338	386	(5)	353	464
South Africa	(5)	3	3	--	--	--
Sweden	--	--	--	(5)	79	89
United Kingdom	5	1,885	2,327	4	1,647	1,980
Total ⁴	411	42,384	48,940	225	32,267	36,319
Ogdensburg, NY:						
Canada	460	46,216	46,678	399	41,749	42,237
France	(5)	9	9	--	--	--
South Africa	(5)	36	37	--	--	--
Total ⁴	460	46,261	46,724	399	41,749	42,237
Pembina, ND						
Canada	150	8,361	8,453	173	10,174	10,293
France	--	--	--	(5)	5	5
Total ⁴	150	8,361	8,453	173	10,179	10,298
Philadelphia, PA:						
Belgium	(5)	14	17	(5)	6	7
China	--	--	--	(5)	33	33
Germany	(5)	13	17	(5)	104	143
Korea, Republic of	--	--	--	137	5,032	11,590
Netherlands	1	858	981	1	1,275	1,463
Thailand	314	12,152	14,558	48	1,629	2,379
United Kingdom	(5)	10	14	--	--	--
Total ⁴	316	13,047	15,587	187	8,079	15,616
Portland, ME, Canada						
	105	13,834	14,804	75	9,765	10,410
Providence, RI:						
Brazil	26	1,557	2,621	--	--	--
Canada	89	6,015	8,682	80	4,572	8,488
China	44	1,628	4,268	--	--	--
Colombia	25	1,879	2,311	48	2,502	3,909
Peru	218	11,882	20,719	29	1,522	2,857
Venezuela	150	8,818	12,266	--	--	--
Total ⁴	553	31,780	50,866	158	8,596	15,253
San Diego, CA:						
China	15	861	1,186	--	--	--
Mexico	14	985	996	--	--	--
Taiwan	378	21,870	35,682	13	515	517
Total ⁴	407	23,715	37,864	13	515	517
San Francisco, CA:						
China	988	43,846	68,389	370	16,786	27,248
Egypt	--	--	--	1	46	79
France	--	--	--	(4)	9	12

See footnotes at end of table.

TABLE 18—Continued
 U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
 AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
San Francisco, CA—Continued:						
India	(5)	41	59	1	98	153
Netherlands	(5)	42	46	(5)	18	37
Taiwan	241	11,760	17,798	20	1,036	1,679
Thailand	157	7,601	12,856	9	1,150	1,806
United Arab Emirates	(5)	29	47	--	--	--
United Kingdom	(5)	12	14	--	--	--
Total ⁴	1,387	63,332	99,210	400	19,143	31,013
Savannah, GA:						
China	(5)	42	57	(4)	10	12
Colombia	349	26,355	33,411	258	17,005	23,652
India	(5)	45	84	--	--	--
Netherlands	1	505	561	1	537	713
Thailand	(5)	21	46	1	96	194
United Kingdom	(5)	11	11	--	--	--
Total ⁴	350	26,979	34,170	259	17,649	24,570
Seattle, WA:						
Canada	1,202	52,581	58,008	757	45,848	48,079
China	365	17,774	28,440	362	25,961	35,167
Japan	1	529	757	1	331	447
Korea, Republic of	220	8,693	13,428	123	6,170	9,308
Netherlands	(5)	93	103	(5)	188	257
Taiwan	--	--	--	(5)	1,053	1,055
Total ⁴	1,788	79,671	100,736	1,243	79,551	94,312
St. Albans, VT, Canada	117	13,453	14,530	126	14,748	15,543
St. Louis, MO:						
Croatia	3	969	1,047	6	1,690	2,564
Netherlands	(5)	141	161	(5)	430	500
Total ⁴	3	1,110	1,208	6	2,120	3,064
Tampa, FL:						
Brazil	286	19,082	23,810	36	2,780	3,225
China	107	5,466	8,484	--	--	--
Colombia	246	11,642	17,402	39	2,103	2,865
Denmark	160	12,200	20,403	58	4,893	7,782
Egypt	38	1,930	2,695	--	--	--
Greece	164	8,213	12,244	--	--	--
Korea, Republic of	86	6,924	8,959	24	1,958	2,548
Peru	27	1,810	2,925	--	--	--
Spain	--	--	--	(5)	4	4
Sweden	9	444	697	19	847	1,868
Taiwan	223	12,220	20,712	--	--	--
Thailand	1	115	299	--	--	--
Venezuela	38	2,485	3,407	--	--	--
Total ⁴	1,385	82,529	122,037	175	12,584	18,292
U.S. Virgin Islands:						
Barbados	(5)	18	19	--	--	--
Colombia	8	910	925	2	213	219
Dominican Republic	12	837	1,116	11	786	1,082
Spain	2	165	165	--	--	--
Total ⁴	22	1,931	2,225	13	998	1,300

See footnotes at end of table.

TABLE 18—Continued
U.S. IMPORTS FOR CONSUMPTION OF HYDRAULIC CEMENT
AND CLINKER, BY CUSTOMS DISTRICT AND COUNTRY¹

(Thousand metric tons and thousand dollars)

Customs district and country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States—Continued:						
Wilmington, NC, Colombia	263	17,687	22,896	186	12,333	16,952
U.S. total ⁴	22,468	1,308,574	1,750,033	11,365	778,888	998,208
Puerto Rico (San Juan):						
Brazil	2	1,380	2,335	--	--	--
China	40	1,977	3,086	78	3,270	5,701
Colombia	3	400	519	4	529	665
Denmark	(5)	--	--	--	--	--
Dominican Republic	18	1,469	1,621	--	--	--
Germany	(5)	68	74	--	--	--
Korea, Republic of	181	8,140	14,664	54	3,861	5,812
Mexico	16	1,846	2,570	17	1,981	2,808
Peru	--	--	--	(5)	14	18
Spain	(5)	16	18	(5)	25	33
Total ⁴	261	15,296	24,887	153	9,681	15,037
Grand total ⁴	22,729	1,323,870	1,774,920	11,519	788,569	1,013,244

¹Revised. -- Zero.

²Includes all varieties of hydraulic cement and clinker.

³Customs 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.

⁴Cost, insurance, and freight. The import value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry.

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

⁶Less than ½ unit.

Source: U.S. Census Bureau.

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

(Thousand metric tons and thousand dollars)

Country	2007			2008		
	Quantity	Customs ¹	Value	Quantity	Customs ¹	Value
			C.i.f. ²			C.i.f. ²
United States:						
Brazil	578	37,245	47,530	36	2,780	3,225
Bulgaria	53	3,261	3,862	--	--	--
Canada	4,323	298,595	320,694	3,294	259,073	275,818
China	4,835	206,564	329,663	1,906	81,907	137,987
Colombia	1,457	95,891	123,916	891	60,180	81,614
Egypt	38	1,930	2,695	--	--	--
Greece	703	35,516	52,160	213	11,717	18,514
Korea, Republic of	2,406	106,272	155,671	1,227	50,410	85,539
Mexico	1,297	68,224	86,086	744	45,002	55,076
Norway	122	6,114	6,117	20	897	897
Peru	290	16,336	27,844	92	4,727	7,509
Sweden	454	22,488	36,634	257	11,443	22,638
Taiwan	2,126	97,106	162,964	855	35,371	54,813
Thailand	689	28,532	44,603	48	1,629	2,379
Turkey	59	3,193	4,880	--	--	--
Venezuela	162	9,468	13,176	--	--	--
Other	68	4,509	6,029	17	1,170	1,619
Total ^{3, 4}	19,662	1,041,245	1,424,522	9,599	566,307	747,629
Puerto Rico:						
China	40	1,977	3,086	78	3,270	5,701
Korea, Republic of	181	8,140	14,664	54	3,861	5,812
Spain	--	--	--	(5)	6	8
Other	2	1,380	2,335	--	--	--
Total ^{3, 4}	223	11,497	20,085	132	7,137	11,521
Grand total ^{3, 4}	19,885	1,052,742	1,444,607	9,731	573,443	759,150

-- Zero.

¹The 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.

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

³Data may not add to totals shown because of independent rounding.

⁴Total imports do not include gray portland cement that was misregistered by importers under the white cement tariff code and which has been included in table 20.

⁵Less than 1/2 unit.

Source: U.S. Census Bureau.

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

(Thousand metric tons and thousand dollars)

Country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ¹	C.i.f. ^{2,3}		Customs ¹	C.i.f. ^{2,3}
United States:						
Canada	407	45,164	46,399	296	40,213	41,086
China	403	30,284	50,747	88	15,869	19,697
Colombia	69	6,993	8,559	58	6,491	8,276
Denmark	227	18,211	27,501	99	9,747	14,875
Egypt	57	4,539	7,796	55	4,724	7,087
India	1	240	342	1	98	153
Mexico	269	33,422	37,201	237	29,222	32,871
Spain	27	2,865	4,266	--	--	--
Taiwan	43	1,735	3,765	(4)	1,053	1,055
Thailand	41	4,521	7,191	29	3,536	5,530
Turkey	79	6,172	8,947	96	5,257	12,201
United Arab Emirates	(4)	29	47	--	--	--
Other	1	55	75	6	459	884
Total ⁵	1,622 ⁶	154,230	202,836	964 ⁶	116,669	143,715
Puerto Rico:						
Colombia	3	400	519	4	529	665
Mexico	16	1,846	2,570	17	1,981	2,808
Peru	--	--	--	(4)	14	18
Other	(4)	23	26	--	--	--
Total ⁵	19	2,269	3,115	21	2,525	3,491
Grand total ⁵	1,641 ⁶	156,500	205,951	985 ⁶	119,194	147,206

-- Zero.

¹Customs 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.

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

³Values 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.

⁴Less than ½ unit.

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

⁶Total imports of white cement include substantial quantities of gray cement that were misregistered by importers under the white cement tariff code.

Source: U.S. Census Bureau.

TABLE 21
U.S. IMPORTS FOR CONSUMPTION OF CLINKER, BY COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	2007			2008		
	Quantity	Value		Quantity	Value	
		Customs ²	C.i.f. ³		Customs ²	C.i.f. ³
United States:						
Canada	576	40,021	40,323	477	35,048	35,310
China	97	6,483	8,938	19	3,414	4,285
Colombia	24	801	1,106	16	446	718
Croatia	--	--	--	(4)	11	23
Egypt	--	--	--	2	149	244
France	109	17,681	18,523	107	20,976	23,550
Germany	(4) ^r	11	13	--	--	--
Korea, Republic of	99	6,803	6,803	--	--	--
Netherlands	(4) ^r	8	9	(4)	9	11
Peru	36	2,235	2,253	--	--	--
Venezuela	30	2,047	2,798	--	--	--
Total ⁵	972	76,089	80,766	621	60,054	64,141
Puerto Rico, Dominican Republic	18	1,446	1,596	--	--	--
Grand total ⁵	990	77,535	82,362	621	60,054	64,141

^rRevised. -- Zero.

¹For all types of hydraulic cement.

²Customs 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 in the merchandise to the United States.

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

⁴Less than ½ unit.

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

Source: U.S. Census Bureau.

TABLE 22
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008 ^e
Afghanistan ^c	70	60	50	50	50
Albania	573	489 ^r	525 ^r	889 ^r	890
Algeria	11,000 ^e	12,800 ^r	14,702	15,886 ^r	17,397 ³
Angola	754	1,315	1,373	1,400 ^e	1,400
Argentina	6,254	7,595	8,929	9,602	9,703 ³
Armenia	501	605	625	722	770
Australia ^e	8,000	9,000	9,000	9,000	8,500
Austria	4,356 ^r	4,560 ^r	4,852 ^r	5,203 ^r	5,309 ³
Azerbaijan	1,428	1,538	1,622	1,731	1,800
Bahrain	400 ^r	400 ^r	400 ^r	400 ^r	370
Bangladesh ^c	5,000	5,100	5,100	5,100	5,000
Barbados	322	341 ^r	338 ^r	294 ^r	300
Belarus	2,731	3,131	3,495	3,820	4,219 ³
Belgium	6,715	7,594	8,192	8,200 ^e	8,200
Benin ^c	250	250	1,489 ³	1,550 ³	1,600
Bhutan ^c	170	170	180	180	170
Bolivia	1,276	1,440	1,636	1,739	1,700
Bosnia and Herzegovina	1,045	1,026	1,226	1,283 ^r	1,406 ³
Brazil	34,413	36,673	39,540	46,406	51,865 ³
Brunei	242	266	240 ^{r,e}	200 ^{r,e}	200
Bulgaria	2,939 ^r	3,618 ^r	4,093 ^r	4,413 ^r	4,400
Burkina Faso ^c	30	30	30	30	30
Burma ⁴	519	543	570	608	676 ³
Cambodia	--	--	--	87	87
Cameroon	1,032	1,000 ^e	1,000	1,000 ^e	1,000
Canada	13,863	14,179	14,336	15,078	13,672 ^{p,3}
Chile	3,798	3,999	4,112	4,440	4,622 ³
China	970,000	1,068,850	1,236,770	1,361,170 ^r	1,388,380 ^{p,3}
Colombia	7,822	9,959	10,038 ⁵	11,068 ⁵	10,456 ^{3,5}
Congo (Brazzaville)	--	100	100 ^e	100 ^e	110
Congo (Kinshasa)	403	511	530	520 ^{r,e}	520
Costa Rica ^c	1,500	1,400	1,400 ³	1,400	1,400
Côte d'Ivoire ^c	650	650	650	650	650
Croatia	3,811	3,481	3,598 ^r	3,524 ^r	3,500
Cuba	1,401	1,567	1,705	1,805	1,800
Cyprus	1,689	1,805	1,786	1,873	1,870
Czech Republic	3,829	3,978	4,239	4,899	4,805 ³
Denmark	2,150	2,120	2,115	2,100 ^e	2,100
Dominican Republic	2,654	2,779	3,777 ^r	4,100 ^{r,e}	4,000
Ecuador ^c	3,470 ^r	3,690 ^r	4,110 ^r	4,420 ^r	4,000
Egypt	28,763	32,458	36,200	38,400	40,000
El Salvador	1,265	1,131	1,311	1,300 ^{r,e}	1,300
Eritrea ^c	45	45	45	45	45
Estonia	615	726	849 ^r	937 ^r	808 ³
Ethiopia	1,316	1,569	1,676 ^r	1,800 ^{r,e}	1,820
Fiji ^c	120	143 ³	143	145	143
Finland	1,295	1,357	1,685	1,743	1,745 ³
France	20,962	21,277	22,540	22,300 ^e	21,700 ³

See footnotes at end of table.

TABLE 22—Continued
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008 ^c
French Guiana ^c	60	60	60	60	62
Gabon ^e	260	260	260	229 ³	230
Georgia ^c	425 ³	450	450	450	450
Germany	31,854	31,009	33,630	33,382	33,581 ³
Ghana ^c	1,900	1,900	1,900	1,900	1,900
Greece	15,039	15,166	15,674	16,667	16,500
Guadeloupe ^c	230	240	230	230	230
Guatemala ^c	2,200	2,400	2,500	2,500	2,500
Guinea ^c	360	360	360	360	360
Haiti ^c	300	300	300	300	300
Honduras	1,392	1,384	1,800 ^{r,e}	1,800 ^{r,e}	1,800
Hong Kong	1,039	1,005	1,010 ^e	1,000 ^e	1,000
Hungary	3,580 ^r	3,371	3,724 ^r	3,552 ^r	3,544 ³
Iceland	100	132	141	90 ^e	100
India ^c	130,000	145,000	160,000	170,000	177,000
Indonesia	33,230	33,917	35,000 ^e	36,000 ^e	37,000
Iran	32,198	32,650	35,300 ^{r,e}	40,000 ^{r,e}	44,400 ³
Iraq ^c	2,500	3,000	3,500	4,500 ^r	5,500
Ireland	5,000 ^e	5,083	4,981	5,000 ^e	5,000
Israel	4,494	5,093	5,089	5,000 ^e	5,000
Italy	45,343	40,284	47,814	47,542 ^r	43,030 ³
Jamaica	808	845	761	592	600
Japan	67,376	69,629	69,942	67,685	62,810 ³
Jordan	3,908	4,046	3,967	4,051 ^r	4,284 ³
Kazakhstan	3,662	3,975	4,880	5,699	5,223 ³
Kenya	1,789	2,123	2,174	2,546 ^r	3,135 ³
Korea, North ^c	5,630	5,700	6,160	6,130	6,130
Korea, Republic of	56,955	51,391	53,971	57,042	53,900 ³
Kosovo ⁶	450 ^e	450	450 ^e	470	590 ³
Kuwait	2,635	2,145	2,200 ^e	2,200 ^e	2,200
Kyrgyzstan	870	900	1,211	1,300 ^e	1,300
Laos ^c	250	250	400	400	400
Latvia ^c	284 ³	280	280	300	310
Lebanon	4,400	4,600	4,400	4,900 ^e	5,000
Liberia	121	144	155	157	160
Libya ^c	3,600	3,621 ³	5,300 ^r	5,206 ^{r,3}	6,000
Lithuania	753	832	1,065	1,105	1,100
Luxembourg	797	760	800 ^e	780 ^e	780
Macedonia	752 ^r	827 ^r	867 ^r	902 ^r	862 ³
Madagascar ^c	170	150	150	270 ³	270
Malawi	120	166	188	185	240
Malaysia	15,690	17,860	18,400 ^{r,e}	19,480 ^r	19,500
Martinique ^c	220	220	220	220	220
Mauritania	300	300 ^e	374 ^r	410	322 ³
Mexico	34,992	37,452	40,362	40,670	47,609 ³
Moldova	440	641	837	800 ^e	750
Mongolia	62	112	141	180 ^r	180
Morocco ^c	11,000	11,000	11,000	11,000	11,000

See footnotes at end of table.

TABLE 22—Continued
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008 ^c
Mozambique ^c	550 ^r	490 ^r	600 ^r	800 ^r	730
Nepal ^{e,4}	285	290	295	300	285
Netherlands	2,380	2,496	2,790	2,700 ^e	2,700
New Caledonia	115	119	133	134 ^{r,e}	134
New Zealand ^c	1,110 ³	1,100	1,120 ^{r,3}	1,100	1,100
Nicaragua	521	530	530 ^e	530 ^e	530
Niger ^e	54	54	54	54	54
Nigeria ^c	2,300	2,700 ^r	3,300 ^r	4,700 ^r	5,000
Norway	1,420	1,613	1,695	1,700 ^e	1,700
Oman	2,621	2,686	3,611	3,880	4,000
Pakistan ^c	15,000	17,000	20,652 ³	30,000 ^r	39,000
Panama	1,042	1,050	1,050 ^e	1,050 ^{r,e}	1,050
Paraguay ^c	470	550	600	600	600
Peru	4,604 ^r	5,107 ^r	5,782 ^r	6,231 ^r	6,922 ³
Philippines	13,346	15,494	12,033	13,048	13,000
Poland	12,566	12,646	14,688	17,120 ^r	17,207 ³
Portugal	8,843	8,438	8,340	12,631 ^r	10,000
Qatar	1,400	1,500	1,568	2,500 ^e	3,500
Réunion ^e	380	380	400	400	400
Romania	6,239	7,032	8,253	10,061	10,703 ³
Russia	45,700	48,500	54,700	59,900	53,600 ³
Rwanda	104	101	103	103	100
Saudi Arabia	25,380	26,064	27,056 ^r	30,369	31,823 ³
Senegal	2,391	2,623	2,884	3,152	3,200
Serbia ⁷	2,240 ^{r,8}	2,276 ^{r,8}	2,565	2,677	2,843 ³
Serbia and Montenegro	-- ^{r,8}	-- ^{r,8}	-- ^r	-- ^r	--
Sierra Leone	180	172	234	236	236
Slovakia	3,158	3,499	3,593	3,718	4,157 ³
Slovenia	1,186	1,114	1,269	1,300 ^{r,e}	1,300
South Africa, sales ⁹	10,297	11,464	12,658	13,651	13,341 ³
Spain, including Canary Islands	45,593	50,347	54,033	54,720 ^r	42,088 ³
Sri Lanka ^c	1,400	1,500	1,600	1,700	1,800
Sudan	307	331	202	326 ^r	330
Suriname ^c	65	65	65	65	65
Sweden	2,588	2,709	2,952	2,950	2,900
Switzerland	3,851	4,022	4,040	4,000 ^e	4,000
Syria	4,757	4,700 ^e	4,804 ^r	5,104 ^r	5,336 ³
Taiwan	19,050	19,891	19,294	18,957	17,330 ³
Tajikistan	194	253	282	313 ^r	300
Tanzania	1,281	1,366	1,432	1,513	1,600
Thailand	35,626	37,872	39,408	35,668	35,600
Togo ^e	800	800	800	800	800
Trinidad and Tobago	768	686	883	890 ^e	800
Tunisia	6,662	6,691	6,932	7,052	7,559 ³
Turkey	38,796	42,787	47,499	49,553	51,432 ³
Turkmenistan ^c	550	650	800	900	900
Uganda ^c	559 ³	630	630	650	650
Ukraine	10,635	12,183	13,732	15,000	14,918 ³

See footnotes at end of table.

TABLE 22—Continued
HYDRAULIC CEMENT: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008 ^c
United Arab Emirates ^c	9,000	9,800 ³	12,600 ^r	14,000 ^r	16,000
United Kingdom	11,405	11,216	12,119	11,900 ^e	11,900
United States, including Puerto Rico ¹⁰	99,015	100,903	99,712	96,850	87,610 ³
Uruguay ^e	620 ^r	620 ^r	620 ^r	620 ^r	620
Uzbekistan	5,068	5,068	5,700 ^{r,e}	6,500 ^r	6,600
Venezuela ^e	5,000 ^r	5,800 ^r	7,200 ^r	9,000 ^r	9,000
Vietnam	26,153	30,808	32,690	36,400 ^e	37,000
Yemen	1,546	1,550	1,470	1,728	3,000
Zambia ^e	390	435	650	650	700
Zimbabwe ^e	500	600	700	400	400
Total	2,190,000	2,350,000	2,610,000 ^r	2,810,000 ^r	2,840,000

^cEstimated. ^pPreliminary. ^rRevised. -- Zero.

¹World 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 thought to be accurate to no more than three significant digits. Data are from a variety of sources, including the European Cement Association.

²Table includes data available through July 9, 2009. Data may include clinker exports for some countries.

³Reported figure.

⁴Data are for fiscal year ending March 31 of the following year.

⁵Data for 2006–08 are for gray cement only; white cement output was likely to have been an additional 50,000 to 100,000 metric tons per year.

⁶Not included in Serbia data.

⁷Excludes Kosovo data.

⁸Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union. Montenegro has no cement plants.

⁹Data have been adjusted to remove sales of cementitious materials other than finished cement. Material sales removed (mostly fly ash and ground granulated blast furnace slag) amounted, in metric tons, to: 2004—1,438,567; 2005—1,511,716; 2006—1,599,505; 2007—1,664,304; and 2008—1,395,124.

¹⁰Portland and masonry cements only.