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CEMENT

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Cement

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Production of portland and masonry cement in the United States increased by 2.2% in 2011 to a total of 67.9 million metric tons (Mt) (table 1). Although welcomed as an improvement by the industry, the 2011 output was the third lowest since 1992 and was 31.4 Mt less than the record output in 2005. As measured by sales to domestic final customers, U.S. consumption of cement increased by 2.6% to 72.3 Mt in 2011 (table 9) after 5 years of consecutive declines; this was also the third lowest volume since 1992, and 55.7 Mt less than the record level in 2005. Despite the modest increase in sales volumes, the average unit price declined in 2011 by about $2.50 per metric ton on an ex-factory basis and the overall value of sales declined slightly to $6.44 billion as a result (tables 1, 11–13). Again because of much lower sales volumes and unit prices, the overall value of sales in 2011 was one-half that of the record sales of $12.90 billion in 2006. Based on typical portland cement mixing ratios in concrete, the delivered value of concrete (excluding mortar) in the United States was estimated to be at least $39 billion in 2011. World production of cement increased 10.4% to 3.61 billion metric tons (Gt).

Percentage or other changes expressed in this report compare activity in 2011 with that of 2010 unless specified otherwise. Except where otherwise indicated, data and trends in this report exclude those in Puerto Rico. 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 masonry cement (including portland-lime and plastic cements); these are the binding agents in concrete and most mortars. A few other types of hydraulic cement (notably aluminous cement) are included in some of the trade data (tables 16–18 and 21; some also include data for clinker) and within the world production data (table 22). This report's tables exclude supplementary cementitious materials (SCM), such as fly ash, other pozzolans, and ground granulated blast furnace slag (GGBFS), except to the degree that the SCM are incorporated within finished portland (blended) or masonry cements or are used as raw feed for clinker manufacture. 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).

Most 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 and certain terminals that are independent of U.S. cement manufacturers. For 2011, questionnaires were received for 153 of 157 sites canvassed, a response rate of 97%, which included all of the active production facilities. Not all forms were returned fully completed, but the data received included 100% reporting for production of cement and clinker. Likewise for 2010, questionnaires were received from 154 of 159 facilities canvassed, also a response rate of 97%, which included all of the production sites and 100% of production data. Missing data were estimated based on monthly data or past annual reporting. For both years, the data exclude a few importers that did not participate in the surveys. To the degree that they are independent of the participating companies, sales by the missing importers are estimated at no more than an additional 0.2% of the total portland cement sales in 2011 and no more than an additional 0.6% in 2010. General background information on cement and its manufacture and on the USGS cement canvasses is given in van Oss (2005).

Government Programs and Environmental Issues

A variety of Government programs provide funding and direction for public sector construction and are thus of importance to concrete, and hence cement, consumption levels. By comparison to some other construction materials, concrete commonly is less sensitive to rapid swings in construction spending levels, mainly because of lead times preparatory to concrete construction and the common need to coordinate between State and Federal agencies. Lackluster cement consumption levels in 2011 for public projects, as in the preceding 2 years, continued to indicate that little of the American Recovery and Reinvestment Act of 2009 "stimulus" funding had been spent on concrete projects. Government funding of highway projects was considered inadequate to address the need for major repairs and upgrades to the country's infrastructure, but renewed or enhanced-level funding for such projects was not attained by yearend 2011.

Past issues of dumping of foreign cement into the U.S. market have declined in importance in recent years owing to the major recession-related downturn in cement consumption levels overall, and a substantial collapse in cement import levels. Nevertheless, following a "sunset" review of antidumping duties against gray portland cement and clinker imports from Japan, the U.S. International Trade Commission (2011) in December recommended retention of the duties.

Environmental issues pertaining to the cement industry mostly result from the manufacture of the intermediate product called clinker. In making clinker, the consumption of large amounts of carbonate raw materials and fuels leads to large emissions of carbon dioxide (CO_2), and can yield significant emissions (if not scrubbed out) of nitrogen oxides (NOx), sulfur oxides (SOx), 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 by far are of CO_2; the cement industry is one of the leading industrial emitters of this greenhouse gas (GHG). Overall, unit emissions CO_2 by

the U.S. cement industry in 2011 were calculated to be in the range of 0.86 to 0.93 metric ton (t) of CO_2 per ton of clinker produced; the average unit emission was 0.89 t. The high-end estimate incorporates fuel combustion emissions calculated using "standard" heat values for the fuel quantities consumed (table 7), the low-end estimate incorporates heat values actually reported by the individual plants. These ratios are significantly unchanged from those of 2010, and include a standard emissions factor from calcination of limestone of 0.51 t of CO_2 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 CO_2 emissions can be reduced in the calculation in proportion to the calcium oxide contributed by noncarbonate alternative raw materials such as ferrous slags and coal combustion ashes. This incorporation would allow a reduction of calcination-related emissions of about 2.7% (0.8 Mt) in 2011 and 2.5% in 2010. This is equivalent to removing the total emissions (including from fuels, and without adjustments) of 1.5 "average" U.S. cement plants for each year. Relative reductions can be significantly larger for the subset of individual plants that actually burn these alternative raw materials. Certain fuels, including alternative or waste fuels, can either directly reduce plant-level CO_2 emissions or may be allowed to be deducted from reported combustion emissions because they are lower in carbon content per unit heat, the fuels are considered to be carbon-neutral (certain biofuels), or because credits may be allowed for their use (certain waste fuels). Fuel deductions have not been made in the averages noted above. Apart from substitution of alternative raw materials, plant-level emissions from combustion can be reduced through upgrading to more fuel-efficient kiln line technology. Unit emissions on a finished product basis can also be reduced by use of SCM and crushed limestone or other fillers in finished cement and in concrete to reduce the clinker content of these products.

The U.S. Environmental Protection Agency (EPA) applies emissions factors similar to those noted above to USGS data on clinker production to calculate and report GHG emissions associated with the U.S. cement industry. However, the EPA was evaluating transitioning to direct GHG emissions reporting for its GHG reporting obligations; beginning in 2011 (2010 emissions year), the cement industry was required to directly report its annual GHG emissions to the EPA. The published results of the 2011 emissions year mandatory reporting (U.S. Environmental Protection Agency, 2013), combined with USGS data for clinker production, calculate, as in 2010, to an average unit emission of 0.90 t CO_2 per ton of clinker, excluding the reported, but very minor, CO_2-equivalent emissions of methane and nitrous oxide (N_2O). This national average is in close agreement with the USGS estimate noted above.

A variety of other emissions from cement plants have come under stringent regulation in recent years. In 2010, the EPA issued (then) final rules pertaining to the national emissions standards for hazardous air pollutants (NESHAP), in which new, very low, limits on individual plant emissions of mercury, total hydrocarbons, particulate matter (as a surrogate for nonvolatile metal pollutants), and hydrochloric acid were established for cement plants that do not burn hazardous wastes, and, separately, published performance standards and emissions guidelines for commercial and industrial waste incinerator (CISWI) units. The cement industry argued that no U.S. cement plants could meet all of the NESHAP standards, that there would be confusion as to whether certain waste-burning plants would be governed by NESHAP or CISWI standards, and that compliance with the new regulations by the stipulated deadline (2013) would be essentially impossible for many plants, which would then, presumably, have to close. Pertaining to "waste" materials, the industry argued that many alternative materials, not hitherto classified as wastes, would be reclassified as solid wastes and that the plants currently burning them would have to either go through the lengthy process of obtaining waste-burning permits or would have to cease consuming the materials. In March 2011, the EPA published guidance as to which nonhazardous materials would be considered to be solid wastes and, separately, issued the final rule for the CISWI standards (U.S. Environmental Protection Agency, 2011a, b). Although certain industry (and industry opponent) objections to the NESHAP were addressed by the EPA in May (U.S. Environmental Protection Agency, 2011c), the Portland Cement Association (PCA) issued a challenge to the combined new regulations in the U.S. Court of Appeals for the District of Columbia. In the meantime, the U.S. House of Representatives issued an act supporting the cement industry (U.S. House of Representatives, 2011). In early December, the U.S. Court of Appeals ruled in the PCA case that the EPA should reconsider some aspects of the NESHAP, but the court left major sections of the regulations intact. It was anticipated that some technical objections would be resolved by the EPA, but the most anticipated change was a 2-year delay in the compliance date to September 2015.

Production

In 2011, U.S. production of portland cement increased by 2.5% to 66.1 Mt (table 3). The increase reflected stronger cement sales during the year combined with a continued decline in cement imports. Still, with the exception of 2009–10, output in 2011 was the lowest since 1991. Production increases and declines among districts were mixed, but most declines were relatively small. Output declines in the Maine and New York, Pennsylvania, and Illinois districts were because of continued idle status or outright closure of one plant in each of these districts in 2010 or 2011. A major production increase in Missouri was because of the continued ramp up of output to near capacity levels of one large plant; this facility was able to service customers throughout the Mississippi River system and thereby offset the loss of production capacity resulting from closures or idlings in 2009 of three plants in the same large market area.

Overall annual production capacity in 2011 declined by nearly 1.5 Mt, reflecting permanent closures of the production lines at three plants in the districts noted above (the facilities continued to act as distribution terminals), and the partial offset by a new plant coming online in Arizona; the 2011 plant counts reflect these developments. In reality, the plant counts and capacities in several districts remain somewhat inflated because

of the existence of idle capacity for which no formal closures had been announced by yearend 2012. Most idle production facilities, however, remained active as distribution terminals. Although still very low, production capacity utilization for the country increased modestly to 54.3%. Only one district (southern Texas) had a capacity utilization approaching "full practicable" levels (taken to be 85%).

Housing construction continued to decline in 2011, which again adversely affected sales of masonry cement, and caused production of masonry cement to decline by 7.5% to 1.8 Mt (table 4), the lowest level since at least 1954 (levels prior to this are not comparable owing to incomplete data).

With multiple subsidiaries of common parents combined under the larger subsidiary's name and with joint ventures apportioned, the 10 leading companies at yearend 2011 were, in descending order of portland cement production, Holcim (US) Inc., CEMEX, Inc., Lehigh Cement Co., Lafarge North America Inc., Buzzi Unicem USA Inc. (including Alamo Cement Co.), Ash Grove Cement Co., Texas Industries, Inc. (TXI), Essroc Cement Corp., Eagle Materials Inc., and CalPortland Co. The U.S. industry remained heavily consolidated, with the 5 leading cement companies, combined, contributing 57% of total U.S. portland cement production, and the 10 leading companies accounting for 80% of total production. Of the above named companies, all except Ash Grove, Eagle Materials, and TXI were foreign owned as of yearend. For the U.S. industry overall, about 80% of total cement output and capacity was by foreign-owned companies.

Clinker production in 2011 increased by 2.4% to 61.2 Mt (tables 1, 5) but, except for 2009−10, was the lowest output since 1985. Monthly production (not tabulated in this report) was erratic overall, showing year-over-year gains of more than 10% in March, November, and December, but declines or essentially stagnant outputs in the other months. Apparent annual capacity fell by 2.8% to 106 Mt. The apparent decline was in part because of the "closure" of plants in New York, Pennsylvania, and Illinois, as noted above; the formal closure in 2011 of the kilns (idle since 2009) at a plant in California; the 2010 closure (credited in 2011) of three wet kilns at a plant in Arkansas; and the late 2010 closure of the kilns at a plant in Washington. The overall decline was partially offset by the opening of a new plant in Arizona. Utilization of capacity increased to 58% (from about 55% in 2010), but the utilization statistic is heavily dependent on the reported number of days of downtime for routine maintenance. As in 2010, many plants reported much longer than normal downtimes for this purpose in 2011; where this was obvious, corrections were made in both years (after consultation with the plants) to remove the extra downtime (a result of slow sales) from the statistic. With the exception of the southern Texas district (87.5%), all districts continued to show capacity utilization rates well below the presumed "full practicable" capacity utilization rates of 85% or more that have been experienced during years of high cement sales volumes. Many plants continued to have one or more kilns idle for all or much of the year, and to operate "active" kilns on a more intermittent basis than would be expected normally. Yearend clinker stockpiles declined by nearly 3% to 4.6 Mt (table 5). Along with the strong increases in clinker production toward yearend noted above, the stockpile decline could be interpreted as largely demand driven, or at least in line with the continued idle status of many kilns. However, plants normally try to build clinker stockpiles at yearend in anticipation of temporary shutdowns for maintenance (typically performed in the first 2 months of the following year), and stocks actually increased, perhaps for this reason, in a majority of districts. In terms of plant (kiln) technology, the count for wet plants declined by two owing to closure of plants or their kilns in New York and Seattle. The dry plant count dropped by one owing to plant closures in California, Pennsylvania, and Illinois being offset by a new plant in Arizona and the closure in 2010 of wet kilns at a combination ("Both") plant in Arkansas; the latter resulted in the plant being reclassified as dry for 2011.

Table 6 lists the nonfuel raw materials consumed to make clinker and cement. Although the ratios among the raw materials, and between them and the total cement and clinker produced, appear broadly similar for the 2 years shown, the consumption for clinker of ferrous feeds appeared to have increased significantly, some aluminous feeds appear to have declined, and steel slag appears to have increased significantly. A significant decline in fly ash for clinker appears partly offset by an increase in other combustion ashes and this may merely represent misidentification of some of the material. It should be noted, however, that apparent changes or substitutions may reflect consumption shifts at a relatively small number of plants. The significant increase in consumption of fly ash for cement, and a strong decrease in consumption for cement of granulated blast furnace slag appear to reflect changes in the equivalent blended cement sales (table 15).

The consumption data in table 6 for fly ash and other ash (for clinker and cement combined) have long been similar to those published by the American Coal Ash Association (ACAA) regarding fly ash and bottom ash sales to the cement industry for making blended cement and clinker. However, for fly ash, the ACAA sales in 2010 were 26% lower, and in 2011 were 36% higher, than the tonnages in table 6 (American Coal Ash Association, 2012). For bottom ash, the ACAA sales were 18% higher in 2010 and 14% lower in 2011, than the comparable tonnages in table 6. It is unclear whether the differences represent the timing difference between actual sales and consumption (including from stockpiles), or if a significant component is misidentified within the USGS survey responses. The "Gypsum and anhydrite" data in table 6 include 0.801 Mt of synthetic gypsum in 2010 and 0.816 Mt in 2011, but this likely underrepresents actual use of the synthetic material because the USGS canvass does not require that the two types of gypsum be differentiated. In recent years, the USGS data for synthetic gypsum have exceeded those reported by the ACAA, likely because the ACAA does not survey the cement plants' own production of the synthetic material. However, the ACAA reported 1.03 Mt of synthetic gypsum sales to the cement industry in 2010 and 0.938 Mt in 2011.

Fuel consumption by the cement industry is shown in table 7. Data shifts can reflect activities at just a few plants. In terms of overall mass ratios among fuels in total and relative to clinker production, a significant decline in 2011 was evident in the ratio of petroleum coke to coal consumed. Both wet and dry plants

boosted their consumption of natural gas as a running fuel (as opposed to use mainly for kiln warm ups) in response to low gas prices. The natural gas data for both years include a component of landfill gas at two plants. Wet plants appeared to have substituted more liquid wastes (including used oils) for fuel oil in 2011.

Although not shown in table 7, overall unit heat consumption (gross heat basis) in 2011 was about 4.1 billion joules (GJ) per metric ton of clinker, significantly unchanged from consumption in 2010. Wet kiln plants averaged 7.0 GJ per ton of clinker, up by about 4%, and dry kiln plants averaged 3.9 GJ in 2011, down by about 2%. It remained unclear whether or not the industry overall was experiencing any heat efficiency penalties for the common practice in 2010 and 2011 of operating kilns on an intermittent basis and with longer overall downtimes than would be customary in busy years. Overall, coal continued to supply the largest share of total heat consumed (64%), followed by petroleum coke (about 17%), and waste fuels (about 10%).

Average unit electricity consumption declined slightly overall and for dry plants, but was significantly lower for the remaining wet plants (table 8). The improvement appears to reflect the higher rate of grinding (cement) capacity utilization noted earlier.

In early October, Argos USA, the U.S. subsidiary of the Colombian cement producer Cementos Argos S.A., completed the purchase of most of Lafarge's southeastern U.S. cement and concrete assets (Argos USA, 2011). Included within this purchase were the 1.6-million-metric-ton-per-year (Mt/yr) Roberta, AL, integrated cement plant; the 0.5 Mt/yr Atlanta, GA, grinding plant; the 1.1 Mt/yr Harleyville, SC, integrated cement plant; and a variety of terminals. Not included in the purchase, however, was Lafarge's cement import terminal at Charleston, SC.

Early in 2011, Drake Cement LLC recorded its first production of cement and clinker from its new Drake, AZ, integrated plant, completed in late 2010. This was the only new producer during 2011. At midyear, CalPortland Co. formally closed the production facilities of its Colton, CA, integrated plant; the plant's kilns had been idle for more than a year, but its finish mill had remained active. The site was to continue to act as a terminal. In June, Holcim indefinitely idled its Catskill, NY, integrated plant. Because this plant recorded no production in 2011 and was formally announced as closed in March 2012, it was removed from the plant count (tables 3, 5) for 2011. In October 2011, Lafarge announced the closure of its Fredonia, KS, integrated plant in early 2012 (Lafarge North America, Inc., 2011).

A number of plant upgrade or expansion projects were underway during 2011, but no major projects (new or upgraded kiln lines or similar) were announced as completed during the year nor were new such projects announced. Many plants were upgrading their emissions control and monitoring systems ahead of the EPA emissions limitations noted earlier. In particular, whereas 49 plants reported having some or all kilns without a continuous emissions monitoring system (CEMS) in 2010, only 12 plants reported having kilns lacking a CEMS in 2011.

Consumption

This report presents data on cement sales to domestic final customers from both the USGS annual canvass (tables 1, 11, 12, and 14) and monthly surveys (table 9). Despite close agreement in the national totals between the annual and monthly data, only table 9 regional 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.

Sales of portland cement in 2011 increased in all months except March and April, relative to the same months in 2010, and essentially continued a growth trend that began in March 2010. The 2.8% rate of increase in domestic sales for 2011 overall (table 9) was similar to the 3.1% growth in sales for March through December 2010 relative to 2009. Notwithstanding the gains, total consumption in 2011 was still 52 Mt (42%) less than in the peak year of 2005. Only 16 States showed consumption declines of 1% or more in 2011; the largest decline was in Louisiana (down by 14.4%) and likely reflected, in part, severe rainfall from tropical storm Lee. Several States showed consumption gains of 10% or more; the largest relative increases were in the District of Columbia, a 63% increase, and North Dakota, up by 46%. Per-capita consumption of portland cement was 221 kg in 2011, significantly unchanged from that of 2009–10. This remained the lowest level since 1947 and was well below the 413 kg per capita level for the record consumption year of 2005. Masonry cement consumption decreased by 4.1% to 1.8 Mt (table 9), the lowest level since 1946 and only about one-third the level in the record consumption year of 2005.

As noted earlier, a few importers do not participate in the USGS annual cement canvass, and their sales—to the degree that they were made to final customers and not to other (reporting) cement companies—are missing from the data in this report. An estimate of the missing sales volumes can be made by comparing the U.S. Census Bureau trade data (tables 17 and 21) with the USGS data for import origins of sales (table 9). Excluding imports from France—largely into Norfolk, VA, and likely all aluminous cement or its clinker—the Census "excess" for 2011 was only about 0.03 Mt. However, this result appears to be too small, based on known gaps in the USGS sales data relating to the imports (table 18) from, especially, the Republic of Korea into the Philadelphia, PA, customs district, and lesser amounts of cement into other districts from other countries. Adjusting for these, and for stockpile changes at importers, it is estimated that the annual sales tables are missing about 0.2 Mt (about 0.2%) of portland cement sales in 2011 and about 0.4 Mt (about 0.6%) in 2010.

Regional breakouts of price data (as mill net values) are listed in tables 11 and 12; again, table 9 gives a better indication of State-level consumption tonnages. As in table 9, regional portland cement sales tonnages in table 11 reveal a mix of increases and decreases in 2011, but show a modest increase overall. Price changes commonly lag changes in sales volumes

because of the common existence of long-term pricing contracts. Despite the higher sales volumes, unit prices in 2011 fell in all but three districts and the overall price for the country declined by 3.3%. Although modest compared with the nearly 7% decrease ($6.50 per metric ton) in 2010 relative to 2009, the price decline in 2011 completely offset the sales tonnage increase in terms of overall revenues. Price shifts for masonry cement (table 12) are difficult to evaluate because of the high, but variable, percentage of sales that are in bag or package form rather than the much cheaper bulk form; the split between bag and bulk sales is not reported to the USGS. As listed, the unit price for masonry cement increased by nearly 2% despite a 5% decline in sales volumes.

Table 10 lists sales of portland cement by mode of transportation. Major changes evident in 2011 are a greater reliance on rail and barge transport for the loading of terminals by the plants and, in terms of sales to final customers, greater reliance on terminals. Assuming correct reporting, waterborne shipments from terminals were significantly higher in 2011 than in recent years. In contrast, shipments by rail to final customers declined significantly.

Within a given category of construction, cement consumption levels broadly reflect levels of construction spending, but 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 2011 fell by 5.4% to about $476 billion (Portland Cement Association, 2013). Public sector construction remained the largest share of the total at $163 billion, down by 10.5%; within this sector, construction spending for buildings declined by 6.9% to $63 billion, spending for roads decreased by 9.0% to $44 billion, and sewage and waste disposal expenditures declined by 13.5% to about $14 billion. With single-family housing starts stagnant, residential construction spending was $160 billion, down by 2.6%, and nonresidential building construction spending was $88 billion, down by 6.7%. Given these spending declines, the higher cement sales tonnages noted above for 2011 point to an apparent increase in cement or concrete "intensity" of construction. Higher cement intensity can result from shifts in spending from repairs to new construction (more concrete-intensive), more projects in their actual concrete-use phase, or less expensive cement or concrete or other perceived advantages of concrete over competing construction materials. Although the statistic is fraught with variables (including variation among types of construction), a crude indicator of overall cement intensity would simply divide total construction spending by the total tons of portland and masonry cement consumed overall; in 2011, this would calculate to 152 t of cement consumed per million dollars, compared with 140 t in 2010. The ratio for 2011 significantly exceeds those of the peak (total tonnage) consumption years of 2005 (146 t) and 2006 (145 t).

Portland cement sales in 2011 are broken out by customer type in table 14. Ready-mixed concrete producers, as listed, accounted for 70% of total shipments, but the true percentage to this customer type was larger (probably about 75%) because some sales were reported under other types, such as airport and road paving contractors, which also made use of ready-mixed concrete; likewise, sales to these contractors could be underreported. As listed on table 14, sales to ready-mixed customers increased by 3.8%, sales to airport contractors declined by 39%, and sales to road paving contractors declined by nearly 10%. Sales to contractors overall declined by 11%. Among concrete product manufacturers, sales to brick and block makers decreased by 12%, those to precast and prestressed slab makers increased by nearly 14%, and sales to pipe manufacturers decreased by nearly 7%; these shifts are difficult to evaluate because of a 6% increase in sales to "Other and unspecified" product manufacturers and the increase is likely mainly in the "unspecified" characterization. Sales to the smaller categories of customers may be underrepresented because some respondents seem to report only broad categories. As listed, sales into the mining sector decreased by nearly 3%, in contrast to generally higher commodity (and mine output tonnages) during the year. Sales into the mining sector were reported by relatively few respondents and the decline may reflect sales tonnage shifts at just a few locations. Sales of cement for oil well (and gas well) drilling increased by 26%; this is in line with a 21.5% increase in the average weekly rig count in 2011 (Baker Hughes, 2013). Cement sales for waste stabilization increased by 19%, in contrast to the decline in spending for the category "sewage and waste disposal" noted above.

Table 15 lists the sales breakout of the various cements included within "portland cement" in this report. As in past years, sales in 2011 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); these also included equivalent cements sold under the specifications of ASTM C–1157. Assignment between "General use and moderate heat" cements and "Sulfate resisting" categories is somewhat artificial because some hybrid cements are listed as meeting the standards for both Type II (or I, II) and Type V (such as II, V) cements; these are supposed to be included under "Sulfate resisting" cements but may not always be so reported. As listed, "Type V" sales increased by 8%. Oil well cement sales increased by nearly 35%, which is a higher relative increase than the sales to oil (and gas) well drillers noted above and may imply an increase in the proportion of deep wells requiring specialized oil well cements; shallower wells can make use of ordinary grades of portland cement.

Sales of blended cements declined by 15% to 1.33 Mt overall in contrast with a 21% increase in 2010. However, USGS monthly data show blended cement sales in 2011 of 1.43 Mt, down by 23%. It remains uncertain why this difference exists, but it most likely relates to continued inconsistencies in characterizing cement sold under the general performance standard ASTM C–1157, which at one time applied only to blended cements but which now applies to hydraulic cements in general, and which allows for cements having limestone additions to be variously classified. There can be reporting uncertainties related to the classification of ternary blended cements (those containing more than one type of SCM). As listed in table 15, sales of blends with GGBFS declined by nearly 29%, and this is in line with an overall 4% decline in granulated slag sales, including direct sales of unblended GGBFS directly to the concrete industry, noted in the 2011

USGS iron and steel slag survey. In contrast, sales of fly ash blends increased by nearly 23%.

Foreign Trade

Trade data supplied from the U.S. Census Bureau are listed in tables 16–21. Exports (table 16) increased in 2011 by 20% to about 1.4 Mt, the highest level in more than 60 years. Despite the increase, exports remained a very small part of total sales by the U.S. industry and continued to be small compared to cement imports. Canada remained the main destination for U.S. exports, accounting for 71% of the 2011 total.

Total imports of cement and clinker in 2011 decreased by 3.1% to 6.4 Mt (tables 1, 17), continuing a trend of decline since the record importation year of 2006 (35.6 Mt). Most of the imports were of gray portland cement, and major tonnage declines were seen in the imports from China, Colombia, Greece (nil in 2011), and Taiwan. Imports from the Republic of Korea increased significantly. As in 2010, Canada remained by far the largest import source.

Official imports of white cement are listed in table 20. In many past years, and based on unexpectedly low unit values, the data appeared to have included some gray cement or clinker; the apparent errors likely were because of the use of the wrong tariff code by importers. Although unit value data for 2010 indicate the possible inclusion of some gray cement in the "white" imports from China, no low-unit-value anomalies are evident in the data for 2011. Overall, imports of white cement increased by 8.7%; this increase was expected given that the United States has only had two white cement plants in operation since 2008, but the increase is in contrast to relatively stagnant white cement sales indicated in table 15 and little change in white cement production. The apparent excess in imports is partly explained by white cement also being used for some masonry cement (not included in table 15) and as a basis for some colored cement that may have been included as gray portland.

Imports of clinker declined slightly to 0.61 Mt (table 21), but the data are incomplete with regard to overland imports from Canada; the tonnages listed are insufficient to have fully supplied Canadian-clinker-dependant grinding plants in Michigan and Washington. The annual deficit is estimated to be about 0.2 Mt in both 2010 and 2011. The unreported Canadian clinker appears mostly to have come 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.

For cement and clinker combined, the 10 busiest customs districts of entry in 2011 were, in descending order of tonnage, Seattle, WA; Detroit, MI; Houston-Galveston, TX; Buffalo, NY; Cleveland, OH; Columbia-Snake, ID, OR, and WA; Honolulu, HI; El Paso, TX; Pembina, ND; and Ogdensburg, NY (table 18). These leading districts accounted for about 77% of the total imports for the year.

World Review

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

World cement output in 2011 was an estimated 3.6 Gt, up by 10.4%. Production was from more than 150 countries. China continued to be by far the world's leading producer, with an output of almost 2.1 Gt, up by about 15%, and accounting for 58% of the world total.

The remaining top 20 producers in 2011 were, in descending order, India, the United States, Brazil, Turkey, Iran, Vietnam, Russia, Japan, Saudi Arabia, the Republic of Korea, Egypt, Thailand, Mexico, Germany, Italy, Pakistan, Indonesia, Spain, and Algeria. Cumulatively, the top 5 countries accounted for 70% of total world output; the top 10 countries, about 78%; and the top 20 countries, about 87%.

Regionally, Asia and the Pacific accounted for 74% of world production, including 8 of the 20 leading producing countries, and had the highest growth rate of all regions. The Middle East (including Turkey) was the next ranked producing region, with 6.5% of the 2011 total, and was followed by Western Europe, at 4.7%; Africa, at 4.0%; Central and South America (including the Caribbean), 3.7%; North America (including Mexico), 3.2%; the Commonwealth of Independent States, 2.6%; and Eastern Europe, 1.3%.

Outlook

Although cement sales in 2011 rose only modestly, portland cement sales for the fourth quarter were up by 7.5% and, together with increases in housing starts late in the year and some other economic indicators of recovery from the recession, it was anticipated that cement sales might increase by as much as 10% in 2012. This would still be well below the consumption level in 2008, and a return to consumption levels similar to the record years of 2005 and 2006 was not expected for at least a decade and only if the housing market and tax revenues to States (and hence public sector construction) recovered substantially. However, at such time that annual consumption returned to levels of 110 Mt or more, it was unclear if there would be sufficient remaining domestic production capacity to meet the higher demand given that stringent emissions restrictions were likely to lead to a large number of older plants closing and to discourage the construction of new plants. It was likely that an increasing share of domestic consumption would thus need to be met with imported cement. Domestic capacity was expected to be given an artificial boost by a broadening of cement standards to allow for more incorporation of SCM and other additions. Recent acceptance in Canada of portland-limestone cements (containing up to 15% ground limestone addition) was expected to lead to U.S. cement standards being revised to allow for such cements as well. Limestone addition was viewed as a relatively easy way to boost cement production capacity, using

an abundant, low "carbon-footprint," resource, without having to increase clinker production capacity.

Given their recent rapid rise in production, Brazil, Iran, Russia, Turkey, and Vietnam all appeared poised to possibly overtake the United States in cement output within the next 5 years.

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TABLE 1
SALIENT CEMENT STATISTICS FOR THE UNITED STATES[1, 2]

(Thousand metric tons unless otherwise specified)

		2007	2008	2009	2010	2011
Production:						
Cement[3]		95,464	86,310	63,907	66,447 [r]	67,895
Clinker		86,130	78,382	56,116	59,802	61,241
Shipments from mills and terminals:[3, 4, 5]						
Quantity		114,000	96,700	71,000	70,300	72,100
Value[6]	thousand dollars	11,900,000	9,990,000	7,020,000	6,490,000 [r]	6,440,000
Average value[6]	dollars per metric ton	104.00	103.50	99.00	92.00	89.50
Stocks, yearend:						
Cement		8,890	8,360	6,080	6,180	6,270
Clinker		6,550	7,070	5,130	4,760	4,620
Exports		886 [7]	823	884	1,178	1,414
Imports:[8]						
Cement		21,496	10,744	6,211	6,013	5,812
Clinker		972	621	556	613	606
Total[9]		22,468	11,365	6,767	6,626	6,418
Consumption, apparent[10]		116,550	96,760	71,510	71,180 [r]	72,200
World production[e, 11]		2,810,000	2,850,000	3,030,000	3,270,000 [r]	3,610,000

[e]Estimated. [r]Revised.

[1]Unless otherwise indicated, data are for portland (including blended) and masonry cements only. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

[2]Excludes Puerto Rico.

[3]Includes cement made from imported clinker. Includes a double-counted component (less than 0.5% per year) of portland cement subsequently converted at the plants to masonry cement; because of the involvement of stockpiles, the precise amount converted from actual production cannot be determined.

[4]Includes imported cement.

[5]Shipments to final domestic customers. Data are from an annual survey of plants and terminals and may differ from the totals in table 9, which are based on consolidated monthly surveys from companies.

[6]Value free on board mill or independently reporting terminal.

[7]Official export data for 2007 have been corrected to remove an apparent excess of 653,255 metric tons of aluminous cement from Laredo, TX.

[8]All forms of hydraulic cement or clinker.

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

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

[11]Total hydraulic cement. May include clinker exports for some countries.

TABLE 2
COUNTY BASIS OF SUBDIVISION OF STATES IN CEMENT TABLES

State subdivision	Defining counties
California, northern	Alpine, Fresno, Kings, Madera, Mariposa, Monterey, Tulare, Tuolumne, and all counties farther north.
California, southern	Inyo, Kern, Mono, San Luis Obispo, and all counties farther south.
Illinois, excluding Chicago	All counties other than those in metropolitan Chicago.
Illinois, metropolitan Chicago	Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will Counties in Illinois.
New York, eastern	Delaware, Franklin, Hamilton, Herkimer, Otsego, and all counties farther east and south, except 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 DISTRICT[1]

(Thousand metric tons unless otherwise specified)

	2010					2011				
District[2]	Number of plants	Production[3]	Grinding capacity[4]	Percentage utilized[5]	Yearend stocks[6]	Number of plants	Production[3]	Grinding capacity[4]	Percentage utilized[5]	Yearend stocks[6]
Maine and New York	5	2,122	4,236	50.1	198	4	1,981	3,687	53.7	203
Pennsylvania	9	3,382	6,790 [7]	49.8 [7]	346	8	3,270	6,020 [7]	54.3 [7]	311
Illinois	3	1,620	2,755	58.8	235	2	1,398	2,017	69.3	225
Indiana	4	2,473	3,745	66.0	219	4	2,292	3,745	61.2	190
Michigan	4	3,482	5,530	63.0	230	4	3,475	5,530	62.8	302
Ohio	2	627	1,166	53.8	56	2	636	1,166	54.6	26
Iowa, Nebraska, South Dakota	5	2,677	5,840 [7]	45.8 [7]	257	5	2,930	5,824	50.3 [7]	313
Kansas	3	1,824	3,572 [r]	51.1 [r]	240	3	1,568	3,572	43.9	237
Missouri	5	6,469	10,817	59.8	661	5	7,054	11,319	62.3	748 [7]
Florida	8 [r]	3,380 [r, 8]	9,970 [r, 7]	34.0 [r, 7]	306	8	3,306 [8]	9,970 [7]	33.2 [7]	264
Georgia, Maryland, Virginia, West Virginia	6	4,305	7,906	54.5	418	6	4,786	8,225	58.2	322
South Carolina	3	2,048	5,085	40.3	114	3	2,482	5,085	48.8	100
Alabama	5	3,286	7,292	45.1	266	5	5,217 [9]	10,594 [9]	49.2 [9]	514 [9]
Kentucky, Mississippi, Tennessee	4	2,193	3,702	59.2	268	4	W [9]	W [9]	W [9]	W [9]
Arkansas and Oklahoma	4	2,012	4,078	49.3	165	4	1,933	3,655	52.9	148
Texas, northern	6	3,867	7,765	49.8	176	6	3,983	7,765	51.3	220
Texas, southern	6	5,000	6,185	80.9	214	6	5,220	6,334	82.4	257
Arizona and New Mexico	3	1,244	3,116	39.9	98	4	1,243	3,715	33.5	126
Colorado and Wyoming	4	2,333	4,517	51.7	114	4	2,437	4,517	54.0	166
Idaho, Montana, Nevada, Utah	6	2,055	3,725	55.2	146	6	2,184	3,728	58.6	136
Alaska and Hawaii	--	--	--	--	66	--	--	--	--	97
California	10	6,945	12,851	54.0	422 [7]	10	7,730	12,851	60.1	431 [7]
Oregon and Washington	4	1,200	2,435	49.3	269	4	1,012	2,435	41.5	235
Importers[10]	--	--	--	--	269 [7]	--	--	--	--	302 [7]
Total[11]	109 [r]	64,546 [r]	123,000 [r, 7]	52.4 [r]	5,750 [7]	107	66,136	122,000 [7]	54.3 [7]	5,860 [7]
Puerto Rico	2	755	1,780	42.4	49	2	744	1,780	41.8	23
Grand total[11]	111 [r]	65,301 [r]	125,000 [r, 7]	52.3 [r]	5,800 [7]	109	66,880	124,000 [7]	54.1 [7]	5,880 [7]

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

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

[2]District assignation is the location of the reporting facilities. Specific districts include importers where district assignations were possible.

[3]Production data include a small amount of portland cement subsequently consumed at the plant to make masonry cement; the amount thus double-counted cannot be determined precisely because of the involvement of cement stockpiles, but is less than 0.5% of the grand totals listed.

[4]Grinding capacity is based on fineness needed to produce a plant's normal output mix, including masonry cement, and allowing for downtime for routine maintenance.

[5]Calculated relative to portland cement output; utilization would be higher if calculated to include output of masonry cement.

[6]Includes imported cement and stocks of domestic and imported cement at mills, terminals, and in transit.

[7]Data include estimates for nonrespondents or incompletely reporting facilities.

[8]Production data have been adjusted to avoid double-counting of portland cement supplied by one plant to another for the sole purpose of conversion to blended and masonry cement.

[9]For 2011, data for Kentucky, Mississippi, and Tennessee are included with those for Alabama.

[10]Data include only those importers or terminals for which district assignations were not possible.

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

TABLE 4
MASONRY CEMENT PRODUCTION AND STOCKS IN THE UNITED STATES, BY DISTRICT[1]

(Thousand metric tons unless otherwise specified)

	2010			2011		
District[2]	Number of active plants	Production[3]	Yearend stocks[4]	Number of active plants	Production[3]	Yearend stocks[4]
Maine and New York	4	40	14	3	39	15
Pennsylvania	8	147	41	7	141	44
Indiana and Ohio	6	260	59	6	232	42
Michigan	3	83	24	3	61	22
Iowa, Nebraska, South Dakota	1	W	W	--	W	W
Kansas	2	W	W	2	W	W
Missouri	1	W	W	1	W	W
Florida	6	198	42	6	188	43
Georgia, Maryland, Virginia, West Virginia	6	251	42	6	233	43
South Carolina	3	152	17	3	143	15
Alabama	4	191	47	4	211 [5]	57 [5]
Kentucky, Mississippi, Tennessee	3	W	W	3	W [5]	W [5]
Arkansas and Oklahoma	4	92	17	3	82	15
Texas	8	199	22	7	187	20
Arizona and New Mexico	3	W	W	3	W	W
Colorado and Wyoming	2	W	W	1	W	W
Idaho, Montana, Nevada, Utah	1	W	W	1	W	W
California	6	178	32 [6]	6	170	36
Importers[7]	--	--	9 [6]	--	--	3 [6]
Total[8]	71	1,901	427 [6]	65	1,759	396 [6]

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

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

[2]District assignation is the location of the reporting facilities. Specific districts include importers where district assignations were possible.

[3]Includes cement produced from imported clinker.

[4]Includes imported cement.

[5]For 2011, data for Kentucky, Mississippi, and Tennessee are included with those for Alabama.

[6]Data include estimates for nonrespondents or incompletely reporting facilities.

[7]Data include only those importers or terminals for which district assignations were not possible.

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

TABLE 5
CLINKER CAPACITY AND PRODUCTION IN THE UNITED STATES IN 2011, BY DISTRICT[1]

District	Number of active plants[2]				Number of kilns[4]	Daily capacity[4, 5] (thousand metric tons)	Average days of routine maintenance[6]	Apparent annual capacity[4, 7] (thousand metric tons)	Production (thousand metric tons)	Percentage of capacity utilized	Yearend stocks (thousand metric tons)
	Process used										
	Wet	Dry	Both[3]	Total							
Maine and New York	1	2	--	3	4	9.6	30.6	3,225	1,897	58.8	160 [8]
Pennsylvania	2	5	--	7	11	16.9	24.5 [8]	5,650 [8]	3,145	55.7 [8]	279
Illinois	--	2	--	2	3	6.4	22.1	2,180	1,337	61.3	145
Indiana	1	3 [9]	--	4	8	10.2	24.0 [8]	3,490 [8]	2,254	64.7 [8]	117
Michigan	--	2	--	2	6	11.2	32.7 [8]	3,690 [8]	2,622	71.1 [8]	167
Ohio	1	1	--	2	3	3.4	11.9	1,192	560	47.0	31
Iowa, Nebraska, South Dakota	--	4	1	5	9	14.1	15.3 [8]	4,830 [8]	2,693	55.8 [8]	158
Kansas	1	2	--	3	5	8.5	24.2	2,894	1,631	56.4	72
Missouri	--	5	--	5	5	28.8	31.0	9,558	6,445	67.4	215
Florida	--	7	--	7	10	26.1	10.2 [8]	9,280 [8]	3,029	32.6 [8]	341
Georgia, Maryland, Virginia, West Virginia	--	5	--	5	5	19.4	27.0 [8]	6,570 [8]	4,557	69.3 [8]	292
South Carolina	--	3	--	3	3	12.2	32.7 [8]	4,070 [8]	2,363	58.1 [8]	265
Alabama, Kentucky, Mississippi, Tennessee	1	8	--	9	9	27.9	20.4	9,577	4,989	52.1	240
Arkansas and Oklahoma	1	3	--	4	8	9.9	21.7	3,379	1,643	48.6	99
Texas, northern	2	4	--	6	12	19.0	18.1	6,591	3,580	54.3	235
Texas, southern	--	5	--	5	6	16.1	19.0 [8]	5,600 [8]	4,900	87.5 [8]	272
Arizona and New Mexico	--	4	--	4	8	10.4	12.9	3,589	1,204	33.6	220
Colorado and Wyoming	--	4	--	4	5	11.5	16.6	3,927	2,277	58.0	264
Idaho, Montana, Nevada, Oregon, Utah, Washington	3	5	--	8	10	13.4	25.0	4,516	2,922	64.7	315
California	--	8	--	8	9	34.8	23.6	11,836	7,193	60.8	621
Total[10]	13	82	1	96	139	309.9	21.4 [8]	106,000 [8]	61,241	58.0 [8]	4,620 [8]
Puerto Rico	--	2	--	2	2	5.3	42.5 [8]	1,731 [8]	662	38.2 [8]	89
Grand total[10]	13	84	1	98	141	315.2	21.7 [8]	107,000 [8]	61,903	57.7 [8]	4,710 [8]

-- Zero.

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

[2]Includes white cement plants and all plants (gray or white) that produced clinker for at least 1 day during the year.

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

[4]Includes kilns active for at least 1 day during the year. For kilns idle all year, excludes those that cannot be restarted, fully permitted, in less than 6 months.

[5]Sum of reported kiln capacities for all plants in a district.

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

[7]Sum of apparent annual capacities for all kilns. For each kiln, the statistic is calculated as 365 days minus days reported for routine maintenance and then multiplied by the unrounded daily capacity.

[8]Data contain estimates for some facilities and have been rounded to no more than three significant digits.

[9]Includes one semiwet kiln.

[10]Data 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	2010		2011	
	Clinker	Cement[3]	Clinker	Cement[3]
Calcareous:				
Limestone (aragonite, chalk, coral, marble)	78,500	1,550	80,000	1,500
Cement rock (includes marl)	7,500	30	8,070	23
Cement kiln dust (CKD)[4]	256	141	391	131
Lime[4]	20	17	17	53
Other	47	13	86	8
Aluminous:				
Clay	2,830	--	2,820	--
Shale and schist	2,370	13	2,250	36
Other[5]	478	--	387	--
Ferrous:				
Iron ore	501	--	544	--
Mill scale	522	--	659	--
Other[6]	19	--	15	--
Siliceous:				
Sand, calcium silicates	2,830	--	2,850	--
Sandstone, quartzite, soils, nonpozzolanic rocks	506	--	481	--
Fly ash	2,430	85	2,380	118
Other ash, including bottom ash	727	--	891	--
Granulated blast furnace slag[7]	70	235	47	217
Other blast furnace slag	30	--	42	--
Steel slag	238	--	296	--
Other slag	165	2	47	5
Natural rock pozzolans[8]	--	20	--	33
Other pozzolans[9]	9	1	18	1
Other:				
Gypsum and anhydrite	(10)	3,550	(10)	3,640
Other[11]	62	61	57	59
Total[12]	100,000	5,720	102,000	5,820
Clinker, imported, raw materials equivalent[13]	--	1,190	--	1,190
Grand total[12]	100,000	6,910	102,000	7,010

-- Zero.

[1]Excludes Puerto Rico.

[2]Data have been rounded to no more than three significant digits.

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

[4]Data are probably underreported.

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

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

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

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

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

[10]Included with Calcareous: Other.

[11]Includes fluorspar and all other materials not listed earlier.

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

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

TABLE 7

CLINKER PRODUCED AND FUEL CONSUMED BY THE U.S. CEMENT INDUSTRY, BY KILN PROCESS[1]

	Clinker production[2]			Conventional fuels[3]				Waste fuels[3]		
Kiln process	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)
2010:										
Wet	15	3,918	6.6	498	148	6,480	27,200	52	59	229,000
Dry[7]	83	54,600	91.3	5,110	1,320	24,100	252,300 r	270	351	639,000
Both[8]	2	1,285	2.1	194	--	--	7,260	--	--	41,300
Total[9]	100	59,802	100.0	5,810	1,470	30,500	287,000	322	411	909,000
2011:										
Wet	13	3,774	6.2	522	98	1,660	61,500	55	78	231,000
Dry[7, 10]	82	57,467	93.8	5,530	1,190	20,000	319,600	265	622	872,000
Both[8, 10]	1	W	W	W	W	W	W	W	W	W
Total[9]	96	61,241	100.0	6,050	1,290	53,900	381,000	320	699	1,100,000

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

[1]Excludes Puerto Rico.

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

[3]With the exception of natural gas (for better summation), all fuel data have been rounded to no more than three significant digits.

[4]All reported to be bituminous.

[5]Distilliate and residual fuel oils. Excludes used oils that were reported under liquid wastes.

[6]Includes landfill gas and propane.

[7]Includes one semiwet plant. Also, for 2010, includes one plant that operated a dry kiln, but also had idle wet kilns that were officially closed during the year.

[8]Plants that can operate both wet and dry kilns, whether or not both types were active during the year. Includes plants that converted from wet to dry technology during the year. For 2010, excludes one plant as noted in footnote 7.

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

[10]For 2011, data for the category "Both" have been included in those for "Dry" plants to protect company proprietary information.

TABLE 8

ELECTRICITY CONSUMED BY U.S. CEMENT PLANTS, BY KILN PROCESS[1]

Plant process	Electricity consumed[2]							Cement produced[4] (thousand metric tons)	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		
2010:									
Integrated plants:									
Wet	--	--	15	621	15	621	7	4,277	145
Dry[5]	3	226	85 [6]	8,470	85 [6]	8,700	91	59,654	146
Both[7]	--	--	2	205	2	205	2	1,377	149
Total or average[3]	3	226	102 [6]	9,300	102 [6]	9,520	100	65,309	146
Grinding plants[8]	--	--	5 [r]	96	5 [r]	96	--	965	100
Exclusions[9]	--	--	3	XX	3	XX	--	173 [r]	XX
2011:									
Integrated plants:									
Wet	--	--	13	586	13	586	6	4,227	139
Dry[5, 10]	2	238	84 [6]	8,760	84 [6]	9,000	94	62,643	144
Both[7, 10]	--	--	1	W	1	W	W	W	W
Total or average[3]	2	238	98 [6]	9,350	98 [6]	9,590	100	66,869	143
Grinding plants[8]	--	--	5	96	5	92	--	917	100
Exclusions[9]	--	--	3	XX	3	XX	--	109	XX

[r]Revised. XX Not applicable. -- Zero.

[1]Excludes Puerto Rico.

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

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

[4]Portland and masonry cement. Data are all reported and are unrounded but are thought to be accurate to no more than three significant digits.

[5]Includes one semiwet plant. Also, for 2010, includes one plant that operated a dry kiln, but also had idle wet kilns that were officially closed during the year.

[6]Includes two grinding plants whose data were included with the integrated plants.

[7]Plants that can operate both wet and dry kilns, whether or not both types were active during the year. Includes plants that converted from wet to dry technology during the year. For 2010, excludes one plant as noted in footnote 5.

[8]Plants 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, or which also reported a substantial component of grinding of excess granulated blast furnace slag. Excludes two plants that were reported under "Dry" as noted in footnote 6.

[9]Plants at which production of portland cement was by simply regrinding of one type into another or which reported production only of masonry cement.

[10]For 2011, data for the category "Both" have been included in those for "Dry" plants to protect company proprietary information.

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

(Thousand metric tons)

Destination and origin	Portland cement		Masonry cement	
	2010	2011	2010	2011
Destination:				
Alabama	1,009	1,000	77	74
Alaska[3]	137	142	--	--
Arizona	1,477	1,476	22	20
Arkansas	757	736	38	34
California, northern	2,081	2,415	35	33
California, southern	4,137	4,475	145	131
Colorado	1,467	1,402	6	4
Connecticut[3]	469	477	11	10
Delaware[3]	172	172	4	4
District of Columbia[3]	109	178	(4)	(4)
Florida	3,486	3,403	211	220
Georgia	1,685	1,703	116	106
Hawaii[3]	262	260	3	2
Idaho	387	375	(4)	(4)
Illinois, excluding Chicago	1,413	1,402	10	8
Illinois, metropolitan Chicago[3]	1,020	1,034	14	15
Indiana	1,482	1,491	34	34
Iowa	1,431	1,597	1	1
Kansas	1,172	1,159	5	5
Kentucky	852	926	45	46
Louisiana[3]	2,742	2,348	48	49
Maine	185	183	2	1
Maryland	888	966	42	39
Massachusetts[3]	679	733	10	10
Michigan	1,554	1,470	40	42
Minnesota[3]	1,200	1,213	12	10
Mississippi[3]	774	758	39	35
Missouri	1,563	1,408	17	15
Montana	259	273	(4)	(4)
Nebraska	988	1,031	1	1
Nevada	897	927	6	5
New Hampshire[3]	185	193	7	7
New Jersey[3]	1,123	1,073	40	37
New Mexico	604	551	4	3
New York, eastern	456	437	9	9
New York, western[3]	657	706	14	14
New York, metropolitan[3]	1,189	1,175	50	47
North Carolina[3]	1,581	1,752	127	121
North Dakota[3]	408	595	1	1
Ohio	2,352	2,529	71	69
Oklahoma	1,432	1,512	39	38
Oregon	609	654	(4)	(4)
Pennsylvania, eastern	1,436	1,512	37	35
Pennsylvania, western	979	1,006	32	31
Rhode Island[3]	93	107	1	1
South Carolina	931	994	61	56
South Dakota	447	468	(4)	(4)
Tennessee	1,230	1,213	103	99
Texas, northern	4,713	4,811	73	68
Texas, southern	5,392	5,637	153	149
Utah	1,023	1,156	(4)	(4)
Vermont[3]	103	101	1	1
Virginia	1,368	1,449	76	71

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	
	2010	2011	2010	2011
Destination:				
Washington	1,322	1,356	22	(4)
West Virginia	426	487	12	13
Wisconsin[3]	1,431	1,526	9	8
Wyoming	322	300	(4)	--
Total[5]	68,544	70,434	1,915	1,836
Puerto Rico	808	838	(4)	(4)
Foreign countries[6]	707	1,132	3	1
Grand total[5]	70,059	72,404	1,918	1,837
Origin:				
United States	64,358	66,622	1,897	1,816
Puerto Rico	731	757	(4)	(4)
Foreign countries[7]	5,701	5,782	21	21
Total shipments[5]	70,059	72,404	1,918	1,837

-- Zero.

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

[2]Data are developed from consolidated monthly surveys of shipments by companies and may differ from data in tables 1, 10–12, and 14–15, which are from annual surveys of individual plants and importers. Although presented unrounded, data are thought to be accurate to no more than three significant digits.

[3]Has no cement plants. The sole plant in Mississippi was idle for both years.

[4]Less than ½ unit.

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

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

[7]Imported cement 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[4]
	In bulk	In bags[3]	In bulk	In bags[3]	In bulk	In bags[3]	
2010:							
Railroad	8,980	6	1,660	10	467	4	2,140
Truck	3,570	83	37,600	966	27,200	307	66,100
Barge and boat	6,270	15	67	--	93	58	218
Total[4]	18,800	105	39,300	977	27,800	370	68,400 [5]
2011:							
Railroad	10,100	4	875	(6)	373	3	1,251
Truck	3,740	115	36,000	894	30,800	400	68,100
Barge and boat	8,800	--	96	--	806	--	902
Total[4]	22,600	119	37,000	894	32,000	403	70,300 [5]

-- Zero.

[1]Includes imported cement and cement made from imported clinker. Excludes Puerto Rico.

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

[3]Includes packages, bags, and supersacks.

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

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

[6]Less than ½ unit.

TABLE 11
PORTLAND CEMENT SHIPPED IN THE UNITED STATES, BY DISTRICT[1]

District[4]	2010			2011		
		Value[2]			Value[2]	
	Quantity[3] (thousand metric tons)	Total (thousands)	Average (per metric ton)	Quantity[3] (thousand metric tons)	Total (thousands)	Average (per metric ton)
Maine and New York	2,459	$225,563	$91.72	2,175	$202,409	$93.06
Pennsylvania	3,887	369,000 [5]	95.00 [5]	3,916	356,000 [5]	91.00 [5]
Illinois	2,016	179,580	89.07	1,870	167,569	89.62
Indiana	1,907	153,623	80.55	1,932	150,597	77.94
Michigan	3,920 [5]	393,000 [5]	100.50 [5]	3,894	384,806	98.81
Ohio	598	55,111	92.18	651	57,382	88.16
Iowa, Nebraska, South Dakota	3,017	311,194	103.13	3,303	325,836	98.65
Kansas	1,596	155,919	97.66	1,452	140,423	96.68
Missouri	6,253	517,000 [5]	82.50 [5]	6,500	514,834	79.20
Florida	3,260 [5]	295,000 [5]	90.50 [5]	3,143	276,081	87.85
Georgia, Maryland, Virginia, West Virginia	3,978	334,768	84.16	4,358	334,753	76.81
South Carolina	1,894	164,338	86.78	2,534	200,566	79.16
Alabama	3,024	252,000 [5]	83.00 [5]	4,683 [6]	400,624 [6]	85.55 [6]
Kentucky, Mississippi, Tennessee	1,740	162,965	93.65	W [6]	W [6]	W [6]
Arkansas and Oklahoma	2,254	219,468	97.38	2,228	204,695	91.89
Texas, northern	4,511	412,000 [5]	91.00 [5]	4,732	454,000	96.00
Texas, southern	5,300	455,862	86.01	5,484	473,661	86.37
Arizona and New Mexico	1,786	199,318 [r]	111.60 [r]	1,704	171,136	100.40
Colorado and Wyoming	2,090 [5]	194,000 [5]	93.00 [5]	1,925	184,478	95.83
Idaho, Montana, Nevada, Utah	1,971	182,061	92.36	2,179	193,491	88.82
Alaska and Hawaii	357	57,700 [5]	162.00 [5]	359	54,045	150.47
California	6,880 [5]	543,000 [5]	79.00 [5]	7,414	558,000 [5]	75.50 [5]
Oregon and Washington	1,244	111,988	90.05	1,480 [5]	137,000 [5]	92.50 [5]
Importers[7]	2,480 [5]	289,000 [5]	116.50 [5]	2,360 [5]	257,000 [5]	109.00 [5]
Total or average[8]	68,400 [5]	6,230,000 [r, 5]	91.00 [5]	70,300 [5]	6,200,000 [5]	88.00 [5]
Puerto Rico	830	W	W	839	W	W
Grand total[8]	69,300 [5]	W	W	71,100 [5]	W	W

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

[1]Includes 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.

[2]Values 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, accurate to no more than the nearest $0.50 or $1.00 per metric ton.

[3]Tonnages 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.

[4]District 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 assignations were possible.

[5]Data are rounded to three significant digits (unit values to the nearest $0.50) because they include estimates.

[6]For 2011, data for Kentucky, Mississippi, and Tennessee are included with those for Alabama.

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

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

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

District[5]	2010 Quantity[4] (thousand metric tons)	2010 Value[3] Total (thousands)	2010 Value[3] Average (per metric ton)	2011 Quantity[4] (thousand metric tons)	2011 Value[3] Total (thousands)	2011 Value[3] Average (per metric ton)
Maine and New York	46	$4,712	$101.96	46	$4,314	$94.58
Pennsylvania	172	20,600 [6]	120.00 [6]	159	22,200 [6]	140.00 [6]
Illinois, Indiana, Ohio	213	30,800 [6]	145.00 [6]	219	29,793	136.24
Michigan	78	9,680 [6]	123.50 [6]	67	9,088	135.45
Iowa, Nebraska, South Dakota	1	98	100.88	1	104	98.25
Kansas and Missouri	92 [6]	12,000 [6]	129.50 [6]	82 [6]	11,649	142.83
Florida	191	25,230	131.92	187	24,600 [6]	132.00 [6]
Georgia, Maryland, Virginia, West Virginia	199	34,143	171.68	191	32,378	169.50
South Carolina	163	19,536	120.19	151	19,382	128.22
Alabama	192	24,448	127.48	241 [7]	32,072 [7]	133.06 [7]
Kentucky, Mississippi, Tennessee	55	8,033	144.87	W [7]	W [7]	W [7]
Arkansas and Oklahoma	93	11,286	121.14	82	9,571	116.71
Texas	187	25,100 [6]	134.50 [6]	178	23,800 [6]	134.00 [6]
Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming	32	4,418 [r]	136.56 [r]	26	3,202	122.14
Alaska and Hawaii	3	796 [6]	286.50 [6]	2	692	308.70
California, Oregon, Washington	185	20,177	109.34	164	17,845	109.02
Importers[8]	6 [6]	1,070 [6]	174.00 [6]	11 [6]	2,090 [6]	193.50 [6]
Total or average[9]	1,910 [6]	252,000 [6]	132.00 [6]	1,810 [6]	243,000 [6]	134.50 [6]

[r]Revised.

[1]Shipments are those by cement companies to final customers and include imported cement and cement made from imported clinker. Excludes sales of masonry cement by portland cement final customers who made masonry cement from purchased portland cement. Data exclude Puerto Rico. Even where presented unrounded, data are thought to be accurate to no more than three significant digits.

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

[3]Values are mill net or ex-plant 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, accurate to no more than the nearest $0.50 or even $1.00 per metric ton.

[4]Tonnages 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.

[5]District 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 assignations were possible.

[6]Data are rounded to three significant digits (unit values to the nearest $0.50) because they include estimates.

[7]For 2011, data for Kentucky, Mississippi, and Tennessee are included with those for Alabama.

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

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

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

(Dollars per metric ton)

Year	Portland cement Gray	Portland cement White[3]	Portland cement All	Masonry cement	All cement
2010	90.00	199.00	91.00	132.00	92.00
2011	87.50	194.00	88.00	134.50	89.50

[1]Values 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.

[2]Data are rounded to the nearest $0.50 per metric ton.

[3]Data for white cement include a component of resales showing significant price markups.

TABLE 14

PORTLAND CEMENT SHIPMENTS IN 2011, BY DISTRICT AND TYPE OF CUSTOMER[1]

(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	1,600	264	85	189	--	35	2,175
Pennsylvania	2,180	1,000	361	164	41	165	3,916
Illinois	1,170	110	141	6	332	108	1,870
Indiana	1,290	210	309	43	16	63	1,932
Michigan	3,110	336	279	155	10	6	3,894
Ohio	504	55	70	12	8	2	651
Iowa, Nebraska, South Dakota	2,560	278	329	10	131	(6)	3,303
Kansas	1,110	122	122	38	59	--	1,452
Missouri	4,860	663	555	76	149	198	6,500
Florida	2,230	617	107	129	7	52	3,143
Georgia, Maryland, Virginia, West Virginia	2,970	830	356	107	3	90	4,358
South Carolina	1,740	298	200	104	6	191	2,534
Alabama, Kentucky, Mississippi, Tennessee	3,500	512	401	147	42	79	4,683
Arkansas and Oklahoma	1,370	141	475	99	136	9	2,228
Texas, northern	2,600	350	695	105	905	73	4,732
Texas, southern	3,650	477	536	181	636	4	5,484
Arizona and New Mexico	1,310	275	64	35	16	3	1,704
Colorado and Wyoming	1,330	155	206	45	180	7	1,925
Idaho, Montana, Nevada, Utah	1,450	192	230	71	211	23	2,179
Alaska and Hawaii	328	29	3	--	--	--	359
California	5,430	760	327	654	112	135	7,414
Oregon and Washington	1,150	117	120	32	22	40	1,480 [7]
Importers[8]	1,670	246	193	31	134	85	2,360 [7]
Total[5]	49,100	8,040	6,160	2,430	3,160	1,370	70,300 [7]
Puerto Rico	439	70	38	292	--	--	839
Grand total[5]	49,600	8,110 [9]	6,200 [10]	2,720	3,160 [11]	1,370	71,100 [7]

[1]Includes 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.

[2]District 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 where district assignations were possible.

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

[4]District totals are unrounded but are thought to be accurate to no more than three significant digits.

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

[6]Less than ½ unit.

[7]Data are rounded to three significant digits because they contain estimates.

[8]Shipments by importers where district assignations were not possible.

[9]Grand total shipments to concrete product manufacturers include brick and block—2,430; precast and prestressed—2,540; pipe—828; and other or unspecified—2,310.

[10]Grand total shipments to contractors include airport—101; road paving—3,350; soil cement—1,620; and other or unspecified—1,120.

[11]Grand total shipments include oil well drilling—2,700; mining—215; and waste stabilization—240.

TABLE 15

PORTLAND CEMENT SHIPMENTS IN THE UNITED STATES, BY TYPE OF CEMENT[1, 2, 3]

(Thousand metric tons)

Type[4]	2010	2011
General use and moderate heat (Types I and II)[5, 6]	53,500	54,500
High early strength (Type III)	2,590	2,550
Sulfate resisting (Type V)[5]	8,630	9,340
Block	154	147
Oil well	1,300	1,750
White[7]	638	635
Blended:[8]		
Portland, natural pozzolans	48	63
Portland, ground granulated blast furnace slag	953	679
Portland, fly ash	304	373
Portland, other pozzolans[9]	263	220
Total blended[10]	1,570	1,330
Expansive and regulated fast setting	18	21
Miscellaneous[11]	30	26
Grand total[10]	68,400	70,300

[1]Includes sales of imported cement. Excludes Puerto Rico.

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

[3]Gray portland-type cements unless otherwise specified.

[4]Sold mostly under specifications ASTM C–150, ASTM C–595, and ASTM C–1157.

[5]Type II/V and similar sulfate-resisting hybrids are included within Type V.

[6]Includes ASTM C–1157 general use cements that contain no pozzolans.

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

[8]Cements sold under ASTM C–595 and those under ASTM C–1157 that contain pozzolans.

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

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

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

TABLE 16
U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

Country	2010		2011	
	Quantity	Value[2]	Quantity	Value[2]
Angola	1	1,153	(3)	114
Aruba	1	157	1	231
Australia	1	404	2	518
Bahamas, The	99	9,063	112	9,137
Belize	7	693	1	218
Bermuda	(3)	152	5	398
Brazil	3	213	2	1,960
Canada	807	113,598	1,010	133,997
Cayman Islands	1	103	(3)	139
Chile	1	371	2	309
China	2	955	(3)	125
Colombia	2	715	14	2,056
Costa Rica	3	135	2	121
Dominican Republic	1	483	10	1,478
Ecuador	(3)	21	1	366
Georgia	(3)	161	1	293
Greece	14	637	8	355
Haiti	13	1,056	53	3,805
Hong Kong	1	402	(3)	160
India	2	264	1	128
Ireland	6	367	--	--
Israel	1	262	1	264
Jamaica	66	6,556	64	6,432
Japan	11	2,526	5	1,078
Madagascar	1	60	--	--
Mexico	39	8,914	46	9,538
Netherlands	(3)	28	17	931
Netherlands Antilles	2	366	5	689
New Zealand	(3)	51	2	678
Panama	67	8,051	23	2,506
Peru	1	364	(3)	177
Russia	(3)	90	2	209
Saudi Arabia	(3)	1,252	1	3,348
Singapore	(3)	434	1	278
Sint Maarten	--	--	9	1,259
Spain	1	66	(3)	60
St. Christopher and Nevis	(3)	57	1	108
Suriname	1	108	--	--
Taiwan	1	3,099	(3)	328
Trinidad and Tobago	1	346	(3)	214
Turks and Caicos Islands	8	759	3	325
United Arab Emirates	(3)	415	2	396
United Kingdom	9	1,614	1	195
Venezuela	(3)	78	1	158
Other	3 r	1,711 r	4	1,823
Total[4]	1,178	168,308	1,414	186,902
Puerto Rico:				
British Virgin Islands	4	664	19	1,887
Curacao	--	--	5	361
Jamaica	--	--	13	849

See footnotes at end of table.

TABLE 16—Continued
U.S. EXPORTS OF HYDRAULIC CEMENT AND CLINKER, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

Country	2010		2011	
	Quantity	Value[2]	Quantity	Value[2]
Netherlands	--	--	2	185
Netherlands Antilles	3	231	--	--
St. Lucia	(3)	3	(3)	3
Total[4]	7	898	39	3,285
Grand Total[4]	1,185	169,206	1,453	190,187

[r]Revised. -- Zero.

[1]Includes portland and masonry cements. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Free alongside ship value. The value of exports at the U.S. seaport or border point of export is based on the transaction price, including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier. The value excludes the cost of loading the carrier.

[3]Less than ½ unit.

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

Source: U.S. Census Bureau.

TABLE 17

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

(Thousand metric tons and thousand dollars)

Country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Algeria	9	811	1,135	--	--	--
Canada	3,410	265,248	283,314	3,416	259,853	276,332
China	655	34,975	51,111	577	32,462	48,435
Colombia	315	19,652	27,367	224	12,620	18,674
Croatia	24	9,459	11,346	33	12,011	14,307
Denmark	54	9,653	13,262	74	7,534	9,582
Egypt	56	5,160	7,097	71	7,093	9,846
France	91	31,318	32,960	72	25,236	25,748
Germany	(4)	185	253	2	446	581
Greece	191	9,173	11,918	--	--	--
India	1	68	102	(4)	47	68
Jamaica	--	--	--	16	5,158	5,234
Japan	28	2,348	2,552	1	830	941
Korea, Republic of	1,018	39,214	61,801	1,402	54,563	86,100
Mexico	370	36,703	40,138	354	38,455	43,271
Netherlands	3	3,363	3,735	3	3,402	3,605
Sweden	83	3,524	6,804	81	3,212	6,445
Taiwan	265	11,242	17,825	65	2,551	4,241
Thailand	16	2,159	3,382	11	1,607	2,379
Trinidad and Tobago	8	544	551	12	814	824
Turkey	21	1,881	2,637	1	280	335
United Kingdom	1	171	290	1	337	408
Venezuela	8	2,648	3,405	--	--	--
Other	(4) r	261 r	302 r	(4)	425	540
Total[5]	6,626	489,762	583,288	6,418	468,937	557,896
Puerto Rico:						
Colombia	7	898	1,172	5	657	851
Korea, Republic of	27	1,350	2,322	--	--	--
Mexico	12	1,393	1,970	14	1,503	2,215
Spain	109	7,206	9,166	106	6,888	8,795
Other	(4)	80	92	(4)	56	83
Total[5]	155	10,927	14,721	125	9,104	11,944
Grand total[5]	6,781	500,689	598,009	6,543	478,041	569,840

rRevised. -- Zero.

[1]Includes portland, masonry, and other hydraulic cements. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Less than ½ unit.

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

Source: U.S. Census Bureau.

TABLE 18

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

(Thousand metric tons and thousand dollars)

Customs district and country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Anchorage, AK:						
Canada	5	298	1,017	6	344	1,206
China	12	842	842	--	--	--
Korea, Republic of	95	3,968	7,676	100	4,159	7,874
Total[4]	112	5,108	9,536	106	4,502	9,081
Baltimore, MD:						
China	1	18	22	1	38	44
Netherlands	(5)	39	43	(5)	135	142
Total[4]	1	57	64	1	172	185
Boston, MA:						
Canada	23	1,010	1,693	4	155	245
Other	(5)	36	37	--	--	--
Total[4]	23	1,046	1,731	4	155	245
Buffalo, NY:						
Canada	590	49,366	52,718	555	46,598	49,209
Other	(5)	24	24	(5)	17	17
Total[4]	590	49,390	52,742	555	46,616	49,227
Charleston, SC, Other	(5)	71	82	--	--	--
Chicago, IL, Other	1	744	865	1	727	767
Cleveland, OH:						
Canada	554	40,960	44,235	486	34,368	36,974
China	(5)	5	8	1	141	225
Netherlands	(5)	591	651	1	768	826
Other	(5)	204	291	(5)	192	252
Total[4]	555	41,759	45,185	488	35,468	38,277
Columbia-Snake, ID, OR, WA:						
Canada	56	3,802	4,007	45	2,743	3,018
China	277	12,893	20,154	298	14,384	22,380
Other	(5)	8	8	--	--	--
Total[4]	332	16,703	24,169	343	17,127	25,398
Detroit, MI:						
Canada	939	72,812	78,669	947	73,028	79,014
Other	(5)	175	192	(5)	329	346
Total[4]	939	72,988	78,862	947	73,356	79,360
Duluth, MN, France	(5)	3	3	--	--	--
El Paso, TX:						
Canada	(5)	33	36	(5)	72	90
Mexico	266	23,407	25,705	204	20,882	23,573
Total[4]	266	23,440	25,741	205	20,954	23,662
Great Falls, MT, Other	(5)	189	227	(5)	79	109
Honolulu, HI:						
Korea, Republic of	165	7,278	10,421	290	12,753	18,673
Taiwan	112	4,928	7,537	--	--	--
Other	(5)	15	24	(5)	2	3
Total[4]	277	12,221	17,983	290	12,756	18,676
Houston-Galveston, TX:						
China	4	390	402	3	503	530
Colombia	9	1,239	1,514	4	562	716
Egypt	28	2,591	3,543	32	3,236	4,386
Korea, Republic of	571	21,418	34,614	658	24,844	41,305
Other	1	404	484	1	445	580
Total[4]	612	26,041	40,558	699	29,590	47,516

See footnotes at end of table.

TABLE 18—Continued

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

(Thousand metric tons and thousand dollars)

Customs district and country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Laredo, TX, Mexico	88	11,887	12,441	88	11,660	11,938
Los Angeles, CA:						
China	26	2,926	3,149	25	2,813	3,643
Croatia	(5)	141	195	3	176	275
Egypt	3	255	349	6	608	903
Thailand	10	1,322	2,064	7	1,047	1,523
Other	(5)	61	108	(5)	81	117
Total[4]	39	4,706	5,864	42	4,724	6,460
Miami, FL:						
Algeria	9	811	1,135	--	--	--
Colombia	5	735	877	4	525	693
Egypt	15	1,402	1,954	24	2,319	3,319
Germany	--	--	--	1	33	35
Mexico	15	1,372	1,915	61	5,886	7,731
Sweden	82	3,057	6,230	80	2,685	5,831
Turkey	21	1,871	2,628	(5)	54	92
Other	(5)	27	30	(5)	20	33
Total[4]	147	9,276	14,769	170	11,529	17,740
Minneapolis, MN:						
Canada	118	13,923	13,937	103	12,810	12,822
Other	(5)	5	6	(5)	15	19
Total[4]	118	13,929	13,943	103	12,824	12,841
Mobile, AL, China	--	--	--	(5)	52	52
New Orleans, LA:						
China	9	1,990	2,165	6	1,353	1,528
Croatia	22	8,891	10,567	30	11,802	13,987
Korea, Republic of	47	1,533	3,056	139	4,741	7,182
Other	(5)	25	28	(5)	2	3
Total[4]	78	12,438	15,816	175	17,898	22,699
New York City, NY:						
Denmark	21	2,137	2,758	24	2,620	3,355
Greece	191	9,173	11,918	--	--	--
Other	1	338	423	1	473	580
Total[4]	213	11,648	15,099	25	3,093	3,935
Nogales, AZ, Mexico	--	--	--	(5)	5	5
Norfolk, VA:						
Canada	13	1,366	1,454	--	--	--
Egypt	1	122	177	3	297	395
France	91	31,175	32,792	72	25,143	25,627
Jamaica	--	--	--	13	4,946	5,019
Sweden	1	342	421	1	513	600
Venezuela	8	2,648	3,405	--	--	--
Other	(5)	15	15	(5)	390	431
Total[4]	113	35,667	38,264	90	31,289	32,072
Ogdensburg, NY:						
Canada	174	14,839	15,398	184	16,972	17,445
Other	(5)	13	14	(5)	5	5
Total[4]	174	14,852	15,412	184	16,977	17,450
Pembina, ND:						
Canada	167	10,701	10,787	191	11,546	11,646
Germany	--	--	--	(5)	37	37
Total[4]	167	10,701	10,787	191	11,583	11,683

See footnotes at end of table.

TABLE 18—Continued

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

(Thousand metric tons and thousand dollars)

Customs district and country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Philadelphia, PA:						
Korea, Republic of	139	5,018	6,033	157	5,477	6,992
Netherlands	1	1,261	1,400	1	646	690
Other	(5)	59	105	(5)	24	43
Total[4]	141	6,337	7,538	158	6,146	7,725
Portland, ME:						
Canada	26	2,372	2,676	28	2,808	3,138
Japan[6]	27 [6]	1,332	1,332	--	--	--
Total[4]	53	3,705	4,009	28	2,808	3,138
Providence, RI, Canada	40	2,290	3,404	4	196	287
San Diego, CA, Mexico	--	--	--	(5)	23	25
San Francisco, CA:						
China	42	2,555	3,168	9	1,025	1,175
Egypt	2	182	265	1	68	90
India	1	68	102	(5)	35	53
Taiwan	153	6,314	10,288	65	2,551	4,241
Thailand	6	799	1,260	4	529	814
Turkey	--	--	--	(5)	8	10
Total[4]	203	9,919	15,083	79	4,216	6,383
Savannah, GA:						
Colombia	149	8,447	12,201	112	5,885	8,746
Egypt	7	608	809	6	565	753
Other	(5)	255	282	(5)	457	487
Total[4]	156	9,310	13,292	118	6,907	9,986
Seattle, WA:						
Canada	630	43,279	44,627	761	49,043	51,629
China	285	13,170	20,940	234	12,071	18,755
Japan	1	550	703	1	432	498
Korea, Republic of	--	--	--	58	2,589	4,074
Other	(5)	116	139	(5)	212	231
Total[4]	916	57,115	66,410	1,053	64,347	75,187
St. Albans, VT:						
Canada	75	8,181	8,640	59	6,532	6,881
South Africa, Republic of	(5)	7	7	--	--	--
Total[4]	75	8,188	8,647	59	6,532	6,881
St. Louis, MO:						
Croatia	1	371	508	--	--	--
Other	(5)	501	571	(5)	403	425
Total[4]	1	872	1,079	(5)	403	425
Tampa, FL:						
Colombia	22	1,640	2,089	1	139	196
Denmark	34	7,510	10,497	50	4,914	6,227
Total[4]	56	9,150	12,586	51	5,054	6,423
U.S. Virgin Islands:						
Colombia	13	291	302	1	106	113
Dominican Republic	--	--	--	3	212	215
Trinidad and Tobago	8	544	551	12	814	824
Total[4]	21	835	853	16	1,133	1,152
Wilmington, NC:						
Colombia	117	7,270	10,343	102	5,356	8,153
Netherlands	(5)	19	20	(5)	43	45
Total[4]	117	7,289	10,363	102	5,400	8,198
U.S. total[4]	6,626 [6]	489,762	583,288	6,418	468,937	557,896

See footnotes at end of table.

TABLE 18—Continued

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

(Thousand metric tons and thousand dollars)

Customs district and country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
San Juan, PR:						
Colombia	7	898	1,172	5	657	851
Korea, Republic of	27	1,350	2,322	--	--	--
Mexico	12	1,393	1,970	14	1,503	2,215
Spain	109	7,206	9,166	106	6,888	8,795
Other	(5)	80	92	(5)	56	83
Total[4]	155	10,927	14,721	125	9,104	11,944
Grand total[4]	6,781 [6]	500,689	598,009	6,543	478,041	569,840

-- Zero.

[1]Includes all varieties of hydraulic cement and clicker. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

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

[5]Less than ½ unit.

[6]Material (27,070 metric tons in August 2010) from Japan into Portland, ME, was granulated blast furnace slag, not hydraulic cement as recorded in error by the importer.

Source: U.S. Census Bureau.

TABLE 19

U.S. IMPORTS FOR CONSUMPTION OF GRAY PORTLAND CEMENT, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

Country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Canada	2,626	199,772	216,660	2,601	193,840	209,122
China	606	28,532	44,096	532	26,446	41,127
Colombia	274	15,638	22,335	215	11,348	17,012
Germany	(4)	58	102	1	157	180
Greece	191	9,173	11,918	--	--	--
Jamaica	--	--	--	3	212	215
Korea, Republic of	1,017	39,169	61,707	1,402	54,539	86,072
Mexico	184	12,311	13,833	88	5,948	7,501
Sweden	82	3,057	6,230	80	2,685	5,831
Taiwan	265	11,242	17,825	65	2,551	4,241
Trinidad and Tobago	8	544	551	12	814	824
Other	(4)	169	190	(4)	297	330
Total[5, 6]	5,254	319,665	395,448	4,999	298,838	372,455
Puerto Rico:		--	--		--	--
Dominican Republic	(4)	2	2	--	--	--
Korea, Republic of	27	1,350	2,322	--	--	--
Spain	109	7,186	9,146	106	6,888	8,795
Total[5, 6]	136	8,539	11,470	106	6,888	8,795
Grand total[5, 6]	5,390	328,204	406,918	5,105	305,726	381,250

-- Zero.

[1]Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Less than ½ unit.

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

[6]Total imports do not include gray portland cement that was misregistered by importers under the white cement tariff code; these quantities are included in table 20.

Source: U.S. Census Bureau.

TABLE 20
U.S. IMPORTS FOR CONSUMPTION OF WHITE CEMENT, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

Country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3, 4]	Quantity	Customs[2]	C.i.f.[3, 4]
Algeria	9	811	1,135	--	--	--
Canada	252	34,814	35,573	271	37,494	38,264
China	38	4,105	4,407	37	4,011	4,973
Colombia	20	2,792	3,278	9	1,272	1,662
Denmark	54	9,647	13,255	74	7,534	9,582
Egypt	56	5,160	7,097	71	7,093	9,846
India	1	68	102	(5)	43	61
Mexico	121	16,560	17,832	163	20,198	22,445
Thailand	16	2,149	3,369	11	1,591	2,359
Turkey	21	1,871	2,628	1	81	136
Other	1	197	362	1	212	319
Total[6]	588	78,173	89,038	639	79,529	89,648
Puerto Rico:						
Colombia	7	898	1,172	5	657	851
Mexico	12	1,393	1,970	14	1,503	2,215
Other	(5)	51	54	(5)	15	20
Total[6]	19	2,342	3,195	19	2,175	3,086
Grand total[6]	607	80,515	92,233	658	81,705	92,733

-- Zero.

[1]Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Customs value. The price actually paid or payable for merchandise when sold for exportation to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States.

[3]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Values of less than $90.00 (c.i.f.) per metric ton likely indicate the mistaken total or partial inclusion of data for gray portland or similar cement or clinker. This error happens when the importer records the wrong tariff number with the U.S. Customs Service. Values that exceed $200 per ton likely indicate misidentified specialty cement, not white cement.

[5]Less than ½ unit.

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

Source: U.S. Census Bureau.

TABLE 21
U.S. IMPORTS FOR CONSUMPTION OF CLINKER, BY COUNTRY[1]

(Thousand metric tons and thousand dollars)

Country	2010			2011		
		Value			Value	
	Quantity	Customs[2]	C.i.f.[3]	Quantity	Customs[2]	C.i.f.[3]
Canada	501	27,512	27,799	531	26,394	26,695
China	1	175	231	1	72	92
Colombia	21	1,222	1,754	--	--	--
Croatia	--	--	--	3	152	235
France	89	29,595	31,090	70	23,369	23,728
Other	(4)	7	7	(4)	47	69
Total[5]	613	58,511	60,882	606	50,034	50,819

-- Zero.

[1]For all types of hydraulic cement. Data are unrounded but are thought to be accurate to no more than three significant digits.

[2]Cost, insurance, and freight. The value represents the customs value plus insurance, freight, and other delivery charges to the first port of entry, but excludes costs of offloading, other U.S. port handling charges, and demurrage.

[4]Less than ½ unit.

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

Source: U.S. Census Bureau.

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

(Thousand metric tons)

Country	2007	2008	2009	2010	2011[e]
Afghanistan	30 [r, e]	37	32	36	38
Albania	889	918	1,108	1,300 [e]	1,300
Algeria	15,886	17,398	18,730 [r]	19,100 [r]	20,000
Angola[e]	1,400	1,780	1,800	1,500	1,500
Argentina	9,602	9,703	9,385 [r]	10,423 [r]	11,592 [3]
Armenia	722	770	467	488	500
Australia[e]	9,200	9,400	9,200	9,000	9,100
Austria	5,203	5,309	4,646	4,254	4,427 [3]
Azerbaijan	1,693	1,595	1,286	1,279	1,450
Bahrain[e]	400 [3]	438 [3]	700	700 [r]	800
Bangladesh[e]	5,100	5,000	5,000	5,000	5,000
Barbados	294	316	301	300 [e]	300
Belarus	3,821	4,219	4,350	4,531	4,700
Belgium	9,571	6,225	9,403	8,722	8,700
Benin[e]	1,550	1,500	1,500	1,430 [r]	800
Bhutan[e]	180	180	180	200 [r]	200
Bolivia	1,739	1,985	2,292	2,414	2,658 [3]
Bosnia and Herzegovina	1,283	1,406	1,074	949	893 [3]
Brazil	46,551	51,970	51,748	59,118	64,093 [3]
Brunei[e]	200	240	220	220	230
Bulgaria	4,413	4,903	2,662	1,966 [r]	1,900
Burkina Faso[e]	30	30	30	30	30
Burma[4]	608	676	670	534	535
Cambodia	87	772	934 [r]	789 [r]	790
Cameroon[e]	1,150 [3]	1,000	1,000	1,000	1,000
Canada	15,078	13,672	10,985	12,431	12,001 [p, 3]
Chile	4,440	4,622	3,876	3,871	4,406 [3]
China	1,361,170	1,400,000	1,644,000	1,820,000 [r]	2,099,000 [p, 3]
Colombia[5]	11,068	10,456	9,232	9,488	10,777 [3]
Congo (Brazzaville)[e]	100	105	110	80 [r]	100
Congo (Kinshasa)	530	411	460 [r]	490 [r]	382 [3]
Costa Rica	2,300	2,500	1,498	1,276	1,600
Côte d'Ivoire	469	360	283	280 [e]	300
Croatia	3,587	3,637	2,838	2,664	2,700
Cuba	1,805	1,707	1,626	1,600 [e]	1,600
Cyprus	1,873	1,900 [r, e]	1,481	1,329	1,400
Czech Republic	4,899	4,710	3,637	3,345	3,830
Denmark	2,871	2,539	1,578	2,000 [e]	1,800
Dominican Republic[e]	4,100	4,000	3,000	3,000	3,000
Ecuador	4,420	5,493	4,990 [r]	5,500 [r, e]	6,000
Egypt	40,400 [r]	39,844	46,900 [r]	47,800 [r]	44,000
El Salvador[e]	1,300	1,300	1,212 [3]	1,200	1,200
Eritrea[e]	45	45	45	45	45
Estonia	937	808	326	375 [e]	375
Ethiopia[e]	1,626 [3]	1,834 [3]	2,100 [r]	2,900 [r]	4,000
Fiji[e]	145	143	110	120 [r]	120
Finland	1,743	1,745	1,052	1,050 [e]	1,050
France	22,300 [e]	21,443 [r]	18,300	17,998 [r]	19,433 [3]
French Guiana[e]	62	62	62	62	62
Gabon[e]	229 [3]	230	250 [r]	200 [r]	200
Georgia[e]	450	450	870 [3]	857 [3]	865
Germany	33,382	33,581	30,441	29,915 [r]	33,540 [3]
Ghana[e]	1,800	1,800	1,800	2,400 [r]	3,000

See footnotes at end of table.

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

(Thousand metric tons)

Country	2007	2008	2009	2010	2011[e]
Greece[e]	16,667 [3]	16,500	16,000	15,000	14,000
Guadeloupe[e]	230	230	230	230	230
Guatemala[e]	2,500	2,500	2,750 [r]	2,000 [r]	1,500
Haiti[e]	290	290	290	290	290
Honduras[e]	1,776 [3]	1,784 [3]	1,700 [r]	1,800	1,710 [3]
Hong Kong[e]	1,000	1,000	1,000	1,000	1,000
Hungary[e]	3,552 [3]	3,544 [3]	3,200	3,200	3,200
Iceland[e]	140	138	138	138	140
India[e]	170,000	185,000	205,000	220,000 [r]	240,000
Indonesia[e]	36,000	36,000	22,195 [3]	28,000 [r]	30,000
Iran[e]	41,000	44,400 [3]	50,000	55,000 [r]	61,000
Iraq[e]	4,500	6,453 [3]	6,500 [r]	6,500 [r]	8,000
Ireland[e]	4,700	3,900	2,600	2,600	2,600
Israel	5,000 [e]	4,819	4,759	5,139	5,200
Italy	47,542	43,030	36,317	34,408 [r]	33,120 [3]
Jamaica	592	725	737	723	700
Japan	67,685	62,810	54,800	51,526	51,291 [3]
Jordan	4,255 [r]	4,375 [r]	3,876 [r]	3,929 [r]	4,000
Kazakhstan	5,699	5,837	5,694	6,686	7,642 [3]
Kenya	2,546	2,829	3,320	3,710 [r]	3,969 [3]
Korea, North[e]	6,130	6,415 [3]	6,400	6,400	6,400
Korea, Republic of	52,182	51,653	50,127	47,420 [r]	48,300 [3]
Kosovo[e, 6]	470 [3]	590 [3]	600	600	600
Kuwait[e]	2,200	2,600	2,000	2,000	2,250
Kyrgyzstan	1,230	1,218	579	600 [e]	650
Laos[e]	400	400	400	400	400
Latvia[e]	300	310	650	1,100	1,100
Lebanon	3,945	4,250	4,900	5,227	5,500
Liberia	157	94	71	72 [r]	61 [3]
Libya	5,206	5,509	6,500	6,000 [e]	3,000
Lithuania	1,105	1,076	583	834	834
Luxembourg	1,081	1,091	1,000	1,078	1,100
Macedonia	945	916	909	820 [r]	981 [3]
Madagascar[e]	270 [3]	360 [r]	390 [r]	420 [r]	420
Malawi	185	230 [r, e]	232 [r]	188 [r]	203 [3]
Malaysia	19,480	19,629	19,457	19,762 [r]	19,500
Martinique[e]	220	220	220	220	220
Mauritania	410	322	340	350 [e]	400
Mexico	38,757	37,139	35,160	34,503 [r]	35,400 [3]
Moldova[e]	800	750	700	900 [r]	900
Mongolia	180	269	235	323	300
Morocco	12,792	14,047	14,519	14,000 [e]	12,000
Mozambique[7]	665	744	777	884	976 [3]
Namibia	--	--	--	5 [e]	250
Nepal[e, 4]	300	295	295	295	295
Netherlands[e]	2,700	2,700	2,700	2,700	2,700
New Caledonia	122	137	138	160	150
New Zealand[e]	1,100	1,100	1,100	1,200	1,100
Nicaragua[e]	530	530	650 [r, 3]	600 [r]	600
Niger[e]	42	40	40	40	40
Nigeria	4,700	5,000	5,000	6,000 [r]	11,600
Norway[e]	1,700	1,700	1,650	1,650	1,600

See footnotes at end of table.

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

(Thousand metric tons)

Country	2007	2008	2009	2010	2011[e]
Oman	3,880	3,991	4,000 [e]	4,500 [r]	4,500
Pakistan[e]	25,745 [3]	30,800 [r]	32,800 [r]	32,800 [r]	32,000 [3]
Panama[e]	1,050	1,843 [3]	1,679 [3]	900 [r]	897 [3]
Paraguay[e]	600	600	600	600	600
Peru	6,231	6,922	6,862	8,396 [r]	8,100 [p]
Philippines	13,048	13,369	14,865	15,900 [e]	16,000
Poland	17,120	17,207	15,422 [r]	15,812 [r]	18,596 [3]
Portugal	12,631	6,650 [r]	6,900 [r]	7,200 [r]	7,500 [p]
Qatar[e]	2,400	3,800	4,095 [3]	3,780 [3]	4,000
Réunion[e]	400	400	375	375	350
Romania	10,060	10,660	7,902	7,008	7,000
Russia	59,939	53,548	44,266	50,400 [e]	55,600 [3]
Rwanda	103	103	92	95 [r]	94
Saudi Arabia	30,369	31,823	36,500	42,300	48,358 [3]
Senegal	3,152	3,084	3,320 [r]	4,066 [r]	4,000
Serbia[8]	2,677	2,843	2,232	2,130 [r]	2,095 [3]
Sierra Leone	247 [r]	254	236	301 [r]	311 [3]
Slovakia	3,718	4,157	3,011	2,888	2,900
Slovenia[e]	1,300	1,300	1,000	1,000	1,000
South Africa, sales	13,651	13,473	11,784	10,870 [r]	11,234 [3]
Spain, including Canary Islands	54,720	42,083 [r]	29,505	26,162 [r]	22,178 [3]
Sri Lanka[e]	1,700	1,800	1,900	2,000	2,200
Sudan	326	247	622	2,113 [r]	5,200
Suriname[e]	65	65	65	65	62
Sweden[e]	2,950 [3]	2,900	2,950	2,900	2,900
Switzerland[e]	4,000	4,000	4,000	4,000	3,800
Syria	5,104	5,336	5,605	6,000	6,000
Taiwan	18,957	17,330	15,918	16,301	16,852 [3]
Tajikistan	313	190	195	288	300
Tanzania	1,630	1,756	1,941	2,312 [r]	2,400
Thailand	35,668	31,651	33,562	36,496	36,679 [3]
Togo[e, 9]	996 [r]	1,350 [r]	1,160 [r]	1,150 [r]	1,780
Trinidad and Tobago	902	958	870	800 [e]	800
Tunisia	7,052	7,559	7,511	8,070 [r]	8,000
Turkey	49,553	54,027	53,973	62,737	63,405 [3]
Turkmenistan	941	1,026	1,100	1,100 [e]	1,200
Uganda[e]	650	650	650	650	650
Ukraine	15,000	14,918	9,496	9,457	10,515 [3]
United Arab Emirates[e]	16,000	21,885 [3]	18,997 [3]	18,000	17,000
United Kingdom	11,887	10,071	7,623	7,882 [r]	8,529 [3]
United States, including Puerto Rico[10]	96,850	87,610	64,843	67,202 [r]	68,639 [3]
Uruguay[e]	620	620	1,050 [r]	1,000 [r]	1,000
Uzbekistan[e]	6,500 [3]	6,600	6,850	6,872 [3]	7,000
Venezuela[e]	8,000 [r]	8,200 [r]	8,500 [r]	8,000 [r]	7,700 [3]
Vietnam	37,102	40,009	48,810 [r]	55,789 [r]	58,994 [3]
Yemen	1,728	2,111	2,118	3,500 [r]	3,000
Zambia[e]	540	560	880	1,127 [r, 3]	1,400
Zimbabwe[e]	400	400	700	800 [r]	900
Total[e]	2,810,000 [r]	2,850,000 [r]	3,030,000 [r]	3,270,000 [r]	3,610,000

[e]Estimated. [p]Preliminary. [r]Revised. -- Zero.

[1]World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown. Even where presented unrounded, reported data are thought to be accurate to no more than three significant digits. Data are from a variety of sources, including the European Cement Association.

[2]Table includes data available through July 20, 2012. Data may include clinker exports for some countries.

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

[3]Reported figure.
[4]Data are for fiscal year ending March 31 of the following year.
[5]Data for 2007–08 are for gray cement only; white cement output was likely to have been an additional 50,000 to 100,000 tons per year.
[6]Not included in Serbia data.
[7]Cement sales from Cimentos de Moçambique SARL (Sociedade Anónima de Responsabilidade Limitada) only.
[8]Excludes Kosovo data.
[9]Calculated based on reported production of clinker and imports and exports of cement and clinker.
[10]Portland and masonry cements only. Includes a small (less than 0.3% per year) component of double-counting where portland cement (not clinker) is consumed to make masonry cement; the precise amount of double-counting can not be determined because of the involvement of portland cement stockpiles.