



2011 Minerals Yearbook

PERLITE [ADVANCE RELEASE]

PERLITE

By Wallace P. Bolen

Domestic survey data and tables were prepared by Joseph M. Krisanda, industry data analyst, and the world production table was prepared by Glenn J. Wallace, international data coordinator.

In 2011, the amount of domestic processed crude perlite sold or used and the amount of expanded perlite sold or used increased slightly compared with those of 2010. Compared with 2009, the lowest level of domestic production since 1964, the amount of processed crude perlite sold or used increased by about 21% in 2011. Domestic production of processed crude perlite was 420,000 metric tons (t), up from 414,000 t in 2010. Although continuing to improve, the 475,000 t of expanded perlite sold or used in 2011 remained below the peak levels seen in 2004 and 2005.

During 2011, imports of processed crude perlite increased by 11% to 193,000 t compared with those of 2010. This second consecutive year of increased perlite imports followed 3 consecutive years with declining imports after a record-high import level in 2006. Exports of crude processed perlite were estimated to have been about 36,000 t in 2011, decreasing by about 14% compared with those of 2010. Trade data in this report are from the U.S. Census Bureau and PIERS, a U.S. trade database compiled by the Journal of Commerce. Percentages in this report were computed using unrounded data.

Production

Domestic production data for perlite were compiled by the U.S. Geological Survey (USGS) from two voluntary annual surveys—one for domestic mine operations (processed crude perlite) and one for expanding plants. The expanding plants used domestic and imported processed crude perlite. The processed crude perlite in table 1 was produced by seven companies with nine mines, eight of which responded to the USGS survey, representing more than 99% of the processed crude perlite sold or used in 2011. One of the mines was inactive and was shipping from stockpiled perlite that was mined prior to 2011. According to data collected by the USGS, the 420,000 t of U.S.-processed crude perlite sold or used in 2011 was valued at \$23.6 million. This was a slight increase in tonnage but a 9.4% increase in value compared with that of 2010. The 475,000 t of expanded perlite sold or used by domestic producers was valued at \$140 million. Total expanded perlite sold and used was nearly unchanged, and the value decreased slightly compared with those of 2010 (table 1).

The processed crude perlite reported in table 1 was mined in Arizona, California, Idaho, Nevada, New Mexico, and Oregon. The mines in Arizona, New Mexico, and Oregon accounted for most of the tonnage mined. Ore producers were, in alphabetical order by State, Harborlite Corp. in Arizona and New Mexico; American Perlite Co. in California; Idaho Minerals, LLC in Idaho; EP Minerals, LLC and Wilkins Mining and Trucking, Inc. in Nevada; Dicapert Minerals Corp. in New Mexico; and Cornerstone Industrial Minerals Corp. in Oregon.

Perlite was expanded at 50 plants throughout the United States. In addition, three plants were reported as idle, including

two of the larger expanding plants owing to a lower than average demand for construction-related products. Production was consolidated at other locations until demand increases. One perlite expander in New Jersey came back online after the company rebuilt after a fire that had destroyed much of the facility in 2009. Of the 50 active plants, 25 plant operators responded to the USGS survey, representing about 77% of the total expanded perlite sold or used. Production information for nonresponding companies was estimated using previously reported data, with adjustments based on currently reported production trends. The top seven producers of expanded perlite, each with production of more than 20,000 metric tons per year, accounted for about 81% of the expanded perlite sold or used in the United States in 2011. The remaining 19% was produced by 20 companies.

Consumption

In 2011, domestic apparent consumption of processed crude perlite was 577,000 t, a 6% increase compared with that of 2010. The 577,000 t was about equal to the apparent consumption of 1992, the year the industry began to see improved sales after the recessionary year of 1991 when apparent consumption was only 544,000 t.

Expanded perlite consumed for construction-related uses, the major market for expanded material, was about 259,000 t, essentially unchanged from that of 2010. Construction uses of expanded perlite, which consisted of concrete aggregate, formed products, masonry- and cavity-fill insulation, and plaster aggregate, accounted for about 54% of total domestic sales of expanded perlite in 2011. Expanded perlite consumption increased in five markets, with the most pronounced increases by percentage reported for the filter aid and plaster aggregate markets (table 3). Expanded perlite consumption decreased significantly in three of the smaller markets: concrete aggregate, high-temperature insulation, and masonry- and cavity-fill insulation.

Perlite was expanded, usually for local consumption, in 27 States. The leading States in production of expanded perlite sold or used were, in descending order, Illinois, Georgia, Pennsylvania, Minnesota, Mississippi, Michigan, Oregon, California, and Florida. The amount of expanded perlite sold or used by State was listed for those States with three or more companies expanding in each State; for other States, individual data were withheld to avoid disclosing company proprietary data (table 2).

Prices

Processed crude perlite was sold at an average value of \$55 per metric ton, which was a 7% increase compared with that of 2010. Perlite consumed by expanding plants operated

by the mining companies was valued at \$58 per ton, which was a 9% increase compared with that of 2010. The average value for all perlite sold or used by mining companies was \$56 per ton, which was an 8% increase compared with that of 2010. The average value of expanded perlite was \$295 per ton, down by 3% from \$304 per ton in 2010. The range in reported prices, however, was wide—from about \$125 per ton to more than \$1,000 per ton.

The average value of expanded perlite by use was, in descending order, low-temperature insulation, \$601 per ton; masonry- and cavity-fill insulation, \$461 per ton; horticultural aggregate, \$457 per ton; fillers, \$429 per ton; filter aid, \$429 per ton; concrete aggregate, \$380 per ton; plaster aggregate, \$338 per ton; high-temperature insulation, \$260 per ton; and formed products, \$178 per ton (table 3).

Foreign Trade

The U.S. Bureau of Census reports perlite and vermiculite in a combined category. Because of this, the exact amounts of perlite exports and imports are not available and must be estimated based on information received from Census and PIERS. The Census data does contain information on the ports used, which can be useful in distinguishing between vermiculite and perlite, especially for exports.

Exports of processed crude and expanded perlite, primarily to Canada, were estimated to be 36,000 t, about 14% less than those of 2010. Most of the perlite exported to Canada was horticultural-grade perlite and was commonly mixed with peat and other ingredients to produce potting soils. Canada has abundant peat resources and was a leading producer and exporter of potting soils. The Republic of Korea was probably the second largest recipient of U.S. exports, receiving about 5,000 t, which was down from about 9,000 t in 2010. Perlite was exported to approximately 40 other countries, but the average amount exported to most of those countries was less than 1,000 t. The value of exports could not be calculated based on available information, but the average prices quoted previously could be applied.

Imports of processed crude perlite, almost exclusively from Greece, increased by 11% to 193,000 t compared with those of 2010. S&B Industrial Minerals S.A. (Kifissia, Greece) was the primary supplier of processed crude perlite imports to the United States. Based on information from the U.S. Census Bureau, the average customs value of perlite imports in 2010 was estimated to be \$114 per ton, an increase of nearly 12% from that of 2010. If insurance and freight costs (\$13.44 per ton) were added to the value of the imports, the total average value of imports was \$128 per ton, an increase of about 13% compared with the total average value in 2010. Most imported perlite arrives through the ports of Brunswick, GA, Mobile, AL, Philadelphia, PA, and Wilmington, DE. After arriving at one of these ports, the perlite is shipped to expanding plants throughout the States east of the Mississippi River.

World Review

Based on available information, the United States was estimated to be the leading consumer of processed crude

and expanded perlite in 2011. Greece was estimated to have produced about 500,000 t and sold or used the largest amount of perlite among the countries listed in table 4. Other leading producers of processed crude perlite were, in descending order, the United States, Japan, and Turkey. In 2011, 15 countries produced 1.77 million metric tons of perlite, a 7% increase compared with global production in 2010. Owing to a lack of reliable information, however, this total does not include all major producing countries, such as China, which was probably the leading or second ranked producer in the world.

Outlook

Total consumption of processed and expanded perlite in the United States in 2012 was expected to increase slightly from the levels of 2011. As the economy recovers and housing and office construction increases, as seen in some areas of the United States, perlite consumption is likely to increase. Perlite imports in 2012 were expected to be essentially unchanged from the level in 2011. Although prices for crude processed perlite increased in 2011, prices for expanded perlite dropped for the first time in 15 years. For 2012, the average price of expanded perlite is expected to remain at about the 2011 level, and processed crude perlite prices are expected to continue to slowly increase partially in response to increased import costs.

Perlite expanding plants, mostly in the Eastern United States, continued to purchase imported perlite and offer strong competition to domestic perlite producers. Imported perlite has supplied about one-quarter to one-third of the demand for processed crude perlite in the United States during recent years, and that trend is expected to continue contingent upon the availability and cost of ocean freight. This strong competition from other countries is expected to continue in the coming years as domestic and foreign suppliers compete for market share amid fluctuating transportation costs, whether rail or ocean freight.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Historical Statistics for Mineral and Material Commodities in the United States. Data Series 140.

Lightweight Aggregates. Ch. in *United States Mineral Resources*, Professional Paper 820, 1973.

Perlite. Ch. in *Mineral Commodity Summaries*, annual.

Other

Geology of the Industrial Rocks and Minerals. Dover Publications Inc., 1969.

Industrial Minerals—Geology and World Deposits, Metal Bulletin plc, 1990.

Industrial Minerals, monthly.

Perlite. Ch. in *Industrial Minerals and Rocks* (7th ed.), Society for Mining, Metallurgy, and Exploration, Inc., 2006.

Perlite. Ch. in *Mineral Facts and Problems*, U.S. Bureau of Mines Bulletin 675, 1985.

TABLE 1
 PERLITE MINED, PROCESSED, AND EXPANDED IN THE UNITED STATES¹

(Thousand metric tons and thousand dollars unless otherwise specified)

| | 2007 | 2008 | 2009 | 2010 | 2011 |
|--|---------|---------|---------|---------|---------|
| Perlite mined ² | 516 | 524 | 304 | 529 | 469 |
| Processed crude perlite: | | | | | |
| Sold to expanders: | | | | | |
| Quantity | 324 | 337 | 263 | 319 | 300 |
| Value | 15,000 | 16,400 | 13,100 | 16,500 | 16,600 |
| Average value dollars per metric ton | 46 | 49 | 50 | 52 | 55 |
| Used at own plants to make expanded perlite: | | | | | |
| Quantity | 85 | 98 | 85 | 95 | 120 |
| Value | 3,550 | 4,450 | 4,000 | 5,090 | 6,990 |
| Average value dollars per metric ton | 42 | 46 | 47 | 54 | 58 |
| Total, sold and used: | | | | | |
| Quantity | 409 | 434 | 348 | 414 | 420 |
| Value | 18,500 | 20,800 | 17,100 | 21,600 | 23,600 |
| Average value dollars per metric ton | 45 | 48 | 49 | 52 | 56 |
| Expanded perlite: | | | | | |
| Production, quantity | 577 | 554 | 450 | 472 | 477 |
| Sold or used: | | | | | |
| Quantity | 575 | 548 | 439 | 471 | 475 |
| Value | 155,000 | 153,000 | 132,000 | 143,000 | 140,000 |
| Average value dollars per metric ton | 269 | 279 | 302 | 304 | 295 |

¹Data are rounded to no more than three significant digits, except average value; may not add to totals shown.

²Crude ore mined and stockpiled for processing.

TABLE 2
 EXPANDED PERLITE PRODUCED AND SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY STATE¹

| State | 2010 | | | | 2011 | | | |
|---------------------------|--|----------------------|---------------------------|--|--|----------------------|----------|--|
| | Production, quantity (metric tons) | Sold or used | | Average value ² (dollars per metric ton) | Production, quantity (metric tons) | Sold or used | | Average value ² (dollars per metric ton) |
| Quantity (metric tons) | | Value (thousands) | Quantity (metric tons) | | | Value (thousands) | | |
| California | 27,500 | 27,300 | \$10,400 | 379 | 26,300 | 25,900 | \$10,100 | 388 |
| Florida | 24,900 | 24,700 | 8,250 | 334 | 25,500 | 25,400 | 7,900 | 310 |
| Michigan | 27,900 | 28,100 | 6,880 | 244 ^r | 28,700 | 28,600 | 7,150 | 250 |
| Nevada | 12,600 | 12,400 | 5,920 | 475 ^r | 13,200 | 31,100 | 5,850 | 446 |
| Pennsylvania | 52,600 | 52,600 | 12,300 | 233 | 41,000 | 41,000 | 9,390 | 229 |
| Other ³ | 327,000 | 326,000 | 99,300 | 305 | 342,000 | 323,000 | 100,000 | 309 |
| Total or average | 472,000 | 471,000 | 143,000 | 304 | 477,000 | 475,000 | 140,000 | 295 |

^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Average value is based on unrounded data and is rounded to the nearest dollar.

³Includes Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Indiana, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Missouri, New Jersey (2011), North Carolina, Ohio, Oklahoma, Oregon, Tennessee, Texas, Wisconsin, and Wyoming.

TABLE 3
EXPANDED PERLITE SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY USE¹

| Use | 2010 | | | 2011 | | |
|-------------------------------------|---------------------------|----------------------|--|---------------------------|----------------------|--|
| | Quantity (metric tons) | Value (thousands) | Average value ² (dollars per metric ton) | Quantity (metric tons) | Value (thousands) | Average value ² (dollars per metric ton) |
| Concrete aggregate | 3,910 | \$1,480 | 378 | 3,550 | \$1,350 | 380 |
| Fillers | 67,900 | 31,200 | 459 | 72,100 | 30,900 | 429 |
| Filter aid | 41,700 | 16,700 | 399 | 46,200 | 19,800 | 429 |
| Formed products ³ | 251,000 | 49,700 | 198 | 251,000 | 44,700 | 178 |
| High-temperature insulation | 7,430 | 2,090 | 281 | 5,690 | 1,480 | 260 |
| Horticultural aggregate | 65,300 | 29,100 | 446 | 64,800 | 29,600 | 457 |
| Low-temperature insulation | 1,910 | 1,060 | 559 | 1,930 | 1,160 | 601 |
| Masonry- and cavity-fill insulation | 1,730 | 810 | 469 | 1,530 | 704 | 461 |
| Plaster aggregate | 3,010 | 1,210 | 403 | 3,290 | 1,110 | 338 |
| Other ⁴ | 1,740 | 444 | 255 | 1,740 | 492 | 282 |
| Unspecified ⁵ | 25,000 | 9,310 | 373 | 23,800 | 9,030 | 380 |
| Total or average | 471,000 | 143,000 | 304 | 475,000 | 140,000 | 295 |

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Average value is based on unrounded data and is rounded to the nearest dollar.

³Includes acoustic ceiling panels, pipe insulation, roof insulation board, and unspecified formed products.

⁴Includes absorbents, laundries, paint texturizers, and other miscellaneous uses.

⁵Estimated and reported data with specific use unknown.

TABLE 4
PERLITE: ESTIMATED WORLD PRODUCTION, BY COUNTRY^{1, 2}

(Metric tons)

| Country ³ | 2007 | 2008 | 2009 | 2010 | 2011 |
|-------------------------------|---------------------|---------------------|---------------------|------------------------|-----------|
| Armenia | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 |
| Australia ⁴ | 7,000 | 7,000 | 6,500 | 7,000 | 7,000 |
| Georgia | 45,000 | 45,000 | 45,000 | 45,000 | 45,000 |
| Greece ⁵ | 525,000 | 525,000 | 525,000 | 500,000 | 500,000 |
| Hungary ⁴ | 67,000 | 67,000 | 65,000 | 65,000 | 65,000 |
| Iran | 30,000 | 30,000 | 30,000 | 30,000 ^r | 30,000 |
| Italy | 60,000 | 60,000 | 60,000 | 60,000 | 60,000 |
| Japan | 230,000 | 230,000 | 220,000 | 210,000 | 300,000 |
| Mexico ⁴ | 54,405 ⁶ | 43,180 ⁶ | 51,395 ⁶ | 31,779 ^{r, 6} | 30,000 |
| Philippines | 4,515 ⁶ | 4,593 ⁶ | 4,606 ⁶ | 4,756 ^{r, 6} | 4,800 |
| Slovakia | 20,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| South Africa | 400 | 400 | 400 | 400 | 400 |
| Turkey ⁴ | 270,000 | 270,000 | 230,000 | 230,000 | 250,000 |
| United States ^{6, 7} | 409,000 | 434,000 | 348,000 | 414,000 | 420,000 |
| Zimbabwe | 3,000 | 3,000 | 3,000 | 2,000 | 2,000 |
| Total | 1,760,000 | 1,780,000 | 1,650,000 | 1,660,000 ^r | 1,770,000 |

^rRevised.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Unless otherwise stated, figures represent processed ore output. Table contains data available through May 26, 2012.

³In addition to the countries listed, Djibouti started perlite production in 2009, and Algeria, Bulgaria, China, Cyprus, Iceland, Morocco, Mozambique, and Russia are thought to have produced perlite, but output is not reported, and available information is inadequate to estimate output.

⁴Crude ore.

⁵Crude perlite screened and sold.

⁶Reported figure.

⁷Processed ore sold and used by producers.