



2012 Minerals Yearbook

PERLITE

PERLITE

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In 2012, the amount of domestic processed crude perlite sold or used decreased by about 6% compared with that of 2011. The amount of expanded perlite sold or used decreased by about 4% during the same period. Domestic production of processed crude perlite was 396,000 metric tons (t), down from 420,000 t in 2011 (table 1). The 458,000 t of expanded perlite sold or used in 2012 was about 30% lower than the peak levels seen in 2004 and 2005.

Exports of crude processed perlite were estimated to have been about 38,000 t in 2012, increasing by about 5% compared with those of 2011. During 2012, imports of processed crude perlite decreased by 22% to 150,000 t compared with those of 2011. This decrease followed two consecutive years of increased perlite imports in 2010 and 2011. Imports reached a peak with record-high imports in 2006. 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. World production of crude processed perlite, from 15 countries, was 3 million metric tons (Mt) in 2012 (table 4). This is about a 3% increase from the revised total of 2.9 Mt in 2011. 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 six companies with eight mines, all of which responded to the USGS survey in 2012. According to data collected by the USGS, the 396,000 t of U.S.-processed crude perlite sold or used in 2012 was valued at \$20.5 million. The total value of the processed crude perlite sold or used in 2012 decreased by 13% compared with that of 2011. The 458,000 t of expanded perlite sold or used by domestic producers was valued at \$142 million, a slight decrease in value compared with that of 2011 (table 1).

The processed crude perlite reported in table 1 was mined in Arizona, 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; Idaho Minerals, LLC in Idaho; EP Minerals, LLC and Wilkins Mining and Trucking, Inc. in Nevada; Dicapertl Minerals Corp. in New Mexico; and Cornerstone Industrial Minerals Corp. in Oregon.

Perlite was expanded at 48 plants throughout the United States. In addition, five plants were reported as idle, including two of the larger expanding plants owing to sluggish demand for construction-related products. Production was consolidated at other locations until demand increased. Of the 48 active plants,

23 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 seven leading companies producing expanded perlite, each with production of more than 15,000 metric tons per year, accounted for about 79% of the expanded perlite sold or used in the United States in 2012. The remaining 21% was produced by 19 companies.

Consumption

In 2012, domestic apparent consumption of processed crude perlite was 508,000 t, a 12% decrease compared with that of 2011. This apparent consumption, the second lowest annual consumption in the past 23 years, reversed a 2-year trend of increasing consumption. The year with the lowest annual consumption during the same period was 2009.

Expanded perlite consumed for construction-related uses, the major market for expanded material, was about 244,000 t, a decrease of about 6% compared with that of 2011. Construction uses of expanded perlite, which consisted of concrete aggregate, formed products, masonry- and cavity-fill insulation, and plaster aggregate, accounted for about 53% of total domestic sales of expanded perlite in 2012. Expanded perlite consumption increased for concrete aggregate, high-temperature insulation, masonry- and cavity-fill insulation, and plaster aggregate (table 3). Expanded perlite consumption decreased in five markets including the largest market, formed products, which decreased by about 10% compared with that of 2011.

Perlite was expanded, usually for local consumption, in 27 States. The leading States, each with more than 20,000 t of expanded perlite sold or used were, in descending order, Illinois, Georgia, Pennsylvania, Minnesota, Michigan, Mississippi, Oregon, California, and Florida. These 9 States accounted for 78% of the expanded perlite sold or used in the United States. 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 \$53 per metric ton, which was a 4% decrease compared with that of 2011. Perlite consumed by expanding plants operated by the mining companies was valued at \$45 per ton, which was a 22% decrease compared with that of 2011. The average value for all perlite sold or used by mining companies was \$52 per ton, which was a 7% decrease compared with that of 2011. These changes in unit value were mostly a reflection of a large

decrease in quantity accompanied by a substantial decrease in unit value reported by one operation and not a trend that was reported across the industry. The average value of expanded perlite was \$310 per ton, an increase of 3% compared with the revised \$302 per ton in 2011. 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, \$572 per ton; horticultural aggregate, \$471 per ton; masonry- and cavity-fill insulation, \$469 per ton; filter aid, \$443 per ton; fillers, \$427 per ton; plaster aggregate, \$425 per ton; concrete aggregate, \$412 per ton; high-temperature insulation, \$268 per ton; and formed products, \$183 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 quantities of perlite exports and imports are not available and must be estimated based on information received from U.S. Bureau of Census and PIERS. The U.S. Bureau of Census data does contain information on the shipping ports, 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 38,000 t, about 5% more than those of 2011. 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 an estimated 11,000 t in 2012, more than double the estimate for 2011. Perlite was exported to approximately 30 other countries in 2012, 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, decreased by 22% to 150,000 t compared with those of 2011. 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 from Greece in 2012 was estimated to be \$107 per ton, a decrease of about 6% from that of 2011. 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 2012 but was only the fourth or fifth ranked producer of crude perlite (depending on the levels in China). Greece and Turkey were estimated to have produced 800,000 t in 2012. Iran was estimated to have produced about 500,000 t.

The estimates for perlite production in Greece, Iran, and Turkey in recent years have been revised and are presented in table 4. Other leading producers of processed crude perlite were, in descending order, the United States and Japan. In 2012, 15 countries produced 3 Mt of perlite, a 3% increase compared with the revised global production in 2011. Owing to a lack of reliable information, however, this total does not include all major producing countries, including China, which was probably one of the five leading producers in the world.

Outlook

Total consumption of processed and expanded perlite in the United States in 2013 was expected to increase slightly from the levels in 2012. As housing and office construction increases, as already seen in some areas of the United States, perlite consumption is likely to increase. Perlite imports in 2013 were expected to increase from the levels in 2012. Although prices for crude processed perlite decreased in 2012, prices for expanded perlite increased. For 2013, the average price of expanded perlite is expected to remain at about the 2012 level, and processed crude perlite prices are expected to rebound and increase compared with prices in 2012.

Perlite expanding plants, mostly in the eastern United States, continued to purchase imported perlite and imports 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)

	2008	2009	2010	2011	2012
Perlite mined ²	524	304	529	469	471
Processed crude perlite:					
Sold to expanders:					
Quantity	337	263	319	300	321
Value	16,400	13,100	16,500	16,600	17,100
Average value dollars per metric ton	49	50	52	55	53
Used at own plants to make expanded perlite:					
Quantity	98	85	95	120	75
Value	4,450	4,000	5,090	6,990	3,400
Average value dollars per metric ton	46	47	54	58	45
Total, sold and used:					
Quantity	434	348	414	420	396
Value	20,800	17,100	21,600	23,600	20,500
Average value dollars per metric ton	48	49	52	56	52
Expanded perlite:					
Production, quantity	554	450	472	477	460
Sold or used:					
Quantity	548	439	471	475	458
Value	153,000	132,000	143,000	144,000 ^r	142,000
Average value dollars per metric ton	279	302	304	302 ^r	310

^rRevised.

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	2011				2012			
	Sold or used				Sold or used			
	Production, quantity (metric tons)	Quantity (metric tons)	Value (thousands)	Average value ² (dollars per metric ton)	Production, quantity (metric tons)	Quantity (metric tons)	Value (thousands)	Average value ² (dollars per metric ton)
California	26,300	25,900	\$10,100	388	24,600	24,500	\$9,730	397
Florida	25,500	25,400	7,900	310	23,700	23,600	7,460	315
Michigan	28,700	28,600	7,150	250	26,900	26,900	6,860	255
Nevada	13,200	31,100	5,850	446	14,600	14,500	6,520	449
Pennsylvania	41,000	41,000	9,390	229	49,000	48,900	10,400	212
Other ³	342,000	323,000	103,000 ^r	320 ^r	321,000	319,000	101,000	316
Total or average	477,000	475,000	144,000 ^r	302 ^r	460,000	458,000	142,000	310

^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, 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	2011			2012		
	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	3,550	\$1,350	380	3,870	\$1,590	412
Fillers	72,100	30,900	429	66,500	28,400	427
Filter aid	46,200	19,800	429	45,700	20,200	443
Formed products ³	251,000	48,000 ^r	192 ^r	226,000	41,400	183
High-temperature insulation	5,690	1,480	260	5,770	1,550	268
Horticultural aggregate	64,800	29,600	457	64,400	30,300	471
Low-temperature insulation	1,930	1,160	601	1,130	644	572
Masonry- and cavity-fill insulation	1,530	704	461	2,340	1,100	469
Plaster aggregate	3,290	1,110	338	11,500	4,910	425
Other ⁴	1,740	492	282	1,320	404	306
Unspecified ⁵	23,800	9,030	380	29,000	11,200	385
Total or average	475,000	144,000 ^r	302 ^r	458,000	142,000	310

^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 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	2008	2009	2010	2011	2012
Armenia	35,000	35,000	35,000	35,000	35,000
Australia ⁴	6,500 ^r	6,500	7,000	7,000	6,000
Georgia	45,000	45,000	45,000	45,000	45,000
Greece ⁵	1,100,000 ^r	862,935 ^{r, 6}	760,000 ^r	800,000 ^r	800,000
Hungary ⁴	67,000	82,000 ^r	71,000 ^r	70,000 ^r	70,000
Iran	600,000 ^r	753,183 ^{r, 6}	547,618 ^{r, 6}	500,000 ^r	500,000
Italy	60,000	60,000	60,000	60,000	60,000
Japan	230,000	220,000	210,000	200,000 ^r	200,000
Mexico ⁴	43,180 ⁶	51,395 ⁶	31,779 ⁶	30,750 ^{r, 6}	31,000
Philippines	4,593 ⁶	4,606 ⁶	4,756 ⁶	6,272 ^{r, 6}	6,300
Slovakia	25,000	25,000	25,000	20,000 ^r	25,000
South Africa	400	400	400	400	400
Turkey ⁴	551,266 ^{r, 6}	522,832 ^{r, 6}	545,585 ^{r, 6}	702,673 ^{r, 6}	800,000
United States ^{6, 7}	434,000	348,000	414,000	420,000	396,000
Zimbabwe	3,000	3,000	1,000 ^r	1,000 ^r	1,000
Total	3,210,000 ^r	3,020,000 ^r	2,760,000 ^r	2,900,000 ^r	2,980,000

^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 July 2, 2013.

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.