



# 2007 Minerals Yearbook

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## PERLITE

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# PERLITE

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In 2007, the amount of domestic processed crude perlite sold or used decreased 9.9%, and the amount of expanded perlite sold or used decreased by 11% compared with that of 2006. Domestic production of processed crude perlite was about 409,000 metric tons (t), and the amount of expanded perlite sold or used was about 575,000 t. Less processed perlite was produced in 2007 than in any year since 1971. During the year, imports of processed crude perlite decreased by 6.5% to 229,000 t after a record high import level in 2006. Exports of crude processed perlite were estimated to have been about 28,000 t, down about 7% when compared with those of 2006. Trade data in this report are from the U.S. Census Bureau and the Journal of Commerce's Port Import and Export Reporting Service. Percentages in this report were computed using unrounded data.

## Production

Domestic production data for perlite were derived 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. All the processed crude perlite described in table 1 was produced at eight mines operated by six companies; seven of the eight mines responded to the USGS survey, representing about 98% of the processed crude perlite sold or used in 2007. According to data collected by the USGS, the 409,000 t of U.S.-processed crude perlite sold or used in 2007 was valued at \$18.5 million, a decrease of 5% compared with that of 2006. The 575,000 t of expanded perlite sold or used by domestic producers was valued at \$155 million, a decrease of 6% compared with that of 2006 (table 1).

The processed crude perlite reported in table 1 was mined in Arizona, California, Idaho, Nevada, New Mexico, and Oregon. The mines in New Mexico and Oregon accounted for most of the tonnage mined. Six of the eight perlite mines experienced decreases in production in 2007 when compared with production in 2006. 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; Dicaperl Minerals Corp. in New Mexico; and Cornerstone Industrial Minerals Corp. in Oregon.

Perlite was expanded at 58 plants throughout the United States, one plant was reported as idle, and two plants were removed from the expanded perlite survey. Of the 58 active plants, 33 plant operators (57%) responded, reporting about 81% of the total expanded perlite sold or used. Production information for nonresponding companies was estimated based on previously reported data. The top seven producers of

expanded perlite, each with production of more than 25,000 metric tons per year, accounted for about 82% of expanded perlite sold or used in the United States in 2007. The remaining 18% was produced by 24 companies. Johns Manville officials reported the closure of their perlite expanding operation in Edinburg, VA, as they consolidated their perlite operations to their facility in Rockdale, IL. Lite Weight Products, Inc., Kansas City, KS, apparently was closed in 2007.

## Consumption

In 2007, domestic apparent consumption of processed crude perlite was 610,000 t, an 8.8% decrease compared with that of 2006. This is the lowest level of apparent consumption since 1992, when 577,000 t of processed crude perlite was consumed. Expanded perlite consumed for construction-related uses, the major market for expanded material, was about 343,000 t, a decrease of nearly 12% compared with that of 2006. Construction uses of expanded perlite, which consisted of concrete aggregate, formed products, masonry- and cavity-fill insulation, and plaster aggregate, accounted for about 60% of total domestic sales in 2007, unchanged from that of 2006. Expanded perlite consumption decreased in nearly every market, with the most pronounced decreases reported for the low-temperature insulation and plaster aggregate markets (table 3). Perlite was expanded, usually for local consumption, in 29 States (perlite expansion ceased in Kansas and Virginia). The leading States in production of expanded perlite sold or used were, in descending order, Illinois, Georgia, Pennsylvania, Mississippi, Alabama, Minnesota, California, Florida, Oregon, and Michigan. The amount of expanded perlite sold or used by State is available for those States with three or more companies expanding in each State; other States are not listed individually to avoid disclosing proprietary data (table 2).

## Prices

Processed crude perlite was sold at an average value of \$46.15 per metric ton, which was a 6.4% increase compared with that of 2006. Perlite consumed by expanding plants operated by the mining companies was valued at \$41.81 per ton, which was a 3.1% increase compared with that of 2006. The average price for all perlite sold or used by mining companies was \$45.25 per ton, which was a 5.5% increase compared with that of 2006. The average price of expanded perlite was \$269 per ton, up from \$256 per ton in 2006; the range in reported prices, however, was wide—from about \$100 per ton to more than \$1,000 per ton.

The average price by use of expanded perlite, in descending order, was low-temperature insulation, \$510 per ton; fillers, \$453 per ton; masonry- and cavity-fill insulation, \$430 per ton;

concrete aggregate, \$392 per ton; horticultural aggregate, \$384 per ton; filter aid, \$355 per ton; plaster aggregate, \$332 per ton; laundries, \$286 per ton; and formed products, \$179 per ton (table 3).

## Foreign Trade

Exports of processed crude and expanded perlite, primarily to Canada, were estimated to be 28,000 t, down about 7% compared with those of 2006. Besides Canada, perlite was exported to around 30 other countries, but the average amount exported to each country was only a few hundred tons. 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 6.5% to about 229,000 t compared with those of 2006. The average customs value of perlite imports in 2007 was estimated to be \$53.48 per ton, an increase of nearly 55% from that of 2006. If insurance and freight costs (\$5.95 per ton) were added to the value of the imports, the total average value of imports was estimated to rise to \$59.43 per ton, an increase of about 53% compared with the average value in 2006. These large increases in the price of imported perlite are probably a result of the rapid increase in fuel cost and a scarcity of ocean transport. Most imported perlite arrives through the ports of Brunswick, GA; Mobile, AL; 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.

Perlite expanding plants, mostly in the Eastern United States, continued to purchase less expensive, imported perlite. Imported perlite has recently had a price advantage compared with domestically produced perlite owing to the low cost of shipping it from Greece to the United States east coast versus higher domestic rail transportation costs. Perlite production in Greece is centered on the islands of Milos and Kos, which offer deepwater access to large oceangoing vessels, thus lowering freight cost. U.S. producers normally must transport perlite by rail, which is subject to higher insurance and freight rates, resulting in higher transportation cost per ton than waterborne transport.

## World Review

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

and expanded perlite in 2007. Greece was estimated to have produced about 525,000 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, Turkey, and Japan. In 2007, 15 countries produced 1.76 million metric tons of perlite. 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 2008 is expected to remain at the historically low levels of 2007. Recent large increases in energy cost and the domestic slowdown in housing construction will probably have a negative impact on the rate of perlite consumption. Perlite imports in 2008 are expected to continue to decrease and be somewhat lower compared with those of 2007. Prices for crude and especially expanded perlite are expected to increase as costs for transportation (both for waterborne and rail) and the expansion process rise owing to sustained increases in fuel costs that affect both domestic and import sources of processed perlite.

## GENERAL SOURCES OF INFORMATION

### U.S. Geological Survey Publications

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 Handybook*, The. *Industrial Minerals Information*, 2002.  
*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 STATES<sup>1</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

	2003	2004	2005	2006	2007
Perlite mined <sup>2</sup>	591	601	606	516	516
Processed perlite:					
Sold to expanders:					
Quantity	381	407	406	360	324
Value	14,800	16,700	16,500	15,600	15,000
Average value      dollars per metric ton	38.76	40.93	40.56	43.39	46.15
Used at own plants to make expanded perlite:					
Quantity	112	101	103	95	85
Value	4,060	3,950	4,200	3,850	3,550
Average value      dollars per metric ton	36.89	39.10	40.75	40.57	41.81
Total, sold and used:					
Quantity	493	508	508	454	409
Value	18,800	20,600	20,700	19,500	18,500
Average value      dollars per metric ton	38.20	41.81	40.68	42.90	45.25
Expanded perlite:					
Production, quantity	665	673	677	646	577
Sold or used:					
Quantity	664	670	677	644	575
Value	147,000	151,000	165,000	165,000	155,000
Average value      dollars per metric ton	221.38	225.98	243.07	255.98	269.23

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

<sup>2</sup>Crude ore mined and stockpiled for processing.

TABLE 2  
 EXPANDED PERLITE PRODUCED AND SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY STATE<sup>1</sup>

State	2006				2007			
	Production, quantity (metric tons)	Quantity (metric tons)	Value (thousands)	Average value <sup>2</sup> (dollars per metric ton)	Production, quantity (metric tons)	Quantity (metric tons)	Value (thousands)	Average value <sup>2</sup> (dollars per metric ton)
California	37,200	37,000	\$12,300	334	33,500	33,200	\$11,500	348
Florida	30,800	30,600	8,350	273	28,300	27,900	8,060	288
Indiana	18,700	18,500	6,110	330	17,400	17,300	5,970	345
Michigan	20,500	20,400	5,530	271	23,100	22,500	6,160	274
Nevada	6,620	6,590	4,120	625	11,300	11,300	4,810	425
Pennsylvania	51,700	51,700	10,300	199	51,300	51,300	11,200	217
Other <sup>3</sup>	481,000 <sup>r</sup>	479,000 <sup>r</sup>	118,000 <sup>r</sup>	246 <sup>r</sup>	412,000	411,000	107,000	260
Total or average	646,000	644,000	165,000	256	577,000	575,000	155,000	269

<sup>r</sup>Revised.

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

<sup>2</sup>Average value is based on unrounded data and is rounded to the nearest dollar.

<sup>3</sup>Includes Alabama, Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Kansas (2006), Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Tennessee, Texas, Virginia (2006), Utah, Wisconsin, and Wyoming.

TABLE 3  
EXPANDED PERLITE SOLD OR USED BY PRODUCERS IN THE UNITED STATES, BY USE<sup>1</sup>

Use	2006			2007		
	Quantity (metric tons)	Value (thousands)	Average value <sup>2</sup> (dollars per metric ton)	Quantity (metric tons)	Value (thousands)	Average value <sup>2</sup> (dollars per metric ton)
Concrete aggregate	2,560	\$898	350	2,160	\$844	392
Fillers	73,600	33,000	449	74,700	33,900	453
Filter aid	48,200	17,000	352	41,000	14,600	355
Formed products <sup>3</sup>	371,000	60,900	164 <sup>r</sup>	330,000	59,200	179
Horticultural aggregate	90,400	32,300	358	75,000	28,700	384
Laundries	1,100	299	272	875	250	286
Low-temperature insulation	3,350	1,370	408	1,660	846	510
Masonry- and cavity-fill insulation	4,160	1,820	437	3,380	1,450	430
Plaster aggregate	10,700	5,330	497	6,760	2,250	332
Other <sup>4</sup>	38,900	11,800	302	39,100	12,700	326
Total or average	644,000	165,000	256	575,000	155,000	269

<sup>r</sup>Revised.

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

<sup>2</sup>Average value is based on unrounded data and is rounded to the nearest dollar.

<sup>3</sup>Includes acoustic ceiling panels, pipe insulation, roof insulation board, and unspecified formed products.

<sup>4</sup>Includes explosives, high-temperature insulation, paint, refractory, soap, steel, sugar manufacture, and various unspecified industrial uses.

TABLE 4  
PERLITE: WORLD PRODUCTION, BY COUNTRY<sup>1, 2</sup>

(Metric tons)

Country <sup>3</sup>	2003	2004	2005 <sup>e</sup>	2006 <sup>e</sup>	2007 <sup>e</sup>
Armenia <sup>e</sup>	35,000	35,000	35,000	35,000	35,000
Australia <sup>e, 4</sup>	5,000 <sup>r</sup>	5,000 <sup>r</sup>	6,000 <sup>r</sup>	6,500 <sup>r</sup>	7,000
Greece, screened	525,000	525,000 <sup>e</sup>	525,000	525,000	525,000
Georgia	NA	45,000 <sup>e</sup>	45,000	45,000	45,000
Hungary <sup>e, 4</sup>	59,530 <sup>5</sup>	65,100 <sup>r</sup>	65,000 <sup>r</sup>	71,000 <sup>r</sup>	71,000
Iran	26,495	31,259	31,000	30,000	30,000
Italy <sup>e</sup>	60,000	60,000	60,000	60,000	60,000
Japan <sup>e</sup>	240,000	240,000	240,000	240,000	240,000
Mexico <sup>4</sup>	194,463	188,027	91,724 <sup>5</sup>	41,219 <sup>p, 5</sup>	41,000
Philippines	6,000	5,510	4,410 <sup>5</sup>	4,500	4,500
Slovakia	15,000	23,840 <sup>r</sup>	13,000 <sup>r</sup>	20,000 <sup>r</sup>	20,000
South Africa <sup>e</sup>	400	400	400	400	400
Turkey <sup>4</sup>	136,633	133,829	140,000	250,000 <sup>r</sup>	270,000
United States <sup>6</sup>	493,000	508,000	508,000 <sup>5</sup>	454,000 <sup>5</sup>	409,000 <sup>5</sup>
Zimbabwe <sup>e</sup>	5,000	4,000	4,000	3,000	3,000
Total	1,810,000	1,870,000 <sup>r</sup>	1,770,000 <sup>r</sup>	1,790,000 <sup>r</sup>	1,760,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. NA Not available.

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

<sup>2</sup>Unless otherwise stated, figures represent processed ore output. Table contains data available through May 20, 2008.

<sup>3</sup>In addition to the countries listed, 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 for the formulation of estimates of output levels.

<sup>4</sup>Crude ore.

<sup>5</sup>Reported figure.

<sup>6</sup>Processed ore sold and used by producers.