



2006 Minerals Yearbook

PERLITE

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In 2006, the amount of domestic processed crude perlite sold or used decreased by 10.6%, and the amount of expanded perlite sold or used decreased by 5.1% compared with that of 2005. Domestic production of processed crude perlite was about 454,000 metric tons (t), and the amount of expanded perlite sold or used was about 644,000 t. The 454,000 t is the smallest annual production of domestic processed crude perlite since 1983 and the second smallest since 1971. In 2006, imports of processed crude perlite increased by 25% to 245,000 t and tied the record high imports level set in 2003. The increase in imports and decrease in demand for expanded perlite combined to dramatically affect domestic mining companies. Many U.S. perlite mines saw decreases in sales of processed crude perlite and some of the decreases were severe. Exports of crude processed perlite were estimated to have been about 30,000 t, down about 6% when compared with those of 2005. 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 nine mines operated by seven companies; six of the nine mines responded to the USGS survey, representing about 88% of the processed crude perlite sold or used in 2006. According to data collected by the USGS, the 454,000 t of U.S.-processed crude perlite sold or used in 2006 was valued at \$19.5 million, a decrease of 5.7% compared with that of 2005. The 644,000 t of expanded perlite sold or used by domestic producers was valued at \$165 million, the same as that of 2005 (table 1). The processed crude perlite reported in table 1 was mined in Arizona, California, Idaho, Nevada, New Mexico, Oregon, and Utah. The mines in New Mexico and Oregon accounted for most of the tonnage mined. Ore producers were, in alphabetical order by State, Harborlite Corp. in Arizona, New Mexico, and Utah; American Perlite Co. in California; Idaho Minerals LLC in Idaho; Eagle-Picher Minerals, Inc. and Wilkins Mining and Trucking, Inc. in Nevada; Dicaperl Corp. in New Mexico; and Cornerstone Industrial Minerals Corp. in Oregon. Dicaperl's operation in No Agua, NM, was operating during the year but at reduced levels as the company supplied perlite to customers mostly from Dicaperl's operation in Socorro, NM. Harborlite's mine and crude perlite processing plant in Utah operated for part of the year but was idled in mid-2006. The company planned

to reactivate the mine in the future, but the existing processing plant will be permanently demobilized.

All of the 61 expanding plants canvassed were active. Of those, 29 plant operators (48%) responded, reporting about 66% 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 81% of expanded perlite sold or used in the United States in 2006. The remaining 19% was produced by 25 companies.

Consumption

In 2006, domestic apparent consumption of processed crude perlite was 669,000 t, a slight decrease compared with that of 2005. Expanded perlite consumed for construction-related uses, the major market for expanded material, was about 388,000 t, a decrease of nearly 7% compared with that of 2005. 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 2006. Expanded perlite consumption increased for concrete aggregate, laundries, low-temperature insulation, masonry- and cavity-fill insulation, and other miscellaneous uses, while consumption decreased for fillers, filter aid, formed products, horticultural aggregates, and plaster aggregate (table 3). Perlite was expanded, usually for local consumption, in 31 States. The leading States in production of expanded perlite sold or used were, in descending order, Illinois, Georgia, Mississippi, Pennsylvania, Minnesota, Alabama, and California. 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 \$43.39 per metric ton, which was a 7% increase compared with that of 2005. Perlite consumed by expanding plants operated by the mining companies was valued at \$40.57 per ton, which was a slight decrease compared with that of 2005. The average price for all perlite sold or used by mining companies was \$42.90 per ton, which was a 5.5% increase compared with that of 2005. The average price of expanded perlite was \$256 per ton, up from \$243 per ton in 2005; 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 was, in descending order, plaster aggregate, \$497 per ton; fillers, \$449

per ton; masonry- and cavity-fill insulation, \$437 per ton; low-temperature insulation, \$408 per ton; horticultural aggregate, \$358 per ton; filter aid, \$352 per ton; concrete aggregate, \$350 per ton; laundries, \$272 per ton; and formed products, \$156 per ton (table 3).

Foreign Trade

Exports of processed crude and expanded perlite, primarily to Canada, were estimated to be 30,000 t, down 6% compared with those of 2005. 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 25% to about 245,000 t compared with those of 2005. The average customs value of perlite imports in 2006 was estimated to be \$34.64 per ton, virtually unchanged from that of 2005. If insurance and freight costs (\$4.33 per ton) were added to the value of the imports, the total average value of imports was estimated to rise to \$38.97 per ton, a decrease of 1.6% compared with the average value in 2005. Imported perlite arrives through the ports of Brunswick, GA; Mobile, AL; Philadelphia, PA; and Wilmington, DE. After arriving at one of these four ports, the perlite is shipped for consumption 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 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 ocean-going 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 2006. 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, Japan, Turkey, Hungary, and Mexico. In 2006, 15 countries produced 1.81 Mt 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 is expected to decrease slightly compared with 2006 levels. Recent large jumps in energy cost and the slowdown in housing construction will probably have a negative impact on the rate of perlite consumption. Perlite imports are expected to remain near the record levels in 2006. 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 and will 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 *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)

	2002	2003	2004	2005	2006
Perlite mined ²	638	591	601	606	516
Processed perlite:					
Sold to expanders:					
Quantity	419	381	407	406	360
Value	15,100	14,800	16,700	16,500	15,600
Average value dollars per metric ton	36.01	38.76	40.93	40.56	43.39
Used at own plants to make expanded perlite:					
Quantity	102	112	101	103	95
Value	3,890	4,060	3,950	4,200	3,850
Average value dollars per metric ton	38.13	36.89	39.10	40.75	40.57
Total, sold and used:					
Quantity	521	493	508	508	454
Value	19,000	18,800	20,600	20,700	19,500
Average value dollars per metric ton	36.42	38.20	41.81	40.68	42.90
Expanded perlite:					
Production, quantity	674	665	673	677	646
Sold or used:					
Quantity	672	664	670	677	644
Value	146,000	147,000	151,000	165,000	165,000
Average value dollars per metric ton	217.84	221.38	225.98	243.07	255.89

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	2005				2006			
	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	34,200	34,200	\$11,200	327	37,200	37,000	\$12,300	334
Florida	31,400	31,400	8,280	263	30,800	30,600	8,350	273
Michigan	21,600	21,600	5,910	273	20,500	20,400	5,530	271
Mississippi	61,000	61,000	9,630	157	W	W	W	W
Nevada	6,610	6,610	3,950	596	6,620	6,590	4,120	625
Pennsylvania	51,900	51,900	9,920	191	51,700	51,700	10,300	199
Other ³	470,000	470,000	116,000	246	499,000	497,000	124,000	249
Total or average	677,000	677,000	165,000	243	646,000	644,000	165,000	256

W Withheld to avoid disclosing company proprietary data; included with "Other."

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

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

³Includes Alabama, Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Massachusetts, Minnesota, Missouri, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Tennessee, Texas, Utah, Virginia, Wisconsin, Wyoming, and data indicated by symbol W.

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

Use	2005			2006		
	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	2,140	\$715	334	2,560	\$898	350
Fillers	77,400	32,900	426	73,600	33,000	449
Filter aid	50,600	17,300	342	48,200	17,000	352
Formed products ³	399,000	64,100	161	371,000	60,900	156
Horticultural aggregate	95,300	30,900	324	90,400	32,300	358
Laundries	1,060	284	269	1,100	299	272
Low-temperature insulation	1,810	838	464	3,350	1,370	408
Masonry- and cavity-fill insulation	4,060	1,410	347	4,160	1,820	437
Plaster aggregate	11,600	5,360 ^r	461	10,700	5,330	497
Other ⁴	34,700	10,700	308	38,900	11,800	302
Total or average	677,000	165,000	243	644,000	165,000	256

^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 explosives, high-temperature insulation, paint, refractory, soap, steel, sugar manufacture, and various unspecified industrial uses.

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

(Metric tons)

Country ³	2002	2003	2004 ^c	2005 ^e	2006 ^c
Armenia ^c	35,000	35,000	35,000	35,000	35,000
Australia ^{e, 4}	5,000	10,000 ^r	10,000 ^r	10,000 ^r	10,000
Greece, screened	516,000	525,000	525,000	525,000	525,000
Georgia	NA	NA	45,000	45,000	45,000
Hungary ^{e, 4}	140,000	59,530 ⁵	59,800	145,000	140,000
Iran	20,000	26,495	31,259 ⁵	31,000 ^r	30,000
Italy ^e	60,000	60,000	60,000	60,000	60,000
Japan ^c	250,000	240,000	240,000	240,000	240,000
Mexico ⁴	85,703	194,463	188,027 ⁵	91,724 ^{r, 5}	100,000
Philippines ^c	6,000	6,000 ⁵	5,510 ^{r, 5}	4,410 ^{r, 5}	4,000
Slovakia	18,630	15,000 ^r	16,000 ^r	19,000	19,000
South Africa ^c	400	400	400	400	400
Turkey ⁴	151,902	136,633	133,829 ⁵	140,000	145,000
United States ⁶	521,000	493,000	508,000 ⁵	508,000 ⁵	454,000 ⁵
Zimbabwe ^c	5,000	5,000	4,000	4,000	3,000
Total	1,810,000	1,810,000	1,860,000	1,860,000 ^r	1,810,000

^cEstimated. ^rRevised. NA Not available.

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 20, 2007.

³In 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.

⁴Crude ore.

⁵Reported figure.

⁶Processed ore sold and used by producers.