

PERLITE

By Wallace P. Bolen

Domestic survey data and tables were prepared by Virginia C. Harper, statistical assistant, and the world production table was prepared by Linder Roberts, international data coordinator.

In 2003, the amount of domestic processed crude and expanded perlite sold and used decreased compared with that of 2002. Domestic production peaked in 1999 at 711,000 metric tons (t) and has fallen each year since, dropping by nearly 31% during the 4-year period. Increasing imports, combined with weak demand from some construction markets, reduced sales of domestically produced perlite. Perlite expanding plants, mostly in the Eastern United States, continued to purchase less expensive, imported perlite. Price differences were mainly attributable to higher domestic rail transportation costs compared with cheaper international waterborne transportation costs. Imports of perlite rose by about 9%, while exports were estimated to have decreased by about 7% compared with those of 2002.

Production

According to the data collected by the U.S. Geological Survey (USGS), the amount of U.S.-processed crude perlite sold or used decreased by about 5% to 493,000 t in 2003 compared with that of 2002. The value of processed crude perlite sold or used decreased slightly to \$18.9 million compared with that of 2002. The amount of expanded perlite sold or used by domestic producers decreased by about 1% to 664,000 t compared with that of 2002, but the associated value increased to \$147 million (table 1).

Domestic production data for perlite were derived by the 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 10 mines operated by 8 companies; 7 of the 10 mine operators responded to the USGS survey, representing about 90% of the processed crude perlite sold or used in 2003. The processed crude perlite that is 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, in alphabetical order by State, were Harborlite Corp. in Arizona and New Mexico; American Perlite Co. in California; Idaho Minerals LLC in Idaho; Eagle-Picher Minerals, Inc. and Wilkins Mining and Trucking, Inc. in Nevada; Dicaparl Corp. in New Mexico; Cornerstone Industrial Minerals Corp. in Oregon; and Basin Perlite Co. in Utah.

Of the 65 expanding plants canvassed, 62 were active. Of those, 34 plant operators (58%) responded, reporting about 62% of the total expanded perlite sold or used (table 1). Production information for nonresponding companies was estimated based upon 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 2003. The remaining 18% was produced by 26 companies.

Two new companies, which produce expanded perlite, were added to the survey for 2003. These new companies were Noble Materials in Fallon, NV, and Basin Perlite in Milford, UT. Three companies were removed from the survey of expanding plants. Johns Manville Corp. closed its operation in Natchez, MS, in 2003 after deciding to meet internal demand from its other perlite expanding plants in Illinois and Virginia. The Scolite International Corp. facility in Troy, NY, which had been inactive for many years, was permanently shut down and the land and facilities were released to the local government to be developed for public use. South Texas Perlite, San Antonio, TX, also shut down in 2003, and the property was sold for residential development.

Consumption

Domestic apparent consumption is defined as U.S.-processed crude perlite sold and used plus imports minus exports. In 2003, domestic apparent consumption of processed crude perlite was 701,000 t, a slight decrease compared with that of 2002. Expanded perlite consumed for construction-related uses, the major market for expanded material, decreased by 3% to 414,000 t. Construction uses of expanded perlite, which consisted of concrete aggregate, formed products, masonry- and cavity-fill insulation, and plaster aggregate, accounted for about 62% of total domestic sales in 2003. Expanded perlite consumption increased for fillers, filter aid, laundries, and plaster aggregate, while consumption decreased for concrete aggregate, formed products, horticultural aggregate, low-temperature insulation, masonry- and cavity-fill insulation, and miscellaneous uses (table 3). Perlite was expanded, usually for local consumption, in 30 States. The leading States in production of expanded perlite sold or used, in descending order, were Georgia, Illinois, Mississippi, Pennsylvania, Minnesota, Alabama, Virginia, California, Florida, and Oregon (table 2).

Prices

Processed crude perlite sold at an average value of \$38.76 per metric ton, which was an increase of about 8% compared with that of 2002. Perlite consumed by expanding plants operated by the mining companies was valued at \$36.29 per ton, which was a decrease of 5% compared with that of 2002. The average price for all perlite sold or used by mining companies was \$38.20 per ton, which was an increase of 5% compared with that of 2002. The average price of expanded perlite was \$221 per ton, up from \$217 per ton in 2002; the range in reported prices, however, was wide—from less than \$100 per ton to more than \$1,000 per ton.

The average price per ton by use of expanded perlite, in descending order, was low-temperature insulation, \$429; fillers,

\$410; masonry- and cavity-fill insulation, \$359; concrete aggregate, \$331; filter aid, \$327; horticultural aggregate, \$306; plaster aggregate, \$289; laundries, \$270; and formed products, \$145 (table 3).

Foreign Trade

Export and import data were derived from U.S. Census Bureau data. Exports of processed crude and expanded perlite, primarily to Canada, were estimated to be 37,000 t, which was 7.5% less than those of 2002. 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 9% to about 245,000 t. The average customs value of perlite imports was estimated to be \$36.25 per ton. If insurance and freight costs (\$4.14) were added to the value of the imports, the total average value of imports was estimated to rise to \$40.39 per ton. Imported perlite has a price advantage compared with domestically produced perlite mostly owing to the low cost of shipping it from Greece to the United States east coast. 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, causing transportation costs to be higher.

World Review

Based on available information, the United States was estimated to be the largest producer and consumer of processed crude and expanded perlite in 2003. Other leading producers of processed crude perlite, in descending order, were Greece, Japan, Turkey, and Hungary (table 4). In 2003, 14 countries produced 1.63 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 largest or second largest producer in the world.

Outlook

Total consumption of processed and expanded perlite in the United States is expected to increase slightly in 2004. As imports increase, domestic perlite production is expected to decrease, although increasing demand in Canada for horticultural perlite may increase U.S. exports. New mine openings during the past 5 years combined with continued growth in imports are expected to restrain price increases for many grades of processed crude 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

Bates, R.L., 1969, *Geology of the industrial rocks and minerals*: New York, NY, Dover Publications Inc., 459 p.
 Harben, P.W., 2002, *The industrial minerals handybook*: Surrey, United Kingdom, Industrial Minerals Information Ltd., 409 p.
 Harben, P.W., and Bates, R.L., 1990, *Industrial minerals—Geology and world deposits*: Surrey, United Kingdom, Metal Bulletin plc, 312 p.
 Industrial Minerals, monthly.
 Perlite. Ch. in *Mineral Facts and Problems*, U.S. Bureau of Mines Bulletin 675, 1985.

TABLE 1
 PERLITE MINED, PROCESSED, EXPANDED, AND SOLD OR USED BY PRODUCERS IN THE UNITED STATES¹

(Thousand metric tons and thousand dollars)

Year	Perlite mined ²	Processed perlite						Expanded perlite		
		Sold to expanders		Used at own plant to make expanded material		Total quantity sold or used	Quantity produced	Sold or used		
		Quantity	Value	Quantity	Value			Quantity	Value	
1999	821	619	20,700	92	3,050	711	731	729	148,000	
2000	873	570	19,600	101	3,100	672	715	715	148,000	
2001	611	490	17,900	97	3,450	588	686	693	146,000	
2002	638	419	15,100	102	3,890	521	674	672	146,000	
2003	591	381	14,800	112	4,060	493	665	664	147,000	

¹Data are rounded to no more than three significant digits; 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	2002				2003			
	Quantity produced (metric tons)	Sold or used			Quantity produced (metric tons)	Sold or used		
		Quantity (metric tons)	Value (thousands)	Average value per metric ton ²		Quantity (metric tons)	Value (thousands)	Average value per metric ton ²
California	38,400	38,400	\$13,400	\$348	32,100	32,100	\$10,600	\$328
Florida	29,800	28,800	7,650	265	31,900	31,300	7,880	251
Michigan	20,600	20,600	4,810	233	21,400	21,400	4,980	232
Mississippi	93,700	93,700	12,900	137	W	W	W	W
Nevada	W	W	W	W	3,860	3,860	1,080	279
Pennsylvania	49,300	49,300	8,270	167	52,200	52,200	9,080	174
Other ³	443,000	441,000	99,400	225	524,000	523,000	113,000	216
Total or average	674,000	672,000	146,000	217	665,000	664,000	147,000	221

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 is rounded to the nearest dollar.

³Includes Alabama, Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Indiana, Kansas, Maine, Massachusetts, Minnesota, Mississippi (2003), Missouri, Nevada (2002), New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Tennessee, Texas, Utah, Virginia, Wisconsin, and Wyoming.

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

Use	2002			2003		
	Quantity (metric tons)	Value (thousands)	Average value per metric ton ²	Quantity (metric tons)	Value (thousands)	Average value per metric ton ²
Concrete aggregate	4,050	\$1,300	\$321	2,970	\$982	\$331
Fillers	57,300	23,500	410	66,600	27,400	410
Filter aid	57,500	18,600	323	59,600	19,500	327
Formed products ³	415,000	60,200	145	401,000	58,200	145
Horticultural aggregate	89,400	27,800	312	86,400	26,400	306
Laundries	1,560	723	464	3,030	817	270
Low-temperature insulation	4,230	1,550	365	3,560	1,530	429
Masonry- and cavity-fill insulation	5,500	1,340	243	3,440	1,240	359
Plaster aggregate	2,620	803	307	7,490	2,160	289
Other ⁴	35,000	10,600	303	30,600	8,760	286
Total or average	672,000	146,000	217	664,000	147,000	221

¹Data are rounded to no more than three significant digits, except average value; 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	1999	2000	2001	2002	2003 ^e
Armenia ^c	35,000	35,000	35,000	35,000	35,000
Australia ^{c, 4}	5,000	5,000	5,000	5,000	5,000
Greece, screened	435,431	360,000	360,000 ^e	360,000 ^e	360,000
Hungary ^{c, 4}	148,000	150,000	151,000	140,000 ^r	145,000
Iran	15,069	15,000 ^e	18,130 ^r	20,000 ^r	20,000
Italy ^c	60,000	60,000	60,000	60,000	60,000
Japan ^c	260,000	250,000	250,000	250,000	240,000
Mexico ⁴	61,596	68,702	80,297	85,703 ^r	90,000
Philippines	10,265	5,650 ^e	6,000	6,000 ^e	6,000
Slovakia	19,460	17,020	14,910 ^r	18,630 ^r	19,000
South Africa ^c	1,200 ^r	1,200 ^r	1,200 ^r	1,200 ^r	1,200
Turkey ⁴	147,818	149,429	70,738 ^r	151,902 ^r	150,000
United States ⁵	711,000	672,000	588,000	521,000	493,000 ⁶
Zimbabwe	5,356	5,000	5,000	5,000	5,000
Total	1,920,000 ^r	1,790,000	1,650,000 ^r	1,660,000 ^r	1,630,000

^cEstimated. ^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 20, 2004.

³In addition to the countries listed, Algeria, Bulgaria, China, Iceland, Morocco, Mozambique, and Russia are thought to have produced perlite, but output is reported, and available information is inadequate for the formulation of reliable estimates of output levels.

⁴Crude ore.

⁵Processed ore sold and used by producers.

⁶Reported figure.