

# PERLITE

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In 2000, whereas imports of processed perlite increased compared with 1999, the amount of domestic processed perlite sold and used decreased. The amount of perlite expanded, sold, and used by domestic expanders also decreased in 2000. Increased demand for horticultural aggregates, loose fill insulation, and miscellaneous uses was more than offset by decreases in demand for construction products, fillers, laundries, low temperature insulation, and plaster aggregate.

## Production

According to the U.S. Geological Survey (USGS), the amount of U.S. processed perlite sold or used decreased by about 5.5% to 672,000 metric tons (t) compared with that of 1999. The value of processed perlite sold or used decreased by 4.4% to \$22.7 million compared with that of 1999. The amount of expanded perlite sold or used by domestic producers decreased 1.9% to 715,000 t, and the associated value remained about the same compared with that of 1999 (table 1).

Domestic production data for perlite are derived by the USGS from two voluntary annual surveys—one for domestic mine operations (processed perlite) and one for expanding plants. All the processed perlite included in table 1 was produced by 11 mines operated by 9 companies, and 9 of the 11 operations responded to the USGS survey. The perlite was mined in Arizona, California, Idaho, Nevada, New Mexico, Oregon, and

Utah; New Mexico operations accounted for the vast majority of the total 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; Wilkins Mining and Trucking, Inc. and Eagle-Picher Minerals, Inc., in Nevada; Cornerstone Industrial Minerals Corp. in Oregon; Dicaperl Corp. and USG Corp. in New Mexico; and Basin Perlite Co. in Utah. Of the 63 expanding operations canvassed, 62 were active. Of those, 49 operations (78%) responded, reporting about 90% of the total expanded perlite sold or used (table 1). The top seven producers of expanded perlite, each with production of more than 30,000 metric tons per year, accounted for nearly 85% of expanded perlite sold or used in the United States in 2000. The remaining 15% was sold or used by 26 companies.

## Consumption

Domestic apparent consumption is defined as U.S. processed perlite sold and used plus imports minus exports. In 2000, domestic apparent consumption of processed perlite was 809,000 t, a slight increase compared with that of 1999. Consumption of expanded perlite for construction-related uses, which was the major market for expanded material, decreased by 5.9% to 494,000 t. Construction uses of expanded perlite, which consisted of concrete aggregate, formed products,

## Perlite in the 20th Century

Expanded perlite was not available in 1900, because the effect of heat treatment to expand perlite was not discovered until 1928, and controlled experiments using perlite from near Superior, AZ, were not undertaken until 1940. Although not extensively used until 1945, expanded perlite was being used as a lightweight aggregate, as loose fill for insulation, and as chicken litter, while the finest grained perlite was being used in cleansers. The building boom after World War II helped perlite gain market share in competition with expanded slag, clay, vermiculite, and other lightweight materials. At least nine companies were actively experimenting on perlite expansion, and several hundred metric tons had been produced commercially in Arizona, California, and Nevada. After several years of pilot-plant development, the perlite industry started commercial production in 1946, when the output reached 3,820 tons. Five companies reported production, mostly from the Superior area of Arizona and one from near Beatty, NV. All of the material sold in 1946 was

used by the construction industry as thermal insulation and lightweight aggregate. The average price of processed perlite was about \$41 per ton in 1946. By 1948, it had dropped to about \$21.50 per ton. In 1948, the first statistics for expanded perlite were available: 36,700 tons valued at \$1.98 million, or about \$54 per ton, was produced.

By 2000, production of processed perlite in the United States was 672,000 tons and expanded perlite consumption was 715,000 tons. Imports of perlite were about 180,000 tons. Domestic production was mainly from mines in New Mexico with much smaller amounts coming from mines in Arizona, California, Idaho, Nevada, Oregon, and Utah. Most of the expanded perlite was produced east of the Mississippi River. Construction related uses accounted for most expanded perlite consumption, but instead of being used as loose insulation or aggregate, most of the expanded perlite was used in formed products such as ceiling tiles.

masonry- and cavity-fill insulation, and plaster aggregate accounted for about 69% of total domestic sales in 2000. Expanded perlite consumption increased for horticultural aggregate, masonry- and cavity- fill insulation, and miscellaneous uses. Consumption decreased for all other uses (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, Mississippi, Georgia, Illinois, Pennsylvania, Alabama, Minnesota, and Virginia (table 2).

### Prices

Processed perlite sold at an average value of \$34.39 per metric ton, which was up 2.8% compared with that of 1999. Perlite consumed by expanding plants operated by the mining companies was valued at \$30.69 per ton, which was a decrease of 7.4% compared with that of 1999. The average price for all perlite sold or used by mining companies was \$33.78 per ton, which was up 1.1% compared with that of 1999. The average price of expanded perlite was \$207 per ton, up from \$203 in 1999; the range in reported prices was, however, wide—from less than \$100 to more than \$1,000 per ton.

The average prices by use per ton of expanded perlite, in descending order, were low-temperature insulation, \$410; fillers, \$402; masonry- and cavity-fill insulation, \$401; filter aid, \$322; concrete aggregate and horticultural aggregate (tied), \$318; plaster aggregate, \$300; laundries, \$277; and formed products, \$144 (table 3).

### Foreign Trade

Exports of processed and expanded perlite, primarily to Canada, were estimated to be 43,000 t, which was a 9% decrease from that of 1999. Imports of processed perlite, almost exclusively from Greece, increased by about 25% to about 180,000 t. Import and export data were derived from U.S. Census Bureau data, the Journal of Commerce's Port Import and Export Reporting Service, and importers and exporters.

### World Review

The United States was estimated to be the largest producer and consumer of crude and expanded perlite. Other leading producers of processed crude perlite were, in descending order, Greece, Japan, Hungary, and Turkey (table 4). In 2000, 13 countries produced 1.91 million metric tons of perlite. Owing to a lack of reliable figures, however, this total does not include several producing countries, such as China, which was probably the largest or second largest producer in the world.

### Outlook

Total consumption of expanded perlite and processed perlite in the United States is expected to increase slightly in 2001. Growth in imports of processed perlite is expected to slow the growth of domestic processed perlite sales. The growth in Canadian horticultural perlite demand may, however, result in increased exports of domestic processed perlite. The new mines in the Western United States and continued growth in imports are expected to restrain price increases for many grades 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

Bates, R.L., 1969, Perlite, *in* *Igneous rocks*, chap. 3 *of* *The industrial rocks*, pt. II *of* *Geology of the industrial rocks and minerals*: New York, Dover Publications Inc., p. 50-58.  
Harben, P.W., and Bates, R.L., 1990, Perlite, *in* *Industrial minerals—Geology and world deposits*: London, Metal Bulletin Plc, p. 184-189.  
*Industrial Minerals Magazine* (London).  
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 STATES 1/

(Thousand metric tons and thousand dollars)

Year	Processed perlite					Expanded perlite				
	Perlite mined 2/	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	
1996	811	565	17,500	120	3,770	684	671	670	137,000	
1997	656	605	19,900	101	3,400	706	700	695	143,000	
1998	832	583	18,800	102	3,060	685	738	736	148,000	
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	

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

2/ Crude ore mined and stockpiled for processing.

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

State	1999				2000			
	Sold or used		Average		Sold or used		Average	
	Quantity (metric tons)	Quantity (metric tons)	Value (thousands)	value per ton 2/	Quantity (metric tons)	Quantity (metric tons)	Value (thousands)	value per ton 2/
California	29,300	29,000	\$9,580 r/	\$330	31,600	31,000	\$10,600	\$341
Florida	34,300	33,100	8,900	269	35,300	34,900	9,000	257
Indiana	17,000	17,000	4,700	276	W	W	W	280
Michigan	24,900	24,900	5,310	213	24,900	25,100	5,380	214
Mississippi	136,000	136,000	16,200	119	127,000	127,000	15,900	125
Pennsylvania	46,800	46,800	8,770	188	49,600	49,600	8,270	166
Other 3/	442,000	442,000	94,600 r/	214	446,000	447,000	98,900	221
Total or average	731,000	729,000	148,000	203	715,000	715,000	148,000	207

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

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

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

3/ Includes Alabama, Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Kansas, Kentucky, Maine, Massachusetts, Mississippi, Nevada, 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 USE 1/

Use	1999			2000		
	Quantity (metric tons)	Value (thousands)	Average value per ton	Quantity (metric tons)	Value (thousands)	Average value per ton 2/
Concrete aggregate	4,330	\$1,230	\$284	2,200	\$700	\$318
Fillers	53,200	19,700	370	48,800	19,600	402
Filter aid	60,000	19,200	319	60,300	19,400	322
Formed products 3/	499,000	73,000	146	477,000	68,800	144
Horticultural aggregate	70,700	23,100	326	83,700	26,600	318
Laundries	4,070	1,080	266	3,360	933	277
Low-temperature insulation	2,850	1,100	386	2,160	886	410
Masonry and cavity-fill insulation	7,500	2,800	373	7,730	3,100	401
Plaster aggregate	13,700	2,430	177	7,040	2,110	300
Other 4/	17,300	5,570	322	22,400	5,930	267
Total or average	729,000	148,000	203	715,000	148,000	207

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

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

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

4/ Includes explosives, high-temperature insulation, paint, refractory, soap, steel, sugar manufacture, and various non-specific industrial uses.

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

(Metric tons)

Country 3/	1996	1997	1998	1999	2000 e/
Armenia e/	6,000	6,000	35,000	35,000	35,000
Australia e/ 4/	5,000	5,000	5,000	5,000	5,000
Greece (screened)	417,882	500,117	425,000 e/	500,000	500,000
Hungary e/ 4/	110,000	120,000	130,000	148,000 r/	150,000
Iran	6,000 e/	10,000 r/ e/	13,320 r/	15,069 r/	15,000
Italy e/	60,000	60,000	60,000	60,000	60,000
Japan e/	304,000 r/	290,000 r/	251,000 r/	260,000 r/ e/	250,000
Mexico 4/	37,417	51,758	54,840	61,596 r/	67,001 5/
Philippines	20,000 e/	20,000 e/	6,356 r/	10,265 r/ 5/	10,000
Slovakia	25,160	25,000 e/	24,200 r/ e/	19,465 r/	20,000
South Africa	682	403	400 e/	400 e/	400
Turkey 4/	157,580	103,416	124,312	130,000	130,000
United States (processed ore sold and used by producers)	684,000	706,000	685,000	711,000 5/	672,000
Total	1,830,000 r/	1,900,000 r/	1,820,000 r/	1,960,000 r/	1,910,000

e/ Estimated. r/ Revised.

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

2/ Unless otherwise stated, figures represent processed ore output. Table contains data available through May 19, 2001.

3/ In addition to the countries listed, Algeria, Bulgaria, China, Iceland, Mozambique, and the former Yugoslavia are believed to have produced perlite but output was not reported, and available information is inadequate for the formulation of reliable estimates of output levels.

4/ Crude ore.

5/ Reported figure.