

# Vermiculite

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Domestic production of crude vermiculite reached 359,000 tons, slightly below the record of 365,000 tons in 1973. Output of exfoliated vermiculite increased to 321,000 tons, 19% above the revised 1976 total. The average value per ton continued to climb, reaching \$157.42. Exfoliating plants processed ore from Montana, South Carolina,

Texas, and South Africa. The principal end uses were as loose-fill and block insulation; in concrete aggregate; in premixes for acoustic, fireproofing, and other applications; and for agricultural purposes. World production of crude vermiculite was 569,879 tons, a decrease of 1% from 1976.

Table 1.—Salient vermiculite statistics

(Thousand short tons and thousand dollars)

	1973	1974	1975	1976	1977
United States:					
Sold or used by producers:					
Crude	365	341	330	304	359
Value	\$9,464	\$10,120	\$13,761	\$14,032	\$18,579
Average value per ton	\$25.93	\$29.68	\$41.70	\$46.16	\$51.75
Exfoliated	293	275	235	270	321
Value	\$31,186	\$30,916	\$36,345	\$42,255	\$50,108
Average value per ton	\$106.44	\$112.42	\$154.66	\$156.40	\$157.42
Exports to Canada	36	44	45	41	45
Imports from the Republic of South Africa	30	42	33	40	40
World: Production, crude	549	557	588	577	570

<sup>1</sup>Revised.

## DOMESTIC PRODUCTION

**Crude Vermiculite.**—Output of vermiculite concentrate, commonly called crude, increased 18%, from 304,000 tons in 1976 to 359,000 tons. The principal mining operations were W. R. Grace & Co.'s mines and beneficiating plants in Libby, Mont. and Enoree, S.C. Crude vermiculite was also produced by Patterson Vermiculite Co. in Lanford, S. C., and Volite, Inc., Llano, Tex.

At yearend Virginia Vermiculite Co. had obtained commercial financing for its mine, beneficiation plant, and exfoliation plant in Louisa County, Va. Mining was planned for late 1978.

**Exfoliated Vermiculite.**—Production of exfoliated vermiculite increased 18% in quantity and 19% in value in 1977. The five leading producing States were Ohio, South Carolina, Texas, Florida, and New Jersey. W. R. Grace & Co., Construction Products Div., the principal producer of crude and exfoliated vermiculite, operated 30 plants in 24 States. Vermiculite was produced by 22 companies with 52 plants in 29 States. Crude vermiculite from the Republic of South Africa was exfoliated at about 10 domestic plants.

Table 2.—Exfoliated vermiculite sold or used, by end use

Use	1976		1977	
	Short tons	Percent of total	Short tons	Percent of total
<b>Aggregates:</b>				
Concrete	67,710	25	65,920	21
Plaster	3,099	1	3,599	1
Premixes <sup>1</sup>	39,450	15	30,130	9
<b>Total<sup>2</sup></b>	<b>110,300</b>	<b>41</b>	<b>99,650</b>	<b>31</b>
<b>Insulation:</b>				
Loose fill	39,050	14	74,900	23
Block	39,310	15	50,980	16
Packing	390	--	168	--
<b>Total<sup>2</sup></b>	<b>78,750</b>	<b>29</b>	<b>126,000</b>	<b>39</b>
<b>Agriculture:</b>				
Horticulture and soil conditioning	36,380	13	40,780	13
Fertilizer carrier	37,450	14	47,580	15
<b>Total<sup>2</sup></b>	<b>73,830</b>	<b>27</b>	<b>88,360</b>	<b>28</b>
<b>Miscellaneous</b>	<b>7,384</b>	<b>3</b>	<b>6,797</b>	<b>2</b>
<b>Grand total<sup>2</sup></b>	<b>270,200</b>	<b>100</b>	<b>320,800</b>	<b>100</b>

<sup>1</sup>Revised.<sup>2</sup>Includes vermiculite used in premixes for acoustic and fireproofing purposes, decorative textures, moisture sealant, etc.<sup>3</sup>Data may not add to totals shown due to independent rounding.

Table 3.—Vermiculite exfoliating plants in the United States in 1977

Company	State	County	Nearest city or town
J. P. Austin Assoc., Inc	Pennsylvania	Allegheny	Beaver Falls.
J. J. Brouk & Co., Inc	Missouri	St. Louis	St. Louis.
Cleveland Builders Supply Co., Cleveland Gypsum Co. Div.	Ohio	Cuyahoga	Cleveland.
Diversified Insulation, Inc	Minnesota	Hennepin	Minneapolis.
W. R. Grace & Co., Construction Products Div.	Arizona	Maricopa	Phoenix.
Arkansas	Arkansas	Pulaski	North Little Rock.
California	California	Alameda	Newark.
do	do	Los Angeles	Los Angeles.
do	do	Orange	Santa Ana.
Colorado	Colorado	Denver	Denver.
Florida	Florida	Broward	Pompano Beach.
do	do	Duval	Jacksonville.
do	do	Hillsborough	Tampa.
Illinois	Illinois	DuPage	West Chicago.
Kentucky	Kentucky	Campbell	Newport.
Louisiana	Louisiana	Orleans	New Orleans.
Maryland	Maryland	Prince Georges	Muirkirk.
Massachusetts	Massachusetts	Hampshire	Easthampton.
Michigan	Michigan	Wayne	Dearborn.
Minnesota	Minnesota	Hennepin	Minneapolis.
Missouri	Missouri	St. Louis	St. Louis.
Nebraska	Nebraska	Douglas	Omaha.
New Jersey	New Jersey	Mercer	Trenton.
New York	New York	Cayuga	Weedsport.
North Carolina	North Carolina	Guilford	High Point.
Oklahoma	Oklahoma	Oklahoma	Oklahoma City.
Oregon	Oregon	Multnomah	Portland.
Pennsylvania	Pennsylvania	Lawrence	New Castle.
South Carolina	South Carolina	Greenville	Kearney.
do	do	do	Travellers Rest.
Tennessee	Tennessee	Davidson	Nashville.
Texas	Texas	Bexar	San Antonio.
do	do	Dallas	Dallas.
Wisconsin	Wisconsin	Milwaukee	Milwaukee.
Hyzer & Lewellen	Pennsylvania	Bucks	Southampton.
International Vermiculite Co	Illinois	Macoupin	Girard.
Koos, Inc	Wisconsin	Kenosha	Kenosha.
La Habra Products, Inc	California	Orange	Anaheim.

Table 3.—Vermiculite exfoliating plants in the United States in 1977 —Continued

Company	State	County	Nearest city or town
MacArthur Co	Minnesota	Ramsey	St. Paul.
Mica Pellets, Inc	Illinois	DeKalb	DeKalb.
Patterson Vermiculite Co	South Carolina	Laurens	Lanford.
Robinson Insulation Co	Montana	Cascade	Great Falls.
Schmelzer Sales Associates, Inc	North Dakota	Ward	Minot.
The Schundler Co	Florida	Hillsborough	Tampa.
O. M. Scott	New Jersey	Middlesex	Metuchen.
Strong-Lite Products	Ohio	Union	Marysville.
Supreme Perlite Co	Arkansas	Jefferson	Pine Bluff.
Vermiculite of Hawaii, Inc	Oregon	Multnomah	Portland.
Vermiculite-Intermountain, Inc	Hawaii	Honolulu	Honolulu.
Vermiculite Products, Inc	Utah	Salt Lake	Salt Lake City.
Volite, Inc	Texas	Harris	Houston.
	do	Llano	Llano.

### CONSUMPTION AND USES

The end-use pattern shifted substantially, through a large increase in loose-fill insulation and a drop in premixes. The principal end-use categories were insulation, 39% (up 10 percentage points); aggregate, 31% (down 10 percentage points); agriculture, 28%; and miscellaneous, 2%. One explanation for the increase in demand for loose-fill insulation is that U.S. consumers became convinced of

the need to insulate their homes, causing an increase in demand for all forms of home insulation. Some of the other insulating materials underwent a period of tight supply, thereby throwing more business to the vermiculite industry. Additionally, about 21,000 tons of crude vermiculite was consumed for various end uses without exfoliation.

### PRICES

According to the Bureau of Mines canvass, the average value of domestic crude vermiculite increased 12%, from \$46.16 per ton in 1976 to \$51.75 in 1977. The average value of exfoliated vermiculite increased \$1.02 per ton to \$157.42 in 1977, f.o.b. mine or plant.

Engineering and Mining Journal quoted nominal yearend prices for crude vermiculite as follows: Per short ton, f.o.b. mine, domestic crude, \$48 to \$75; c.i.f. Atlantic ports, Republic of South Africa crude, \$60 to \$80.

### FOREIGN TRADE

Exports of crude vermiculite to Canada increased to 45,000 tons in 1977. The vermiculite was shipped primarily from Libby,

Mont. About 40,000 tons of crude vermiculite was imported duty free from the Republic of South Africa.

### WORLD REVIEW

**Canada.**—A total of 59,471 tons of crude vermiculite was imported in 1977, from the United States and the Republic of South Africa. The Provinces receiving the most vermiculite were Quebec, 23,800 tons; Ontario, 15,000 tons; Alberta, 9,700 tons; Manitoba, 6,000 tons; and British Columbia, 4,500 tons. The end-use pattern for 1976 was as

follows: Loose-fill insulation, 71.9%; horticulture, 8.8%; insulating concrete, 7.3%; plaster, 2%; and other uses (including fireproofing and barbecue base), 10%.<sup>2</sup>

**Japan.**—Production of crude vermiculite in Japan in 1977 was 15,000 tons, compared with 14,000 tons in 1976. The deposits are generally of lower quality vermiculite. The

primary producing companies were Sinsei Nekken Kogyo Co., Ltd., U. S. Industry Co., Toyo Hiruishi Kogyo Co., and Nihon Hiruishi Kabuishiki Kaisha. The principal deposits are in Fukushima Prefecture in the northeast, and in Fukui Prefecture in central Japan.

About 80,000 tons of vermiculite per year is imported into Japan, mainly from the Republic of South Africa with a small quantity from the United States and Kenya.

Most of the vermiculite is consumed by the construction industry.<sup>2</sup>

**South Africa, Republic of.**—Total production of crude vermiculite was 182,343 short tons. Local usage amounted to 7,485 tons, and exports were 163,800 tons.

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<sup>2</sup>Stonehouse, D. H. Lightweight Aggregate, 1976. Canada Dept. Energy, Mines, and Resources (Ottawa), 1976, 5 pp.

<sup>3</sup>Industrial Minerals (London). No. 119, August 1977, p. 22.

Table 4.—Vermiculite: World production, by country<sup>1</sup>

(Short tons)

Country <sup>1</sup>	1975	1976	1977 <sup>2</sup>
Argentina -----	<sup>a</sup> 4,400	4,517	4,600
Brazil <sup>3</sup> -----	882	1,111	<sup>a</sup> 1,200
Egypt <sup>a</sup> -----	( <sup>c</sup> )	( <sup>c</sup> )	---
India -----	<sup>f</sup> 2,327	4,600	2,954
Japan <sup>a</sup> -----	13,000	14,000	15,000
Kenya -----	8,249	3,954	4,762
South Africa, Republic of -----	228,761	244,798	182,343
Tanzania <sup>a</sup> -----	20	20	20
United States (sold or used by producers) -----	330,000	304,000	359,000
Total -----	<sup>f</sup> 587,639	577,000	569,879

<sup>a</sup>Estimate. <sup>b</sup>Preliminary. <sup>c</sup>Revised.

<sup>d</sup>Excludes production by centrally planned economy countries.

<sup>e</sup>Production for Brazil in previous editions of the Minerals Yearbook has been estimated owing to the absence of reliable source materials. Official Brazilian output data for the years 1967 to 1974 that has become available since the last edition of the Minerals Yearbook was published as follows in short tons: 1967, 239; 1968, 186; 1969, 18; 1970, 9; 1971, 104; 1972, 622; 1973, 51; and 1974, 7.

<sup>f</sup>Revised to zero.