



aeration, percolation, and nutrient retention characteristics in horticulture and some landscape applications (The Scotts Company, Summer 2001, Product guide—Soil mixes & amendments, accessed July 31, 2001, at URL <http://www.scotts.com/professionalhorticulture/SoilMixesAmendments.cfm>).

Another application of vermiculite was use beneath above-ground swimming pools as a pool cushion. It provides a soft, level surface that protects the vinyl liner from sharp objects. Vermiculite also can be mixed with portland cement to form an insulating monolithic porous concrete base for use beneath vinyl inground swimming pools. The base protects pools from being damaged by changes in the water table and hydrostatic pressure (The Schundler Co., [1994]).

## Prices

Published prices for vermiculite serve as a general guide only because of variations in source, quantity, application, and other factors. Prices for raw (unexpanded) U.S. vermiculite concentrate, bulk, ex-plant were about \$143 to \$220 per metric ton, depending on particle size. For imported South African crude vermiculite, bulk, f.o.b. barge, U.S. Gulf Coast, prices ranged from \$187 to \$243 per ton (Industrial Minerals, 2000b).

The average value of U.S. exfoliated vermiculite sold or used by producers, using partly estimated data, was \$322 per metric ton (table 1) and was a composite value including both U.S. and imported material.

## Foreign Trade

Trade data for vermiculite concentrate are not collected as a separate category by the U.S. Census Bureau but are included within the basket category “vermiculite, perlite, and chlorite, unexpanded” under tariff code 2530.10.0000. According to Moeller (2001), U.S. exports of vermiculite concentrate in 2000 were about 5,000 t (table 1) and were believed to be shipped primarily to Canada. Total U.S. imports of vermiculite in 2000 were about 59,000 t (Port Import/Export Reporting Service, data printout, 2001). South Africa supplied about 74% of the tonnage, and China, 23%.

## World Review

In Western Europe, the United Kingdom was the major consumer of vermiculite. The largest end use in Western Europe was for building boards, which were essentially of two types. One type was produced using a wet slurry manufacturing process; the other type was made using a binder such as metal silicate or equivalent (Ellicott, 2000).

A number of companies in Western Europe produced exfoliated vermiculite for the horticultural market. The insulation market included loose-fill insulation and insulation shapes for uses that included secondary insulation in such industrial installations as aluminum smelters (Ellicott, 2000).

Canada.—Normiska Corp., Mississauga, Ontario, signed an agreement to acquire VIL Vermiculite, Inc., for about \$1.8 million. VIL's assets included manufacturing facilities for horticultural grades of vermiculite and perlite in Lachine, Quebec. Normiska's product lines included sphagnum peat moss, pine bark mulches, and composts (Industrial Specialties News, 2000).

South Africa.—Palabora Mining Co. Ltd. is the world's largest supplier and exporter of vermiculite from its operation in the northern Transvaal. Material is exported worldwide (Russell, 2000). The company formerly named Natkruid Vermiculite Mine (Pty.) Ltd., which is located north of Pietersburg, was purchased by an offshore holding company and became known as Natkruid Mine. Plans called for an increase in output to 24,000 metric tons per year (t/yr) by 2001 from 18,000 t/yr. Natkruid was exporting vermiculite largely to the refractory, horticultural, and fire protection industries of Europe (Industrial Minerals, 2000a).

## Outlook

Although horticultural and related applications have been the largest end uses of vermiculite in the United States in recent years, other uses appear to be growing, including as an intumescent (swelling) material for use, for example, in gaskets. Another use is in coatings and binders (chemically delaminated vermiculites that form high-tensile-strength films). As finely ground material, vermiculite serves as a functional filler in coatings, construction materials, and friction brake applications (Moeller, 2001). Materials that compete with vermiculite in general include mineral wool, perlite, and polystyrene (Ellicott, 2000).

Although South Africa is the largest supplier of vermiculite, Australia, Brazil, China, and Zimbabwe have significant output. Production of the mineral in China was said to be increasing, and that country may become a major supplier in the future (Moeller, 2001).

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## GENERAL SOURCES OF INFORMATION

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Lightweight Aggregates. Ch. in *United States Mineral Resources*, Professional Paper 820, 1973.

### Other

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Vermiculite. Ch. in *Mineral Facts and Problems*, U.S. Bureau of Mines Bulletin 675, 1985.

The Vermiculite Association ([www.vermiculite.org](http://www.vermiculite.org)), Lincoln, United Kingdom.

TABLE 1  
SALIENT VERMICULITE STATISTICS 1/

(Thousand metric tons and thousand dollars)

	1996	1997	1998	1999	2000
<b>United States:</b>					
Sold and used by producers:					
Concentrate	W	W	W	175 e/	150 e/
Exfoliated	135	155 e/	170 e/	175 e/	165 e/
Value	\$45,300	\$49,400 e/	\$53,300 e/	\$55,300 e/	\$53,200 e/
Average value 2/	\$334	\$318 e/	\$313 e/	\$315 e/	\$322 e/
Exports e/	8	9	11	13	5
Imports for consumption	48	67	68	71	59
World, production 3/	280 4/	301 4/	328 r/ 4/	541 r/	512 e/

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to no more than three significant digits.

2/ Based on unrounded data.

3/ Excludes production by countries for which data were not available.

4/ Excludes U.S. data.

TABLE 2  
ACTIVE VERMICULITE EXFOLIATION PLANTS IN THE UNITED STATES IN 2000

Company	County	State
J.P. Austin Associates, Inc.	Beaver	Pennsylvania.
P.V.P. Industries	Trumbull	Ohio.
Palmetto Vermiculite Co., Inc.	Spartanburg	South Carolina.
The Schundler Co.	Middlesex	New Jersey.
The Scotts Company	Hempstead	Arkansas.
Do.	Union	Ohio.
Do.	Greenville	South Carolina.
Southwest Vermiculite Co., Inc.	Bernalillo	New Mexico.
Sun Gro Horticulture, Inc.	Jefferson	Arkansas.
Do.	La Salle	Illinois.
Thermic Refractories, Inc.	Macoupin	Do.
Thermo-O-Rock, Inc.	Maricopa	Arizona.
Do.	Washington	Pennsylvania.
Verlite Co.	Hillsborough	Florida.
Vermiculite Industrial Corp.	Allegheny	Pennsylvania.
Vermiculite Products, Inc.	Harris	Texas.
W.R. Grace & Co., Construction Products Division	Maricopa	Arizona.
Do.	Broward	Florida.
Do.	Greenville	South Carolina.

TABLE 3  
ESTIMATED EXFOLIATED VERMICULITE  
SOLD AND USED IN THE UNITED STATES, BY END USE 1/

(Metric tons, unless otherwise specified)

	1999	2000
Aggregates 2/	28,300	25,000
Insulation 3/	W	W
Agricultural:		
Horticultural	27,200	33,800
Soil conditioning	39,600	31,300
Fertilizer carrier	W	W
Total	W	W
Other 4/	6,290	W
Grand total	175,000	165,000

W Withheld to avoid disclosing company proprietary data; included in "Grand total."

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

2/ Includes acoustic insulation, fireproofing, and texturizing uses.

3/ Includes high-temperature and packing insulation and sealants.

4/ Includes various industrial and other uses not specified.

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

(Metric tons)

Country	1996	1997	1998	1999	2000 e/
Argentina e/	40	822 3/	1,000 r/	2,800 r/	2,800
Australia e/	2,500	5,000	10,000	12,000	12,000
Brazil	21,999	23,000	24,300	23,400 r/	23,000
China	NA	NA	NA	40,000 e/	40,000
Egypt	447	447	12,376	12,000 e/	12,000
India	2,405	4,405	4,080	4,000 e/	4,200
Japan e/	15,000	15,000	15,000	15,000	15,000
Kenya	734	1,418	353	164 r/	165
Mexico	350	295	--	100 e/	100
Russia e/	30,000	25,000	25,000	25,000	25,000
South Africa	196,000	211,001	221,300	217,800 r/	208,835 3/
United States, sold and used by producers 4/	W	W	W	175,000 e/	150,000
Zimbabwe	10,249	14,841	14,804	13,898 r/	18,935 3/
Total	280,000	301,000	328,000 r/	541,000 r/	512,000

e/ Estimated. r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in Total.

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/ Excludes production by countries for which data are not available and for which general information is inadequate for formation of reliable estimates. Table includes data available through July 20, 2001.

3/ Reported figure.

4/ Concentrate.