

## VERMICULITE

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** Two companies with mining and processing facilities in South Carolina and Virginia produced vermiculite concentrate. Most of the vermiculite concentrate was shipped to 17 exfoliating plants in 11 States. The end uses for exfoliated vermiculite were estimated to be agricultural, insulation, and other, 75%; and lightweight concrete aggregates (including cement premixes, concrete, and plaster), 25%.

<b>Salient Statistics—United States:</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007<sup>e</sup></b>
Production <sup>e, 1</sup>	110	<sup>2</sup> 100	100	100	100
Imports for consumption <sup>e</sup>	37	69	91	65	75
Exports <sup>e</sup>	15	10	5	5	5
Consumption, apparent, concentrate <sup>e</sup>	<sup>3</sup> 130	<sup>3</sup> 160	<sup>3</sup> 185	160	170
Consumption, exfoliated <sup>e</sup>	95	90	85	90	95
Price, average, concentrate, dollars per ton, ex-plant	143	<sup>4</sup> 143	<sup>5</sup> 143	<sup>6</sup> 138	140
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, mine and mill, number <sup>e</sup>	90	<sup>7</sup> 100	<sup>7</sup> 100	<sup>7</sup> 100	<sup>7</sup> 95
Net import reliance <sup>8</sup> as a percentage of apparent consumption <sup>e</sup>	20	35	45	40	40

**Recycling:** Insignificant.

**Import Sources (2003-06):** South Africa, 54%; China, 45%; and other, 1%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations <u>12-31-07</u></b>
Vermiculite, perlite and chlorites, unexpanded	2530.10.0000	Free.
Exfoliated vermiculite, expanded clays, foamed slag, and similar expanded materials	6806.20.0000	Free.

**Depletion Allowance:** 14% (Domestic and foreign).

**Government Stockpile:** None.

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**Events, Trends, and Issues:** U.S. imports of vermiculite are not collected as a separate category by the U.S. Census Bureau. However, according to a nongovernmental source, U.S. imports, excluding any material from Canada and Mexico, were about 51,000 tons for the first 8 months of 2007. China provided 67% and South Africa, 32%.<sup>9</sup>

IBI Corporation of Toronto, Ontario, Canada, signed an agreement with a subsidiary of Rio Tinto plc for the conditional sale of IBI's Namekara vermiculite property in southeast Uganda. In March 2007, Rio Tinto made an initial payment to IBI. The development of a mine by Rio Tinto at Namekara was to be conditional upon the results of a study, in progress during 2007, into the magnitude of the resource. The study also will include the prospective financial viability of future operations at the scale contemplated.<sup>10</sup>

### **World Mine Production, Reserves, and Reserve Base:**

	Mine production		Reserves <sup>11</sup>	Reserve base <sup>11</sup>
	2006	2007 <sup>e</sup>		
United States <sup>e</sup>	100	100	25,000	100,000
Brazil	25	25	NA	NA
China	110	110	NA	NA
Russia	25	25	NA	NA
South Africa	198	200	14,000	80,000
Zimbabwe	20	13	NA	NA
Other countries	42	47	NA	NA
World total (rounded)	520	520	NA	NA

**World Resources:** Marginal reserves of vermiculite that occur in Colorado, Nevada, North Carolina, Texas, and Wyoming are estimated to be 2 million to 3 million tons. Reserves have been reported in Australia, Brazil, China, Russia, South Africa, Uganda, the United States, Zimbabwe, and some other countries. However, reserve information comes from many sources, and in most cases it is not clear whether the numbers refer to vermiculite alone or vermiculite plus host rock and overburden.<sup>12</sup>

**Substitutes:** Expanded perlite is a substitute for vermiculite in lightweight concrete and plaster. Other more dense but less costly material substitutes in these applications are expanded clay, shale, slag, and slate. Alternate materials for loosefill fireproofing insulation include fiberglass, perlite, and slag wool. In agriculture, substitutes include peat, perlite, sawdust, bark and other plant materials, and synthetic soil conditioners.

<sup>e</sup>Estimated. NA Not available.

<sup>1</sup>Concentrate sold and used by producers.

<sup>2</sup>Dickson, Ted, 2006, Vermiculite, Countries and Commodities Reports. (Accessed March 17, 2006, via <http://www.mining-journal.com>.)

<sup>3</sup>Rounded.

<sup>4</sup>Industrial Minerals, 2004, Prices: Industrial Minerals, no. 442, July, p. 64-65.

<sup>5</sup>Moeller, Eric, 2006, Vermiculite: Mining Engineering, v. 58, no. 6, June, p. 61. (Average of prices from range of sized grades.)

<sup>6</sup>Moeller, Eric, 2007, Vermiculite: Mining Engineering, v. 59, no. 6, June, p. 61-62. (Average of prices from range of sized grades.)

<sup>7</sup>Mine, mill, and office.

<sup>8</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>9</sup>Commonwealth Business Media, Inc., 2007, Port Import/Export Reporting Service. (Accessed November 15, 2007, at <http://www.piers.com>.)

<sup>10</sup>Industrial Minerals, 2007, Rio Tinto expands vermiculite business with IBI buy: Industrial Minerals, no. 473, February, p. 8.

<sup>11</sup>See Appendix C for definitions.

<sup>12</sup>Roskill Information Services, Ltd., 2004, The economics of vermiculite (8th ed.): London, United Kingdom, Roskill Information Services Ltd., 126 p. plus appendices.