

## 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 and reported production of approximately 100,000 tons. Most of the vermiculite concentrate was shipped to 18 exfoliating plants in 11 States. The end uses for exfoliated vermiculite were estimated to be agriculture/horticulture, 40%; lightweight concrete aggregates (including cement premixes, concrete, and plaster), 20%; insulation, 8%; and other, 32%.

| <b>Salient Statistics—United States:</b>   | <b>2008</b> | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012<sup>e</sup></b> |
|--|-------------|-------------|-------------|-------------|-------------------------|
| Production <sup>e, 1</sup>   | 100         | 100         | 100         | 100         | 100                     |
| Imports for consumption <sup>e, 2</sup>  | 73          | 39          | 29          | 53          | 50                      |
| Exports <sup>e</sup>   | 5           | 3           | 2           | 2           | 2                       |
| Consumption, apparent, concentrate <sup>3</sup>  | 170         | 140         | 130         | 150         | 150                     |
| Consumption, exfoliated <sup>e</sup>   | 82          | 69          | 73          | 70          | 70                      |
| Price, average, concentrate, dollars per ton, ex-plant                                   | 140         | 130         | 150         | 160         | 160                     |
| Employment, number <sup>e</sup>  | 100         | 75          | 80          | 80          | 80                      |
| Net import reliance <sup>4</sup> as a percentage of<br>apparent consumption <sup>5</sup> | 40          | 30          | 20          | 30          | 30                      |

**Recycling:** Insignificant.

**Import Sources (2008–11):** South Africa, 49%; China, 40%; Brazil, 7%; Australia, 2%; and other, 2%.

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

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

**Government Stockpile:** None.

**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, United States imports, excluding any material from Canada and Mexico, were about 37,000 tons for the first 9 months of 2012, the monthly average being slightly below the monthly average of imports during 2011. South Africa provided 35%, China, 30%, and Brazil, 30% of vermiculite imports. Although supplies of coarse grades continued to be tight, prices that had risen significantly in mid-2011 began to level off in 2012.

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An Australian company continued development of and production at the East African Namekara vermiculite deposit in Uganda, a portion of the larger East African vermiculite project (EAVP). The EAVP has about 55 million tons of inferred resources and is considered to be one of the world's largest deposits. The company, which increased production capacity from 4,000 tons per year of raw vermiculite concentrate in 2010 to about 18,000 tons per year in 2011, expected to reach the company's nameplate production capacity of 30,000 tons per year by yearend 2012. With the addition of a 50,000-ton-per-year plant, the company anticipated reaching a production capacity of 80,000 tons per year at Namekara by 2014. Challenges that lay ahead were transportation and related infrastructure improvement, negotiating a mining agreement with the Ugandan Government, and stabilizing its supply of electricity. The Namekara deposit has sufficient resources for more than 50 years of production at the expanded rate.

A South African company began evaluation and exploration of properties adjacent to and nearby its ongoing vermiculite mining operations in the country. Based on early drilling results, the reserves may be sufficient to allow the company to double its annual vermiculite production and still exceed the mine's current expected 24-year mine life, based on its recent average production of about 200,000 tons per year.

A Brazilian company with a mine in central Brazil planned to increase production capacity at the mine to about 100,000 tons per year of vermiculite in 2012 from 70,000 tons per year in 2011. The company also owned mining rights to an estimated 2 million tons of vermiculite ore reserve located near Brasilia. It planned to bring that deposit online, reaching a production capacity of 20,000 tons per year by 2013 and 100,000 tons per year in 2016.

**World Mine Production and Reserves:** The estimate of reserves was revised for Brazil based on new information from an official Government source in that country.

|                               | Mine production |                         | Reserves <sup>6</sup> |
|-------------------------------|-----------------|-------------------------|-----------------------|
|                               | <u>2011</u>     | <u>2012<sup>e</sup></u> |                       |
| United States <sup>e, 1</sup> | 100             | 100                     | 25,000                |
| Australia                     | 13              | 13                      | NA                    |
| Brazil                        | 50              | 50                      | 9,500                 |
| China                         | 120             | 120                     | NA                    |
| Egypt                         | 5               | —                       | NA                    |
| India                         | 13              | 14                      | NA                    |
| Russia                        | 25              | 25                      | NA                    |
| South Africa                  | 170             | 195                     | 14,000                |
| Uganda                        | 20              | 30                      | NA                    |
| Other countries               | <u>26</u>       | <u>25</u>               | <u>15,000</u>         |
| World total                   | 542             | 570                     | NA                    |

**World Resources:** Marginal reserves of vermiculite 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.

**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. — Zero.

<sup>1</sup>Concentrate sold and used by producers. Data are rounded to one significant digit to avoid disclosing company proprietary data.

<sup>2</sup>Excludes Canada and Mexico.

<sup>3</sup>Rounded to two significant digits to protect proprietary data.

<sup>4</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>5</sup>Rounded to one significant digit to protect proprietary data.

<sup>6</sup>[See Appendix C for resource/reserve definitions and information concerning data sources.](#)