

Perlite

U.S. Geological Survey Perlite Commodity Specialist Wallace Bolen has prepared the following information on perlite — a recently discovered but commonly used mineral.

Perlite is found in most homes, workplaces and schools. Most of the white ceiling tiles in offices and classrooms are made primarily of perlite. The soil around potted plants also has small white grains of perlite. Other than in these lightweight construction products and horticultural soil mixes, perlite is used in food processing for filtration and in natural gas processing as a low-temperature insulation that aids the gas liquefaction process. Perlite is also an excellent high temperature insulator and resists burning.

Perlite is one of the “newest” economically significant minerals. Controlled experiments using perlite from near Superior, Ariz., did not occur until 1940, and perlite was not used extensively until 1945. What is unique to perlite and just a few other minerals, such as vermiculite, is that when perlite is heated, its volume increases and its density decreases dramatically — a characteristic discovered only in 1928. Dropping a sample of sand-sized particles of crude processed perlite into a large furnace at 760 to 1,100 degrees Celsius causes the perlite to “pop” like popcorn, expanding to as much as 20 times its original volume. The average density of so-called expanded perlite is about 110 kilograms per cubic meter, whereas the average density of crude processed perlite is about 2,300 kilograms per cubic meter. A large bag of expanded perlite at a local home improvement store is as light as a large bag of popcorn.

The largest perlite mines are in New Mexico, with others in Arizona, California, Idaho, Nevada, Oregon and Utah. After mining, crude perlite is crushed, sorted into several sizes and then shipped throughout the United States. This crude processed perlite goes to expanding plants, which heat treat the mineral and then either use or sell it. Armstrong World Industries in Lancaster, Pa., is by far the largest producer and consumer of expanded perlite, making many of the ceiling tiles used in the United States.

Mining companies in the United States sold or used about 500,000 metric tons of crude processed perlite, with an average value of about \$36 per ton, in 2002. Imports of crude processed perlite, about 175,000 tons per year, supply about 25 percent of the demand in the United States. In 2002, 63 perlite expansion plants sold or used about 670,000 tons with an average value of \$217 per ton. Estimates put the United States as the largest producer and consumer of crude processed and expanded perlite in 2002. Other leading producers of crude processed perlite were, in descending order, Greece, Japan, Hungary and Turkey.

Originally published as *Geotimes* Mineral Resource of the Month, October 2003
Used with permission.



Sample of expanded perlite with penny for scale. Image from *Minerals in Your World*.