

## Industrial Minerals in Idaho

**T**oday, industrial minerals promise markets and wealth far greater than that for the proverbial bonanza of gold. Our accustomed progress and prosperity have created constant demands for these commodities, making them the truly indispensable building blocks of modern civilization. Nationwide and in Idaho, industrial minerals represent an annual dollar value more than that of the glamorous precious metals, gold and silver.

The term industrial minerals, or nonmetallics as they are sometimes called, covers all those rocks and naturally occurring earth resources other than metals, oil, gas, geothermal water, and, in some definitions, gemstones. Yet why, for example, are rather common materials—sand and gravel, phosphate, limestone, and dimension stone—so valuable? One hint in seeking an answer is to imagine constructing just our buildings and roads without rock or sand and gravel. According to the U.S. Bureau of Mines, every person in the United States will use nearly 1 million pounds of the combined commodities of stone, sand, gravel, and cement in his or her lifetime.

The mining and processing of industrial minerals are different in several ways from that for metals such as gold, silver, lead, zinc, and copper. For one, deposits of nonmetallics tend to be larger and easier to find and less costly to buy and develop. The purity of the deposit may be less important, owing to the large quantity of material to be extracted. Nonmetallics are usually mined close to local or regional markets and major transportation routes, because shipping costs are a big expense. To consolidate operating costs further, the mines and processing plants are commonly located in the same area. Commodity prices fluctuate little in comparison with those for the metallics, thereby making properly developed mines for industrial minerals excellent long-term investments. For all these reasons and finally, since we will always need these products for their very practical uses, and their uses and value should only increase in the future, the commercial development of nonmetallics will continue to gleam with a luster all its own.

Idaho is endowed with a wide variety of industrial minerals. The most valuable in yearly production is phosphate (see GeoNote 8). Sand and gravel and crushed stone are second in value. Over forty companies operate sand and gravel or crushed stone plants in the state. Other nonmetallics being produced include pumice, perlite, garnet, limestone, clay, silica, scoria/volcanic cinders, dimension stone, gypsum, and zeolites. The state also has potentially commercial deposits of diatomite, bentonite, fluorspar, mica, barite, and kyanite. Commodities found

in the state but yet to be commercially developed include manganese, beryllium, thorium, rare earth elements (black sands), asbestos, feldspar, salt, and iron ore.

Different kinds of volcanic glass are mined throughout the state. Pumice, a porous light-colored material, is commonly buoyant enough to float on water. It is used as a light-weight aggregate for building blocks and other construction materials. Companies mining pumice include Hess Pumice in Malad, Amcor Inc. in Idaho Falls, and Producers Products in Meridian. Hess Pumice grinds the rock to various sizes and sells the product as an abrasive (used for example in pencil erasers and Lava™ hand soap) and as a polishing medium.

Perlite, another volcanic glass, contains water and when heated expands or pops like popcorn. Raw and expanded perlite is used as a fireproofing material, a filtering medium, and a light-weight aggregate. The commodity is mined by National Perlite (a division of Oglebay Norton) in Malad. The volcanic glass, scoria, is used as landscaping rock, aquarium gravel, and briquets in gas barbecues. It is mined by Mountain West Bark Products at Rexburg and Lava Flow Products near Mountain Home.

Idaho has the largest garnet operation in the United States. Garnet is used in filters for swimming pools and as an abrasive for sandpaper and sandblasting. Emerald Creek Garnet Milling Company near Fernwood generates annually more than 20,000 tons of finished product. The garnets are dredged from Emerald and Carpenter Creeks in the state's largest placer mine.



Active industrial mineral operations in Idaho.

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Limestone is mined and processed for a variety of purposes. It is an important ingredient in cement, the bonding agent in the manufacture of concrete. The only cement producer in the state is Ash Grove Cement West in Inkom. The company gets lime from a pit near its plant. Limestone for animal feed supplement and industrial uses is provided by Treasure Canyon Calcium in Franklin County. The Nez Perce Indian tribe sells limestone to a paper mill in Lewiston. Travertine, a decorative building stone, is quarried by Idaho Travertine in Idaho Falls. Recently, limestone has also been used as a filler in paper and other products. Lime-filled paper is more stable and lasts longer than the much more acidic and deteriorative clay-based paper. Two companies, Idaho Limestone and Faxe Kalk (a Danish Corporation), have invested in this market. Idaho Limestone has built a \$2.5 million filler-lime plant at Grangeville. Faxe Kalk has purchased the White Rock lime deposit in Clark County to be operated by E.J. Wilson and Sons. The state has other limestone deposits that might be commercially developed.

High-quality fire brick was produced until recently by A.P. Greene in Troy. The now defunct plant produced brick used by the aluminum and timber industries. The clay to make the brick was mined from pits near Deary. Clayburn Industries of Canada ships clay from this same area to British Columbia for making similar refractories.

Pure silica sand is mined by Unimin Corporation from ancient lake-bed deposits near Emmett. Unimin sells the silica for an abrasive in sandblasting and as a material in the manufacture of glass bottles and other glass products. Monsanto at Soda Springs and FMC Corporation at Pocatello quarry quartzite for slag in their elemental phosphorus plants.

A decorative quartzite from quarries near Oakley is shipped worldwide as a facing and building stone. Several firms mine and market the Oakley stone. These include Northern Stone Supply, Oakley Valley Stone, Idaho Quartzite Corporation, Star Stone Company, and Ernie Ray Hale Quarries. S and O Stone quarries quartzite near Clayton for building stone.

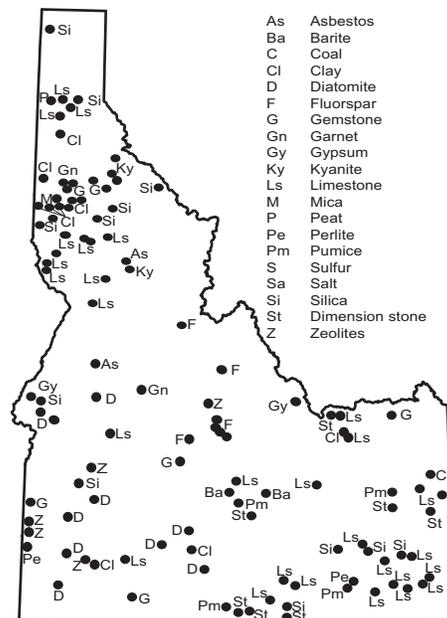
Gypsum is quarried from the Iron Mountain deposit near Weiser by Silver Still Mining Company. All of this material is used for agricultural applications.

Zeolites are a family of minerals known as molecular sieves. The minerals are used for various applications including very fine filters, gas absorbents, water softening, pollution control, a carrier for fungicides and other products, and an animal feed supplement. Large deposits of zeolite (especially the mineral clinoptilolite) are found in southwest Idaho, near the Oregon border and the old townsite of Sheaville. Teagum Mineral Products mines

zeolite from these deposits and processes the material at a plant in Adrian, Oregon. Steelhead Resources also owns large deposits in this area.

Diatomite is a sedimentary rock consisting of closely packed, microscopic fossilized aquatic plants called diatoms. The material works well as a filter and as an extender in paints and plastics. The wine and beer industries use diatomite in filtering their products. Potentially important deposits are being developed by Grefco in Owyhee County and American Diatomite north of Gooding on Clover Creek.

Gemstones are commonly included in discussions of industrial minerals. Idaho is known as the "Gem State" and for good reason. The commercial garnet deposits, discussed earlier, of Emerald Creek and vicinity in northern Idaho are also the sites of gem-quality star garnets for which Idaho is so famous. The star garnet is the official state stone, and the finest star garnets in the world come from Idaho. The U.S. Forest Service maintains a popular fee-collecting area near Fernwood. A private company, 3D's Panhandle Gems, markets the beautiful stones. Spectacular fire opals are mined by Spencer Opal near Idaho Falls. Jasper mines are in Bruneau Canyon of Owyhee County and near the old mining town of Pearl in Gem County. Other well-known gemstones include smoky quartz crystals and aquamarine crystals collected primarily from the Sawtooth batholith.



Potential deposits or occurrences of industrial minerals in Idaho.

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