

Gypsum Encyclopedia Article

Gypsum

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Gypsum

Gypsum, a white mineral soft enough to be scratched with a fingernail, is hydrated calcium sulfate $[\text{Ca}(\text{SO}_4) \cdot 2\text{H}_2\text{O}]$. Gypsum often begins as calcium sulfate dissolved in an isolated body of salt **water**. As the water evaporates, the calcium sulfate becomes so concentrated that it can no longer remain in solution and crystallizes out (precipitates) as gypsum. Many large beds of gypsum have been formed in this way.

Gypsum occurs in a number of distinct forms, including a clear, parallelogram-shaped crystal (selenite); a white, **amorphous** form (alabaster, used for ornamental carving); and a fibrous, lustrous form (satin spar, used in jewelry). When ground up and heated to drive off its water, gypsum becomes a powder termed plaster of Paris. Plaster of Paris has the useful property of hardening in any desired shape when mixed with water, molded, and allowed to dry.

Gypsum is one of the most widely used **minerals** in the world. Some 90 countries mine gypsum, producing more than 100 million tons (91 million metric tons) annually. The construction industry has long been particularly gypsum intensive. In the late nineteenth and early twentieth centuries gypsum was widely used in plastering, which since the 1950s has been displaced by gypsum drywall (sheetrock). The average new U.S. home contains tons of gypsum drywall. Gypsum is also an ingredient in portland cement, which is used in the construction of bridges, buildings, highways, and the like, and millions of tons of gypsum are used annually as fertilizer. Small quantities of pure gypsum are essential in smelting, glassmaking, and other industries.

Low-grade gypsum is manufactured synthetically at coal-fired electric power plants as a by-product of pollution-control processes that remove sulfur from flue gas. Synthetic gypsum production exceeds 110 million tons (100 million metric tons) annually.

See Also

Mohs' Scale