



Little Known Facts about Gypsum



- The word gypsum is Latin and is derived from the Greek (*gyposos*) meaning “chalk” or “plaster,” although it may also have Semetic origins (Arabic *jibs*, Hebrew *gephes*).
- Chemical composition is $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ (Calcium Sulfate Dihydrate).
- There are five basic forms of gypsum: *selenite* (transparent and some of the largest crystals found on earth), *satinspar* (fibrous and silky), *alabaster* (fine-grained, translucent white, used in ornamental works), *rock gypsum* (the most common form), and *gypsite* (soft, earthy, impure form). Under unusual circumstances gypsum can be in the form of sand, and in arid and sandy conditions gypsum can also form as desert rose, a rosette formation with sand inclusions.
- Gypsum is water soluble and forms by evaporation or as a result of the mineral anhydrite being hydrated. These unique evaporative and soluble properties are two factors, among many others, that have led to the unlikely formation of the largest gypsum sand dunefield in the world at White Sands National Monument.
- Gypsum also has a unique chemical makeup which allows it to be changed and used for multiple purposes. For instance, it contains water molecules that are attached to calcium sulfate molecules by weak hydrogen bonds, and gypsum can be dehydrated and then re-hydrated easily, allowing it to take on various useful forms.
- Dehydrating gypsum at 300°F results in plaster of Paris, named for a large gypsum deposit in that city. Plaster of Paris is used in construction and to make sculpture, gauze, and casts.
- Gypsum was used by the ancient Greeks, Assyrians, and Chinese in sculpture and was first used in construction as mortar for the great Egyptian pyramid of Cheops (3000 BC). The Romans used it as a fire resistant material. Today it is used in many ways including the manufacture of medicines, insecticides, paint, highways, soil conditioner, tennis courts, crayons, beer, mead, tofu, baked goods, and frozen desserts. Its most common use in the United States is in the manufacture of drywall (plaster board).
- Benjamin Franklin introduced the use of gypsum into the United States after seeing it used in France. Mining soon became widespread in the United States. Today more than 110 million metric tons of gypsum products are produced worldwide each year.
- Gypsum and its associated products are heavy and expensive to transport. This, along with White Sands’ remote location, may have been a deterrent to turn-of-the-century prospectors who showed interest in mining these gypsum dunes.

- In the early 1800s the illegal smuggling of gypsum into Passamaquoddy Bay resulted in the “Plaster War,” in which the smugglers, farmers who relied on the mineral as a fertilizer, defeated New Brunswick officials.
- In 2000 miners in Chihuahua, Mexico discovered Cueva de los Cristales (Cave of Crystals). The cave contains gypsum crystals up to thirty-six feet long and weighing fifty-five tons, some of the largest natural crystals ever found.
- In 2004 the Mars Rover *Opportunity* confirmed gypsum dunefields on the surface of Mars. Because the formation of gypsum is associated with water, this has led to new research about the possibility of life on Mars.
- White Sands National Monument is home to the largest gypsum dunefield in the world (275 square miles) and can be seen from space. The monument houses 4.5 billion tons of gypsum, enough to circle the equator in box cars twenty-five times or supply the U.S. drywall industry for hundreds of years.

Further Reading

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