

Synthetic Gypsum

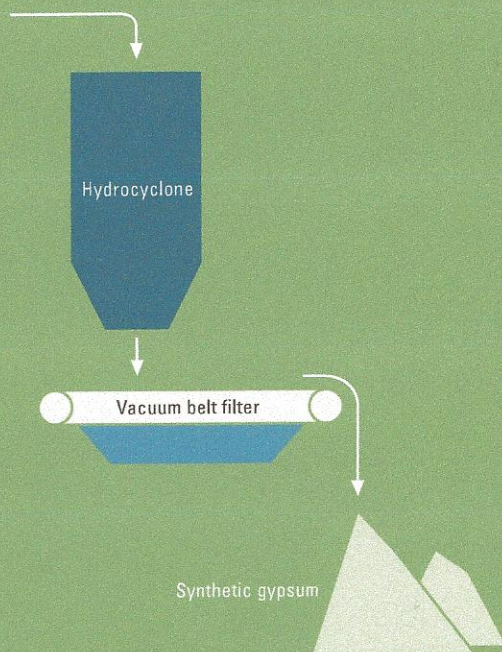
Dewatering for a better product

Because the FGD process uses a lot of water, the resulting product has a high moisture content. A dewatering system removes most of the water from the calcium sulfate, making it a more marketable product.

The calcium sulfate passes through a hydrocyclone and on to a belt filter. Vacuum pumps beneath the belt literally suck the water out of the product, leaving it with a 10 percent moisture content. The synthetic gypsum is ready for use.

Gypsum Dewatering Island

Calcium sulfate
from FGD system



How gypsum forms

Synthetic gypsum is a sulfate material that results from the flue gas desulfurization (FGD) or "scrubbing" process at coal-fired power plants. The FGD process removes up to 95 percent of the sulfur dioxide emissions from the plant flue gas.

A slurry of powdered limestone and water is sprayed into the boiler's flue gas causing a chemical reaction. The calcium carbonate in the limestone reacts with the sulfur dioxide in the flue gas to form calcium-sulfur compounds. The newest FGD technology (forced oxidation) introduces air into the process to convert the solid product into calcium sulfate (synthetic gypsum).

Uses for synthetic gypsum

Calcium sulfate, also known as gypsum, is a harmless compound that most often occurs naturally. Natural gypsum is mined commercially in the United States and elsewhere as a raw material for use in building products such as drywall, cement additives and plaster.

Synthetic gypsum also can be used to manufacture these same building materials, which reduces the need to mine the natural deposits. AEP is working to market the synthetic gypsum produced by its FGD systems for this purpose. Marketing the synthetic gypsum will significantly reduce the amount of material that will need to be disposed.

Managing gypsum in a landfill

Any synthetic gypsum that is produced by the FGD systems that is not marketed can be safely managed in landfills. AEP anticipates that it will not be able to market all of the synthetic gypsum it produces and therefore will likely need to landfill some of this material.

Even though gypsum (calcium sulfate) is considered a benign material, AEP will take the steps necessary (if the material is landfilled) to control surface runoff and protect groundwater resources.