

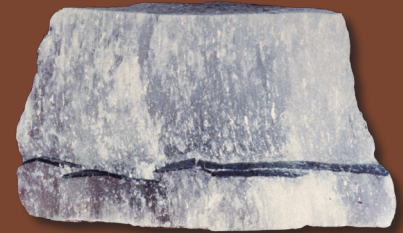
# Anhydrite and Gypsum

## Indiana's Evaporite Minerals

Gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) and anhydrite ( $\text{CaSO}_4$ ) are two related minerals formed in Indiana during periodic episodes of ancient sea water evaporation in restricted basins. Large deposits of both minerals are located in northwestern and southwestern Indiana. These deposits are commonly associated with dolostone and limestone.

Anhydrite may be converted to gypsum with the addition of the water accompanied by a volume increase that destroys any planar features in the beds. The reverse is also possible, creating anhydrite by dehydrating gypsum.

Both minerals display vitreous luster and are white in color and streak. The calcium in either mineral may be substituted by small amounts of strontium and barium. The differences in their physical characteristics help to identify these minerals. Gypsum is a soft mineral that can be scratched with your fingernail and has four different cleavage surfaces. Its crystals display a variety of forms, the most common being a granular, massive rock known as "alabaster." Another type, selenite, is a transparent crystalline material that forms large, well-developed crystals. Aggregates of fibrous gypsum form a variety called "satin spar."



satin spar gypsum



bluish anhydrite with calcite

Although commonly associated with gypsum, anhydrite lacks  $\text{H}_2\text{O}$  molecules, resulting in different physical characteristics. Anhydrite closely resembles gypsum in hand samples, but it has three cleavage planes at 90 degree angles. In addition, anhydrite is slightly harder and denser compared with gypsum and may have a slightly bluish tint.

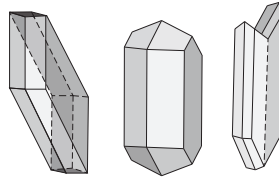


gypsum crystals

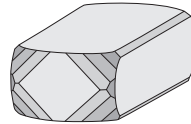
Both gypsum and anhydrite are used as soil additives and in portland cement. Gypsum is more economically desirable because of its use in drywall manufacturing.

## MOH'S HARDNESS SCALE

S O F T E S T  ↑          ↓  H A R D E S T	1	TALC	
	2	<b>GYPSUM</b>	← FINGERNAIL
	3	CALCITE	
		<b>ANHYDRITE</b>	← COPPER COIN
	4	FLUORITE	
	5	APATITE	
			← KNIFE / GLASS
	6	FELDSPAR	
	7	QUARTZ	
			← STEEL TOOL
8	TOPAZ		
9	CORUNDUM		
10	DIAMOND		



Gypsum Crystals



Anhydrite Crystal

*Analyzing the Past to Provide for the Future*



Indiana Geological Survey

611 North Walnut Grove Ave.

Bloomington, Indiana 47405

(812) 855-7636

IGSinfo@indiana.edu

<http://IGS.indiana.edu>