

Anhydrite

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Anhydrite is a mineral – anhydrous calcium sulfate, CaSO_4 . It is in the orthorhombic crystal system, with three directions of perfect cleavage parallel to the three planes of symmetry. It is not isomorphous with the orthorhombic barium (baryte) and strontium (celestine) sulfates, as might be expected from the chemical formulas. Distinctly developed crystals are somewhat rare, the mineral usually presenting the form of cleavage masses. The hardness is 3.5 and the specific gravity 2.9. The color is white, sometimes greyish, bluish or purple. On the best developed of the three cleavages the lustre is pearly, on other surfaces it is vitreous. When exposed to water, anhydrite readily transforms to the more commonly occurring gypsum, ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) by the absorption of water. This transformation is reversible, with gypsum or calcium sulfate hemihydrate forming anhydrite by heating to $\sim 200^\circ\text{C}$ under normal atmospheric conditions.^[5] Anhydrite is commonly associated with calcite, halite, and sulfides such as galena, chalcopyrite, molybdenite and pyrite in vein deposits.

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Occurrence

Anhydrite is most frequently found in evaporite deposits with gypsum; it was, for instance, first discovered, in 1794, in a salt mine near Hall in Tirol. In this occurrence depth is critical since nearer the surface anhydrite has been altered to gypsum by absorption of circulating ground water.

Anhydrite



Anhydrite, Chihuahua, Mexico

General

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| Category | Sulfate mineral |
| Chemical formula | Anhydrous calcium sulfate: CaSO_4 |
| Strunz classification | 07.AD.30 |
| Dana classification | 28.3.2.1 |
| Crystal symmetry | Orthorhombic 2/m 2/m 2/m |
| Unit cell | $a = 6.245(1) \text{ \AA}$, $b = 6.995(2) \text{ \AA}$, $c = 6.993(2) \text{ \AA}$; $Z = 4$ |
| Identification | |
| Color | Colorless to pale blue or violet if transparent; white, mauve, rose, pale brown or gray from included impurities |
| Crystal habit | Rare tabular and prismatic crystals. Usually occurs as fibrous, parallel veins that break off into cleavage fragments. Also |