Goslarite

\[ \text{ZnSO}_4 \cdot 7\text{H}_2\text{O} \]

Crystal Data: Orthorhombic. Point Group: 222. Typically stalactitic or in efflorescent crusts; fibrous, granular or massive.

\[ D(\text{meas.}) = 1.98(5) \quad D(\text{calc.}) = 1.972 \]
Soluble in \( \text{H}_2\text{O} \), taste astringent, metallic, nauseous; dehydrates in air; strongly diamagnetic.

Optical Properties: Transparent. Color: Colorless, white; pale shades of blue, green, or brown from impurities; colorless in transmitted light. Luster: Vitreous, silky if fibrous. 
Optical Class: Biaxial (−). Orientation: \( X = b; \ Y = c; \ Z = a. \) Dispersion: \( r > v \), weak. 
\[ \alpha = 1.463 \quad \beta = 1.475 \quad \gamma = 1.480 \quad 2V(\text{meas.}) = \text{Small to moderate.} \]

Cell Data: Space Group: \( \text{P2}_1\text{2}_1\text{2}_1 \). 
\begin{align*}
a & = 11.779 \\
b & = 12.050 \\
c & = 6.822 \\
Z & = 4
\end{align*}

X-ray Powder Pattern: Synthetic. 
4.21 (100), 5.36 (80), 4.18 (50), 5.29 (35), 2.867 (35), 2.651 (30), 4.46 (25)

Chemistry:
\begin{align*}
\text{SO}_3 & \quad 27.29 \quad \text{(1)} \quad 27.84 \quad \text{(2)} \\
\text{FeO} & \quad 1.12 \\
\text{MnO} & \quad 1.24 \\
\text{NiO} & \quad 0.06 \\
\text{ZnO} & \quad 23.12 \quad 28.30 \\
\text{MgO} & \quad 0.81 \\
\text{H}_2\text{O} & \quad 42.42 \quad 43.86 \\
\text{insol.} & \quad 3.65 \\
\text{Total} & \quad 99.71 \quad 100.00
\end{align*}

(1) Ushaw Moor, Durham, England. (2) \( \text{ZnSO}_4 \cdot 7\text{H}_2\text{O} \).

Polymorphism & Series: Forms a series with epsomite.

Occurrence: A secondary mineral in oxidized portions of zinc sulfide deposits, particularly as coatings on walls of mine passages.

Association: Epsomite, melanterite, pickeringite, chalcanthite, gypsum.

Distribution: Widespread as post-mining efflorescences. A few notable localities include: in Germany, from the Rammelsberg mine, near Goslar, Harz Mountains, and at Freiberg and Altenberg, Saxony. From Baňská Štiavnica (Schemnitz), Slovakia. At Falun, Sweden. From Sain-Bel, near Lyon, Rhône, France. At the Almagrera mine, Tharsis, Huelva Province, Spain. In Italy, at Capanne Vecchie, Elba, and Raißl, Venezia Giulia. At Broken Hill, New South Wales, Australia. In the USA, in Arizona, at Bisbee, Cochise Co. and many other districts; from the Central district, Grant Co., New Mexico; at Island Mountain, Trinity Co., California; from Butte, Silver Bow Co., Montana; at Bingham Canyon, Salt Lake Co., Utah; in the Comstock Lode, Storey Co., Nevada; at Friedensville, Lehigh Co., Pennsylvania. From Quebrada de La Alcaparrosa, San Juan Province, Argentina.

Name: For the locality at Goslar, Germany.


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