Bischofite $MgCl_2 \cdot 6H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals short prismatic along [001]; commonly foliated, fibrous, crystalline granular. *Twinning:* May twin polysynthetically under pressure.

Physical Properties: *Fracture:* Conchoidal to uneven. Hardness = 1–2 D(meas.) = 1.591–1.604 D(calc.) = 1.5895 (synthetic). Soluble in H_2O; deliquescent; taste astringent, bitter.

Optical Properties: Semitransparent. *Color:* Colorless to white; colorless in transmitted light. *Luster:* Vitreous to dull.
Optical Class: Biaxial (+). *Orientation:* $X = b$; $Y \wedge c = 9.5°$. *Dispersion:* $r > v$, weak.
$\alpha = 1.495$ $\beta = 1.507$ $\gamma = 1.528$ 2V(meas.) = 79°24′

Cell Data: *Space Group:* $C2/m$ (synthetic). $a = 9.8607(2)$ $b = 7.1071(2)$ $c = 6.0737(2)$ $\beta = 93.758(2)°$ Z = 2

X-ray Powder Pattern: Synthetic.
4.095 (100), 2.646 (69), 2.880 (58), 2.732 (39), 2.305 (39), 2.228 (27), 3.553 (26)

Chemistry:

	(1)	(2)	(3)
Mg	11.86	11.5	11.95
Ca		0.9	
Cl	35.04	34.2	34.88
H_2O	[53.10]	[51.4]	53.17
SO_3		2.0	
Total	[100.00]	[100.0]	100.00

(1) Leopoldshall, Germany; H_2O by difference. (2) Stassfurt, Germany; by electron microprobe, H_2O by difference. (3) $MgCl_2 \cdot 6H_2O$.

Occurrence: In saline deposits; probably in part secondary, formed from carnallite.

Association: Carnallite, halite, kieserite.

Distribution: In Germany, from Stassfurt-Leopoldshall, 34 km south of Magdeburg, Saxony-Anhalt; at Vienenburg and Aschersleben, Lower Saxony. From Lake Inder, Kazakhstan.

Name: For Karl Gustav Bischof (1792–1870), German geologist and mineral chemist, University of Bonn, Bonn, Germany.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 46–47. (2) Heide, K. and W. Kühn (1965) Bischofit im carnallitschen Stassfurtlager der stillgelegten Kaliwerke Aschersleben/Anhalt (Schachtanlage V). Chem. Erde, 24, 211–214 (in German). (3) Sorrell, C.A. and R.R. Ramey (1974) X-ray powder data and unit cell parameters of $MgCl \cdot 6H_2O$. J. Chem. Engr. Data, 19, 31–32. (4) Agron, P.A. and W.R. Busing (1985) Magnesium dichloride hexahydrate, $MgCl_2 \cdot 6H_2O$, by neutron diffraction. Acta Cryst., C41, 8–10.