

Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals are uncommon, dipyramidal $\{\bar{1}11\}$, with $\{110\}$ and perhaps another dozen forms, to 10 cm; typically coarse- to fine-grained, massive. *Twinning:* On $\{001\}$, contact; polysynthetic about $[110]$.

Physical Properties: *Cleavage:* On $\{110\}$, $\{111\}$, perfect; on $\{\bar{1}11\}$, $\{\bar{1}01\}$, $\{011\}$, imperfect. *Tenacity:* Friable to firm. Hardness = 3.5 D(meas.) = 2.571 D(calc.) = 2.571 Slowly soluble in H₂O.

Optical Properties: Translucent. *Color:* Colorless, pale gray, pale yellow; colorless in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $Y = b$; $Z \wedge c = -76.5^\circ$. *Dispersion:* $r > v$, moderate. $\alpha = 1.520$ $\beta = 1.533$ $\gamma = 1.584$ $2V(\text{meas.}) = 55^\circ$

Cell Data: *Space Group:* C2/c. $a = 6.912(2)$ $b = 7.624(2)$ $c = 7.642(2)$ $\beta = 118.09(2)^\circ$
Z = 4

X-ray Powder Pattern: Klodawa, Poland. (ICDD 13-102).
3.41 (10), 4.84 (9), 3.33 (9), 2.527 (9), 2.055 (9), 3.05 (8), 2.567 (8)

Chemistry:

	(1)	(2)
SO ₃	57.93	57.85
MgO	29.00	29.13
H ₂ O	13.07	13.02
Total	100.00	100.00

(1) Stassfurt, Germany. (2) MgSO₄·H₂O.

Mineral Group: Kieserite group.

Occurrence: Typically in marine salt deposits; rarely as a volcanic sublimate or efflorescence.

Association: Halite, carnallite, polyhalite, anhydrite, boracite, sulfoborite, leonite, epsomite, celestine.

Distribution: In Germany, from the Stassfurt-Westeregeln district, with large crystals from the Bartensleben mine, Saxony-Anhalt; in the Hildesia mine, near Hannover, and at Wathlingen, Lower Saxony, and many other places. From Hallstatt, Austria. At Stebnyk and Kalusz, Ukraine. From Klodawa, near Kutno, Poland. At Sleights, Eskdale, Yorkshire, England. From Monte Sambuco, Sicily, Italy. At Ozinky, southwest of Saratov, Russia. In the Mayo mine, Salt Range, Punjab, India. In the USA, from the Carlsbad potash district, Eddy Co., New Mexico, extending into west Texas; in the Paradox Basin, Grand Co., Utah.

Name: Honoring Dietrich Georg Kieser (1779–1862), President, Jena Academy, Jena, Germany.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 477–479. (2) Hawthorne, F.C., L.A. Groat, M. Raudsepp, and T.S. Ercit (1987) Kieserite, Mg(SO₄)(H₂O), a titanite-group mineral. Neues Jahrb. Mineral., Abh., 157, 121–132. (3) Hintze, C. (1929) Handbuch der Mineralogie. Gruyter & Co., Berlin, 1(3), 4324–4332 (in German).