

Kemmlitzite**(Sr, Ce)Al₃(AsO₄)(SO₄)(OH)₆**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3}2/m$. As pseudocubic rhombohedral crystals, to 0.15 mm, rarely modified by {0001}.

Physical Properties: *Cleavage:* Poor on {0001}. Hardness = 5.5 D(meas.) = 3.63 D(calc.) = 3.601 Low magnetic susceptibility.

Optical Properties: Transparent to translucent. *Color:* Pale gray-brown with a yellow tint, brownish; in transmitted light, colorless to brown-yellow, commonly zoned.

Optical Class: Uniaxial (+). $\omega = 1.701(1)$ $\epsilon = 1.707(1)$

Cell Data: *Space Group:* $[R\bar{3}m]$ (by analogy to beudantite). $a = 7.027(1)$ $c = 16.51(1)$ $Z = 3$

X-ray Powder Pattern: Kemmlitz, Germany.

2.959 (10), 3.514 (9), 1.903 (9), 2.203 (8), 1.757 (8), 5.71 (7), 1.292 (6)

Chemistry:

	(1)
SO ₃	5.99
P ₂ O ₅	5.69
As ₂ O ₅	21.57
SiO ₂	2.18
Al ₂ O ₃	27.24
RE ₂ O ₃	12.60
Fe ₂ O ₃	0.78
MgO	0.90
CaO	0.90
SrO	8.27
H ₂ O	12.04
Total	98.16

(1) Kemmlitz, Germany; RE₂O₃ = Ce₂O₃ 57.00%, La₂O₃ 26.35%, Nd₂O₃ 15.77%, Sm₂O₃ 0.88%; AsO₄, SO₄, PO₄, (OH)¹⁻, and H₂O confirmed by IR; corresponding to (Sr_{0.42}RE_{0.40}Mg_{0.12}Ca_{0.08})_{Σ=1.02}(Al_{2.79}Fe_{0.05}³⁺)_{Σ=2.84}(AsO₄)_{0.98}[(PO₄)_{0.42}(SO₄)_{0.39}(SiO₄)_{0.19}]_{Σ=1.00}(OH)_{5.22}•0.88H₂O.

Mineral Group: Beudantite group.

Occurrence: In a kaolinized quartz porphyry, in a heavy-fraction separate of undetermined origin as to primary or secondary formation.

Association: Kaolinite, zircon, anatase, apatite, 13 other less-abundant heavy minerals.

Distribution: From the Kemmlitz kaolin deposit, near Oschatz, Saxony, Germany.

Name: For the locality of the first specimens, Kemmlitz, Germany.

Type Material: National Museum, Prague, Czech Republic, 53508; National School of Mines, Paris, France; Harvard University, Cambridge, Massachusetts, USA, 109097.

References: (1) Hak, J., Z. Johan, M. Kvaček, and W. Liebscher (1969) Kemmlitzite, a new mineral of the woodhouseite group. Neues Jahrb. Mineral., Monatsh., 201–212. (2) (1970) Amer. Mineral., 55, 320–321 (abs. ref. 1).