

Kuzelite**Ca₄Al₂(SO₄)(OH)₁₂•6H₂O**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3}$ or 3. Platy hexagonal to rhomboidal crystals, to 2 mm.

Physical Properties: *Cleavage:* On {0001}, perfect. *Fracture:* Uneven. *Hardness* = 1–2
D(meas.) = 1.99(5) D(calc.) = 2.014

Optical Properties: Transparent. *Color:* White. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (-). $\omega = 1.504(5)$ $\epsilon = 1.485(5)$

Cell Data: *Space Group:* $R\bar{3}$ or $R3$. $a = 5.76(1)$ $c = 53.66(2)$ $Z = 3$

X-ray Powder Pattern: Zeilberg quarry, Germany.
8.972 (100), 4.476 (70), 2.362 (40), 2.190 (40), 2.071 (35), 4.004 (30), 2.882 (30)

| Chemistry: | (1) | (2) |
|--------------------------------|--------|--------|
| SO ₃ | 12.9 | 12.86 |
| Al ₂ O ₃ | 19.6 | 16.38 |
| CaO | 34.5 | 36.03 |
| Na ₂ O | 0.0 | |
| H ₂ O | 33.45 | 34.73 |
| Total | 100.45 | 100.00 |

(1) Zeilberg quarry, Germany; by electron microprobe, H₂O by TGA; corresponding to Ca_{3.83}Al_{2.40}(SO₄)(OH)_{12.86}•6H₂O. (2) Ca₄Al₂(SO₄)(OH)₁₂•6H₂O.

Occurrence: A rare mineral in carbonaceous xenoliths in basalt, formed above 100 °C by decomposition of ettringite.

Association: Ettringite, afwillite, natrolite, calcite, torbermorite, gyrolite, portlandite, apophyllite (Zeilberg quarry, Germany); hydrocalumite, ettringite, tobermorite, strätlingite–vertumnite, portlandite, calcite, gypsum (Bellerberg volcano, Germany).

Distribution: In Germany, from the Zeilberg quarry, Maroldsweisach, Bavaria, and at the Bellerberg volcano, two km north of Mayen, Eifel district.

Name: Honoring Professor Hans Jürgen Kuzel (1932–1997), German mineralogist, Mineralogical Institute, Erlangen, Germany, who first synthesized the compound.

Type Material: Martin Luther University, Halle, Germany.

References: (1) Pöllmann, H., T. Witzke, and H. Kohler (1997) Kuzelite, [Ca₄Al₂(OH)₁₂][(SO₄)•6H₂O], a new mineral from Maroldsweisach/Bavaria, Germany. *Neues Jahrb. Mineral., Monatsh.*, 423–432. (2) (1998) *Amer. Mineral.*, 83, 909 (abs. ref. 1). (3) Allmann, R. (1977) Refinement of the hybrid layer structure Ca₂Al(OH)₆ + $\frac{1}{2}$ SO₄•3H₂O. *Neues Jahrb. Mineral., Monatsh.*, 136–144. (4) Blass, G. and H.W. Graf (2001) Neue Mineralienfunde aus der Vulkaneifel. *Mineralien Welt*, 12(1), 19–20 (in German).