

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As crystals with dominant { $\bar{1}01$ }, {100}, {010} and {001}, to 0.5 mm, elongated along [100] and tabular on {010}. *Twinning:* Simply or polysynthetically twinned on {001}.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Fracture:* Stepped. *Tenacity:* Brittle. Hardness = ~ 3.5 D(meas.) = 2.70(3) D(calc.) = 2.768

**Optical Properties:** Transparent. *Color:* Colorless to pale yellow, colorless in transmitted light. *Streak:* White. *Luster:* Vitreous. *Pleochroism:* None. *Optical Class:* Biaxial (+).  $\alpha = 1.589(2)$   $\beta = 1.592(2)$   $\gamma = 1.601(2)$   $2V(\text{meas.}) = 60(10)^\circ$   $2V(\text{calc.}) = 60.3^\circ$  *Orientation:*  $X = b$ ,  $Z \wedge a = 5^\circ$ .

**Cell Data:** *Space Group:* P2/a.  $a = 15.020(5)$   $b = 6.959(2)$   $c = 10.237(3)$   $\beta = 111.470(4)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Hagendorf-Süd granitic pegmatite no. 25, Germany. 2.7958 (100), 4.929 (80), 9.443 (65), 4.719 (47), 3.494 (46), 5.596 (25), 1.979 (24)

<b>Chemistry:</b>	(1)
Na <sub>2</sub> O	0.53
MgO	0.88
Al <sub>2</sub> O <sub>3</sub>	11.66
P <sub>2</sub> O <sub>5</sub>	34.58
CaO	4.29
MnO	17.32
FeO	8.32
ZnO	2.60
<u>H<sub>2</sub>O</u>	<u>2.27</u>
Total	99.68

(1) Hagendorf-Süd granitic pegmatite no. 25, Germany; average of 65 electron microprobe analyses, H<sub>2</sub>O by Penfield method; corresponding to (Ca<sub>0.63</sub>Zn<sub>0.26</sub>Na<sub>0.14</sub>) $\Sigma=1.03$ (Mn<sub>0.60</sub>Fe<sup>2+</sup><sub>0.40</sub>) $\Sigma=1.00$ (Mn<sub>1.40</sub>Fe<sup>2+</sup><sub>0.37</sub>Mg<sub>0.18</sub>Fe<sup>3+</sup><sub>0.06</sub>) $\Sigma=2.01$ (Al<sub>1.88</sub>Fe<sup>3+</sup><sub>0.12</sub>) $\Sigma=2.00$ [PO<sub>4</sub>]<sub>4</sub>(OH)<sub>2</sub>·7.89 H<sub>2</sub>O.

**Mineral Group:** Jahnsite-whiteite group.

**Occurrence:** A secondary mineral in cavities within zwieselite crystals or as coronas (up to 1 mm in diameter) around cubic crystals of uraninite in the core zone of a complex granitic pegmatite that was altered and leached by low-temperature oxidizing hydrothermal solutions.

**Association:** Triplite-zwieselite, fluorapatite, nordgauite, columbite-(Fe), a Mn-analogue of montgomeryite, koninckite, jahnsite-(CaMnMn).

**Distribution:** From the Cornelia open pit, Hagendorf-Süd granitic pegmatite no. 25, Bavaria, Germany.

**Name:** For the chemical composition, in accordance with nomenclature for the whiteite group.

**Type Material:** Mineralogical Museum, St. Petersburg State University, Russia (1/19470).

**References:** (1) Yakovenchuk, V.N., E. Keck, S.V. Krivovichev, Y.A. Pakhomovsky, E.A. Selivanova, J.A. Mikhailova, A.P. Chernyatjeva, and G.Yu. Ivanyuk (2012) Whiteite-(CaMnMn), CaMnMn<sub>2</sub>Al<sub>2</sub>[PO<sub>4</sub>]<sub>4</sub>(OH)<sub>2</sub>·8H<sub>2</sub>O, a new mineral from the Hagendorf-Süd granitic pegmatite, Germany. *Mineral. Mag.*, 76(7), 2761-2771. (2) (2015) *Amer. Mineral.*, 100, 663 (abs. ref. 1).