

Crystal Data: Triclinic, pseudomonoclinic. *Point Group:* $\bar{1}$ or 1. As radiating tufts and bundles of crystals, to 2 mm; crystals elongated || [101] and flattened on {001}. Forms observed are {100} and {001}, also (110). *Twining:* Always, by rotation about [101].

Physical Properties: Hardness = n.d. D(meas.) = 2.86 D(calc.) = 2.89

Optical Properties: Transparent to translucent. *Color:* White to colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $X \simeq b$; $Z \wedge c = 10(5)^\circ$. $\alpha = 1.411(2)$ $\beta = 1.416(2)$ $\gamma = 1.422(2)$ $2V(\text{meas.}) = 77(2)^\circ$ $2V(\text{calc.}) = 78^\circ$

Cell Data: *Space Group:* $C\bar{1}$ or $C1$. $a = 9.48(5)$ $b = 6.98(3)$ $c = 9.30(5)$
 $\alpha = 91.14(10)^\circ$ $\beta = 104.85(10)^\circ$ $\gamma = 90.0(10)^\circ$ $Z = 4$

X-ray Powder Pattern: Hagendorf, Germany.

3.48 (100), 4.56 (70), 3.69 (60), 2.852 (40), 1.460 (40), 2.277 (30), 2.242 (30)

Chemistry:

	(1)	(2)
Ca	29.86	31.05
Al	10.27	10.45
F	52.1	51.52
H ₂ O	7.0	6.98
Total	99.23	100.00

(1) Hagendorf, Germany; by electron microprobe, average of two analyses, H₂O by DTA-TGA; corresponds to $\text{Ca}_{1.90}\text{Al}_{0.97}\text{F}_7\cdot 0.96\text{H}_2\text{O}$. (2) $\text{Ca}_2\text{AlF}_7\cdot \text{H}_2\text{O}$.

Occurrence: Formed by hydrothermal alteration of triphylite in a pegmatite.

Association: Rockbridgeite, pyrite, strengite, apatite.

Distribution: Originally noted on a museum specimen, labelled only "Hagendorf", the matrix of which resembles that of pegmatites in the Hagendorf area, Bavaria, Germany. Since found in the Hagendorf-Süd pegmatite.

Name: For Dr. Carl Hintze (1851–1916), Professor of Mineralogy, University of Breslau, Breslau, Germany, noted for his compilation of the famous *Handbuch der Mineralogie*.

Type Material: Royal Ontario Museum, Toronto, Canada, M35498; National Museum of Natural History, Washington, D.C., USA, B20119.

References: (1) Dunn, P.J., D.R. Peacor, and B.D. Sturman (1979) Carlhintzeite, a new calcium aluminum fluoride hydrate from the Hagendorf pegmatites, Bavaria, Germany. *Can. Mineral.*, 17, 103–105. (2) (1980) *Amer. Mineral.*, 65, 205–206 (abs. ref. 1). (3) Mücke, A. (1981) The parageneses of the phosphate minerals of the Hagendorf pegmatite - a general view. *Chem. Erde*, 40, 217–234.