Weberite Na_2MgAlF_7

Crystal Data: Orthorhombic, pseudocubic. *Point Group:* $2/m\ 2/m\ 2/m$, $mm2$, or 222. As subhedral pseudocubo-octahedral crystals, showing {001}, {010}, {110}, {011}, {101}, {111}, and {131}, and in anhedral cleavages, to several cm; as irregular grains, massive; as inclusions in cryolite and intergrowths with fluorite. *Twinning:* With $[\overline{1}11]$ as twin axis and {011} as composition plane, commonly as contact twins.

Physical Properties: *Cleavage:* {011}, poor; {010}, indistinct. *Fracture:* Uneven. Hardness = 3.5 D(meas.) = 2.96 D(calc.) = 2.966 Slightly soluble in H_2O.

Optical Properties: Translucent. *Color:* Light gray, mottled, rarely pale orange; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (+). *Orientation:* $X = c$; $Y = a$; $Z = b$. α = 1.344–1.346 β = 1.346–1.348 γ = 1.347–1.350 2V(meas.) = 83(3)°

Cell Data: *Space Group:* $Imma$, $Imm2$, or $I2_12_12_1$. a = 7.060(1) b = 10.000(10) c = 7.303(1) Z = 4

X-ray Powder Pattern: Ivigtut, Greenland.
1.779 (10), 2.95 (9), 2.89 (9), 5.05 (6), 5.89 (5), 2.30 (5), 1.542 (5)

Chemistry:

	(1)	(2)
Na	19.08	19.97
K	1.19	
Fe	0.37	
Mg	10.43	10.56
Ca	0.08	
Al	11.65	11.72
F	57.58	57.75
insol.	0.16	
Total	100.54	100.00

(1) Ivigtut, Greenland. (2) Na_2MgAlF_7.

Occurrence: In the cryolite deposit and overlying pegmatite (Ivigtut, Greenland).

Association: Cryolite, chiolite, jarlite, stenonite, thomsenolite, prosopite, pachnolite, ralstonite, fluorite, topaz, potassian mica, pyrite, galena (Ivigtut, Greenland).

Distribution: From the Ivigtut cryolite deposit, southwestern Greenland. At St. Peters Dome, near Pikes Peak, El Paso Co., and in the Goldie carbonatite, McClure Mountain-Iron Mountain, Fremont Co., Colorado; from the Zapot pegmatite, 25 km northeast of Hawthorne, Fitting district, Mineral Co., Nevada, USA. In the Mt. Cleveland tin mine, western Tasmania, Australia. At Perga, Volyn, Ukraine.

Name: Honors Theobald Weber (1823–1886), active in the early development of the Ivigtut cryolite deposit.

Type Material: University of Copenhagen, Copenhagen, Denmark, 1981.936.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 127–128. (2) Ferguson, R.B. (1949) Observations on some aluminum fluoride minerals. Amer. Mineral., 34, 383–397. (3) Giuseppetti, G. and C. Tadini (1978) Re-examination of the crystal structure of weberite. Tschermaks Mineral. Petrog. Mitt., 25, 57–62. (4) Pauly, H. and O.V. Petersen (1981) Weberite from Ivigtut, South Greenland: new data on paragenesis, twinning, habit, and optics. Neues Jahrb. Mineral., Monatsh., 511–519. (5) Knop, O., T.S. Cameron, and K. Jochem (1982) What is the true space group of weberite? J. Solid State Chem., 43, 213–221.