

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As sharp prismatic crystals, to 0.25 mm, that display {110}, {100}, {111}.

Physical Properties: *Cleavage:* None. *Fracture:* n.d. *Tenacity:* Brittle. *Hardness* = n.d. *D(meas.)* = 2.77(2) *D(calc.)* = 2.790

Optical Properties: Translucent. *Color:* Colorless to white. *Streak:* White. *Luster:* Vitreous. *Optical Class:* n.d. *n* ~ 1.445

Cell Data: *Space Group:* Pbcn. *a* = 10.810(2) *b* = 8.336(2) *c* = 6.822(1) *Z* = 4

X-ray Powder Pattern: La Fossa crater, Vulcano, Aeolian Islands, Italy. 2.983 (100), 2.702 (82), 6.631 (70), 1.712 (58), 2.208 (30), 3.317 (28), 5.429 (14)

Chemistry:	(1)	(2)
K ₂ O	36.19	36.48
Al ₂ O ₃	20.42	19.74
SO ₃	28.74	31.01
F	22.89	22.07
<u>-O=F</u>	<u>9.64</u>	<u>9.30</u>
Total	98.60	100.00

(1) La Fossa crater, Vulcano, Aeolian Islands, Italy; average of 7 electron microprobe analyses, corresponding to K_{2.02}[Al_{1.05}F_{3.17}S_{0.94}O_{3.83}].

(2) K₂[AlF₃]SO₄.

Occurrence: In altered pyroclastic breccias in an active fumarole (300-350° C).

Association: Alunite, sassolite, anhydrite, metavoltine.

Distribution: La Fossa crater, Vulcano, Aeolian Islands, Sicily, Italy.

Name: For *Thermessa* (warm island), an ancient Greek name for the island of Vulcano.

Type Material: Reference Collection, Dipartimento di Chimica Strutturale e Stereochimica Inorganica of Università degli Studi, Milan, Italy, 2007-2.

References: (1) Demartin, F., C.M. Grammaccioli, I. Campostrini, and P. Orlandi (2008) Thermessaite, K₂[AlF₃]SO₄, a new ino-aluminofluoride-sulfate from La Fossa crater, Vulcano, Aeolian Islands, Italy. *Can. Mineral.*, 46, 693–700. (2) (2009) *Amer. Mineral.*, 94, 404–405 (abs. ref. 1).