

**Meniaylovite****Ca<sub>4</sub>AlSi(SO<sub>4</sub>)F<sub>13</sub>·12H<sub>2</sub>O**

**Crystal Data:** Cubic. *Point Group:*  $2/m\bar{3}$ . As octahedral and cubo-octahedral crystals to 0.2 mm; in yellowish-white crusts.

**Physical Properties:** *Cleavage:* n.d. *Tenacity:* n.d. *Hardness =* n.d. *Fracture:* n.d.  
D(meas.) = 2.25(2) D(calc.) = n.d.

**Optical Properties:** Transparent. *Color:* Colorless or white. *Streak:* n.d. *Luster:* Vitreous.  
*Optical Class:* Isotropic.  $n(\text{calc.}) = 1.430(1)$

**Cell Data:** *Space Group:*  $Fd\bar{3}$ .  $a = 16.722(2)$   $Z = 8$

**X-ray Powder Pattern:** Tolbachik Volcano, Kamchatka, Russia.  
9.63 (100), 5.91 (46), 2.178 (33), 3.219 (32), 2.235 (28), 5.04 (27), 4.17 (19)

<b>Chemistry:</b>	(1)
CaO	28.96
Al <sub>2</sub> O <sub>3</sub>	6.85
SiO <sub>2</sub>	7.77
SO <sub>3</sub>	10.33
H <sub>2</sub> O <sup>+</sup>	27.89
F	31.90
<u>-O = F</u>	<u>13.43</u>
Total	100.00

(1) Ca<sub>4</sub>AlSi(SO<sub>4</sub>)F<sub>13</sub>·12H<sub>2</sub>O.

**Mineral Group:** Chukhrovite group.

**Occurrence:** A product of the alteration of volcanic rocks by fumarole gases.

**Association:** Malladrite, hieratite(?), ralstonite, anhydrite, gypsum, hematite (Tolbachik); anhydrite, bassanite, gypsum, jarosite, anatase, hematite, opal, ralstonite, jakobssonite, oskarssonite (Eldfell).

**Distribution:** From First and Second cinder cones, Northern Breakthrough of the Tolbachik Main Fracture Eruption (1975-1976), Tolbachik Volcano, Kamchatka, Russia [TL]. At Eldfell volcano, Heimaey Island, Vestmannaeyjar archipelago, Iceland.

**Name:** Honors Russian volcanologist Igor Aleksandrovich *Meniayloy* (1937-1993), for his study of the geochemistry of exhalations of the Tolbachik Main Fracture Eruption; Institute of Volcanology, Far East Branch, Russian Academy of Sciences, Petropavlovsk-Kamchatsky, Russia.

**Type Material:** Mining Museum, St. Petersburg Mining Institute, Russia.

**References:** (1) Vergasova, L.P., T.F. Semyonova, V.B. Epifanova, S.K. Filatov, and V.M. Chubarov (2004) Meniaylovite, Ca<sub>4</sub>AlSi(SO<sub>4</sub>)F<sub>13</sub>·12H<sub>2</sub>O, a new mineral of volcanic exhalations. *Vulkanologiya i Seismologiya*, 2, 3-5 (in Russian). (2) Mathew, M., S. Takagi, K.R. Waerstad, and A.W. Frazier (1981) The crystal structure of synthetic chukhrovite, Ca<sub>4</sub>AlSi(SO<sub>4</sub>)F<sub>13</sub>·12H<sub>2</sub>O. *Amer. Mineral.*, 66, 392-397. (3) Jacobsen, M.J., T. Balić-Žunić, D. Mitolo, A. Katerinopoulou, A. Garavelli, and S.P. Jacobsson (2014) Oskarssonite, AlF<sub>3</sub>, a new fumarolic mineral from Eldfell volcano, Heimaey, Iceland. *Mineral. Mag.*, 78(1), 215-222 [locality].