

**Siwaqaite****Ca<sub>6</sub>Al<sub>2</sub>(CrO<sub>4</sub>)<sub>3</sub>(OH)<sub>12</sub>·26H<sub>2</sub>O**

**Crystal Data:** Hexagonal. *Point Group:* 3*m*. As hexagonal prismatic crystals to 250 μm, terminated by a hexagonal pyramid or a pinacoid; commonly in granular aggregates to ~50 μm.

**Physical Properties:** *Cleavage:* Perfect on (10 $\bar{1}$  0). *Fracture:* Uneven or irregular. *Tenacity:* Brittle. Hardness = ~2 D(meas.) = n.d. D(calc.) = 1.819

**Optical Properties:** Transparent. *Color:* Canary-yellow. *Streak:* Yellowish gray. *Luster:* Vitreous.

*Optical Class:* Uniaxial (-).  $\omega = 1.512(2)$   $\epsilon = 1.502(2)$  *Orientation:*  $E = c$ .

**Cell Data:** Space Group: *P31c*.  $a = 11.3640(2)$   $c = 21.4485(2)$   $Z = 2$

**X-ray Powder Pattern:** Calculated pattern.

9.8415 (100), 5.682 (65), 4.7086 (38), 2.7984 (33), 3.8998 (29), 3.2805 (17), 5.0208 (16)

<b>Chemistry:</b>	(1)	(2)
Cr <sub>2</sub> O <sub>3</sub>	12.80	22.81
SO <sub>3</sub>	6.78	
SeO <sub>3</sub>	3.80	
SiO <sub>2</sub>	0.55	
Al <sub>2</sub> O <sub>3</sub>	7.14	7.75
CaO	25.20	25.59
H <sub>2</sub> O	[42.89]	43.85
Total	99.16	100.00

(1) North Siwaqa complex, Hashem region, Jordan; average of 12 electron microprobe analyses supplemented by Raman and FTIR spectroscopy, H<sub>2</sub>O calculated from stoichiometry; corresponds to Ca<sub>6.01</sub>(Al<sub>1.87</sub>Si<sub>0.12</sub>)<sub>Σ=1.99</sub>[(CrO<sub>4</sub>)<sub>1.71</sub>(SO<sub>4</sub>)<sub>1.13</sub>(SeO<sub>4</sub>)<sub>0.40</sub>]<sub>Σ=3.24</sub>(OH)<sub>11.63</sub>·26H<sub>2</sub>O.

(2) Ca<sub>6</sub>Al<sub>2</sub>(CrO<sub>4</sub>)<sub>3</sub>(OH)<sub>12</sub>·26H<sub>2</sub>O.

**Mineral Group:** Ettringite group.

**Occurrence:** In thin veins and small cavities in spurrite marble of a high-temperature low-pressure pyrometamorphic sequence of rocks.

**Association:** Calcite, fluorapatite, brownmillerite, minerals of the barite-hashemite series, cuspidine, fluormayenite, gehlenite, perovskite, lakargiite.

**Distribution:** North Siwaqa complex, Lisdan-Siwaqa Fault, Hashem region, 60 km south of Amman, Jordan.

**Name:** From the name of the locality, *Siwaqa* area, where the mineral was found.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5277/1).

**References:** (1) Juroszek, R., B. Krüger, I. Galuskina, H. Krüger, Y. Vapnik, and E. Galuskin (2020) Siwaqaite, Ca<sub>6</sub>Al<sub>2</sub>(CrO<sub>4</sub>)<sub>3</sub>(OH)<sub>12</sub>·26H<sub>2</sub>O, a new mineral of the ettringite group from the pyrometamorphic Daba-Siwaqa complex, Jordan. *Amer. Mineral.*, 105(3), 409-421.