

**Currierite****Na<sub>4</sub>Ca<sub>3</sub>MgAl<sub>4</sub>(AsO<sub>3</sub>OH)<sub>12</sub>·9H<sub>2</sub>O**

**Crystal Data:** Hexagonal. *Point Group:* 622. As divergent sprays of hexagonal prisms, needles and hair-like fibers to ~200 μm. Crystals display {100} and {001}.

**Physical Properties:** *Cleavage:* Parallel [001], good. *Tenacity:* Brittle, elastic as thin fibers. *Fracture:* Irregular. Hardness = ~ 2 D(meas.) = 3.08(1) D(calc.) = 3.005 Soluble in dilute HCl.

**Optical Properties:** Transparent. *Color:* Colorless to white. *Streak:* White. *Luster:* Vitreous to silky.

*Optical Class:* Uniaxial (-).  $\omega = 1.614(1)$   $\varepsilon = 1.613(1)$

**Cell Data:** *Space Group:* P622.  $a = 12.2057(9)$   $c = 9.2052(7)$   $Z = 1$

**X-ray Powder Pattern:** Torrecillas mine, Salar Grande, Iquique Province, Tarapacá Region, Chile. 10.63 (100), 3.021 (96), 4.002 (35), 3.474 (29), 1.5227 (29), 4.61 (24), 6.12 (20)

| Chemistry:                     | (1)     | (2)    |
|--------------------------------|---------|--------|
| K <sub>2</sub> O               | 0.17    |        |
| Na <sub>2</sub> O              | 5.65    | 5.67   |
| MgO                            | 2.39    | 1.84   |
| CaO                            | 7.10    | 7.70   |
| CoO                            | 0.09    |        |
| CuO                            | 0.47    |        |
| Fe <sub>2</sub> O <sub>3</sub> | 6.95    |        |
| Al <sub>2</sub> O <sub>3</sub> | 6.97    | 9.33   |
| Sb <sub>2</sub> O <sub>5</sub> | 2.42    |        |
| As <sub>2</sub> O <sub>5</sub> | 62.03   | 63.10  |
| Cl                             | 0.07    |        |
| H <sub>2</sub> O               | [12.82] | 12.36  |
| -O=Cl                          | 0.02    |        |
| Total                          | 102.48  | 100.00 |

(1) Torrecillas mine, Salar Grande, Iquique Province, Tarapacá Region, Chile; average of 5 electron microprobe analyses, H<sub>2</sub>O calculated; corresponds to (Na<sub>3.95</sub>Al<sub>2.96</sub>Ca<sub>2.74</sub>Mg<sub>1.28</sub>Fe<sup>3+</sup><sub>0.63</sub>Cu<sub>0.13</sub>K<sub>0.08</sub>Co<sub>0.03</sub>) $\Sigma=11.80$ (As<sup>5+</sup><sub>11.68</sub>Sb<sup>5+</sup><sub>0.32</sub>) $\Sigma=12$ (O<sub>56.96</sub>Cl<sub>0.04</sub>) $\Sigma=57$ H<sub>30.81</sub>. (2) Na<sub>4</sub>Ca<sub>3</sub>MgAl<sub>4</sub>(AsO<sub>3</sub>OH)<sub>12</sub>·9H<sub>2</sub>O.

**Occurrence:** A secondary alteration phase from the oxidation of native arsenic and other As-bearing primary phases, followed by later alteration by saline fluids derived from evaporating meteoric water under hyperarid conditions.

**Association:** Anhydrite, canutite, chudobaite, halite, lavendulan, magnesiokoritnigite, quartz, scorodite, torrecillasite.

**Distribution:** From the Torrecillas mine, Salar Grande, northern Atacama Desert, Iquique Province, Tarapacá Region, Chile.

**Name:** Honors Rock Henry Currier (1940-2015), American mineral dealer, collector, author and lecturer for his unrelenting efforts to benefit the greater mineralogical community.

**Type Material:** Natural History Museum of Los Angeles County, Los Angeles, California, USA (66266, 64057 and 64080).

**References:** (1) Kampf, A.R., S.J. Mills, B.P. Nash, M. Dini, and A.A. Molina Donoso (2017) Currierite, Na<sub>4</sub>Ca<sub>3</sub>MgAl<sub>4</sub>(AsO<sub>3</sub>OH)<sub>12</sub>·9H<sub>2</sub>O, a new acid arsenate with ferrinatriite-like heteropolyhedral chains from the Torrecillas mine, Iquique Province, Chile. *Mineral. Mag.*, 81(5), 1141-1149. (2) (2018) *Amer. Mineral.*, 103, 658 (abs. ref. 1).