Amstallite **$CaAl(Si,Al)_4O_8(OH)_4 \cdot (H_2O,Cl)$**

Crystal Data: Monoclinic. *Point Group:* $2/m$. As acicular prismatic crystals, to 1 cm, elongated and commonly striated ‖ [001], with cross sections appearing rhombohedral or hexagonal.

Physical Properties: *Cleavage:* Good on {100}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 3–5 D(meas.) = 2.40(5) D(calc.) = 2.38

Optical Properties: Transparent to translucent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Orientation:* $Z = b$; $Y \wedge c = 10°$. *Dispersion:* $r < v$, weak. $\alpha = 1.533$ $\beta = 1.534$ $\gamma = 1.538$ 2V(meas.) = 57(2)° 2V(calc.) = 59°

Cell Data: *Space Group:* $C2/c$. $a = 18.830(2)$ $b = 11.517(2)$ $c = 5.190(1)$ $\beta = 100.86(1)°$ Z = 4

X-ray Powder Pattern: Amstall, Austria.
9.75 (100), 3.603 (100), 3.816 (90), 5.43 (70), 4.714 (60), 3.175 (60), 4.069 (40)

Chemistry:

	(1)
SiO_2	49.41
Al_2O_3	22.84
CaO	13.80
Cl	1.75
H_2O	12.40
$-O = Cl_2$	0.39
Total	99.81

(1) Amstall, Austria; by electron microprobe, corresponds to $Ca_{0.98}Al_{1.78}Si_{3.26}O_{12.80}Cl_{0.20}H_{5.46}$.

Occurrence: In open fissures cutting pegmatitic schlieren, in hydrothermally altered graphite-bearing metamorphic rocks.

Association: Apatite, rutile, siderite, albite, laumontite, calcite, vivianite.

Distribution: In the Amstall graphite quarry, Amstall, Austria.

Name: For the type locality at Amstall, Austria.

Type Material: Institute of Mineralogy and Crystallography, Vienna University; Natural History Museum, Vienna, Austria.

References: (1) Quint, R. (1987) Description and crystal structure of amstallite, $CaAl(OH)_2[Al_{0.8}Si_{3.2}O_8(OH)_2] \cdot [(H_2O)_{0.8}Cl_{0.2}]$, a new mineral from Amstall, Austria. Neues Jahrb. Mineral., Monatsh., 253–262. (2) (1988) Amer. Mineral., 73, 1492–1493 (abs. ref. 1).