

Crystal Data: Hexagonal. *Point Group:* 6/m. As acicular crystals to 0.5 mm; commonly in radiating aggregates.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* [Brittle]. Hardness = ~3 D(meas.) = 3.70(5) D(calc.) = 3.775

Optical Properties: Transparent. *Color:* Light green to yellowish green. *Streak:* Greenish to pale yellow. *Luster:* Vitreous to silky. *Optical Class:* Uniaxial (+). $\omega = 1.725(3)$ $\varepsilon = 1.810(3)$ *Pleochroism:* *O* = yellow-green, *E* = green.

Cell Data: *Space Group:* $P6_3/m$. $a = 13.598(6)$ $c = 5.954(3)$ $Z = 2$

X-ray Powder Pattern: Clara mine, central Black Forest, Germany. 11.88 (10), 2.46 (9), 4.47 (8), 3.56 (8), 2.95 (8), 3.26 (5), 2.70 (5)

Chemistry:	(1)
CaO	1.21
CuO	42.91
Fe ₂ O ₃	0.39
Y ₂ O ₃	0.91
La ₂ O ₃	2.32
Ce ₂ O ₃	4.99
Nd ₂ O ₃	2.38
Sm ₂ O ₃	0.56
Eu ₂ O ₃	0.26
Gd ₂ O ₃	0.52
Dy ₂ O ₃	0.18
SiO ₂	0.96
As ₂ O ₅	30.91
SO ₃	0.40
H ₂ O	[11.10]
Total	100.00

(1) Clara mine, central Black Forest, Germany; average electron microprobe analysis, H₂O by difference; corresponds to $(\text{Ce}_{0.33}\text{Ca}_{0.23}\text{La}_{0.15}\text{Nd}_{0.15}\text{Y}_{0.09}\text{Sm}_{0.03}\text{Gd}_{0.03}\text{Eu}_{0.02}\text{Dy}_{0.01})_{\Sigma=1.04}(\text{Cu}_{5.78}\text{Fe}_{0.05})_{\Sigma=5.83}(\text{As}_{2.88}\text{Si}_{0.17}\text{S}_{0.05})_{\Sigma=3.10}\text{O}_{12}(\text{OH})_6 \cdot 3.60\text{H}_2\text{O}$.

Mineral Group: Mixite group.

Occurrence: In the oxidation zone of polymetallic sulfide deposits.

Association: Barite, quartz, goethite, cornwallite (Clara mine).

Distribution: From the Clara mine, near Oberwolfach, central Black Forest, Germany.

Name: By analogy to *agardite*-(Y), with a suffix for its rare-earth content dominated by Cerium.

Type Material: Staatlichen Museum für Naturkunde, Stuttgart, Germany.

References: (1) Walenta, K. and T. Theye (2004) Agardite-(Ce) of the Clara mine in the central Black Forest. *Aufschluss*, 55, 17-23 (in German, English abs.). (2) (2004) *Amer. Mineral.*, 89(10), 1574 (abs. ref. 1). (3) Aksenov, S.M., N.V. Chukanov, J. Göttlicher, S. Möckel, D. Varlamov, K.V. Van and R.K. Rastsvetaeva (2018) New insights into the crystal chemistry of agardite-(Ce): refinement of the crystal structure, hydrogen bonding, and epitaxial intergrowths with the Sb-analogue of auriacusite. *Phys. Chem. Minerals* 45, 39-50.