

Juabite **$\text{Ca}^{2+}\text{Cu}_{10}(\text{Te}^{4+}\text{O}_3)_4(\text{AsO}_4)_4(\text{OH})_2 \cdot 4\text{H}_2\text{O}$**

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Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As masses of platy crystals, tabular on {010}, with minor {100}, $\{\bar{1}01\}$, and {101}, to 0.3 mm.

Physical Properties: *Cleavage:* Perfect on {010}. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 3–4 D(meas.) = n.d. D(calc.) = 4.50

Optical Properties: Transparent to translucent. *Color:* Emerald-green to pale green; brownish white in reflected light with turquoise-blue internal reflections. *Streak:* Pale green. *Luster:* Vitreous to adamantine on cleavages.

Optical Class: Biaxial. $n = [1.71\text{--}1.73]$

Cell Data: *Space Group:* $P\bar{1}$. $a = 8.9903(7)$ $b = 10.1197(8)$ $c = 8.9959(7)$
 $\alpha = 102.654(1)^\circ$ $\beta = 92.432(1)^\circ$ $\gamma = 70.432(1)^\circ$ $Z = 1$

X-ray Powder Pattern: Centennial Eureka mine, Utah, USA.
3.097 (100), 9.28 (70), 4.65 (70), 3.018 (60), 2.658 (50), 2.468 (50), 1.740 (50)

Chemistry:

	(1)	(2)
As ₂ O ₅	23.17	22.53
TeO ₂	29.99	31.30
FeO	0.26	
CuO	38.51	39.00
CaO	2.52	2.75
H ₂ O	[4.39]	4.42
Total	[98.84]	100.00

(1) Centennial Eureka mine, Utah, USA; by electron microprobe, total Fe as FeO, H₂O calculated from stoichiometry; corresponds to $(\text{Ca}_{0.92}\text{Fe}_{0.07})_{\Sigma=0.99}\text{Cu}_{9.94}(\text{Te}_{0.96}\text{O}_3)_4(\text{As}_{1.04}\text{O}_4)_4(\text{OH})_2 \cdot 4\text{H}_2\text{O}$.
(2) $\text{CaCu}_{10}(\text{TeO}_3)_4(\text{AsO}_4)_4(\text{OH})_2 \cdot 4\text{H}_2\text{O}$.

Occurrence: A very rare secondary mineral formed by the reaction of enargite and tellurium-enriched solutions.

Association: Enargite, beudantite, quartz.

Distribution: Found on a dump at the Centennial Eureka mine, 1.5 km southwest of Eureka, Tintic district, Juab Co., Utah, USA.

Name: For Juab Co., Utah, USA, where the first specimen was collected.

Type Material: The Natural History Museum, London, England, 1997,1; Canadian Geological Survey, Ottawa, Canada, 67959.

References: (1) Roberts, A.C., R.A. Gault, M.C. Jensen, A.J. Criddle, and E.A. Moffatt (1997) Juabite, $\text{Cu}_5(\text{Te}^{6+}\text{O}_4)_2(\text{As}^{5+}\text{O}_4)_2 \cdot 3\text{H}_2\text{O}$, a new mineral species from the Centennial Eureka mine, Juab County, Utah. Mineral. Mag., 61, 139–144. (2) (1997) Amer. Mineral., 82, 1262 (abs. ref. 1). (3) Burns, P.C., C.M. Clark, and R.A. Gault (2000) Juabite, $\text{CaCu}_{10}(\text{Te}^{4+}\text{O}_3)_4(\text{AsO}_4)_4(\text{OH})_2(\text{H}_2\text{O})_4$: crystal structure and revision of the chemical formula. Can. Mineral., 38, 809–816.