

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. Commonly in prismatic to rhombohedral crystals, terminated by $\{02\bar{2}1\}$, to 5 cm. As indistinct crystalline aggregates and massive.

Physical Properties: *Cleavage:* Perfect on $\{10\bar{1}1\}$. *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 5 D(meas.) = 3.28–3.35 D(calc.) = [3.30] Pyroelectric.

Optical Properties: Transparent to translucent. *Color:* Emerald-green, blue-green.

Streak: Green. *Luster:* Vitreous.

Optical Class: Uniaxial (+), with three or six sectors in basal section. $\omega = 1.652$ – 1.658
 $\epsilon = 1.704$ – 1.710

Cell Data: *Space Group:* $R\bar{3}$. $a = 14.566$ $c = 7.778$ $Z = 18$

X-ray Powder Pattern: Tsumeb, Namibia. (ICDD 33-487).

2.600 (100), 2.443 (60), 7.29 (50), 4.07 (30), 4.90 (25), 2.714 (20), 2.117 (20)

Chemistry:

	(1)	(2)
SiO ₂	38.93	38.11
CuO	49.51	50.46
H ₂ O	11.27	11.43
Total	99.71	100.00

(1) Unknown locality. (2) CuSiO₂(OH)₂.

Occurrence: In the oxidized zone of some copper deposits.

Association: Chrysocolla, malachite, mimetite, wulfenite, cerussite, hemimorphite, fluorite, quartz.

Distribution: From Altyn-Tyube, 50 km east of Karaganda, Kirghiz Steppe, Kazakhstan. At Băița (Rézbánya), Romania. In the USA, in Arizona, at the Mammoth-St. Anthony mine, Tiger, at Ray, and in the Table Mountain mine, Galiuro Mountains, Pinal Co., and from the Harquehala mine, Harquehala Mountains, Yuma Co.; in California, from the Blue Bell claims, near Baker, San Bernardino Co. At Chiviquin, Córdoba Province, Argentina. In Chile, from the Mina La Verde, Copiapó. Fine crystals from around Renéville, Mindouli, and Pimbi, Congo Republic. At Tantara and the Mashamba West mine, Kolwezi, Katanga Province, Congo (Shaba Province, Zaire). As splendid large crystals from Tsumeb, Guchab, and the Omaue deposit, Kaokoveld, Namibia. From Mavoyo, Angola. In Zimbabwe, at several mines in the Lomagundi district, the Inez mine, Hartley district, and the Midway mine, Fort Victoria. Many other minor localities are known.

Name: From the Greek for *through* and *to see*, as the cleavage directions may be seen on looking through the crystal.

Type Material: Natural History Museum, Paris, France, Haüy 4969.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 463–464.

(2) Ribbe, P.H., G.V. Gibbs, and M.M. Hamil (1977) A refinement of the structure of diophtase, Cu₆[Si₆O₁₈]•6H₂O. Amer. Mineral., 62, 807–811.