

Hydroxylchondrodite

Mg₅(SiO₄)₂(OH)₂

Crystal Data: Monoclinic. *Point Group:* 2/m. As coarse tabular or lens-like crystals, to 1.5 cm, and in aggregates to 2 cm. *Twinning:* Thin polysynthetic on {001}.

Physical Properties: *Cleavage:* None; parting on {001}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 6 D(meas.) = 3.21(1) D(calc.) = 3.183

Optical Properties: Translucent. *Color:* Reddish brown. *Streak:* Pale yellow. *Luster:* Vitreous. *Optical Class:* Biaxial (+). $\alpha = 1.662(3)$ $\beta = 1.669(2)$ $\gamma = 1.688(2)$ $2V(\text{meas.}) = 80(10)^\circ$ $2V(\text{calc.}) = 63^\circ$ *Orientation:* $Z = b$. *Pleochroism:* Strong, X = brown; Y = light brown with grayish green tint; Z = pale grayish greenish brown. *Absorption:* $X > Y > Z$.

Cell Data: *Space Group:* $P2_1/c$. $a = 7.8847(12)$ $b = 4.7235(8)$ $c = 10.2869(15)$ $\beta = 109.19(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Chuvashskie Mountains, Zlatoust region, South Urals, Russia. 1.740 (100), 2.260 (74), 2.518 (59), 2.621 (44), 2.763 (37), 2.673 (37), 3.023 (36)

Chemistry:	(1)
MgO	52.74
FeO	1.51
TiO ₂	7.08
SiO ₂	34.38
P ₂ O ₅	0.47
F	1.29
H ₂ O	3.48
<u>-O=F₂</u>	<u>0.54</u>
Total	100.41

(1) Chuvashskie Mountains, Zlatoust region, South Urals, Russia; average of 11 electron microprobe analyses, H₂O by the Alimarin method; corresponding to (Mg_{4.52}Ti_{0.31}Fe_{0.07}) $\Sigma=4.90$ (Si_{1.98}P_{0.02}) $\Sigma=2.00$ O₈ [(OH)_{1.33}O_{0.44}F_{0.23}] $\Sigma=2.00$.

Mineral Group: Humite group.

Occurrence: In the contact zone between magnesium skarn and marble.

Association: Calcite, clinochlore, dolomite, tremolite, diopside, andradite-grossular, magnetite, perovskite, hydroxylclinohumite, titanite.

Distribution: Perovskite pit, western slope of the Chuvashskie Mountains, Zlatoust region, South Urals, Russia.

Name: Reflects the mineral's identity as the OH (*hydroxyl*) analogue of *chondrodite*.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia (3986/1).

References: (1) Pekov I.V., E.I. Gerasimova, N.V. Chukanov, Y.K. Kabalov, N.V. Zubkova, A.E. Zadov, V.O. Yapaskurt, V.M. Gekimiyants, and D.Y. Pushcharovskii (2011) Hydroxylchondrodite Mg₅(SiO₄)₂(OH)₂: A new mineral of the humite group and its crystal structure. Doklady Akademii Nauk, 436(4), 526-532 (in Russian). English translation: Doklady Earth Sciences, 2011, 436(2), 230-236. (2) (2014) Amer. Mineral., 99, 245 (abs. ref. 1).