Carlosturanite \(\text{(Mg, Fe}^{2+}, \text{Ti)}_{21} \text{(Si, Al)}_{12} \text{O}_{28} \text{(OH)}_{34}\)

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Crystal Data: Monoclinic. Point Group: \(m\). Fibers, to 0.2 \(\mu\)m width, elongated along [010], to several cm. Commonly gathered in folded bundles; intergrown in parallel with brucite and chrysotile.

Physical Properties: Cleavage: On \{001\}, very good; parting on \{010\}. Tenacity: Flexible. Hardness = n.d. \(D(\text{meas.}) = 2.63(2)\) \(D(\text{calc.}) = 2.606\)


Optical Class: Biaxial. Pleochroism: Orange-brown \(\parallel [010]\); pale orange-brown \(\perp [010]\). \(n = 1.605(5)\) \(2V(\text{meas.}) = n.d.\)

Cell Data: Space Group: \(Cm\). \(a = 36.70\) \(b = 9.41\) \(c = 7.291\) \(\beta = 101.1^\circ\) \(Z = 2\)

X-ray Powder Pattern: Near Sampeyre, Italy.

Chemistry:

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\begin{align*}
\text{SiO}_2 & \quad 35.53 \\
\text{TiO}_2 & \quad 2.24 \\
\text{Al}_2\text{O}_3 & \quad 1.07 \\
\text{Cr}_2\text{O}_3 & \quad 0.24 \\
\text{FeO} & \quad 4.03 \\
\text{MnO} & \quad 0.72 \\
\text{MgO} & \quad 39.28 \\
\text{H}_2\text{O} & \quad 16.85 \\
\hline
\text{Total} & \quad 99.96
\end{align*}
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(1) Near Sampeyre, Italy; by electron microprobe, average of 15 analyses, \(\text{H}_2\text{O}\) by TGA; corresponds to \((\text{Mg}_{18.88}\text{Fe}_{1.08}\text{Ti}_{0.54}\text{Mn}_{0.20}\text{Cr}_{0.06})\Sigma = 20.76(\text{Si}_{11.46}\text{Al}_{0.40})\Sigma = 11.86\text{H}_{36.26}\text{O}_{63.00}\).

Occurrence: In a network of veins crosscutting a metamorphic antigorite serpentinite, in an ophiolite.

Association: Diopside, chrysotile, brucite, magnetite, clinohumite, perovskite, uvarovite (near Sampeyre, Italy).

Distribution: In Italy, in Piedmont, at a number of localities around Sampeyre and Casteldelfino, Varaita Valley; around Crissolo, Po Valley; at Monte Nebin, Maira Valley; and around Viù, Viù Valley. From Taberg, Sweden.

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Type Material: Regional Science Museum, Torino, Italy; Natural History Museum, Vienna, Austria, L9493; National Museum of Natural History, Washington, D.C., USA, 162683.