Chesterite  \((\text{Mg, Fe}^{2+})_{17}\text{Si}_{20}\text{O}_{54}(\text{OH})_6\)

Crystal Data: Orthorhombic. Point Group: \(mm2\). Radiating sprays of prismatic crystals, to 5 cm; as intergrowths \(\parallel\{010\}\) in anthophyllite and cummingtonite.

Physical Properties: Cleavage: Perfect on \(\{110\}\), intersecting at \(\sim 45^\circ\) and \(135^\circ\); breakage along \(\{100\}\) and \(\{010\}\) may be due to parting. Hardness = n.d. \(D(\text{meas.}) = \text{n.d.}\) \(D(\text{calc.}) = [3.08]\)

Optical Properties: Transparent. Color: Colorless to very light pinkish brown; in thin section, colorless. Optical Class: Biaxial (−). Orientation: \(X = a; Y = b; Z = c\). Dispersion: \(r > v\), weak. \(\alpha = 1.617(5)\) \(\beta = 1.632(5)\) \(\gamma = 1.640(5)\) \(2V(\text{meas.}) = 71(2)^\circ\)

Cell Data: Space Group: \(A2_1ma\). \(a = 18.6140(3)\) \(b = 45.306(1)\) \(c = 5.2966(3)\) \(Z = 4\)

X-ray Powder Pattern: Calculated.  
\(8.609\) (100), 3.076 (66), 3.246 (49), 11.327 (41), 2.554 (36), 3.751 (34), 2.779 (31)

Chemistry: 

\[
\begin{array}{lcc}
\text{Component} & \text{Formula} & \text{Weight} \\
\hline
\text{SiO}_2 & 57.95 \\
\text{Al}_2\text{O}_3 & 0.25 \\
\text{FeO} & 14.14 \\
\text{MgO} & 24.24 \\
\text{CaO} & 0.42 \\
\text{Na}_2\text{O} & 0.03 \\
\text{H}_2\text{O} & [2.60] \\
\text{Total} & [100.62]
\end{array}
\]

(1) Chester, Vermont, USA; by electron microprobe, \(\text{H}_2\text{O}\) assuming (OH) sites filled by \((\text{OH})^\pm\).

Occurrence: In black wallrock between chlorite and actinolite zones of a metamorphosed ultramafic body.

Association: Jimthompsonite, clinojimthompsonite, anthophyllite, cummingtonite, talc.

Distribution: In the Carleton talc quarry, near Chester, Windsor Co., Vermont, USA.

Name: For the Chester, Vermont, USA, locality.

Type Material: Royal Ontario Museum, Toronto, Canada, M36083; Harvard University, Cambridge, Massachusetts, 134079; National Museum of Natural History, Washington, D.C., USA, 145869.