**Magnesio-cummingtonite** *(Mg, Fe^{2+})_2(Mg, Fe^{2+})_5Si_8O_{22}(OH)_2*

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. As prisms or needles. *Twinning:* Multiple twinning || {100}.

**Physical Properties:** *Cleavage:* Good on {110}, intersecting at 54° and 126°.  
*Tenacity:* Brittle.  
*Hardness:* 5–6  
*Density (meas.):* 3.13–3.22  
*Density (calc.):* 3.18–3.24

**Optical Properties:** Semitransparent.  
*Color:* Light green, beige; colorless to pale green in thin section.  
*Luster:* Vitreous.  
*Optical Class:* Biaxial (-).  
*Pleochroism:* Weak, with increasing iron content; *X* = *Y* = colorless; *Z* = pale green or yellow.  
*Orientation:* *Y* = *b*.  
*Dispersion:* *r* < *v*, weak.  
*Refractive Indices:*  
\[\alpha = 1.621 \quad \beta = 1.632 \quad \gamma = 1.643\]  
2V(meas.) = 66°–97°

**Cell Data:**  
*Space Group:* P2_1/m.  
*a = 9.49  
*b = 18.00  
*c = 5.30  
*β = 102.0°  
*Z = 2*

**X-ray Powder Pattern:** Cooma, Australia.  
3.044 (100), 3.425 (80), 3.230 (80), 2.963 (60), 3.838 (40), 2.724 (40), 2.495 (40)

**Chemistry:**

<table>
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<th>(2)</th>
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<tr>
<td>SiO_2</td>
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<td>55.97</td>
<td>NiO</td>
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<td>TiO_2</td>
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<td>MgO</td>
<td>30.9</td>
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<td>Al_2O_3</td>
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<td>CaO</td>
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<tr>
<td>Fe_2O_3</td>
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<td>Na_2O</td>
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<td>K_2O</td>
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<td>MnO</td>
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<td>0.37</td>
<td>P_2O_5</td>
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<td>Total</td>
<td>99.65</td>
<td>96.12</td>
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</table>

(1) Cima di Gagnone, Switzerland; by electron microprobe, corresponds to (Mg_0.56,Fe^{2+}_0.80,Ca_0.08  
Mn_0.04,Ni_0.01)\_\Sigma=2.79(Si_7.83,Al_0.01)\_\Sigma=7.96(OH)_2.  
(2) Cooma, Australia; by electron microprobe,  
Fe^{2+}:Fe^{3+} confirmed by wet analysis; corresponds to (Mg_0.45,Fe^{2+}_1.23,Ca_0.19,Na_0.09,Al_0.07,Mn_0.04  
Ti_0.01)\_\Sigma=7.88(Si_7.83,Al_0.17)\_\Sigma=8.00(OH)_2.

**Polymorphism & Series:** Forms a series with cummingtonite and grunerite.

**Mineral Group:** Amphibole (Fe–Mn–Mg) group: Mg/(Mg + Fe^{2+}) ≥ 0.7; (Ca + Na)_B < 1.34;  
Li < 1.0; Mn < 0.5.

**Occurrence:** In metamorphosed ultramafic rocks of the amphibolite facies; as exsolution lamellae in magnesio-arfvedsonite.

**Association:** Anthophyllite, tremolite, chlorite, magnesite, talc, enstatite (Cima di Gagnone, Switzerland).

**Distribution:** From near Cima di Gagnone, Ticino, Switzerland. At Cooma, New South Wales, Australia.

**Name:** For magnesium in its composition and similarity to cummingtonite.

**Type Material:** n.d.

**References:**  

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