Szenicsite

\[ \text{Cu}_3(\text{MoO}_4)(\text{OH})_4 \]

Crystal Data: Orthorhombic. Point Group: 2/m 2/m 2/m. As lamellar \{100\} crystals, elongated on [001], dominated by \{100\} with \{110\}, curved \{010\} common, \{211\} uncommon, to 3 cm; typically as jackstraw or booklike radial aggregates intergrown about [001].

Physical Properties: Cleavage: \{100\} and \{010\}, good. Tenacity: Brittle. Hardness = 3.5–4 D(meas.) = 4.26(5) D(calc.) = 4.279

Optical Properties: Transparent to translucent. Color: Dark green. Streak: Malachite-green. Luster: Adamantine. Optical Class: Biaxial (+). Pleochroism: X = yellow-green; Y = Z = green. Orientation: X = b; Y = a; Z = c. Dispersion: r > v, strong. \( \alpha = > 1.8 \) \( \beta = > 1.8 \) \( \gamma = > 1.8 \) 2V(meas.) = 74(3)°

Cell Data: Space Group: Pnnm. \( a = 8.5201(8) \) \( b = 12.545(1) \) \( c = 6.0794(6) \) \( Z = 4 \)

X-ray Powder Pattern: Jardinera No. 1 mine, Chile.

2.591 (vs), 5.471 (s), 3.754 (s), 3.043 (s), 1.519 (s), 4.599 (m), 2.759 (m), 2.415 (m)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
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</thead>
<tbody>
<tr>
<td>\text{MoO}_3</td>
<td>34.00</td>
<td>34.38</td>
</tr>
<tr>
<td>\text{Al}_2\text{O}_3</td>
<td>0.14</td>
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</tr>
<tr>
<td>\text{CuO}</td>
<td>56.26</td>
<td>57.01</td>
</tr>
<tr>
<td>\text{H}_2\text{O}</td>
<td>8.79</td>
<td>8.61</td>
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<tr>
<td>Total</td>
<td>99.19</td>
<td>100.00</td>
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</tbody>
</table>

(1) Jardinera No. 1 mine, Chile; by electron microprobe, average of 20 analyses; \text{H}_2\text{O} by LOI, \text{MoO}_4^{2–} and \text{OH}^{–} confirmed by IR; corresponds to \text{Cu}_{2.97}\text{Al}_{0.01}(\text{MoO}_4)_{0.99}(\text{OH})_{4.09}.
(2) \text{Cu}_3(\text{MoO}_4)(\text{OH})_4.

Occurrence: A uncommon secondary mineral in the oxidized zone of a copper–molybdenum deposit in granite.

Association: Powellite, chrysocolla, brochantite, lindgrenite, gold, molybdenite, chalcopyrite, chalcocite, hematite, barite, quartz.

Distribution: From the Jardinera No. 1 mine, five km east of Inca de Oro, Atacama, Chile.

Name: Honors husband and wife Marissa Szenics (1950–) and Terry Szenics (1947–), mineral collectors and dealers who found the first specimens.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 133734, 133735, 133738, 133739.