Dolerophanite

\[ \text{Cu}_2\text{O} (\text{SO}_4) \]

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Crystal Data: Monoclinic. **Point Group:** 2/m. As prismatic crystals elongated along [010], flattened on \{101\} and striated \| [010], with complex development of over 20 forms, to 1 mm.

Physical Properties: **Cleavage:** Perfect on \{101\}. **Hardness:** 3  
**D (meas.) = 4.17**  
**D (calc.) = 4.16**  
Soluble in H\(_2\)O, leaving a residue.

Optical Properties: Translucent to opaque. **Color:** Chestnut-brown to dark brown and nearly black; yellow-brown in transmitted light. **Streak:** Yellowish brown.  
**Optical Class:** Biaxial (+). **Pleochroism:** X = deep brown; Y = brownish yellow; Z = lemon-yellow. **Orientation:** Y = b; Z \∧ c = −10\(^\circ\). **Dispersion:** r > v, very strong, crossed.  
\[ \alpha = 1.715 \quad \beta = 1.820 \quad \gamma = 1.880 \quad 2V(\text{meas.}) = 85^\circ \]

Cell Data: **Space Group:** C2/m (synthetic). \[ a = 9.370(1) \quad b = 6.319(1) \quad c = 7.639(1) \]
\[ \beta = 122.34(1)^\circ \quad Z = 4 \]

X-ray Powder Pattern: Vesuvius, Italy.  
3.623 (100), 6.443 (50), 2.615 (42), 2.256 (30), 2.776 (21), 2.546 (18), 2.028 (13)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO(_3)</td>
<td>33.94</td>
<td>33.48</td>
</tr>
<tr>
<td>CuO</td>
<td>66.06</td>
<td>66.52</td>
</tr>
<tr>
<td>Total</td>
<td>[100.00]</td>
<td>100.00</td>
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</table>

(1) Vesuvius, Italy; recalculated to 100% from an original total of 98.69%; corresponds to Cu\(_{1.98}\)O\(_{0.98}\)(SO\(_4\))\(_{1.01}\). (2) Cu\(_2\)O(SO\(_4\)).

Occurrence: A rare volcanic sublimate.

Association: Chalcocyanite, euchlorine, eriochalcite (Vesuvius, Italy); chalcocyanite, euchlorine, eriochalcite, vergasovaite, fedotovite, melanothallite, piypite, ponomarevite, cotunnite, sofiite, halite, sylvite, tenorite, cuprian anglesite, gold (Tolbachik volcano, Russia).

Distribution: On Vesuvius, Campania, Italy. At the Tolbachik fissure volcano, Kamchatka Peninsula, Russia.

Name: From the Greek for *fallacious* and *to appear*, in allusion to a physical appearance nonsuggestive of the composition.

Type Material: Natural History Museum, Paris, France, 71.124.