Melanophlogite

Crystal Data: Tetragonal, pseudocubic. Point Group: 4/m 2/m 2/m supercells are statistically oriented along the pseudocubic axes. As well-formed cubes, modified by \{210\}, to 5 mm. Most commonly as thin crusts of complexly intergrown crystals and rounded, drop-like aggregates. Twinning: Interpenetrant twinning on \{201\}, probable, giving sectored and depressed cube faces.

Physical Properties: Fracture: Conchoidal. Tenacity: Brittle. Hardness = 6.5–7 VHN = 649–724, 680 average (100 g load). D(meas.) = 1.99–2.11 D(calc.) = 1.98–1.99 Impurities incorporated may include CH₄, CO₂, S.

Optical Properties: Transparent to translucent. Color: Colorless when pure; pale yellow to deep red-brown with impurities; turbid white when weathered. Luster: Adamantine. Optical Class: Isotropic; may be weakly anisotropic. n = 1.425–1.457

Cell Data: Space Group: P4₁2₁2₁. \(a = 26.82(3) \quad c = 13.37(2) \quad Z = 184\)

Chemistry:

<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>92.4</td>
<td>94.6</td>
<td>96.18</td>
<td>O</td>
<td>3.40</td>
<td>2.6</td>
</tr>
<tr>
<td>C</td>
<td>1.2</td>
<td>0.9</td>
<td>0.84</td>
<td>S</td>
<td>2.3</td>
<td>0.1</td>
</tr>
<tr>
<td>H</td>
<td>0.81</td>
<td>0.6</td>
<td>0.79</td>
<td>Total</td>
<td>100.11</td>
<td>98.8</td>
</tr>
</tbody>
</table>

(1) Racalmuto, Sicily, Italy. (2) Chvaletice, Czech Republic; by electron microprobe and neutron activation, corresponding to 46SiO₂·(C₂.17H₁.7₂O₅.₄₂S₀.₄₉). (3) Mt. Hamilton, California, USA; corresponding to 46SiO₂·(C₂.₀₁H₂.₆₉O₄.₀₂).

Polymorphism & Series: Becomes cubic above ~40 °C.

Occurrence: A late-stage, low-temperature mineral in sulfur deposits (Racalmuto, Sicily, Italy); in low-temperature hydrothermal veins associated with metamorphosed sedimentary manganese deposits (Chvaletice, Czech Republic); in carbonate-bearing serpentinites (Fortullino, Italy; Mt. Hamilton, California, USA).


Distribution: In Italy, at Solfatara Giona, Racalmuto, and at Caltanissetta, Sicily; and from Fortullino, near Quercianella, Tuscany. In the Chvaletice deposit, Czech Republic. In the USA, at Mt. Hamilton, Santa Clara Co., California.

Name: From the Greek for black and to be burned, in allusion to the fact that some specimens of the mineral turn black when heated.
