Kleinite Hg$_2$N(Cl, SO$_4$)•nH$_2$O

Crystal Data: Hexagonal or triclinic. Point Group: 6/m 2/m 2/m. Crystals short prismatic to equant, to 3 mm, showing prominent {10$ar{1}$0}, {20$ar{2}$1}, and {0001}.

Physical Properties: Cleavage: {0001}, uneven; {10$ar{1}$0}, imperfect. Tenacity: Brittle. Hardness = 3.5–4 D(meas.) = 7.9–8.0 D(calc.) = [7.87]

Optical Properties: Transparent to translucent. Color: Pale yellow, canary-yellow to orange, may be zoned, yellow cores with reddish orange rims; tenebrescent, deepening in color in daylight, the original color restored in darkness; yellow to colorless in transmitted light. Streak: Sulfur-yellow. Luster: Adamantine to greasy. Optical Class: Biaxial (−); uniaxial (+) ≥ 130 °C; isotropic ≥ ~190 °C. Dispersion: r < v, very strong. ω = 2.19 ε = 2.21 α = 2.16 β = 2.18 γ = 2.18 2V(meas.) = Small to 80°.


X-ray Powder Pattern: Terlingua, Texas, USA. 2.914 (10), 2.615 (10), 3.884 (6), 2.013 (6), 1.434 (4), 1.242 (4), 5.228 (2)

Chemistry:

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hg</td>
<td>85.86</td>
</tr>
<tr>
<td>N</td>
<td>2.57</td>
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<tr>
<td>Cl</td>
<td>7.30</td>
</tr>
<tr>
<td>H$_2$O</td>
<td>1.03</td>
</tr>
<tr>
<td>SO$_4$</td>
<td>3.10</td>
</tr>
</tbody>
</table>

Total 99.86

(1) Terlingua, Texas, USA; averages of numerous partial analyses, corresponds to Hg$_{2.96}$N$_{0.86}$[Cl$_{0.96}$(SO$_4$)$_{0.15}$]$_{1.11}$•0.53H$_2$O.

Occurrence: In hydrothermal mercury deposits.

Association: Terlinguaite, gypsum, barite, calcite, other mercury minerals (Terlingua, Texas, USA); mosesite, calomel, montroydite (McDermitt mine, Nevada, USA).

Distribution: In the USA, from Terlingua, Brewster Co., Texas; the New Idria district, San Benito Co., California; and in the McDermitt and Cordero mercury mines, Opalite district, Humboldt Co., Nevada.

Name: To honor Carl Klein (1842–1907), Professor of Mineralogy, University of Berlin, Berlin, Germany.

Type Material: Harvard University, Cambridge, Massachusetts; National Museum of Natural History, Washington, D.C., USA, 86639–86641, 86647.