**Gillulyite**

\[ \text{Tl}_2(\text{As}, \text{Sb})_8\text{S}_{13} \]

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**Crystal Data:** Monoclinic. **Point Group:** 2/m. Rarely as prismatic crystals, to 2 mm, showing \{110\}, \{010\}, and \{011\}; in cleavable masses.

**Physical Properties:** Cleavage: Perfect on \{001\}. Hardness = 2–2.5 VHN = 87–132, 108 average (25 g load). D(meas.) = 4.02 D(calc.) = 4.14

**Optical Properties:** Opaque, translucent in thin fragments. **Color:** Deep red to maroon, tarnishing to darker red or blue; pale gray in reflected light, with abundant deep red internal reflections. **Streak:** Bright brick-red. **Luster:** Vitreous to metallic if tarnished. **Optical Class:** Biaxial. **Anisotropism:** Distinct. **Bireflectance:** Weak to moderate in oil; pale rose to dusky rose.

**Cell Data:** **Space Group:** \( P2_1/n \). \( a = 9.584(3) \) \( b = 5.679(2) \) \( c = 21.501(6) \) \( \beta = 100.07(2)^\circ \). \( Z = 2 \)

**X-ray Powder Pattern:** Mercur deposit, Utah, USA.

3.077 (100), 2.814 (100), 3.63 (90), 2.502 (70), 1.766 (70), 1.414 (60), 3.87 (60)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tl</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td>As</td>
<td>39.3</td>
<td></td>
</tr>
<tr>
<td>Sb</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>28.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>98.6</td>
<td></td>
</tr>
</tbody>
</table>

(1) Mercur deposit, Utah, USA; by electron microprobe, average of five analyses; corresponding to \( \text{Tl}_{2.02}\text{As}_{7.63}\text{Sb}_{0.26}\text{S}_{7.88}\text{S}_{13.00} \).

**Occurrence:** In a sediment-hosted disseminated gold deposit, in organic-rich unoxidized carbonates.

**Association:** Orpiment, realgar, lorandite, raguinite, pyrite, barite, calcite.

**Distribution:** From the Mercur gold deposit, southern Oquirrh Mountains, about 56 km southwest of Salt Lake City, Tooele Co., USA [TL].

**Name:** To honor James C. Guilluly (1896–1980), U.S. Geological Survey, who worked in the area of the Mercur deposit.

**Type Material:** Royal Ontario Museum, Toronto, Canada; Harvard University, Cambridge, Massachusetts, 130781; National Museum of Natural History, Washington, D.C., USA, 170773.

**References:**


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