Proudite  

Cu$_{0-1}$Pb$_{7.5}$Bi$_{9.3-9.7}$(S,Se)$_{22}$  


Crystal Data: Monoclinic.  
Point Group: 2/m.  
As elongate to acicular grains or irregular laths.

Physical Properties: Cleavage: One good cleavage parallel to grain elongation, a second at an apparent angle of 40° to the first.  
Hardness = n.d.  
VHN = 38–87 (50 g load).  
D(meas.) = n.d.  
D(calc.) = 7.08

Optical Properties: Opaque.  
Color: Silver-gray; in polished section, creamy white.  

Pleochroism: Strong, from cream-white to white.  
Anisotropism: Strong, from cream-gray to tan.  

R$_1$–R$_2$: n.d.

Cell Data:  
Space Group: C2/m.  

a = 31.96(1)  
b = 4.12(1)  
c = 36.69(3)  
β = 109.52(3)°  
Z = 4

X-ray Powder Pattern:  
Juno mine, Australia.  

2.960 (100), 2.059 (86), 3.494 (65), 2.066 (60), 3.834 (48), 3.224 (48), 3.447 (42)

Chemistry:  

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>Cu</td>
<td>0.5</td>
<td>1.38</td>
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<tr>
<td>Pb</td>
<td>33.7</td>
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<tr>
<td>Bi</td>
<td>43.3</td>
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<tr>
<td>Se</td>
<td>14.0</td>
<td>12.02</td>
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<td>S</td>
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<td>Total</td>
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</table>

(1) Juno mine, Australia; by electron microprobe, average of 11 analyses; corresponds to Cu$_{0.36}$Pb$_{7.36}$Bi$_{9.38}$S$_{13.97}$Se$_{8.03}$.  
(2) “ideal” proudite – Cu$_{1.00}$Pb$_{7.50}$Bi$_{9.33}$S$_{15.00}$Se$_{7.00}$.

Occurrence: With large, presumably hydrothermal magnetite bodies (Juno mine, Australia).

Association: Gold, junoite, selenian heyrovskýite, krupkaite, magnetite (Juno mine, Australia).

Distribution: In Australia, from the Juno mine, Tennant Creek, Northern Territory [TL]. At Janos, Chihuahua, Mexico.

Name: Honors John S. Proud (1907–1997), a Director of the Peko-Wallsend mining company, developers of the Tennant Creek deposits.

Type Material: n.d.

References:  