Insizwaite  

\[ \text{Pt}(\text{Bi}, \text{Sb})_2 \]  

**Crystal Data:** Cubic.  
*Point Group:* 2/m 3.  
As small rounded grains, to 120 µm.

**Physical Properties:** Hardness = n.d.  
VHN = 488–540, 519 average (25 g load).  
D(meas.) = n.d.  
D(calc.) = 12.8

**Optical Properties:** Opaque.  
*Color:* In polished section, white.  
*Luster:* Metallic.

R: (400) 55.7, (420) 56.4, (440) 57.2, (460) 57.8, (480) 58.4, (500) 58.8, (520) 59.2, (540) 59.5, (560) 59.8, (580) 60.1, (600) 60.3, (620) 60.4, (640) 60.4, (660) 60.3, (680) 60.3, (700) 60.3

**Cell Data:**  
*Space Group:* Pa 3.  
a = 6.691  
Z = 4

**X-ray Powder Pattern:** Synthetic PtBi\(_2\).  
2.996 (100), 2.017 (90), 2.732 (80), 1.788 (60), 3.343 (50), 1.459 (50), 0.772 (50)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt</td>
<td>36.1</td>
<td>31.2</td>
</tr>
<tr>
<td>Pd</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Ni</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Sn</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Bi</td>
<td>52.0</td>
<td>55.2</td>
</tr>
<tr>
<td>Sb</td>
<td>12.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Te</td>
<td>7.7</td>
<td></td>
</tr>
</tbody>
</table>

\(\text{Total} \quad 101.0 \quad 100.5\)

(1) Insizwa deposit, South Africa; by electron microprobe, average of five analyses; corresponding to \(\text{Pt}_1.00(\text{Bi}_{1.35}\text{Sb}_{0.57})\Sigma=1.92\).  
(2) Sudbury, Canada; by electron microprobe; corresponding to \(\text{Pt}_{0.90}\text{Pd}_{0.08}\text{Ni}_{0.02}\Sigma=1.00(\text{Bi}_{1.49}\text{Te}_{0.34}\text{Sb}_{0.11}\text{Sn}_{0.06})\Sigma=2.00\).

**Mineral Group:** Pyrite group.

**Occurrence:** Of hydrothermal origin, in a vein cutting massive pyrrhotite ore (Insizwa deposit, South Africa); in Cu–Ni sulfide ore (Sudbury, Canada).

**Association:** Pentlandite, cubanite, hessite, altaite, argentopentlandite, chalcopyrite, mackinawite, niggliite, froodite, parkerite, galena, sphalerite, magnetite, pyrrhotite.

**Distribution:** From the Insizwa Cu–Ni deposit, Waterfall Gorge, East Cape, South Africa [TL].  
In the Coleman mine, Sudbury, and the Strathcona mine, Falconbridge, Ontario, Canada.  
At Fox Gulch, Goodnews Bay, Alaska, USA.  
From the Noril’sk region, western Siberia, Russia.

**Name:** For the Insizwa deposit, South Africa, where it was discovered.

**Type Material:** Geological Survey of Canada, Ottawa, 10400; Canadian Museum of Nature, Ottawa, Canada.

**References:**  
(2) (1973) Amer. Mineral., 58, 805 (abs. ref. 1).  