Stillwaterite  
\(\text{Pd}_8\text{As}_3\)

Crystal Data:  Hexagonal.  
**Point Group:** \(\bar{3}\) or \(3\).  
As anhedral grains, to 265 \(\mu\)m.

**Twinning:** Rarely observed in polished section.

Physical Properties:  
Hardness = n.d.  
VHN = 384 (50 g load).  
D(meas.) = n.d.  
D(calc.) = 10.96

Optical Properties:  
Opaque.  
**Color:** In polished section, pale creamy gray with faint pinkish tint.  
**Luster:** Metallic.  
**Anisotropism:** Weak in air, dark gray to brownish gray; in oil, distinct in brownish black with a blue to yellow-brown tinge.

\(R_1 - R_2:\)  
(470) 51.6–52.7,  
(546) 52.5–53.2,  
(589) 53.1–53.7,  
(650) 54.4–55.0

Cell Data:  
**Space Group:** \(P\bar{3}\) or \(P3\).  
\(a = 7.392–7.399\)  
\(c = 10.311\)  
\(Z = 3\)

X-ray Powder Pattern:  
Stillwater complex, Montana, USA.

2.115 (100), 2.355 (80), 1.351 (50), 0.8858 (40), 2.700 (30), 1.991 (30b), 2.521 (20)

Chemistry:

<table>
<thead>
<tr>
<th>Element</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pd</td>
<td>79.0</td>
<td>79.13</td>
<td>79.11</td>
</tr>
<tr>
<td>Pt</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Au</td>
<td>0.07</td>
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<td></td>
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<tr>
<td>Ni</td>
<td>0.01</td>
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<tr>
<td>As</td>
<td>21.2</td>
<td>20.83</td>
<td>20.89</td>
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<tr>
<td>Sb</td>
<td>0.05</td>
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<td></td>
</tr>
<tr>
<td>Bi</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total   | 100.2 | 100.56 | 100.00 |

(1) Stillwater complex, Montana, USA; by electron microprobe; corresponds to \(\text{Pd}_{7.87}\text{As}_{3.00}\).
(2) Siikakamä intrusion, Finland; by electron microprobe, average of three grains, original total given as 100.58%; corresponds to \((\text{Pd}_{7.97}\text{Pt}_{0.02})\Sigma=7.99(\text{As}_{2.98}\text{S}_{0.01})\Sigma=2.99\).  
(3) \(\text{Pd}_8\text{As}_3\).

Occurrence:  
In layered ultramafic igneous bodies.

Association:  
Gold, palladoarsenide, sperrylite, braggite, hollingworthite, chalcopyrite, digenite, pentlandite, pyrrhotite.

Distribution:  
From the Banded and Upper zones of the Stillwater complex, Montana, USA [TL].  
In the Roby zone, Lac des Iles complex, Ontario, Canada.  
At the Siikakamä intrusion, about 50 km southeast of Rovaniemi, northern Finland.  
From the Lukkulaisvaara layered intrusion, Karelia, Russia.

Name:  
For the Stillwater mafic complex, Montana, USA.

Type Material:  

References:  

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