Barringerite

Crystal Data:  Hexagonal.  Point Group:  6/m2.  As bands, 10–15 µm wide and several hundred µm long, consisting of individual grains less than 1 µm in diameter, along the contact between schreibersite and troilite.

Physical Properties:  Hardness = > 7  VHN = 1097 (20 g load).  D(meas.) = n.d.  D(calc.) = 6.92

Optical Properties:  [Opaque.]  Color:  White, similar to kamacite; bluish compared to schreibersite, in reflected light.  Optical Class:  Uniaxial.  Anisotropism:  Noticeable; white to blue.  R:  (Slightly higher than that of schreibersite; lower than that of kamacite).

Cell Data:  Space Group:  P62m.  a = 5.87(7) c = 3.44(4) Z = 3

X-ray Powder Pattern:  Synthetic Fe2P.
2.237 (100), 1.28 (100), 1.21 (100), 1.10 (100), 2.048 (95), 1.920 (90), 1.694 (80)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe</td>
<td>44.3</td>
<td>75.1</td>
<td>76.22</td>
</tr>
<tr>
<td>Cr</td>
<td>0.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ni</td>
<td>33.9</td>
<td>0.04</td>
<td>2.85</td>
</tr>
<tr>
<td>Co</td>
<td>0.25</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>21.8</td>
<td>22.8</td>
<td>20.21</td>
</tr>
</tbody>
</table>

Total 100.25 98.15 100.01

(1) Ollague meteorite; average of several analyses by electron microprobe, corresponding to Fe1.16N0.24Co0.01Σ=2.01P.  (2) Y-793274 meteorite; by electron microprobe.  (3) China; corresponding to Fe2.09N0.07Cr0.02Σ=2.18P.

Occurrence:  Along the contacts between schreibersite and troilite in a Fe–Ni meteorite (Ollague); as a single grain in a brecciated lunar meteorite of mixed mare and highland origin (Y-793274 meteorite); in the oxidation zone of a platinum-bearing Cu–Ni sulfide deposit (China).

Association:  Kamacite, olivine, schreibersite, troilite (Ollague meteorite); plagioclase, glass (Y-793274 meteorite) schreibersite, wüstit, lawrencite (Canyon Diablo meteorite).

Distribution:  In the Imilac (Ollague) pallasite meteorite [an extraterrestrial origin has been questioned]. In the Yamato-793274 meteorite, from the Moon. In the Canyon Diablo iron meteorite. Found in an unspecified mineral deposit in China.

Name:  To honor Daniel Moreau Barringer (1860–1929), early proponent of the meteor impact origin of Meteor Crater, near Canyon Diablo, Arizona, USA.

Type Material:  Nininger collection, Center for Meteorite Studies, Arizona State University, Tempe, Arizona, USA.


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