Haynesite

Orthorhombic. Point Group: 2/m 2/m 2/m or mm2. Crystals are bladed, flattened on {010} and elongated along [001], to 3 mm; as divergent sprays and rosettes.

Physical Properties: Cleavage: On {010}, good. Hardness = 1.5–2 D(meas.) = 4.1 D(calc.) = 4.07 Radioactive; fluoresces yellowish green under SW UV.

Optical Properties: Transparent to translucent. Color: Amber-yellow; yellow in transmitted light. Luster: Vitreous. Optical Class: Biaxial (–). Pleochroism: Strong; bright yellow to pale yellow. Orientation: X = a; Y = b; Z = c. α = 1.618(2) β = 1.738(3) γ = 1.765(5) 2V(meas.) = 45° 2V(calc.) = 48°

Cell Data: Space Group: Pnca or Pncc. a = 8.025(5) b = 17.43(1) c = 6.935(3) Z = 2

X-ray Powder Pattern: Repete mine, Utah, USA.

8.01 (100), 2.912 (80), 4.01 (70), 3.119 (70), 3.468 (60), 3.186 (50), 2.471 (40)

Chemistry:

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>UO₃</td>
<td>71.81</td>
<td>72.22</td>
</tr>
<tr>
<td>SeO₂</td>
<td>17.91</td>
<td>18.68</td>
</tr>
<tr>
<td>H₂O</td>
<td>8.56</td>
<td>9.10</td>
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<tr>
<td>Total</td>
<td>98.28</td>
<td>100.00</td>
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</table>

(1) Repete mine, Utah, USA; by electron microprobe, average of 12 analyses, C and H by CHN analyzer, recalculated after removal of CaO 0.85% and CO₂ 1.51% as calcite; then corresponds to (UO₂)₃(SeO₃)₂(OH)₂•4.7H₂O. (2) (UO₂)₃(SeO₃)₂(OH)₂•5H₂O.

Occurrence: Rare in an oxidized uranium deposit in mudstones and sandstones.

Association: Andersonite, boltwoodite, ferroselite, gypsum, barite, calcite.

Distribution: From the Repete mine, 34 km southeast of Blanding, San Juan Co., Utah, USA.

Name: Honors Patrick Eugene Haynes (1953- ), American geologist, mineral collector and dealer, who found the first specimens.

Type Material: Royal Belgian Institute of Natural Sciences, Brussels, Belgium, RC3922.