**Bílinite**

\[ \text{Fe}^{2+}\text{Fe}^{3+}(\text{SO}_4)_4\cdot22\text{H}_2\text{O} \]

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**Crystal Data:** Monoclinic.  **Point Group:** 2/m.  Fibrous crystals, to 0.03 mm, in radial aggregates.

**Physical Properties:** Hardness = \( \sim 2 \)  \( D(\text{meas.}) = 1.875–1.99 \)  \( D(\text{calc.}) = [1.99] \)  Soluble in \( \text{H}_2\text{O} \).

**Optical Properties:** Semitransparent.  **Color:** White to yellowish; colorless in transmitted light.  **Luster:** Silky.

**Optical Class:** Biaxial (−).  **Orientation:** Inclined extinction 33°–39°.  \( \alpha = 1.480–1.482 \)  \( \beta = \text{n.d.} \)  \( \gamma = 1.489–1.493 \) 2\( V(\text{meas.}) = \text{n.d.} \).

**Cell Data:**  **Space Group:** \( P2_1/c \).  \( a = 6.208 \)  \( b = 24.333 \)  \( c = 21.255 \)  \( \beta = 100.3^\circ \)  \( Z = 4 \)

**X-ray Powder Pattern:** Světec, Czech Republic.  (ICDD 25-1153).

4.31 (100), 3.51 (100), 4.84 (50), 4.10 (40), 4.96 (30), 3.29 (30), 5.48 (25)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{SO}_3 )</td>
<td>34.87</td>
<td>33.78</td>
</tr>
<tr>
<td>( \text{Fe}_2\text{O}_3 )</td>
<td>15.88</td>
<td>16.84</td>
</tr>
<tr>
<td>( \text{FeO} )</td>
<td>6.93</td>
<td>7.58</td>
</tr>
<tr>
<td>( \text{MgO} )</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>( \text{Na}_2\text{O} )</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>( \text{H}_2\text{O} )</td>
<td>41.77</td>
<td>41.80</td>
</tr>
</tbody>
</table>

Total 99.87 100.00

(1) Světec, Czech Republic.  (2) \( \text{Fe}^{2+}\text{Fe}^{3+}(\text{SO}_4)_4\cdot22\text{H}_2\text{O} \).

**Mineral Group:** Halotrichite group.

**Occurrence:** An alteration of iron sulfide in lignite (Světec, Czech Republic); a post-mine mineral with other iron sulfates (Nikitov deposits, Ukraine).

**Association:** Melanterite (Nikitov deposits, Ukraine).

**Distribution:** From Světec (Schwaz), near Bílina, Czech Republic. In the Nikitov mercury deposits, Ukraine. From the Higgins mine, Bisbee, Cochise Co., Arizona, and at Arco, Butte Co., Idaho, USA. From the Chiricas mine, Malargüe district, Mendoza Province, Argentina.

**Name:** For its first-noted occurrence near Bílina, Czech Republic.

**Type Material:** n.d.