Decagonite  \( \text{Al}_{71}\text{Ni}_{24}\text{Fe}_5 \)

**Crystal Data:** Quasicrystal. *Point Group:* n.d. As anhedral grains to ~60 \( \mu \text{m} \).

**Physical Properties:**  
*Cleavage:* n.d.  
*Tenacity:* n.d.  
*Fracture:* n.d.  
*Hardness:* n.d.  
*D(meas.):* n.d.  
*D(calc.):* n.d.

*Optical Class:* n.d.

**Cell Data:** Space Group: \( P10_5/mmc \). Structure is not reducible to a three-dimensional unit cell.

**X-Ray Diffraction Pattern:** Grain 126 of the Khatyrka meteorite.  
2.024 (100), 3.765 (50), 2.051 (45), 3.405 (40), 1.9799 (40), 1.4219 (35), 1.8014 (30)

**Chemistry:**

<table>
<thead>
<tr>
<th>Element</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al</td>
<td>52.19</td>
</tr>
<tr>
<td>Ni</td>
<td>39.01</td>
</tr>
<tr>
<td>Fe</td>
<td>8.18</td>
</tr>
<tr>
<td>Total</td>
<td>99.92</td>
</tr>
</tbody>
</table>

(1) Grain 126 of the Khatyrka meteorite; average electron microprobe analysis; corresponding to \( \text{Al}_{70.2}\text{Ni}_{24.5}\text{Fe}_5.3 \).

**Mineral Group:** Quasicrystal.

**Occurrence:** From impact shock metamorphism in a CV3 carbonaceous chondrite meteorite.

**Association:** Al-bearing trevorite, diopside, forsterite, ahrensite, clinoenstatite, nepheline, coesite, pentlandite, Cu-bearing troilite, icosahedrite, khatyrkite, taenite, Al-bearing taenite, steinhardtite.

**Distribution:** From Grain 126 of the Khatyrka meteorite.

**Name:** For the 10-fold symmetry of its crystal structure.

**Type Material:** Natural History Museum, University of Florence, Italy (3146/I).