Martinandesite

\[ \text{Ba}_2(\text{Al}_4\text{Si}_{12}\text{O}_{32}) \cdot 10\text{H}_2\text{O} \]

**Crystal Data:** Orthorhombic.  *Point Group:* 2/m 2/m 2/m.  As platy crystals to 5 mm displaying \{010\},  \{100\} and  \{001\}; as blocky and rounded crystals to 8 mm; in aggregates to 6 cm.  

_Twining:_ Cruciform to 3.5 mm.

**Physical Properties:**  
*Clearage:* Indistinct, presumably on \{010\} and in a direction across \{010\}.  
_Fracture:_ Uneven.  
_Tenacity:_ Brittle.  
_Hardness = 4.5  
_D(meas.) = 2.482(5)  
_D(calc.) = 2.495

**Optical Properties:**  
_Transparent to translucent._  
_Color:_ White or tan.  
_Streak:_ White.  
_Luster:_ Vitreous to porcelaneous.  
_Optical Class:_ Biaxial (~).  
_α = 1.500(2) β = 1.512(2) γ = 1.515(2) 2V(meas.) = 55(10)°  
2V(calc.) = 53°  
_Dispersion:_ r < v, weak.

**Cell Data:**  
_Space Group:_ Pmmn.  
_a = 9.4640(5) b = 14.2288(6) c = 6.9940(4) Z = 1

**X-ray Powder Pattern:**  
_Wasenalp, near Isenwegg peak, Ganter valley, Switzerland._  
5.61 (100), 6.26 (83), 3.005 (79), 6.98 (74), 3.170 (62), 3.933 (60), 3.191 (50)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na₂O</td>
<td>0.37</td>
<td></td>
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<tr>
<td>K₂O</td>
<td>0.12</td>
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<tr>
<td>BaO</td>
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<td>Al₂O₃</td>
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<td>SiO₂</td>
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<tr>
<td>H₂O</td>
<td>12.57</td>
<td>12.76</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>99.50</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

(1) Wasenalp, near Isenwegg peak, Ganter valley, Switzerland; average of 5 electron microprobe analyses, H₂O by the modified Penfield method; corresponds to Na₀.₁₇K₀.₀₄Ba₂.₀₀(Al₄.₁₉Si₁₁.₈₁O₃₂)H₁₉.₈₅O₉.₉₃.  (2) \( \text{Ba}_2(\text{Al}_4\text{Si}_{12}\text{O}_{32}) \cdot 10\text{H}_2\text{O}. \\

**Mineral Group:** Zeolite group.

**Occurrence:** In quartz veins cutting zoisite-, celsian-, and armenite-bearing gneiss.

**Association:** Armenite, quartz, dickite, chlorite.

**Distribution:** At Wasenalp, near Isenwegg peak, Ganter valley, Simplon region, Switzerland.

**Name:** Honors Martin Andres (b. 1965), the Swiss mineral collector and amateur mineralogist, who discovered the armenite vein locality of Wasenalp.

**Type Material:** Geological Museum of Lausanne, Switzerland (MGL 093284).