Amblygonite
LiAl(PO₄)(F,OH)

Crystal Data: Triclinic. Point Group: T. Crude crystals, typically equant with complex form development, to 1.5 m; massive. Twinning: On several laws, with microscopic polysynthetic twinning common.

Physical Properties: Cleavage: {100}, perfect; {110}, good; {010}, distinct; {001} imperfect [morphological orientation of ref. (1)]. Fracture: Uneven to subconchoidal. Tenacity: Brittle. Hardness = 5.5–6 D(meas.) = 3.04–3.11 D(calc.) = [3.13]

Optical Properties: Transparent to translucent. Color: Milk-white, pale yellow, beige, salmon-pink, pale green, pale blue, gray, may be colorless; colorless in transmitted light. Luster: Vitreous to greasy, pearly on good cleavages. Optical Class: Biaxial (−). Orientation: Euler angles φ = 55.5°; ψ = 30.0°; θ = 18.2° [for amblygonite 92%]. Dispersion: r > v. α = 1.577–1.591 β = 1.592–1.605 γ = 1.596–1.613 2V(meas.) = 107°–129.5°

Cell Data: Space Group: C1. a = 6.644(2) b = 7.744(2) c = 6.910(1) α = 90.35(2)° β = 117.33(2)° γ = 91.01(2)° Z = 4

X-ray Powder Pattern: Chursdorf, Germany. 3.151 (vvsb), 4.642 (vs), 2.955 (vs), 3.237 (ms), 1.935 (ms), 3.300 (m), 2.384 (m)

Chemistry:

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<th>(1)</th>
<th>(2)</th>
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<tr>
<td>P₂O₅</td>
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<td>48.31</td>
<td>F</td>
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<td>Al₂O₃</td>
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<td>Li₂O</td>
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<td>−O = F₂</td>
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<td>Total</td>
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(1) [Chursdorf, Germany]; by electron microprobe, corresponds to Li₁₀.₀₀Al₀.₉₈(PO₄)₁.₀₁F₁.₀₂.
(2) LiAl(PO₄)(F,OH) with F:OH = 1:1.

Polymorphism & Series: Forms a series with montebrasite.

Mineral Group: Amblygonite group.

Occurrence: An uncommon accessory mineral in zoned granite pegmatites; in high-temperature tin veins and greisens.

Association: Lacroixite, apatite, lithiophilite, spodumene, lepidolite, petalite, pollucite, tourmaline (pegmatites); cassiterite, topaz, mica (greisens).

Distribution: Much less common than montebrasite. The few localities for analyzed material include: from Chursdorf and Arnsdorf, near Penig, Saxony, Germany. On Utö Island, near Stockholm, Sweden. In the USA, at Hebron, Oxford Co., Maine; large crystals in San Domingo Wash, northeast of Wickenburg, Maricopa Co., Arizona. From the Tanco pegmatite, Bernic Lake, Manitoba, Canada. At Coolgardie, Western Australia. From near Karibib, Namibia. In the Muiâne pegmatite, Alto Ligonha district, Mozambique.

Name: From the Greek for blunt and angle, for its ~90° cleavage angle.

Type Material: Mining Academy, Freiberg, Germany, 20336.


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