

# Gatumbaite

# CaAl<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>•H<sub>2</sub>O

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**Crystal Data:** Monoclinic. *Point Group:* 2/m, 2, or m. Anedral crystals, to 5 mm, bladed; in radial fibrous aggregates, in sheaves and rosettes.

**Physical Properties:** *Cleavage:* One, || to the [010] fiber axis. *Fracture:* Asbestiform. *Tenacity:* Brittle. Hardness = < 5 D(meas.) = 2.92 D(calc.) = 2.95

**Optical Properties:** Translucent. *Color:* White. *Luster:* Pearly. *Optical Class:* Biaxial (-). *Orientation:* Z = b; OAP ⊥ {010}. α = 1.610(2) β = [1.63] γ = 1.639(2) 2V(meas.) = 65(5)° 2V(calc.) = 67°

**Cell Data:** *Space Group:* P2/m, P2, or Pm. a = 6.907(2) b = 5.095(2) c = 10.764(3) β = 91°3(1)' Z = 2

**X-ray Powder Pattern:** Buranga pegmatite, Rwanda. 4.210 (100), 2.241 (100), 1.726 (75), 2.772 (70), 2.301 (65), 3.207 (50), 3.159 (50)

Chemistry:	(1)	(2)	(3)
P <sub>2</sub> O <sub>5</sub>	41.35	41.95	42.24
TiO <sub>2</sub>		0.13	
Al <sub>2</sub> O <sub>3</sub>	28.09	30.16	30.35
Fe <sub>2</sub> O <sub>3</sub>	2.20	0.04	
MnO	0.30		
CaO	17.35	16.22	16.69
Na <sub>2</sub> O	0.30		
H <sub>2</sub> O <sup>+</sup>	10.68	[11.50]	10.72
H <sub>2</sub> O <sup>-</sup>	0.32		
Total	100.59	[100.00]	100.00

(1) Buranga pegmatite, Rwanda; (OH)<sup>1-</sup> and H<sub>2</sub>O confirmed by IR, corresponds to (Ca<sub>1.06</sub>Na<sub>0.04</sub>Mn<sub>0.02</sub><sup>2+</sup>)<sub>Σ=1.12</sub>(Al<sub>1.89</sub>Fe<sub>0.10</sub><sup>3+</sup>)<sub>Σ=1.99</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2.14</sub>•0.96H<sub>2</sub>O. (2) Mt. Perry, Australia; by electron microprobe, H<sub>2</sub>O by difference; corresponds to Ca<sub>0.98</sub>Al<sub>2.00</sub>(PO<sub>4</sub>)<sub>2.00</sub>(OH)<sub>2</sub>•H<sub>2</sub>O. (3) CaAl<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>•H<sub>2</sub>O.

**Occurrence:** From the phosphate assemblage in a complex granite pegmatite (Buranga pegmatite, Rwanda; Hålsjöberg, Sweden.); in andesites altered hydrothermally through hydrogen metasomatism (Mt. Perry, Australia).

**Association:** Trolleite, scorzalite, apatite, bjarebyite, burangaite (Buranga pegmatite, Rwanda); trolleite, augelite, andalusite, rutile, topaz, quartz (Mt. Perry, Australia).

**Distribution:** In the Buranga pegmatite, near Gatumba, Rwanda. On Mt. Perry, 75 km southwest of Bundaberg, Queensland, Australia. At Hålsjöberg, Värmland, Sweden.

**Name:** For its occurrence near Gatumba, Rwanda.

**Type Material:** Royal Museum of Central Africa, Tervuren, Belgium, RMG10560; National Museum of Natural History, Washington, D.C., USA, 142982.

**References:** (1) von Knorring, O. and A.-M. Fransolet (1977) Gatumbaite, CaAl<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>•H<sub>2</sub>O: a new species from Buranga pegmatite, Rwanda. Neues Jahrb. Mineral., Monatsh., 12, 561–568. (2) (1978) Amer. Mineral., 63, 793–794 (abs. ref. 1). (3) Duggan, M.B., M.T. Jones, D.N.G. Richards, and J.L. Kamprad (1990) Phosphate minerals in altered andesite from Mount Perry, Queensland, Australia. Can. Mineral., 28, 125–131.