

Guimarãesite

$\text{Ca}_2\text{Be}_4\text{Zn}_5(\text{PO}_4)_6(\text{OH})_4 \cdot 6\text{H}_2\text{O}$

Crystal Data: Monoclinic. *Point Group:* 2/m. As tabular prismatic crystals in rims (up to 0.1 mm thick) on crystals of roscherite-group minerals.

Physical Properties: *Cleavage:* Perfect on {100}, good on {010} (by analogy in the group). *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = ~4.5 (by analogy) D(meas.) = n.d. D(calc.) = 2.963 Nonfluorescent.

Optical Properties: Transparent. *Color:* Brown, colorless in thin section. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.596(2)$ $\beta = 1.600(2)$ $\gamma = 1.602(2)$ $2V(\text{meas.}) = 55^\circ - 75^\circ$ $2V(\text{calc.}) = 70^\circ$ *Orientation:* X = elongation. Nonpleochroic.

Cell Data: *Space Group:* C2/c. $a = 15.98(1)$ $b = 11.84(2)$ $c = 6.63(1)$ $\beta = 95.15(15)^\circ$ $Z = 2$

X-Ray Diffraction Pattern: Near the Piauí river, Itinga county, Minas Gerais, Brazil.
5.98 (100), 9.98 (90), 3.152 (90), 4.82 (80), 2.708 (80), 3.052 (70), 2.961 (70)

Chemistry:	(1)	(2)
CaO	9.72	9.43
MgO	4.00	
MnO	2.18	
FeO	2.65	
ZnO	19.06	34.22
Al ₂ O ₃	1.70	
BeO	[8.975]	8.41
P ₂ O ₅	38.20	35.81
H ₂ O	[13.515]	12.12
Total	100.00	100.00

(1) Near the Piauí river, Itinga county, Minas Gerais, Brazil; average electron microprobe analysis, H₂O and BeO calculated; corresponds to $\text{Ca}_{1.93}(\text{Zn}_{2.61}\text{Mg}_{1.11}\text{Fe}^{2+}_{0.41}\text{Al}_{0.37}\text{Mn}_{0.34})_{\Sigma=4.84}\text{Be}_{4.00}(\text{PO}_4)_{6.00}(\text{OH})_{3.90} \cdot 6.41\text{H}_2\text{O}$. (2) $\text{Ca}_2\text{Zn}_5\text{Be}_4(\text{PO}_4)_6(\text{OH})_4 \cdot 6\text{H}_2\text{O}$.

Mineral Group: Roscherite group.

Occurrence: A late fracture-filling mineral in a phosphate-rich granite pegmatite.

Association: Albite, microcline, quartz, elbaite, lepidolite, schorl, eosphorite, moraesite, saleeite, zanazziite, an Fe-dominant roscherite-group mineral, opal.

Distribution: From a pegmatite near the Piauí river, Itinga county, Minas Gerais, Brazil.

Name: Honors the Brazilian mineralogist Djalma Guimarães (1895-1973).

Type Material: Geology Museum, University of São Paulo, Brazil (DR 591).

References: (1) Chukanov, N.V., D. Atencio, A.E. Zadov, L.A.D. Menezes, and J.M.V. Coutinho (2007) Guimarãesite, a new Zn-dominant monoclinic roscherite-group mineral from Itinga, Minas Gerais, Brazil. New Data on Minerals. 42, 11-15.