

Zodacite

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Crystal Data: Monoclinic. *Point Group:* 2/m or m. Crystals, to 0.2 mm, may be isolated, usually in flat radial sprays.

Physical Properties: *Cleavage:* [On {010}] (by analogy to montgomeryite). *Hardness* = ~4
D(meas.) = 2.68 D(calc.) = 2.65

Optical Properties: Semitransparent. *Color:* Pale to medium yellow, colorless. *Streak:* Pale yellow to white. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Pleochroism:* Very weak; Y = very pale green; Z = pale green. *Orientation:* X = b; Y ∧ c = 24°; Z ∧ a = 23°. *Absorption:* Y < Z. α = 1.598(1)
β = 1.601(1) γ = 1.602(1) 2V(meas.) = 83(1)° 2V(calc.) = 60°

Cell Data: *Space Group:* C2/c or Cc. a = 10.152(8) b = 24.14(3) c = 6.308(6)
β = 91.14(7)° Z = 2

X-ray Powder Pattern: Mangualde pegmatite, Portugal.
5.18 (10), 12.00 (6), 2.907 (5), 3.150 (4), 6.31 (3), 9.38 (2), 2.985 (2)

Chemistry:

	(1)	(2)
P ₂ O ₅	34.8	32.94
Al ₂ O ₃	7.7	
Fe ₂ O ₃	14.1	24.71
MnO	4.8	5.49
MgO	0.2	
CaO	18.0	17.35
H ₂ O	[20.4]	19.51
Total	[100.0]	100.00

(1) Mangualde pegmatite, Portugal; by electron microprobe, total Fe as Fe₂O₃, total Mn as MnO, H₂O by difference; corresponds to Ca_{3.96}(Mn_{0.83}Mg_{0.06})_{Σ=0.89}(Fe_{2.18}Al_{1.86})_{Σ=4.04}(PO₄)_{6.05}(OH)_{3.67}•12.13H₂O. (2) Ca₄MnFe₄(PO₄)₆(OH)₄•12H₂O.

Mineral Group: Montgomeryite group; Mn > Mg or Fe²⁺; Fe³⁺ > Al.

Occurrence: Initially found on a museum specimen from a complex zoned granite pegmatite.

Association: Jahnsite-(CaMnMn), huréaulite, phosphosiderite, varulite, microcline.

Distribution: From the Mangualde pegmatite, near Mesquitela, Portugal.

Name: To honor Peter Zodac (1894–1967), American founder of Rocks and Minerals magazine.

Type Material: Canadian Museum of Nature, Ottawa, Canada, 53452; National Museum of Natural History, Washington, D.C., USA, 149953.

References: (1) Dunn, P.J., J.D. Grice, and W.C. Metropolis (1988) Zodacite, the Mn analogue of montgomeryite, from Mangualde, Portugal. Amer. Mineral., 73, 1179–1181.