

Nigerite-24R**(Fe²⁺, Zn)₄Sn₂(Al, Si, Fe)₁₅O₃₀(OH)₂**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. As hexagonal platelets, to 2 mm, and as oriented overgrowths on gahnite. *Twinning:* By two-fold rotation about [0001], observed as striations on {0001} and repeated intergrowths at 120°, also by X-ray diffraction effects.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.42

Optical Properties: Transparent to translucent. *Color:* Colorless; very pale green in transmitted light.

Optical Class: Uniaxial. ω = n.d. ϵ = n.d.

Cell Data: *Space Group:* $P\bar{3}m1$. $a = 5.730(3)$ $c = 55.60(3)$ $Z = 3$

X-ray Powder Pattern: n.d.

Chemistry:

	(1)
SiO ₂	0.89
SnO ₂	21.27
Al ₂ O ₃	52.63
FeO	13.91
MnO	0.33
ZnO	8.12
CaO	1.06
H ₂ O	[1.79]
Total	[100.00]

(1) Mt. Garnet, Australia; by electron microprobe, here computed from average of two elemental analyses, total Fe as FeO, H₂O by difference; corresponds to (Fe_{2.66}Zn_{1.42}Mn_{0.06})_{Σ=4.14}Sn_{2.01}Ca_{0.28}(Al_{14.69}Si_{0.21}Fe_{0.10})_{Σ=15.00}O₃₀(OH)₂.

Polymorphism & Series: 6H and 24R polytypes are known.

Occurrence: In quartz-sillimanite rocks closely associated with tin-bearing granite pegmatites (Egbe district, Nigeria); in tin-bearing skarns (Mt. Garnet, Australia).

Association: Gahnite (Egbe district, Nigeria); magnetite, fluorite, biotite, gahnite, corundum, cassiterite (Mt. Garnet, Australia).

Distribution: Distinction of the 24R from the 6H polytype requires that the unit cell be determined, which has been accomplished for the following localities: from the Egbe district, Kabba Province, Nigeria. At the Mt. Garnet tin deposits, Queensland, Australia. In the Geco Cu–Zn deposit, Manitouwadge district, 80 km north-northeast of Lake Superior, Ontario, Canada.

Name: As the 24R polytype of *nigerite*-6H.

Type Material: Royal Ontario Museum, Toronto, Canada, M24546; National Museum of Natural History, Washington, D.C., USA, 146963.

; nigerite-6T = ferronigerite-2N1S; nigerite-24R = ferronigerite-6N6S; [full list given under högbohmite];