

Crystal Data: Monoclinic. *Point Group:* 2/m. As corroded irregularly shaped grains to 0.05 mm.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = 2.5 D(meas.) = 3.3(1) D(calc.) = 3.45

Optical Properties: Translucent. *Color:* Bright orange to brown. *Streak:* Brown. *Luster:* Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.708(1)$ $\beta = 1.710(1)$ $\gamma = 1.719(1)$ $2V$ (meas.) = 56(2)°

$2V$ (calc.) = 51° *Pleochroism:* Strong, $X =$ pale brown, $Y \approx Z =$ deep red-brown.

Absorption: $X < Y \approx Z$. *Orientation:* $X \wedge c = 2^\circ$ (in β obtuse), $Y = b$, $Z \wedge a = 8^\circ$ (in β obtuse).

Cell Data: *Space Group:* C2/m. $a = 5.3516(7)$ $b = 9.2817(11)$ $c = 10.0475(13)$
 $\beta = 100.337(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Fernando de Noronha Island, Pernambuco, Brazil.

2.637 (100), 2.172 (90), 3.646 (70), 3.130 (70), 3.383 (60), 2.902 (50), 2.435 (50)

Chemistry:

	(1)		(1)
SiO ₂	26.96	Na ₂ O	0.41
TiO ₂	11.63	H ₂ O	0.55
Al ₂ O ₃	15.48	F	0.92
Fe ₂ O ₃	[0.90]	Cl	0.06
FeO	[11.37]	Li	0.017
MnO	0.12	B	0.0021
MgO	10.58	-O = F	0.39
BaO	13.91	<u>-O = Cl</u>	<u>0.01</u>
CaO	0.15	Total	96.49
K ₂ O	3.84		

(1) Fernando de Noronha Island, Pernambuco, Brazil; average of 25 electron microprobe and ion microprobe analyses, Fe³⁺/Fe²⁺ calculated for charge balance; corresponds to (Ba_{0.48}K_{0.43}Na_{0.07}Ca_{0.01}) $\Sigma=0.99$ (Mg_{1.38}Fe²⁺_{0.83}Ti_{0.77}Fe³⁺_{0.02}Mn_{0.01}) $\Sigma=3.00$ (Si_{2.36}Al_{1.60}Fe³⁺_{0.04}) $\Sigma=4.00$ O₁₀[O_{1.42}(OH)_{0.32}F_{0.26}] $\Sigma=2.00$.

Mineral Group: Mica supergroup, brittle mica group.

Polymorphism & Series: 1M polytype, trioctahedral.

Occurrence: Interstitial in an olivine nephelinite volcanic rock.

Association: Olivine, clinopyroxene, Fe-Ti oxide, nepheline, calcite, apatite, K-rich feldspar.

Distribution: From Fernando de Noronha Island, Pernambuco, Brazil and from the Hyblean Plateau, Sicily, Italy.

Name: The oxy-analog of *kinoshitalite*.

Type Material: Canadian Museum of Nature, Ottawa, Canada.

References: (1) Kogarko, L.N., Y.A. Uvarova, E. Sokolova, F.C. Hawthorne, L. Ottolini, and J.D. Grice (2005) Oxykinoshitalite, a new species of mica from Fernando de Noronha Island, Pernambuco, Brazil: occurrence and crystal structure. *Can. Mineral.*, 43, 1501-1510. (2) (2006) *Amer. Mineral.*, 91, 1204-1205 (abs. ref. 1). (3) Manuella, F.C., S. Carbone, L. Ottolini, and S. Gibilisco (2012) Micro-Raman spectroscopy and SIMS characterization of oxykinoshitalite in an olivine nephelinite from the Hyblean Plateau (Sicily, Italy). *Eur. J. Mineral.*, 24(3), 527-533.