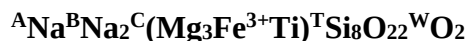


Ferri-obertiite

Crystal Data: Monoclinic. *Point Group:* 2/m. As acicular to lamellar crystals to 300 μm .

Physical Properties: *Cleavage:* Perfect on {110}. *Tenacity:* Brittle. *Fracture:* n.d.
Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.145

Optical Properties: Transparent. *Color:* Pink-orange. *Streak:* n.d. *Luster:* Vitreous.
Optical Class: Biaxial (+). $\alpha = 1.664(2)$ $\beta = 1.680(2)$ $\gamma = 1.722(2)$ $2V(\text{meas.}) = 66.4(3)^\circ$
 $2V(\text{calc.}) = 64.7^\circ$ *Pleochroism:* $X = \text{pale pink}$, $Y = \text{pinkish orange}$, $Z = \text{orange-brown}$.
Absorption: $X < Y < Z$. *Orientation:* $X \parallel b$, $Y \wedge c = 17.8^\circ$ (in β obtuse), $Z \wedge a = 3.5^\circ$ (in β acute).

Cell Data: *Space Group:* C2/m. $a = 9.7901(7)$ $b = 17.9354(13)$ $c = 5.2892(4)$ $\beta = 104.142(2)^\circ$ $Z = 2$

X-ray Powder Pattern: Rothenberg Volcano, Eifel complex, Rhineland-Palatinate, Germany.
2.704 (100), 3.116, (76), 3.388 (72), 8.931, (72), 2.5299 (67), 2.583 (39), 2.160 (38)

Chemistry:	(1)	(2)
SiO ₂	55.32	56.27
TiO ₂	7.31	9.35
Al ₂ O ₃	0.34	
Cr ₂ O ₃	0.12	
Fe ₂ O ₃	5.81	9.35
MnO	1.32	
MgO	17.00	14.15
ZnO	0.05	
NiO	0.04	
CaO	2.31	
Na ₂ O	8.62	10.88
K ₂ O	1.24	
H ₂ O	[0.20]	
F	1.22	
Cl	0.01	
– O = F ₂	0.52	
Total	100.43	100.00

(1) Rothenberg Volcano, Eifel complex, Rhineland-Palatinate, Germany; average of 10 electron microprobe analyses, H₂O calculated to minimize non-negative values of Fe²⁺ and (F+OH+Cl+O) = 2 apfu; corresponds to $^A(\text{Na}_{0.76}\text{K}_{0.22})_{\Sigma=0.98}^B(\text{Na}_{1.61}\text{Ca}_{0.35}\text{Mn}^{2+}_{0.04})_{\Sigma=2.00}^C(\text{Mg}_{3.58}\text{Mn}^{2+}_{0.11}\text{Fe}^{3+}_{0.62}\text{Ti}^{4+}_{0.66}\text{Cr}^{3+}_{0.01}\text{Zn}_{0.01}\text{Ni}_{0.01})_{\Sigma=5.00}^T(\text{Si}_{7.82}\text{Ti}^{4+}_{0.12}\text{Al}_{0.06})_{\Sigma=8.00}\text{O}_{22}^W[\text{O}_{1.26}\text{F}_{0.55}(\text{OH})_{0.19}]_{\Sigma=2.00}$.
(2) $^A\text{Na}^B\text{Na}_2^C(\text{Mg}_3\text{Fe}^{3+}\text{Ti})^T\text{Si}_8\text{O}_{22}^W\text{O}_2$.

Occurrence: From vesicles in silicate veins within basaltic scoria.

Mineral Group: Amphibole supergroup, oxo-amphibole group.

Association: Sanidine, α -quartz paramorphic after β -quartz, eifelite, tridymite, rutile, roedderite.

Distribution: From the Rothenberg Volcano, Eifel complex, Rhineland-Palatinate, Germany.

Name: For an oxo-amphibole with Fe³⁺ dominant over Fe²⁺ in the C site.

Type Material: Museo di Mineralogia, Dipartimento di Scienze della Terra e dell'Ambiente, Università degli Studi, Pavia, Italy (2015-02).

References: (1) Oberti, R., M. Boiocchi, F.C. Hawthorne, N.A. Ball, and G. Blass (2017) Ferri-obertiite from the Rothenberg quarry, Eifel volcanic complex, Germany: Mineral data and crystal chemistry of a new amphibole end-member. *Mineral. Mag.*, 81(3), 641-651. (2) (2018) *Amer. Mineral.*, 103, 332 (abs. ref. 1).