Leucophoenicite

Mn$^{2+}$\((SiO_4)_{3}(OH)_{2}\)

Crystal Data: Monoclinic.  
Point Group: 2/m.  
Crystals rare, typically slender, prismatic, elongated and striated || [010], to 8 mm; in isolated grains or granular massive.  
Twinning: On {001}, common, contact or interpenetrant twins, lamellar.

Physical Properties:  
Cleavage: {001}, imperfect.  
Tenacity: Brittle.  
Hardness = 5.5–6  
D(meas.) = 3.848  
D(calc.) = [4.01]

Optical Properties:  
Color: Brown to light purple-red, raspberry-red, deep pink to light pink; rose-red to colorless in thin section.  
Luster: Vitreous.  
Orientation: X \(\perp\) {001} cleavage.  
Dispersion: \(r > v\), slight.  
\(\alpha = 1.751(3)\)  
\(\beta = 1.771(3)\)  
\(\gamma = 1.782(3)\)

2V(meas.) = 74(5)°

Cell Data:  
Space Group: P2$_1$/a.  
\(a = 10.842(19)\)  
\(b = 4.826(6)\)  
\(c = 11.324(9)\)  
\(\beta = 103.93(9)°\)  
\(Z = [2]\)

X-ray Powder Pattern:  
Franklin, New Jersey, USA.  
1.8063 (10), 2.877 (9), 2.684 (8), 4.36 (5), 3.612 (5), 2.365 (5), 2.620 (4)

Chemistry:  
(1) (2) (3)  
\(\text{SiO}_2\) 26.36 26.7 26.7  
\(\text{CaO}\) 5.67 2.4 2.8  
\(\text{FeO}\) trace 0.3 0.3  
\(\text{MnO}\) 60.63 62.8 64.7  
\(\text{K}_2\text{O}\) 0.24  
\(\text{ZnO}\) 3.87 0.0 0.0  
\(\text{H}_2\text{O}\) 2.64 [2.3] [2.8]  
\(\text{MgO}\) 0.21 5.5 2.7  
Total 100.01 [100.0] [100.0]

(1) Franklin, New Jersey, USA; composite of two analyses, corresponding to \((\text{Mn}_{5.89}\text{Ca}_{0.70}\text{Zn}_{0.32} \text{Na}_{0.04}\text{Mg}_{0.03}\text{K}_{0.01})\Sigma=6.99(\text{Si}_{1.01}\text{O}_{4})_{3}(\text{OH})_{2}\).  
(2) Kombat mine, Namibia; by electron microprobe, \(\text{H}_2\text{O}\) by difference; corresponding to \((\text{Mn}_{5.98}\text{Mg}_{0.92}\text{Ca}_{0.29}\text{Fe}_{0.02})\Sigma=7.21(\text{SiO}_4)_{3}(\text{OH})_{1.72}\).  
(3) Valsesia-Valtournanche area, Italy; by electron microprobe, \(\text{H}_2\text{O}\) by difference; corresponding to \((\text{Mn}_{6.16}\text{Mg}_{0.45}\text{Ca}_{0.34}\text{Fe}_{0.03})\Sigma=6.98(\text{SiO}_4)_{3}(\text{OH})_{2.10}\).

Mineral Group:  
Leucophoenicite group.

Occurrence:  
A late-stage hydrothermal or contact zone mineral in veins and skarns in a metamorphosed stratiform Zn-Mn orebody (Franklin, New Jersey, USA).

Association:  
Willemite, franklinite, calcite, vesuvianite, garnet, sussexite, rhodochrosite, pyrophyllite, tephroite, sonolite, jerrygibbsite, glauchroite, manganosite, copper, zincte (Franklin, New Jersey, USA); barysilite, spessartine, vesuvianite, barite, copper, hausmannite (Kombat mine, Namibia).

Distribution:  
At Franklin, Sussex Co., New Jersey, USA. From Pajsberg, Värmland, Sweden.  
In the Valsesia-Valtournanche area, Val d’Aosta, Italy. In the Kombat mine, 49 km south of Tsumeb, Namibia. From Hotazel, near Kuruman, Cape Province, South Africa.

Name:  
From the Greek for pale and purplish red in reference to its conspicuous color.

Type Material:  
Yale University, New Haven, Connecticut, 2.4830; Harvard University, Cambridge, Massachusetts, USA, 114565.

References:  

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