

Mcauslanite



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Crystal Data: Triclinic. *Point Group:* $\bar{1}$ or 1. As clusters of radiating fibrous to bladed crystals, elongated along [001], to 1 mm; dominant forms include {010}, {100}, minor {001}. *Twining:* By rotation about [100]*, creating suture lines on {010}.

Physical Properties: *Cleavage:* Good $\parallel$ [001]. *Tenacity:* Brittle. Hardness = 3.5
D(meas.) = 2.22(2) D(calc.) = 2.17

Optical Properties: Transparent to translucent. *Color:* Yellowish white. *Streak:* White. *Luster:* Vitreous to silky. *Optical Class:* Biaxial (-). *Orientation:* $X \wedge b = 17^\circ$ in β obtuse; $Y \wedge c = 18^\circ$ in α obtuse; $Z \wedge a = 14^\circ$ in γ obtuse. $\alpha = 1.522(1)$ $\beta = 1.531(1)$ $\gamma = 1.534(1)$ 2V(meas.) = 55(5)°
2V(calc.) = 59.7°

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 10.055(5)$ $b = 11.568(5)$ $c = 6.888(5)$
 $\alpha = 105.84(6)^\circ$ $\beta = 93.66(6)^\circ$ $\gamma = 106.47(5)^\circ$ $Z = 1$

X-ray Powder Pattern: East Kemptville mine, Nova Scotia, Canada.
4.96 (100), 10.6 (90), 9.53 (85), 6.55 (70), 2.812 (55), 2.785 (45), 3.436 (35)

Chemistry:

	(1)	(2)
P ₂ O ₅	30.5	30.02
Al ₂ O ₃	11.1	10.78
FeO	18.1	22.79
MnO	5.0	
F	2.2	2.01
H ₂ O	34.0	35.25
-O = F ₂	0.9	0.85
Total	[100.0]	100.00

(1) East Kemptville mine, Nova Scotia, Canada; by electron microprobe, total Fe as FeO, confirmed by microchemical test, original anhydrous total 84.8%, normalized to 100.0% with 34% H₂O by two separate TGA-EGA determinations; then corresponding to H_{1.02}(Fe_{2.40}Mn_{0.67})_{Σ=3.07}Al_{2.08}(PO₄)_{4.10}F_{1.10}•17.49H₂O. (2) HFe₃Al₂(PO₄)₄F•18H₂O.

Occurrence: A very rare non-oxidized secondary mineral along joints beneath the erosional surface of a greisen-hosted stockwork tin mine.

Association: Vivianite, phosphophyllite, childrenite-eosphorite.

Distribution: From the East Kemptville tin mine, Yarmouth Co., Nova Scotia, Canada.

Name: Honors Dr. David A. McAuslan (1943–), Exploration Manager for Shell Canada Resources Ltd., developers of the East Kemptville tin mine, Canada.

Type Material: Department of Earth Sciences, Carleton University, Canada, 4427; Canadian Museum of Nature, Ottawa, Canada, 64806; National Museum of Natural History, Washington, D.C., USA, 165484.

References: (1) Richardson, J.M., A.C. Roberts, J.D. Grice, and R.A. Ramik (1988) Mcauslanite, a supergene hydrated iron aluminum fluorophosphate from the East Kemptville tin mine, Yarmouth County, Nova Scotia. Can. Mineral., 26, 917–921. (2) (1990) Amer. Mineral., 75, 707–708 (abs. ref. 1).