

Macaulayite



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Crystal Data: Monoclinic. *Point Group:* n.d. As $< 2 \mu\text{m}$ platy grains.

Physical Properties: *Cleavage:* {001}, strongly suspected. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 4.41

Optical Properties: Translucent. *Color:* Red; in transmitted light, pale red to yellowish.
Luster: Earthy.
Optical Class: Biaxial. $n = > 1.74$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* C-centered cell. $a = 5.038$ $b = 8.726$ $c = 36.342$ $\beta = 92^\circ$
 $Z = 2$

X-ray Powder Pattern: Bennachie, Scotland; strongest two lines from oriented sample. Basal planes expand after glycol treatment.

36.6 (vs), 18.16 (vs), 2.533 (100), 2.720 (35), 1.462 (35), 3.700 (25), 2.214 (20)

Chemistry:

	(1)
SiO ₂	10.48
Al ₂ O ₃	3.71
Fe ₂ O ₃	78.41
H ₂ O	[7.4]
Total	[100.00]

(1) Bennachie, Scotland; by electron microprobe, average of 14 analyses, recalculated from anhydrous analyses; corresponds to $\text{Fe}_{22.38}^{3+}\text{Al}_{1.69}\text{Si}_{3.98}\text{O}_{43}(\text{OH})_2$.

Occurrence: A secondary mineral formed in deeply weathered granite.

Association: Kaolinite, illite.

Distribution: From Bennachie, near Inverurie, Aberdeenshire, Scotland.

Name: For the Macaulay Institute for Soil Research, Aberdeen, Scotland.

Type Material: Royal Scottish Museum, Edinburgh, Scotland; The Natural History Museum, London, England.

References: (1) Wilson, M.J., J.D. Russell, J.M. Tait, D.R. Clark, A.R. Fraser, and I. Stephen (1981) A swelling hematite/layer-silicate complex in weathered granite. *Clay Minerals*, 16, 261–278. (2) Wilson, M.J., J.D. Russell, J.M. Tait, D.R. Clark, and A.R. Fraser (1984) Macaulayite, a new mineral from north-east Scotland. *Mineral. Mag.*, 48, 127–129. (3) (1985) *Amer. Mineral.*, 70, 1330 (abs. refs. 1 and 2).