

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals prismatic to acicular, elongated || [001].

Physical Properties: *Cleavage:* Distinct on {010}. *Hardness* = 6–7 *D*(meas.) = 3.11–3.26 *D*(calc.) = 3.170 Insoluble in acids, including HF.

Optical Properties: Transparent to translucent. *Color:* Colorless to pale pink, gray; colorless to pink in thin section. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Pleochroism:* $X = Y =$ colorless; $Z =$ rose-pink. *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r > v$. $\alpha = 1.630$ – 1.670 $\beta = 1.636$ – 1.675 $\gamma = 1.640$ – 1.691 $2V$ (meas.) = 45° – 61°

Cell Data: *Space Group:* $Pbam$ (synthetic). $a = 7.5785(6)$ $b = 7.6817(7)$ $c = 2.8864(3)$ $Z = 1$

X-ray Powder Pattern: Synthetic.

3.390 (100), 3.428 (95), 2.206 (60), 5.39 (50), 2.542 (50), 2.694 (40), 1.5242 (35)

Chemistry:

	(1)	(2)
SiO ₂	29.04	28.20
TiO ₂	0.79	
Al ₂ O ₃	69.63	71.80
Fe ₂ O ₃	0.50	
Na ₂ O	0.18	
K ₂ O	0.06	
Total	100.20	100.00

(1) Isle of Mull, Scotland. (2) Al₆Si₂O₁₃.

Occurrence: In fused argillaceous inclusions in Tertiary eruptive rocks (Isle of Mull, Scotland); as microscopic inclusions in sillimanite in pelitic inclusions in a tonalite (Val Sissone, Italy); in a complex assemblage of emerylike rocks (Sithean Sluaigh, Scotland).

Association: Corundum (Isle of Mull, Scotland); sillimanite, kyanite (Val Sissone, Italy); corundum, magnetite, spinel, pseudobrookite, sanidine, cordierite (Sithean Sluaigh, Scotland).

Distribution: From Nuns Pass, Carsaig, and a number of other places on the Isle of Mull, also at Sithean Sluaigh, Strachur, Argyllshire, Scotland. At Tievebulliagh, Co. Antrim, Ireland. In the Bergell massif, at Val Sissone, Lombardy, Italy. At the Bellerberg, Nickenicher Sattel, and other volcanoes, Eifel district, Germany. From the Bushveld complex, at Maandagshoek, Transvaal, and in the Roberts Victor diamond mine, near Kimberley, Cape Province, South Africa. In Russia, on Buguchan Mountain and near Arkhara Station, Amur region.

Name: For its type locality on the Isle of Mull, Scotland.

Type Material: The Natural History Museum, London, England, 1925,432–437.

References: (1) Bowen, N.L., J.W. Greig, and E.G. Zeiss (1924) Mullite, a new silicate of alumina. *J. Wash. Acad. Sci.*, 14, 183–191. (2) Deer, W.A., R.A. Howie, and J. Zussman (1982) *Rock-forming minerals*, (2nd edition), v. 1A, orthosilicates, 742–758. (3) Angel, R.J., R.K. McMullan, and C.T. Prewitt (1991) Substructure and superstructure of mullite by neutron diffraction. *Amer. Mineral.*, 76, 332–342. (4) (1940) *NBS Mono.* 25, 3, 3.