

**Barrerite****(Na, K, Ca)<sub>2</sub>Al<sub>2</sub>Si<sub>7</sub>O<sub>18</sub>•7H<sub>2</sub>O**

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**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. As well-formed, laminar crystals, to 5 mm, with {010}, {011}, and {111}; {001} is common, but of poor quality.

**Physical Properties:** *Cleavage:* Perfect on {010}. *Hardness* = n.d. *D(meas.)* = 2.13(1) *D(calc.)* = 2.11

**Optical Properties:** Transparent to translucent. *Color:* White to slightly pink.

*Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Orientation:* X = a; Y = b; Z = c.  $\alpha = 1.4791(5)$   $\beta = 1.4851(5)$   $\gamma = 1.4891(5)$  *2V(meas.)* = n.d. *2V(calc.)* = 78(8)°

**Cell Data:** *Space Group:* Amma. *a* = 13.643(2) *b* = 18.200(3) *c* = 17.842(2) *Z* = 8

**X-ray Powder Pattern:** Capo Pula, Sardinia, Italy; cannot be distinguished from stellerite. 9.10 (> 100), 4.054 (100), 3.028 (80), 3.004 (25), 4.659 (20), 2.773 (20), 1.8192 (17)

**Chemistry:**

	(1)
SiO <sub>2</sub>	58.82
Al <sub>2</sub> O <sub>3</sub>	14.75
Fe <sub>2</sub> O <sub>3</sub>	0.04
MnO	trace
MgO	0.24
CaO	1.66
SrO	trace
BaO	trace
Na <sub>2</sub> O	5.97
K <sub>2</sub> O	1.76
H <sub>2</sub> O	16.40
Total	99.64

(1) Capo Pula, Sardinia, Italy; by AA, SiO<sub>2</sub> by gravimetry, Al<sub>2</sub>O<sub>3</sub> by complexometric titration, H<sub>2</sub>O by TGA; corresponds to (Na<sub>1.36</sub>K<sub>0.26</sub>Ca<sub>0.21</sub>Mg<sub>0.04</sub>)<sub>Σ=1.87</sub>Al<sub>2.05</sub>Si<sub>6.93</sub>O<sub>18</sub>•6.44H<sub>2</sub>O.

**Mineral Group:** Zeolite group.

**Occurrence:** On the walls of large fractures in deeply weathered andesitic and rhyolitic lavas.

**Association:** Heulandite.

**Distribution:** Found near Capo Pula, below South Efisio Tower, Nora, Sardinia, Italy.

**Name:** For Richard Maling Barrer (1910–), New Zealand-born British teacher and student of the chemistry of zeolites.

**Type Material:** University of Modena, Modena, Italy; National Museum of Natural History, Washington, D.C., USA, 128521.

**References:** (1) Passaglia, E. and D. Pongiluppi (1974) Sodian stellerite from Capo Pula, Sardegna. *Lithos*, 7, 69–73. (2) Passaglia, E. and D. Pongiluppi (1975) Barrerite, a new natural zeolite. *Mineral. Mag.*, 40, 208. (3) (1976) *Amer. Mineral.*, 61, 1053 (abs. refs. 1 and 2). (4) Galli, E. and A. Alberti (1975) The crystal structure of barrerite. *Bull. Soc. fr. Minéral.*, 98, 331–340.