

**Ashcroftine-(Y)** **$K_5Na_5(Y, Ca)_{12}Si_{28}O_{70}(CO_3)_8(OH)_2 \cdot 8H_2O$** 

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**Crystal Data:** Tetragonal. *Point Group:*  $4/m\ 2/m\ 2/m$ . As fibrous prismatic crystals, to 2 cm, striated || [001]; in divergent sprays; as a fine, crystalline powder.

**Physical Properties:** *Cleavage:* Perfect on {100}, distinct on {001}. *Tenacity:* Flexible. Hardness = 5 D(meas.) = 2.61 D(calc.) = [2.59]

**Optical Properties:** Transparent to translucent. *Color:* Pale pink, white, pinkish brown, pinkish purple, deep violet-brown. *Streak:* White. *Luster:* Vitreous, may be silky. *Optical Class:* Uniaxial (+).  $\omega = 1.536\text{--}1.537$   $\epsilon = 1.545\text{--}1.549$

**Cell Data:** *Space Group:*  $I4/mmm$ .  $a = 24.01(1)$   $c = 17.52(1)$   $Z = 4$

**X-ray Powder Pattern:** Narssârssuk, Greenland. 17.027 (100), 12.043 (90), 7.615 (60), 3.114 (50), 2.687 (50), 5.379 (35), 6.014 (30)

<b>Chemistry:</b>	(1)	(2)
SiO <sub>2</sub>	38.09	42.69
Y <sub>2</sub> O <sub>3</sub>	26.61	34.37
MnO	0.79	
MgO	0.87	
CaO	5.72	
Na <sub>2</sub> O	3.62	3.93
K <sub>2</sub> O	5.65	5.97
H <sub>2</sub> O <sup>+</sup>	4.8	4.11
H <sub>2</sub> O <sup>-</sup>	6.40	
CO <sub>2</sub>	7.2	8.93
Total	99.75	100.00

(1) Narssârssuk, Greenland; Y<sub>2</sub>O<sub>3</sub> originally determined as Al<sub>2</sub>O<sub>3</sub>. (2) K<sub>5</sub>Na<sub>5</sub>Y<sub>12</sub>Si<sub>28</sub>O<sub>70</sub>(CO<sub>3</sub>)<sub>8</sub>(OH)<sub>2</sub>•8H<sub>2</sub>O.

**Occurrence:** In cavities in augite syenite (Narssârssuk, Greenland); in igneous breccia and pegmatites in an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada).

**Association:** Calcite, elpidite, albite, quartz, aegirine, orthoclase, zinnwaldite, graphite (Narssârssuk, Greenland); aegirine, bastnäsité, lorenzenite, brookite, elpidite, leucosphenite, cordylite, narsarsukite (Mont Saint-Hilaire, Canada).

**Distribution:** From Narssârssuk, Greenland. At Mont Saint-Hilaire, Quebec, Canada. From Cava del 'Osa, near Rome, Lazio, Italy.

**Name:** To honor Frederick Noel Ashcroft (1878–1949), benefactor to the British Museum (Natural History), London, England.

**Type Material:** The Natural History Museum, London, England, 1924,867; University of Copenhagen, Copenhagen, Denmark; Harvard University, Cambridge, Massachusetts, 110266; National Museum of Natural History, Washington, D.C., USA, 95320, R4333.

**References:** (1) Hey, M.H. and F.A. Bannister (1933) Studies on the zeolites. Part IV. Ashcroftine (kalithomsonite of S.G. Gordon). *Mineral. Mag.*, 23, 305–308. (2) Moore, P.B., J.M. Bennett, and S.J. Louisnathan (1969) Ashcroftine is not a zeolite! *Mineral. Mag.*, 37, 515–517. (3) Moore, P.B., P.K. Sen Gupta, E.O. Schlemper, and S. Merlino (1987) Ashcroftine, ca. K<sub>10</sub>Na<sub>10</sub>(Y, Ca)<sub>24</sub>(OH)<sub>4</sub>(CO<sub>3</sub>)<sub>16</sub>(Si<sub>56</sub>O<sub>140</sub>)•16H<sub>2</sub>O, a structure with enormous polyanions. *Amer. Mineral.*, 72, 1176–1189. (4) Mandarino, J.A. and V. Anderson (1989) *Monteregian Treasures*. Cambridge Univ. Press, 30.

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