

**Chabazite-K**

**Crystal Data:** Pseudo-hexagonal. *Point Group:*  $\bar{3} 2/m$ . Crystals rhombohedral, nearly equant, to 4.5 cm; tabular, complex to rounded twins; anhedral, granular, or massive. *Twinning:* About [00\*1], interpenetrant, simple and repeated, common; or by contact on {10\*1}.

**Physical Properties:** *Cleavage:* {10\*1}, distinct. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 4-5 D(meas.) = 2.05-2.20 D(calc.) = 2.035

**Optical Properties:** Transparent to translucent. *Color:* White, yellow, pink, red, colorless; colorless in thin section. *Streak:* White. *Luster:* Vitreous.

*Optical Class:* Biaxial (+) or (-) or uniaxial; commonly shows birefringent panelling in six sections.

*Orientation:*  $X = c$ ; rarely  $Z = c$ .  $a = 1.478-1.487$   $\beta = \text{n.d.}$   $\gamma = 1.480-1.493$   $2V(\text{meas.}) = 0^\circ-32^\circ$

**Cell Data:** *Space Group:*  $R\bar{3} m$ .  $a = 13.849(3)$   $c = 15.165(3)$  [hexagonal cell, with composition (K<sub>2.06</sub>Na<sub>0.98</sub>Ca<sub>0.46</sub>Mg<sub>0.10</sub>Sr<sub>0.01</sub>)[Fe<sub>0.08</sub>Al<sub>4.37</sub>Si<sub>7.60</sub>O<sub>24</sub>]·11.42H<sub>2</sub>O]  $Z = 1$

**X-ray Powder Pattern:** n.d.

Chemistry:	(1)		(2)		
	(1)	(2)	(1)	(2)	
SiO <sub>2</sub>	51.41	47.17	Na <sub>2</sub> O	3.67	5.18
Al <sub>2</sub> O <sub>3</sub>	18.01	20.94	K <sub>2</sub> O	8.15	9.04
MgO	0.94	0.70	H <sub>2</sub> O	n.d.	n.d.
CaO	0.44	1.02	Total	82.62	84.05

(1) Foveaux Formation, Bluff Peninsula, New Zealand; electron microprobe analysis; corresponds to K<sub>1.72</sub>Na<sub>1.18</sub>Mg<sub>0.23</sub>Ca<sub>0.08</sub>(Al<sub>3.51</sub>Si<sub>8.49</sub>)O<sub>24</sub>·*n*H<sub>2</sub>O. (2) Do.; electron microprobe analysis; corresponds to K<sub>1.92</sub>Na<sub>1.67</sub>Ca<sub>0.18</sub>Mg<sub>0.17</sub>(Al<sub>4.11</sub>Si<sub>7.85</sub>)O<sub>24</sub>·*n*H<sub>2</sub>O.

**Mineral Group:** Zeolite group, chabazite series.

**Occurrence:** In volcanic rocks as basalts, andesite; rarer in limestones and schists; hydrothermally deposited in cavities and joints in ore veins. In tuff in lake deposits, altered from volcanic glass.

**Association:** Zeolites, nepheline, melilite, olivine, pyroxenes, amphiboles, axinite, epidote, calcite, tridymite, dolomite.

**Distribution:** A common zeolite. Tufo Ercolano, Ercolano, Naples, Italy [TL]. Analytically confirmed material from Foveaux Formation, Bluff Peninsula, New Zealand.

**Name:** From the Greek *chabazios*, an ancient name of a stone. A suffix indicates the most abundant extra-framework cation. Chabazite without a suffix is the correct name for a member of the chabazite series that is not specifically identified on compositional grounds.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 589-592. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, 387-400. (3) Passaglia, E. (1970) The crystal chemistry of chabazites. *Amer. Mineral.*, 55, 1278-1301. (4) De Gennaro, M. and E. Franco (1976) La K-chabazite di alcuni "Tufi del Vesuvio". *Rend. Acad. Naz. Lincei*, 40, 490-497. (5) Coombs, D.S., C.A. Bosel, Y. Kawachi, and L.A. Paterson (2005) A silica-deficient, shallow-marine zeolite assemblage in the Foveaux Formation, Bluff Peninsula, New Zealand. *Mineral. Mag.*, 69(2), 137-144. (5) Mazzi, F. and E. Galli (1983) The tetrahedral framework of chabazite. *Neues Jahrb. Mineral., Monatsh.*, 461-480. (6) Gualtieri, A.F. and E. Passaglia (2006) Rietveld structure refinement of NH<sub>4</sub>-exchanged natural chabazite. *Eur. J. Mineral.*, 18, 351-359. (7) Coombs, D.S., A. Alberti, T. Armbruster, G. Artioli, C. Colella, E. Galli, J.D. Grice, F. Liebau, J.A. Mandarino, H. Minato, E.H. Nickel, E. Passaglia, D.R. Peacor, S. Quartieri, R. Rinaldi, M. Ross, R.A. Sheppard, E. Tillmanns, and G. Vezzalini, (1998) Recommended nomenclature for zeolite minerals: Report of the Subcommittee on Zeolites of the IMA, Commission on New Mineral and Mineral Names. *Mineral. Mag.*, 62, 533-571.