Chabazite-Na \((Na_3K)[Al_4Si_8O_{24}]\cdot11H_2O\)

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

**Physical Properties:** *Cleavage:* \([01\overline{1}]\), distinct. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 4.5  *D(meas.)* = 2.09(2)  *D(calc.)* = 2.035


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

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

**Cell Data:** *Space Group:* \(R\bar{3}m\).  \(a = 13.863(3)\)  \(c = 15.165(3)\)  \([\text{hexagonal cell, with composition (Na}_{3.11}\text{K}_{1.05}\text{Ca}_{0.19}\text{Mg}_{0.08}\text{Si}_{8.05}][\text{Al}_{4.53}\text{Fe}_{0.01}\text{Si}_{7.40}\text{O}_{24}]\cdot11.47\text{H}_2\text{O}\)  \(Z = 1\)

**X-ray Powder Pattern:** Biggest ‘Faraglione’ facing Aci Trezza, Sicily, Italy. 9.50 (s), 4.36 (s), 2.947 (s), 2.612 (ms), 2.523 (ms), 1.807 (ms), 1.807 (ms), 5.11 (ms)

**Chemistry:**

<table>
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<tr>
<th>Element</th>
<th>Formula</th>
<th>Column 1</th>
<th>Column 2</th>
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<tbody>
<tr>
<td>SiO₂</td>
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<td>42.45</td>
<td>Na₂O</td>
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<tr>
<td>Al₂O₃</td>
<td>21.33</td>
<td>22.06</td>
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<td>MgO</td>
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<td>0.24</td>
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<td>CaO</td>
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<td>Fe₂O₃</td>
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<td>H₂O</td>
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</tbody>
</table>

Total 84.66 99.97

(1) Foveaux Formation, Bluff Peninsula, New Zealand; electron microprobe analysis; corresponds to Na₂.51K₆.13Ca₀.17Mg₀.02(Al₄.08Si₇.93)O₂₄·11H₂O.  (2) Biggest ‘Faraglione’ facing Aci Trezza, Sicily, Italy; corresponds to Na₃.11K₁.05Ca₀.19Mg₀.06(Al₄.53Si₇.40)O₂₄·11.47H₂O.

**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:** Biggest ‘Faraglione’ facing Aci Trezza, Sicily, 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:**