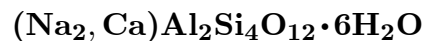


# Gmelinite



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**Crystal Data:** Hexagonal. *Point Group:*  $6/m\ 2/m\ 2/m$ . As euhedral crystals, pyramidal, tabular, or rhombohedral, striated  $\parallel$  (0001) or less commonly,  $\parallel$  [0001], to 4 cm. Rarely in radiating aggregates or granular. *Twinning:* Penetration twins on  $\{10\bar{1}1\}$ , common.

**Physical Properties:** *Cleavage:*  $\{10\bar{1}0\}$ , distinct; parting on  $\{0001\}$ . *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 4.5 D(meas.) = 2.02–2.17 D(calc.) = 2.098 Piezoelectric.

**Optical Properties:** Transparent to translucent, opaque. *Color:* Colorless, white, reddish white, salmon-red, yellowish, greenish white; colorless in thin section. *Luster:* Vitreous. *Optical Class:* Uniaxial (–) or (+); may be anomalously biaxial.  $\omega = 1.476\text{--}1.494$   
 $\epsilon = 1.474\text{--}1.480$

**Cell Data:** *Space Group:*  $P6_3/mmc$ .  $a = 13.75\text{--}13.80$   $c = 9.97\text{--}10.08$   $Z = 4$

**X-ray Powder Pattern:** Montecchio Maggiore, Italy.  
4.106 (100), 11.908 (63), 2.978 (55), 2.690 (44), 3.227 (41), 7.68 (29), 5.026 (28)

**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	50.00	46.57
Al <sub>2</sub> O <sub>3</sub>	19.17	21.12
CaO	2.95	7.04
SrO	0.58	0.25
Na <sub>2</sub> O	7.20	4.35
K <sub>2</sub> O	0.10	0.27
H <sub>2</sub> O	20.00	20.40
Total	100.00	100.00

(1) Montecchio Maggiore, Italy; by electron microprobe, corresponds to  $(\text{Na}_{1.16}\text{Ca}_{0.26}\text{Sr}_{0.03}\text{K}_{0.01})_{\Sigma=1.46}\text{Al}_{1.88}\text{Si}_{4.16}\text{O}_{12} \cdot 5.54\text{H}_2\text{O}$ . (2) South quarry, White Head, Co. Antrim, Ireland; by electron microprobe, corresponds to  $(\text{Na}_{0.71}\text{Ca}_{0.64}\text{Sr}_{0.03}\text{K}_{0.01})_{\Sigma=1.39}\text{Al}_{2.10}\text{Si}_{3.92}\text{O}_{12} \cdot 5.73\text{H}_2\text{O}$ .

**Mineral Group:** Zeolite group.

**Occurrence:** Formed from sodium-rich fluids, in basalts and related igneous rocks, also pegmatites.

**Association:** Zeolites, calcite, aragonite, quartz.

**Distribution:** Widespread in small amounts. A few localities for well studied material follow. From Montecchio Maggiore, Vicenza, Italy. At Glenarm and elsewhere in Co. Antrim, Ireland. On the Isle of Skye, Scotland. At Pyrgos, Cyprus. In the USA, from Bergen Hill, Hudson Co., and Great Notch, Paterson, and Prospect Park, Passaic Co., New Jersey; at Springfield, Lane Co., Oregon. On Pinnacle Rock, Five Islands, and Two Islands, Nova Scotia, Canada. In the Ilímaussaq intrusion, southern Greenland. At Sarbay-Sokolov, Kazakhstan. Large crystals from Bekiady, Madagascar. From around Flinders, Victoria, Australia.

**Name:** For Christian Gottlob Gmelin (1792–1860), German mineralogist and chemist of Tübingen, Germany.

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