

Garronite

$\text{Na}_2\text{Ca}_5\text{Al}_{12}\text{Si}_{20}\text{O}_{64} \cdot 27\text{H}_2\text{O}$

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Crystal Data: Tetragonal; possibly orthorhombic, pseudotetragonal. *Point Group:* $\bar{4}2m$.

As radiating crystal aggregates completely filling amygdules, characteristically radially jointed; rare single crystals, to 4 mm, are dipyrarnidal. *Twinning:* Observed optically at a very fine scale; may be a domain structure.

Physical Properties: *Cleavage:* Two at 90° , prismatic. *Hardness* = 4.5–5
D(meas.) = 2.13–2.17 D(calc.) = 2.201

Optical Properties: Transparent. *Color:* [Colorless to white, yellowish, grayish.]

Luster: Vitreous to greasy.

Optical Class: Uniaxial (+) or (–) to biaxial; may be zoned, changing optical properties from the core to the extremities. $\omega = 1.500\text{--}1.515$ $\epsilon = 1.502\text{--}1.512$

Cell Data: *Space Group:* $I\bar{4}m2$. $a = 9.9266(2)$ $c = 10.3031(3)$ $Z = [0.5]$

X-ray Powder Pattern: Co. Down, Ireland.

4.12 (100), 3.14 (100), 2.66 (100), 7.15 (80), 4.95 (80), 4.07 (60), 3.22 (60)

Chemistry:

	(1)	(2)
SiO ₂	43.21	45.15
Al ₂ O ₃	24.20	23.35
Fe ₂ O ₃	0.02	0.02
CaO	10.64	10.32
BaO	trace	0.09
Na ₂ O	2.94	2.96
K ₂ O	0.54	0.16
H ₂ O	18.62	18.74
Total	100.17	100.79

(1) Glenariff, Ireland; corresponds to $(\text{Na}_{2.52}\text{K}_{0.30})_{\Sigma=2.82}\text{Ca}_{5.08}\text{Al}_{12.70}\text{Si}_{19.24}\text{O}_{64} \cdot 27.64\text{H}_2\text{O}$.

(2) Skessa, Reydarfjord, Iceland; corresponds to $(\text{Na}_{2.52}\text{K}_{0.08})_{\Sigma=2.60}(\text{Ca}_{4.86}\text{Ba}_{0.02})_{\Sigma=4.88}\text{Al}_{12.10}\text{Si}_{19.84}\text{O}_{64} \cdot 27.46\text{H}_2\text{O}$.

Mineral Group: Zeolite group.

Occurrence: As amygdule fillings in silica-undersaturated olivine basalt flows (Co. Antrim, Ireland); in lavas rich in phenocrysts of bytownite and in non-porphyritic olivine basalt flows (Iceland); in diabase porphyry (Angara River, Russia).

Association: Zeolites.

Distribution: In Ireland, from the Glenariff Valley, Co. Antrim, and at a number of other localities towards Belfast. At The Storr, Isle of Skye, Scotland. In Iceland, at numerous localities between Berufjord and Seydisfjord. In Russia, near Nevon, on the Angara River, 50 km below the Ilim River, Siberia. At Gignat, Puy-de-Dôme, France. In the Höwenegg quarry, Hegau, Baden-Württemberg, Germany. From San Giorgio di Perlina, Vicenza, Italy. On Table Mountain, Jefferson Co., Colorado, and from Goble, Columbia Co., Oregon, USA. At Davis Hill, Ontario, and around Laurel and at Mont Saint-Hilaire, Quebec, Canada. A few other localities are known.

Name: For the Garron Plateau area, Co. Antrim, Ireland.

Type Material: n.d.

References: (1) Walker, G.P.L. (1962) Garronite, a new zeolite, from Ireland and Iceland. *Mineral. Mag.*, 33, 173–186. (2) Barrer, R.M., F.W. Bultitude, and I.S. Kerr (1959) Some properties of, and a structural scheme for, the harmotome zeolites. *J. Chem. Soc.*, 294, 1521–1528. (3) (1963) *Amer. Mineral.*, 48, 711–712 (abs. refs. 1 and 2). (4) Artioli, G. (1992) The crystal structure of garronite. *Amer. Mineral.*, 77, 189–196.

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