

Eudialyte**Na₄(Ca, Ce)₂(Fe²⁺, Mn²⁺)ZrSi₈O₂₂(OH, Cl)₂(?)**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. Crystals short rhombohedral with {0001} dominant, to long prismatic, up to 10 cm. More commonly as irregular masses and vein fillings.

Physical Properties: *Cleavage:* Perfect to indistinct on {0001}, imperfect on {11 $\bar{2}$ 0}. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 5–6 *D*(meas.) = 2.74–3.10 *D*(calc.) = n.d.

Optical Properties: Translucent. *Color:* Brown, yellow-brown, yellow, pink, rose-red, cherry-red, red; colorless in thin section. *Luster:* Vitreous to dull.

Optical Class: Uniaxial (+) or (-). *Pleochroism:* Weak; *O* = colorless, pink, pale yellow; *E* = pink to colorless. ω = 1.588–1.636 ϵ = 1.588–1.658

Cell Data: *Space Group:* $R\bar{3}m$. *a* = 13.95–14.29 *c* = 29.89–30.49 *Z* = 12

X-ray Powder Pattern: Kipawa Lake, Canada; could be mistaken for alluaivite. 2.82 (100), 2.94 (90), 3.10 (80), 4.25 (50), 4.05 (40), 3.35 (40), 3.19 (40)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	50.35	50.14	CaO	9.74	11.18
TiO ₂	0.38	0.46	SrO	0.11	0.47
ZrO ₂	11.80	11.83	Na ₂ O	12.53	14.06
Al ₂ O ₃	0.44	0.07	K ₂ O	0.43	1.39
RE ₂ O ₃	6.40	0.37	F	0.23	
Fe ₂ O ₃	0.19	0.50	Cl	1.47	1.82
Nb ₂ O ₅	0.69	0.11	H ₂ O ⁺	1.64	1.07
FeO	2.41	5.32	H ₂ O ⁻		0.12
MnO	1.34	0.60	P ₂ O ₅	0.03	
MgO	0.13	0.24	S		0.04
			-O = (F, Cl) ₂	0.43	0.41
			Total	99.88	99.38

(1) Kipawa Lake, Canada; corresponds to Na_{3.85}(Ca_{1.65}RE_{0.19}K_{0.17})_{Σ=2.01}(Fe_{0.32}²⁺Mn_{0.18}²⁺Nb_{0.06}Mg_{0.03})_{Σ=0.59}(Zr_{0.91}Al_{0.08}Ti_{0.04}Fe_{0.01}³⁺)_{Σ=1.04}Si_{8.02}O₂₂[(OH)_{1.73}Cl_{0.39}]_{Σ=2.12}. (2) Khibiny massif, Russia; corresponds to Na_{4.29}(Ca_{1.88}K_{0.28}RE_{0.02})_{Σ=2.18}(Fe_{0.70}²⁺Mn_{0.08}²⁺Mg_{0.06}Nb_{0.01})_{Σ=0.85}(Zr_{0.98}Fe_{0.13}³⁺Ti_{0.05}Al_{0.01})_{Σ=1.17}Si_{7.90}O₂₂[(OH)_{1.12}Cl_{0.43}]_{Σ=1.55}.

Occurrence: In nepheline syenites, alkalic granites, and associated pegmatites; may be a major constituent, of both magmatic and late-stage pneumatolytic origin.

Association: Microcline, nepheline, aegirine, lamprophyllite, lorenzenite, murmanite, arfvedsonite, sodalite, aenigmatite, rinkite, l avenite, titanite, titanian magnetite.

Distribution: Numerous localities, a number affording fine crystals. In Greenland, on the Kangerdluarssuk Plateau, in the Il maussaq intrusion, at Narss russuk, and elsewhere. Around the Langesundsfjord, Norway. In Russia, from the Lovozero and Khibiny massifs, Kola Peninsula; at Barynga Ridge, Taimyr; in the Burpala massif, about 120 km north of Lake Baikal, eastern Siberia. In the USA, from Magnet Cove, Hot Spring Co., Arkansas; at Point of Rocks, Colfax Co., and in a large deposit at Pajarito Mountain, Otero Co., New Mexico. In Canada, from Seal Lake and the Red Wine complex, Labrador, Newfoundland; in the Sheffield Lake complex, Kipawa River, Villedieu Township, and from Mont Saint-Hilaire and near Saint-Amable, Quebec. From Tenerife, Canary Islands.

Name: From the Greek for *easily* and *dissolved*, in allusion to its ready dissolution in acids. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.

- References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 409–412. (2) Deer, W.A., R.A. Howie, and J. Zussman (1986) Rock-forming minerals, (2nd edition), v. 1B, disilicates and ring silicates, 348–363. (3) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 355–364. (4) Rastsvetaeva, R.K. and B.E. Borutzky (1988) Crystallochemical traits of eudialyte in the light of new structural data. *Mineral. Zhurnal*, 10(1), 48–57 (in Russian). (5) Pol'shin, E.V., A.N. Platonov, B.E. Borutzky, M.N. Taran, and R.K. Rastsvetaeva (1991) Optical and Mössbauer study of minerals of the eudialyte group. *Phys. Chem. Minerals*, 18, 117–125.