

Cancrinite



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Crystal Data: Hexagonal. *Point Group:* 6. Rarely as prismatic crystals, terminated by a low pyramid, to 2 cm; commonly massive. *Twinning:* Lamellar, rare.

Physical Properties: *Cleavage:* Perfect on $\{10\bar{1}0\}$, poor on $\{0001\}$. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 2.42–2.51. D(calc.) = [2.49]

Optical Properties: Transparent to translucent. *Color:* Colorless, white, light blue to light grayish blue, honey-yellow, orange, reddish; colorless in thin section. *Streak:* White. *Luster:* Vitreous, pearly, or greasy.

Optical Class: Uniaxial (–) or (+). $\omega = 1.507\text{--}1.528$ $\epsilon = 1.495\text{--}1.503$

Cell Data: *Space Group:* $P6_3$. $a = 12.58\text{--}12.76$ $c = 5.11\text{--}5.20$ $Z = 1$

X-ray Powder Pattern: York River, Bancroft, Canada.

3.21 (100), 4.64 (90), 3.64 (70), 2.099 (70), 1.488 (50), 1.447 (50), 10.92 (40)

Chemistry:

	(1)	(2)	(3)
SiO ₂	34.35	33.64	34.25
TiO ₂		0.07	
Al ₂ O ₃	29.35	29.82	29.06
Fe ₂ O ₃	0.03		
MgO	0.01	0.39	
CaO	8.11	8.64	10.66
Na ₂ O	17.66	15.41	17.67
K ₂ O	0.10	0.50	
Cl	0.21		
H ₂ O ⁺	3.02	4.61	
H ₂ O [–]	0.11		
CO ₂	6.60	6.79	8.36
SO ₃		0.03	
Total	99.55	99.90	100.00

(1) Dungannon Township, Ontario, Canada. (2) Iron Hill, Colorado, USA.

(3) Na₆Ca₂Al₆Si₆O₂₄(CO₃)₂.

Mineral Group: Cancrinite group.

Occurrence: A primary mineral in some alkalic igneous rocks, including pegmatites in nepheline syenites; also as an alteration product of nepheline.

Association: Nepheline, sodalite, natrolite, orthoclase, monticellite, titanian andradite, zircon.

Distribution: At Miass, Ilmen Mountains, Southern Ural Mountains, and on the Kola Peninsula, Russia. From Tvedalen and the Langesundsfjord, Norway. Found near Loch Borolan, Assynt, Scotland. Around the Laacher See, Eifel district, Germany. From Vesuvius, Campania, Italy. In the USA, from Gardiner and Litchfield, Kennebec Co., Maine; Pennsburg, Chester Co., Pennsylvania; at Iron Hill, Gunnison Co., Colorado; and Point of Rocks, Colfax Co., New Mexico. In Canada, from Bancroft, Egan Chute, and Blue Mountain, Ontario; at Mont Saint-Hilaire, Quebec; and a number of other lesser localities.

Name: For Count Egor Frantsevich Kankrin (Georg Cancrin) (1774–1845), German-Russian Minister of Finance of Russia.

Type Material: Humbolt Museum, Berlin, Germany.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 427–428.

(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework

silicates, 310–320. (3) Foit, F.F., Jr. (1973) Cancrinite with a new superstructure from Bancroft, Ontario. *Can. Mineral.*, 11, 940–951. (4) Grundy, H.D. and I. Hassan (1982) The crystal structure of a carbonate-rich cancrinite. *Can. Mineral.*, 20, 239–251.

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