

Tritomite-(Y)**(Y, Ca, La, Fe²⁺)₅(Si, B, Al)₃(O, OH, F)₁₃(?)**

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Crystal Data: Metamict; hexagonal after heating at 1000 °C. *Point Group:* n.d. As irregular grains and masses, to 2.5 cm.

Physical Properties: *Fracture:* Conchoidal. Hardness = 3.5–6.5 VHN = 515–609 D(meas.) = 3.05–3.40 D(calc.) = n.d.

Optical Properties: Translucent in thin fragments. *Color:* Greenish black, dark reddish brown to brownish black; pale green, pale olive-brown to yellowish brown in thin section. *Streak:* Greenish gray. *Luster:* Weakly vitreous to resinous. *Optical Class:* Isotropic. *n* = 1.627–1.685

Cell Data: *Space Group:* n.d. *a* = 9.32, after heating at 1000 °C. *c* = 6.84 *Z* = n.d.

X-ray Powder Pattern: Cranberry Lake, New Jersey, USA; after heating at 1000 °C and the appearance of an apatitelike phase.

2.78 (100), 4.02 (50), 3.13 (50), 3.83 (40), 3.05 (40), 2.76 (40), 1.930 (40)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	24.89	24.66	PbO		0.11
TiO ₂	0.27	0.23	BeO		0.23
ThO ₂	1.84	2.84	MgO	0.50	0.20
UO ₃		0.92	CaO	7.81	16.61
B ₂ O ₃	10.04	11.12	SrO	0.05	
Al ₂ O ₃	3.87	6.21	Na ₂ O	0.11	0.08
Y ₂ O ₃	17.77	20.03	K ₂ O	0.01	
La ₂ O ₃	0.73	5.72	F	0.44	1.02
CeO ₂	2.49		Cl	0.45	
Ce ₂ O ₃		2.85	H ₂ O ⁺	9.82	3.68
RE ₂ O ₃	13.41		H ₂ O ⁻	1.93	
Fe ₂ O ₃	3.22		P ₂ O ₅	0.02	
FeO		3.47	–O = (F, Cl) ₂	0.28	0.43
MnO	0.60	0.45	Total	99.99	[100.00]

(1) Cardiff township, Canada; spectrographic analysis of RE = Pr₆O₁₁ 0.54%, Nd₂O₃ 1.84%, Sm₂O₃ 1.07%, Eu₂O₃ 0.14%, Gd₂O₃ 1.61%, Tb₄O₇ 0.34%, Dy₂O₃ 1.92%, Ho₂O₃ 0.50%, Er₂O₃ 1.99%, Tm₂O₃ 0.31%, Yb₂O₃ 2.88%, Lu₂O₃ 0.27%. (2) Cranberry Lake, New Jersey, USA; recalculated to 100.00% after removal of calcite impurity; Y₂O₃ includes all Y group RE, La₂O₃ includes all Ce group RE.

Occurrence: In granite pegmatites and pegmatite veins cutting pyroxenite.

Association: Calcite, apatite, diopside, fluorite, scapolite (Cardiff township, Canada); albite, calcite, arfvedsonite, pyrite, quartz, tourmaline (Faraday mine, Canada); magnetite, zircon, apatite, calcite, fergusonite (Cranberry Lake, New Jersey, USA).

Distribution: In the USA, from near Cranberry Lake, Sussex Co., New Jersey. In Canada, from a prospect pit in Cardiff township, and in the Faraday mine, Bancroft district, Ontario.

Name: For its relation to *tritomite*-(Ce), and *yttrium* in the composition.

Type Material: Harvard University, Cambridge, Massachusetts, 108000; The Natural History Museum, London, England, 1963,226; Canadian Geological Survey, Ottawa, Canada, 14270.

References: (1) Frondel, C. (1961) Two yttrium minerals: spencite and rowlandite. *Can. Mineral.*, 6, 576–581. (2) (1961) *Amer. Mineral.*, 46, 1204 (abs. ref. 1). (3) Jaffe, H.W. and V.J. Molinski (1962) Spencite, the yttrium analogue of tritomite from Sussex County, New Jersey. *Amer. Mineral.*, 47, 9–25. (4) Joensuu, O.I. and C.O. Ingamells (1966) Additional data on the composition of spencite. *Can. Mineral.*, 8, 647–649. (5) Hogarth, D.D., H.R. Steacy, E.I. Semenov, E.G. Proshchenko, M.E. Kazakova, and Z.T. Kataeva (1973) New occurrences and data for spencite. *Can. Mineral.*, 12, 66–71.

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