

Britholite-(Y)**(Y, Ca)₅(SiO₄, PO₄)₃(OH, F)**

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Crystal Data: Hexagonal. *Point Group:* 6/*m*. As short prismatic hexagonal crystals, to 1.3 cm; more commonly massive.

Physical Properties: *Cleavage:* Imperfect on {0001}, {10 $\bar{1}$ 0}. *Fracture:* Uneven to splintery. Hardness = 6 D(meas.) = 4.35 D(calc.) = [4.44]

Optical Properties: Translucent to transparent. *Color:* Dark reddish brown; in thin section, yellowish brown. *Streak:* Faint brown. *Luster:* Resinous to dull.

Optical Class: Uniaxial (+). $\omega = 1.728\text{--}1.750$ $\epsilon = 1.730\text{--}1.752$

Cell Data: *Space Group:* $P6_3/m$. $a = 9.43$ $c = 6.81$ $Z = 2$

X-ray Powder Pattern: Suishoyama pegmatite, Japan.

2.813 (100), 2.753 (90), 2.727 (80), 3.13 (50), 3.09 (50), 3.39 (30), 1.885 (30)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	22.70	21.80	MgO	0.10	0.07
TiO ₂		0.04	PbO		0.13
UO ₂		0.23	CaO	9.58	13.31
ThO ₂	0.51	1.55	Na ₂ O		0.20
Al ₂ O ₃	0.75	0.72	K ₂ O		0.06
Y ₂ O ₃	46.91	37.47	F	0.50	1.48
$\Sigma\text{Ce}_2\text{O}_3$	4.47	6.02	H ₂ O ⁺	0.68	
$\Sigma\text{La}_2\text{O}_3$	5.76	10.92	H ₂ O ⁻	0.15	
Fe ₂ O ₃	1.44	0.69	H ₂ O		1.35
Nb ₂ O ₅		0.06	CO ₂	0.10	
FeO	0.79	0.50	P ₂ O ₅	1.73	2.98
MnO	3.67	0.66	-O = F ₂	0.21	0.62
			Total	[99.63]	99.62

(1) Suishoyama pegmatite, Japan; original total given as 99.58%. (2) "European Russia."

Occurrence: In pegmatites.

Association: Yttrialite, thorogummite, tenerite, allanite.

Distribution: In the Suishoyama pegmatite, near Iisaka, Fukushima Prefecture, and from Shinden, Gifu Prefecture, Japan. From an undefined locality given only as "European Russia."

Name: For its chemical relation to *britholite-(Ce)* and dominant *yttrium* in its composition.

Type Material: n.d.

References: (1) Hata, S. (1938) Abukumalite [britholite-(Y)], a new mineral from pegmatites of Iisaka, Fukushima prefecture. *Sci. Pap. Inst. Phys. Chem. Res., Tokyo*, 34, 1018–1023. (2) Omori, K. and S. Hasegawa (1953) Yttrialite and abukumalite [britholite-(Y)] from pegmatite of Suishoyama, Iisaka village, Fukushima, Japan. *J. Japan. Assoc. Mineral. Petrol. Econ. Geol.*, 37, 21–29. (3) Ito, J. (1968) Silicate apatites and oxyapatites. *Amer. Mineral.*, 53, 890–907. (4) (1970) Introduction to Japanese minerals. *Geol. Sur. of Japan*, 62–63.