

Hingganite-(Y)**(Y, Yb, Er)BeSiO₄(OH)**

Crystal Data: Monoclinic. Point Group: $2/m$. Stout prismatic crystals, to 1.5 mm, may be in fanlike to sheaflike aggregates; typically granular.

Physical Properties: Hardness = [5-5.5] VHN = 415-467 D(meas.) = 4.42-4.57
D(calc.) = 4.45 Cleavage: None detected.

Optical Properties: Transparent. Color: Milky white, light yellow, light green, light blue; colorless in transmitted light. Luster: Vitreous.

Optical Class. Biaxial (+). *Orientation:* $Y = b$; $Z \wedge c = 6^\circ-13^\circ$; $Z \wedge a = 14^\circ$.

Dispersion: $r < v$; strong. $\alpha = 1.744-1.748$ $\beta = 1.753-1.765$ $\gamma = 1.765-1.783$
 $2V(\text{meas.}) = 80^\circ$

Cell Data: Space Group: $P2_1/c$. $a = 4.790$ $b = 7.545$ $c = 9.989$ $\beta = 91^\circ$ $Z = 4$

X-ray Powder Pattern: Heilungkiang Province, China.

3.148 (10), 2.685 (10), 2.569 (6), 4.790 (5), 3.462 (5), 1.985 (5), 1.880 (5)

Chemistry:	(1)	(2)	(1)	(2)	(1)	(2)
SiO ₂	25.20	26.43	Yb ₂ O ₃	17.02	BeO	10.41 10.50
TiO ₂	0.10		RE ₂ O ₃	12.39	MgO	0.09
Al ₂ O ₃	1.70	0.10	Fe ₂ O ₃	1.63	CaO	0.96 2.38
Y ₂ O ₃	26.11	24.83	FeO	0.89	(K:Na) ₂ O	1.17
Ce ₂ O ₃	28.47		PbO	0.38	H ₂ O	2.94 [3.92]
					Total	100.05 [99.55]

(1) Greater Khingan Range, China; corresponds to $(Y_{0.33}Ce_{0.21}La_{0.16}Nd_{0.10}RE_{0.13})_{\Sigma=0.93}$
 $[(K:Na)_{0.07}Fe^{3+}_{0.05}Ca_{0.04}Fe^{2+}_{0.03}]_{\Sigma=0.19}(Be_{1.00}Al_{0.08})_{\Sigma=1.08}Si_{1.02}O_{4.38}(OH)_{0.80}$. (2) Kola Peninsula, Russia;
 by electron microprobe, H₂O by difference, RE₂O₃ = Tb₂O₃ 0.33%, Dy₂O₃ 2.13%, Ho₂O₃ 0.21%,
 Er₂O₃ 6.47%, Tm₂O₃ 1.38%, Lu₂O₃ 1.87%. (3) Heilungkiang Province, China, by XRF and wet
 chemical analysis, analytical results not available; stated to correspond to
 $(Y_{0.33}Ce_{0.19}Nd_{0.10}La_{0.05}RE_{0.20}Fe^{3+}_{0.05}Fe^{2+}_{0.03}Na_{0.03})_{\Sigma=0.98}(Be_{0.97}Al_{0.03})_{\Sigma=1.00}(Si_{0.98}Al_{0.05})_{\Sigma=1.03}$
 $O_{4.00}[(OH)_{0.77}O_{0.23}]_{\Sigma=1.00}$.

Mineral Group: Gadolinite group.

Occurrence: In a RE, Be-bearing granophyre (Greater Khingan Range, China); in
 "amazonite"-rich pegmatite in a differentiated alkalic massif (Kola Peninsula, Russia).

Association: Hingganite-(Ce), quartz, potassium feldspar, albite, zinnwaldite, cassiterite, stokesite,
 fluorite, chlorite, titanite (Tahara area, Japan); aegirine, zircon, quartz (Mt. Malosa, Malawi).

Distribution: From an unspecified locality in the Greater Khingan Range, Heilungkiang
 Province, China. In the Trimouns talc deposit, six km northeast of Luzenac, Ariège, France.
 From the [Keivy massif,] Kola Peninsula, and at Tastyg, Tuva, Russia. In the Iwaguro Sekizai
 quarry, Tahara area, Gifu Prefecture, Japan. On North Sugarloaf Mountain, Bethlehem, Grafton Co.,
 New Hampshire, USA. On Mt. Malosa, Zomba district, Malawi.

Name: Presumably for the occurrence in the Greater Khingan (Hinggan) Range, China, and
 predominance of yttrium.

Type Material: Geology Bureau, Chinese Academy of Geological Sciences, Beijing, China.

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