

Aeschnynite-(Y)**(Y, Ca, Fe, Th)(Ti, Nb)₂(O, OH)₆**

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals, to 10 cm, commonly tabular, less commonly prismatic, forms {001}, {010}, {021}, {110}, {210}, {111}; granular.

Physical Properties: *Cleavage:* Perfect on {100}, {010}, and {001}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 4.82–4.93 D(calc.) = 5.5 Magnetic.

Optical Properties: Semitransparent. *Color:* Pale yellow, yellow-orange, pale greenish yellow. *Streak:* White, pale yellow, reddish yellow. *Luster:* Submetallic to pearly on crystal faces, resinous to waxy on fracture surfaces.

Optical Class: Biaxial (+). *Orientation:* $X = a$; $Y = c$; $Z = b$. *Dispersion:* $r > v$, strong. $\alpha = 2.19\text{--}2.28$ $\beta = 2.21\text{--}2.30$ $\gamma = 2.34\text{--}2.50$ $2V(\text{meas.}) = 70^\circ\text{--}80^\circ$

Cell Data: *Space Group:* $Pmn\bar{b}$. $a = 7.44\text{--}7.50$ $b = 10.92\text{--}11.04$ $c = 5.18$ $Z = 4$

X-ray Powder Pattern: “Southern China”.

2.902 (10), 1.059 (7), 1.051 (7), 4.34 (5), 2.715 (5), 5.27 (4), 2.503 (4)

Chemistry: (1)		(2)	(1)		(2)	(1)		(2)
Nb ₂ O ₅	17.99	23.35	UO ₂	4.01	5.35	PbO	0.06	0.84
Ta ₂ O ₅	0.89	1.15	Al ₂ O ₃	trace		MgO	0.04	0.15
SiO ₂	0.38	0.40	(Y, Er) ₂ O ₃	28.76	25.62	CaO	1.02	1.80
TiO ₂	32.91	27.39	Ce ₂ O ₃	1.97	2.48	Na ₂ O	0.22	0.90
SnO ₂	0.12	0.18	FeO	1.48	1.43	K ₂ O	0.19	0.18
ThO ₂	7.69	4.28	MnO	0.27	0.30	H ₂ O ⁺	1.88	2.56
ZrO ₂	trace	1.33	ZnO		0.09	Total	99.88	99.78

(1) Urstad, Norway; Ce₂O₃ includes (La, Dy)₂O₃. (2) Arendal, Norway; Ce₂O₃ includes (La, Dy)₂O₃.

Polymorphism & Series: Forms two series, with aeschnynite-(Ce) and with tantalaeschnynite-(Y).

Occurrence: In granite and granite pegmatites; in ankerite-dolomitic carbonatites; as a detrital mineral in placers.

Association: Euxenite, monazite, xenotime, allanite, zircon, fergusonite, thorite, synchysite, gadolinite, chernovite, columbite, biotite, muscovite, titanite, corundum.

Distribution: From many localities in Norway, including: at Urstad, on Hidra (Hitterö) Island; Sätersdalen; at Kåbuland, Mölland, and Birkeland; near Arendal, Mörefjär, and Salterö; at Frikstad. In Russia, at Miass, in the Ilmen Mountains, Southern Ural Mountains. In Switzerland, from Piz Lucendro, near the St. Gotthard Pass, on Pizzo Rotondo, Val Bedretto, and Val Nalps, Tavetsch, Graubünden; and elsewhere. In Italy, on Pizzo Cervandone, Alpe Devero, Val d'Aosta, Piedmont. At Böckstein, near Bad Gestein, Austria. From Tongafeno, Ambedabao, Ambohitromby, near Ambatofotsy, Tomboarivo, and other localities in Madagascar. From the Embabaa district, Swaziland. A number of other less-well-defined localities are known.

Name: For similarity to *aeschnynite*-(Ce), with *yttrium* as the dominant rare-earth element.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 793–797 [priorite]. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 489–496 [priorite]. (3) Levinson, A.A. (1966) A system of nomenclature for rare-earth minerals. Amer. Mineral., 51, 152–158 [priorite = aeschnynite-(Y)]. (4) Chi Ling-Yi (1974) Taiyite [= aeschnynite-(Y)], a new variety of aeschnynite-priorite group. Acta Geol. Sin. 91–94 (in Chinese with English abs.) (5) (1976) Amer. Mineral., 61, 178 (abs. ref. 4). (6) Sommerauer, J. and L. Weber (1972) Aeschnit-(Y,Gd,Dy,Er), ein neues Zerrkluftmineral der zentralen Schweizer Alpen. Schweiz. Mineral. Petrog. Mitt., 52, 75–91 (in German with English abs.).

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