

Tantalaeschynite-(Y)**(Ca, Y, Ce)(Ta, Ti, Nb)₂O₆**

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Crystal Data: Orthorhombic; metamict. *Point Group:* $[2/m\ 2/m\ 2/m]$ [by analogy to aeschynite-(Y)]. Crystals, prismatic || [001], to 5.6 cm, showing {010}, {001}, {110}, {130}.

Physical Properties: *Fracture:* Conchoidal. Hardness = 5.5–6 VHN = 657–673 (100 g load). D(meas.) = 5.75–6.13, on impure material. D(calc.) = 6.39 Radioactive.

Optical Properties: Transparent. *Color:* Brownish black to black; in thin section, yellow-orange; in reflected light, dark gray with abundant white to dark red internal reflections. *Streak:* Pale yellowish brown. *Luster:* Resinous.

Optical Class: Isotropic.

R: (470) 14.5, (546) 14.2, (589) 14.0, (650) 14.0

Cell Data: *Space Group:* $[Pmnb.]$ $a = 7.38$ $b = 10.97$ $c = 5.34$ $Z = [4]$

X-ray Powder Pattern: Raposa pegmatite, Brazil; after heating in air at 1300 °C. 3.00 (10), 2.94 (10), 1.581 (7), 2.65 (5), 1.70 (5), 1.86 (4)

Chemistry:

	(1)		(1)
Nb ₂ O ₅	18.7	Nd ₂ O ₃	1.9
Ta ₂ O ₅	39.3	Sm ₂ O ₃	0.6
TiO ₂	11.7	Gd ₂ O ₃	0.6
ThO ₂	6.5	Dy ₂ O ₃	0.4
UO ₂	0.4	Er ₂ O ₃	0.4
Y ₂ O ₃	4.6	Yb ₂ O ₃	0.7
La ₂ O ₃	1.3	Fe ₂ O ₃	0.9
Ce ₂ O ₃	3.7	CaO	6.2
Pr ₂ O ₃	0.6	Total	98.5

(1) Raposa pegmatite, Brazil; by electron microprobe, corresponding to (Ca_{0.47}Y_{0.17}Ce_{0.10}RE_{0.14}Th_{0.10}U_{0.01})_{Σ=0.99}(Ta_{0.75}Ti_{0.62}Nb_{0.60}Fe_{0.05})_{Σ=2.02}O₆.

Polymorphism & Series: Forms a series with aeschynite-(Y).

Occurrence: In a pegmatite.

Association: Quartz, microcline, biotite, columbite, beryl.

Distribution: In the Raposa pegmatite, near São José do Sabugí, Paraíba, Brazil.

Name: For an *aeschynite* with TANTALum greater than titanium in the composition and with *yttrium* as the dominant rare-earth element.

Type Material: Department of Geosciences, University of Brasilia, Brasilia, Brazil, NT-52; Institute of Earth Sciences, Free University of Amsterdam, Amsterdam, The Netherlands, NT-52.

References: (1) Adusumilli, M.S., C. Kieft, and E.A.J. Burke (1974) Tantal-aeschynite, a new mineral of the aeschynite group from the Borborema region, north-eastern Brazil. Mineral. Mag., 39, 571–576. (2) (1974) Amer. Mineral., 59, 1331–1332 (abs. ref. 1).