

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As regular to flattened octahedral crystals, to 6 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.
Hardness = 5 D(meas.) = 6.49(6) D(calc.) = 6.568

Optical Properties: Transparent. *Color:* Green. *Streak:* White. *Luster:* Adamantine.
Optical Class: Isotropic. $n = 2.11(2)$

Cell Data: *Space Group:* $Fd3m$. $a = 10.4451(2)$ $Z = 8$

X-ray Powder Pattern: Alto Quixaba pegmatite, Frei Martinho, Paraíba, Brazil.
3.015 (100), 1.846 (59), 1.574 (47), 3.14 (33), 6.023 (31), 2.610 (27), 1.198 (23)

Chemistry:	(1)
Na ₂ O	6.39
CaO	6.96
Bi ₂ O ₃	6.71
Ta ₂ O ₅	76.81
F	3.63
-O = F ₂	1.53
Total	98.97

(1) Alto Quixaba pegmatite, Frei Martinho, Paraíba, Brazil; average of 17 electron microprobe analyses, IR spectroscopy confirms absence of H₂O and OH; corresponding to (Na_{1.10}Ca_{0.64}Bi_{0.15})_{Σ=1.89}Ta_{2.00}O_{5.91}F_{1.02}.

Mineral Group: Pyrochlore supergroup, microlite group.

Occurrence: In a granitic pegmatite.

Association: Perthitic microcline, albite, amblygonite, muscovite, quartz, elbaite, tantalite-(Fe), tantalite-(Mn), beryl.

Distribution: From the Alto Quixaba pegmatite, Frei Martinho municipality, Paraíba State, northeastern Brazil. Similar material from the Altai Mounains, Russia and the Borborema pegmatitic province, northeastern Brazil.

Name: As a member of the *microlite* group with dominant fluorine (*fluor*) at an anion site and sodium (*natro*) in the A structural site.

Type Material: Mineralogical Collection of the Bergakademie, Freiberg (77975), and in the Mineralogical Collection, Martin-Luther University, Institute for Geological Science, Halle (010356), Germany.

References: (1) Witzke, T., M. Steins, T. Doering, W. Schuckmann, R. Wegner, and H. Pöllmann (2011) Fluornatromicrolite, (Na,Ca,Bi)₂Ta₂O₆F, a new mineral species from Quixaba, Paraíba, Brazil. *Can. Mineral.*, 49, 1105-1110. (2) (2012) *Amer. Mineral.*, 97, 1263 (abs. ref. 1).