

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. As prismatic crystals to 50 mm, showing {100}, {001}, and rarely {101}.

Physical Properties: *Cleavage:* Poor on {111}. *Tenacity:* Brittle. *Fracture:* n.d. Hardness = 5.5-6 D(meas.) = 3.36(2) (with inclusions) D(calc.) = 3.01

Optical Properties: Translucent. *Color:* Apple-green to shades of brown, colorless in thin section.

Luster: Vitreous.

Optical Class: Uniaxial (-). $\varepsilon = 1.606(2)$ $\omega = 1.611(2)$

Cell Data: *Space Group:* $P4/mcc$. $a = 7.5789(2)$ $c = 14.7038(4)$ $Z = 2$

X-ray Powder Pattern: Dara-i-Pioz massif, Tien Shan, Tajikistan.

3.40 (100), 5.31 (70), 3.33 (65), 2.654 (59), 5.36 (40), 2.175 (25), 7.59 (23)

| Chemistry: | (1) |
|---------------------------------|-------------|
| SiO ₂ | 54.58 |
| Al ₂ O ₃ | 0.03 |
| Fe ₂ O ₃ | 0.10 |
| MnO | 0.01 |
| ThO ₂ | 23.43 |
| UO ₂ | 1.93 |
| REE ₂ O ₃ | 1.50 |
| PbO | 0.94 |
| CaO | 7.56 |
| Na ₂ O | 2.89 |
| K ₂ O | 4.54 |
| F | 0.20 |
| H ₂ O | 1.76 |
| <u>-O = F</u> | <u>0.08</u> |
| Total | 99.39 |

(1) Dara-i-Pioz massif, Tien Shan, Tajikistan; wet chemical and AA analyses, (*REE* proportions: La = 24.4, Ce = 39.1, Pr = 5.0, Nd = 21.0, Sm = 3.5, Gd = 2.7, Y+Yb = 3.6, Dy = 1.5); corresponds to $(\text{Th}_{0.78}\text{REE}_{0.08}\text{U}_{0.06}\text{Pb}_{0.04}\text{Fe}_{0.01})_{\Sigma=0.97}(\text{Ca}_{1.19}\text{Na}_{0.82})_{\Sigma=2.01}(\text{K}_{0.85}\square_{0.15})_{\Sigma=1.00}(\text{Si}_{17.99}\text{Al}_{0.01})_{\Sigma=8.00}\text{O}_{12}[\text{O}_{7.75}(\text{OH})_{0.16}\text{F}_{0.09}]_{\Sigma=8.00} \cdot 0.78\text{H}_2\text{O}$.

Mineral Group: Steacyite Group.

Occurrence: In alkaline to subalkaline massifs.

Association: Microcline, pectolite, quartz, aegirine, calcite.

Distribution: At the Jelisu massif and Dara-i-Pioz massif, Tien Shan, Tajikistan.

Name: For the region, *Turkestan* Ridge, where the studied material was collected.

Type Material: Museum of the Ilmen Reserve, Miass and the A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia.

References: (1) Pautov, L.A., A.A. Agakhanov, E.V. Sokolova, and Y.K. Kabalov (1997) Turkestanite $\text{Th}(\text{Ca}, \text{Na})_2(\text{K}_{1-x}\square_x)\text{Si}_8\text{O}_{20} \cdot n\text{H}_2\text{O}$ - a new mineral. *Zap. Ross. Mineral. Obsch.*, 126(6), 45-55 (in Russian). (2) (1998) *Amer. Mineral.*, 83, 1348-1349 (abs. ref. 1). (3) Kabalov, Y.K., E.V. Sokolova, L.A. Pautov, and J. Schneider (1998) Crystal structure of a new mineral turkestanite: a calcium analogue of steacyite. *Crystallography Reports*, 43, 584-588.