

Crystal Data: Tetragonal. *Point Group:* 4/m 2/m 2/m. As irregular grains to 0.08 mm, as zones in fluorapophyllite-(K).

Physical Properties: *Cleavage:* Perfect. *Tenacity:* Brittle. *Fracture:* Stepped. Hardness = 4.5-5 VHN = 468-502, 480 average (100g load). D(Meas.) = 2.54(2) D(calc.) = 2.513

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Uniaxial (+). $\omega = 1.540(2)$ $\epsilon = 1.544(2)$ Non-pleochroic.

Cell Data: *Space Group:* P4/nmc. $a = 9.060(6)$ $c = 15.741(11)$ $Z = 2$

X-Ray Diffraction Pattern: Darai-Pioz glacier, Alai Mountain range, Tien-Shan, Tajikistan. 7.870 (100), 3.935 (100), 2.974 (84), 2.515 (73), 2.486 (71), 3.602 (55), 2.030 (45)

Chemistry:	(1)	(2)
SiO ₂	48.78	48.03
Al ₂ O ₃	0.05	
CaO	22.69	22.41
Cs ₂ O	10.71	14.07
K ₂ O	1.13	
Na ₂ O	0.04	
F	1.86	1.90
H ₂ O	[14.61]	14.40
-O = F ₂	0.78	0.80
Total	99.09	100.00

(1) Darai-Pioz glacier, Alai Mountain range, Tien-Shan, Tajikistan; average electron microprobe analysis, H₂O calculated; corresponds to (Cs_{0.75}K_{0.24}) $\Sigma=0.99$ (Ca_{3.99}Na_{0.01}) $\Sigma=4$ (Si_{8.01}Al_{0.01}) $\Sigma=8.02$ O_{20.03}F_{0.97}(H₂O)₈. (2) CsCa₄(Si₈O₂₀)F(H₂O)₈.

Mineral Group: Apophyllite group.

Occurrence: A hydrothermal mineral.

Association: Quartz, pectolite, baratovite, aegirine, leucosphenite, pyrochlore, neptunite, fluorapophyllite-(K), reedmergnerite.

Distribution: From the moraine of the Darai-Pioz glacier, Alai Mountain range, Tien-Shan, Rashtskii district, Tajikistan.

Name: Suffix indicates the Cs-analogue of *fluorapophyllite*-(K).

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5280/1).

References: (1) Agakhanov, A.A., L.A. Pautov, A.V. Kasatkin, V.Y. Karpenko, E. Sokolova, M.C. Day, F.C. Hawthorne, V.A. Muftakhov, I.V. Pekov, F. Cámara, and S.N. Britvin (2019) Fluorapophyllite-(Cs), CsCa₄(Si₈O₂₀)F(H₂O)₈, a new apophyllite-group mineral from the Darai-Pioz massif, Tien-Shan, northern Tajikistan. *Can. Mineral.*, 57, 965-971.