

Kazakovite

$\text{Na}_6\text{Mn}^{2+}\text{TiSi}_6\text{O}_{18}$

©2001 Mineral Data Publishing, version 1.2

Crystal Data: Hexagonal. *Point Group:* $\bar{3}2/m$. Crystals, to 2 mm, show the forms $\{11\bar{2}1\}$ and $\{11\bar{2}4\}$; as disseminated grains. *Twinning:* Twinning axis normal to $\{11\bar{2}4\}$; simple, complex, and polysynthetic twins.

Physical Properties: *Fracture:* Uneven to subconchoidal. Hardness = 4 D(meas.) = 2.84–2.90 D(calc.) = 2.97

Optical Properties: Semitransparent. *Color:* Yellow; pale yellow in thin section.

Luster: Vitreous to greasy.

Optical Class: Uniaxial (–). $\omega = 1.648\text{--}1.650$ $\epsilon = 1.625\text{--}1.638$

Cell Data: *Space Group:* $R\bar{3}m$. $a = 10.174$ $c = 13.053$ $Z = 3$

X-ray Powder Pattern: Mt. Karnasurt, Russia.

2.60 (10), 2.52 (8), 1.816 (8), 3.60 (7), 1.480 (7), 3.28 (6), 3.17 (6)

Chemistry:

	(1)
SiO ₂	52.44
TiO ₂	7.62
Al ₂ O ₃	0.84
Fe ₂ O ₃	2.30
Nb ₂ O ₅	1.40
MnO	4.40
MgO	0.10
CaO	0.40
Na ₂ O	25.50
K ₂ O	0.47
H ₂ O ⁺	3.66
H ₂ O [–]	0.14
P ₂ O ₅	0.70
Total	99.97

(1) Mt. Karnasurt, Russia; corresponds to $(\text{Na}_{5.51}\text{K}_{0.07}\text{Ca}_{0.05})_{\Sigma=5.63}\text{Mn}_{0.42}^{2+}(\text{Ti}_{0.64}\text{Fe}_{0.20}\text{Nb}_{0.07}\text{Mg}_{0.02}\text{Al}_{0.02})_{\Sigma=0.95}(\text{Si}_{5.84}\text{Al}_{0.09}\text{P}_{0.07})_{\Sigma=6.00}\text{O}_{18}$.

Mineral Group: Lovozerite group.

Occurrence: In sodalite-rich syenites in an alkalic massif (Lovozero massif, Russia).

Association: Nordite, belovite, vuonnemite, alkalic feldspars, ussingite (Lovozero massif, Russia); villiaumite, delhayelite, lamprophyllite, lomonosovite, feldspars, nepheline, aegirine (Khibiny massif, Russia).

Distribution: On Mts. Karnasurt and Alluaiv, Lovozero massif, and in the Khibiny massif, Kola Peninsula, Russia.

Name: For Mariya Efimovna Kazakova (1913–1982), Institute of Mineralogy and Geochemistry of Rare Elements, Moscow, Russia, analytical chemist who provided the mineral's analysis.

Type Material: Mining Institute, St. Petersburg, 1081/2; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 75513, 76106, vis3466.

References: (1) Khomyakov, A.P., E.I. Semenov, E.M. Es'kova, and A.A. Voronkov (1974) Kazakovite – a new mineral of the lovozerite group. *Zap. Vses. Mineral. Obshch.*, 103, 342–345 (in Russian). (2) (1975) *Amer. Mineral.*, 60, 161–162 (abs. ref. 1). (3) (1975) *Mineral. Abs.*, 26, 126 (abs. ref. 1). (4) Povarennykh, A.S. and Y.P. Men'shikov (1977) Kazakovite from the Khibiny Mountains and IR spectra of some titano- and zirconosilicates. *Geol. Zh.*, 37, 115–120 (in Russian). (5) (1977) *Chem. Abs.*, 87, 41912 (abs. ref. 4). (6) Voronkov, A.A., Z.V. Pudovkina, V.A. Blinov, V.V. Ilyukhin, and Y.A. Pyatenko (1979) Crystal structure of kazakovite $\text{Na}_6\text{Mn}\{\text{Ti}[\text{Si}_6\text{O}_{18}]\}$. *Doklady Acad. Nauk SSSR*, 245, 106–109 (in Russian).

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.