

Burpalite

Na₂CaZrSi₂O₇F₂

©2001 Mineral Data Publishing, version 1.2

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* 2/*m*. As tablets, elongated along [001] and flattened on {010}, to 5 mm. In fan-shaped aggregates, commonly intimately intergrown with lăvenite.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 5–6
D(meas.) = 3.33(15) D(calc.) = 3.27 Weak yellow-orange fluorescence in X-rays.

Optical Properties: Transparent to translucent. *Color:* Colorless, yellowish. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (–). *Orientation:* X = b; Y = c; Z = a. *Dispersion:* $r < v$, weak.
 $\alpha = 1.627(2)$ $\beta = 1.634(2)$ $\gamma = 1.639(2)$ 2V(meas.) = 82.1° 2V(calc.) = 80.1°

Cell Data: *Space Group:* P2₁/a. $a = 10.1173(8)$ $b = 10.4446(6)$ $c = 7.2555(3)$
 $\beta = 90.039(7)^\circ$ Z = 4

X-ray Powder Pattern: Burpala massif, Russia; by Gandolfi camera to exclude lăvenite domains.

2.962 (vs), 1.886 (ms), 1.556 (ms), 1.787 (s), 3.035 (m), 3.306 (m), 1.678 (m)

Chemistry:

| | (1) |
|--------------------------------|-------|
| SiO ₂ | 31.82 |
| TiO ₂ | 1.06 |
| ZrO ₂ | 31.11 |
| Y ₂ O ₃ | 0.32 |
| Nb ₂ O ₅ | 0.22 |
| FeO | 0.43 |
| MnO | 0.60 |
| CaO | 14.52 |
| Na ₂ O | 13.86 |
| F | 8.1 |
| H ₂ O | 1.23 |
| –O = F ₂ | 3.41 |
| Total | 99.86 |

(1) Burpala massif, Russia; by electron microprobe, average of four analyses, H₂O by Penfield method; corresponds to (Na_{1.69}Mn_{0.03}Fe_{0.02}Y_{0.01}) $\Sigma=1.75$ Ca_{0.98}(Zr_{0.96}Ti_{0.05}Nb_{0.01}) $\Sigma=1.02$ Si_{2.00}O₇[F_{1.61}(OH)_{0.26}] $\Sigma=1.87$ •0.13H₂O.

Polymorphism & Series: Dimorphous with lăvenite.

Occurrence: In a fenitized hornfelsic sandstone in the contact zone of an alkalic intrusive.

Association: Lăvenite, albite, nepheline, aegirine, alkalic amphibole, biotite, catapleiite, astrophyllite, fluorite, loparite.

Distribution: In the Burpala massif, about 120 km north of Lake Baikal, eastern Siberia, Russia.

Name: For its occurrence in the Burpala massif, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p300; Museum of Natural History, University of Pisa, Pisa, Italy; The Natural History Museum, London, England, 1994,5.

References: (1) Khomyakov, A.P., D.Y. Pushcharovskii, I.M. Kulikova, and V.I. Kuz'min (1988) New representative of the hiortdahlite-lăvenite mineralogical group. *Vestnik Mosk. Univ. Geol.*, 43(1), 87–92 (English trans. of Russian). (2) (1990) *Amer. Mineral.*, 75, 436–437 (abs. ref. 1). (3) Merlino, S., N. Perchiazzi, A.P. Khomyakhov [Khomyakov], D.Y. Pushcharovskii, I.M. Kulikova, and V.I. Kuzmin (1990) Burpalite, a new mineral from the Burpalinskii massif, North Transbaikal [Transbaikal], USSR: its crystal structure and OD character. *Eur. J. Mineral.*, 2, 177–185.

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.