Vlodavetsite $Ca_2Al(SO_4)_2F_2Cl\cdot 4H_2O$

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Tetragonal. *Point Group:* $4/m$. Square to rectangular, tabular to scaly crystals, to 0.3 mm, showing {001}, {100}; commonly fine-grained massive.

Physical Properties: *Cleavage:* On {100}, perfect. *Tenacity:* Plastic in masses. Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.10–2.35

Optical Properties: Semitransparent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Uniaxial (+). $\omega = 1.509(2)$ $\epsilon = 1.526(3)$

Cell Data: *Space Group:* $I4/m$. $a = 6.870(1)$ $c = 13.342(2)$ Z = 2

X-ray Powder Pattern: Tolbachik volcano, Kamchatka, Russia.
3.431 (100), 3.335 (80), 6.67 (60), 3.922 (50), 3.729 (40), 3.052 (40), 2.483 (40)

Chemistry:

	(1)	(2)
SO_3	35.97	36.00
Al_2O_3	12.37	11.46
CaO	25.11	25.22
F	8.1	8.54
Cl	6.08	7.97
H_2O	16.10	16.20
$-O = (F, Cl)_2$	4.78	5.39
Total	98.95	100.00

(1) Tolbachik volcano, Kamchatka, Russia; by electron microprobe, average of 11 analyses, F and Cl by wet methods, H_2O calculated from stoichiometry; corresponds to $Ca_{2.00}Al_{1.09}(SO_4)_{2.01}F_{1.94}Cl_{0.77}\cdot 4H_2O$. (2) $Ca_2Al(SO_4)_2F_2Cl\cdot 4H_2O$.

Occurrence: A product of low-temperature hydration of minerals on the fracture walls of volcanic fumaroles.

Association: Gypsum, sellaite, bischofite, hydrophilite, spinel.

Distribution: From the Tolbachik fissure volcano, Kamchatka Peninsula, Russia.

Name: Honors Vladimir Ivanovich Vlodavets (1893–1993), volcanologist who founded the Kamchatka volcanological station.

Type Material: Mining Institute, St. Petersburg, Russia, 2078/1.

References: (1) Vergasova, L.P., S.K. Filatov, G.L. Starova, G.L. Matusevich, and T.M. Filasova (1995) Vlodavetsite $AlCa_2(SO_4)_2F_2Cl\cdot 4H_2O$ – a new mineral from volcanic exhalations. Doklady Acad. Nauk SSSR, 343, 358–360 (in Russian). (2) Starova, G.L., S.K. Filatov, G.L. Matusevich, and V.S. Fundamensky (1995) The crystal structure of vlodavetsite, $AlCa_2(SO_4)_2F_2Cl\cdot 4H_2O$. Mineral. Mag., 59, 159–162. (3) (1996) Amer. Mineral., 81, 768 (abs. refs. 1–2).

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.