Chukhrovite-(Y)  \( \text{Ca}_3(\text{Y}, \text{Ce})\text{Al}_2(\text{SO}_4)\text{F}_{13} \cdot 10\text{H}_2\text{O} \)

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Cubic.  Point Group: 2/m 3.  Crystals show varying degrees of dominance of {100} and {111}, to 1 cm.


Optical Properties: Transparent to opaque.  Color: Colorless, white, rarely with a lilac tint.  Luster: Vitreous to pearly, greasy on fracture surfaces.  Optical Class: Isotropic, anomalously birefringent.  \( n = 1.42–1.44 \)

Cell Data: Space Group: \( \text{Fd} \overline{3} \).  \( a = 16.80(0.5) \)  \( Z = 8 \)

X-ray Powder Pattern: Kara-Oba deposit, Kazakhstan.  2.193 (10), 1.834 (10), 3.261 (9), 2.572 (9), 2.843 (8), 1.684 (8), 1.512 (8)

Chemistry:

\[
\begin{align*}
\text{SO}_4 & \quad 10.38 \\
\text{Al}_2\text{O}_3 & \quad 10.56 \\
\text{RE}_2\text{O}_3 & \quad 18.00 \\
\text{MgO} & \quad 0.40 \\
\text{CaO} & \quad 21.52 \\
(\text{Na}, \text{K})_2\text{O} & \quad \text{trace} \\
\text{F} & \quad 28.32 \\
\text{H}_2\text{O}^+ & \quad 10.80 \\
\text{H}_2\text{O}^- & \quad 12.00 \\
\text{insol.} & \quad \text{trace} \\
\text{O} = \text{F} & \quad 11.89 \\
\text{Total} & \quad 100.09
\end{align*}
\]

\( (1) \) Kara-Oba deposit, Kazakhstan: \( \text{RE}_2\text{O}_3 = \text{Y}_2\text{O}_3 [40.9\%] \), \( \text{La}_2\text{O}_3 5\% \), \( \text{Ce}_2\text{O}_3 15\% \), \( \text{Pr}_2\text{O}_3 4\% \), \( \text{Nd}_2\text{O}_3 12\% \), \( \text{Sm}_2\text{O}_3 7.2\% \), \( \text{Eu}_2\text{O}_3 0.2\% \), \( \text{Gd}_2\text{O}_3 6.5\% \), \( \text{Tb}_2\text{O}_3 0.9\% \), \( \text{Dy}_2\text{O}_3 4.1\% \), \( \text{Ho}_2\text{O}_3 0.8\% \), \( \text{Er}_2\text{O}_3 1.7\% \), \( \text{Tm}_2\text{O}_3 0.3\% \), \( \text{Yb}_2\text{O}_3 1.2\% \), \( \text{Lu}_2\text{O}_3 0.2\% \) by X-ray spectroscopy; corresponds to \( \text{Ca}_{3.03}(\text{Y}, \text{Ce})_{0.96}\text{Al}_{1.62}(\text{SO}_4)_{1.06}\text{F}_{11.46}(\text{OH})_{0.40}\text{Cl}=11.86\cdot9.55\text{H}_2\text{O} \).

Occurrence: In the oxidation zone of a Mo–W deposit.

Association: Halloysite, geraskutite, fluorite, creedite, anglesite, “limonite”.

Distribution: From the Kara-Oba Mo–W deposit, Bet-Pak-Dal Desert, central Kazakhstan.

Name: Honors Fedor Vasil’evich Chukhrov (1908–1988), Russian mineralogist, Director, Institute of Geology of Ore Deposits, Petrology, Mineralogy, and Geochemistry, Moscow, Russia, and yttrium, the dominant rare-earth element.


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.