Johnsomervilleite

\( \text{Na}_2\text{Ca(Fe}^{2+}, \text{Mg, Mn}^{2+})_7(\text{PO}_4)_6 \)

(c)2001-2005 Mineral Data Publishing, version 1

Crystal Data:  Hexagonal; may be metamict.  Point Group:  \( \text{3} \) (probable).  As grains or blebs, to 2 cm; in dendritic or coralloidal groups.

Physical Properties:  Cleavage:  Perfect, on \( \{0001\} \), probable.  Fracture:  Subconchoidal to splintery.  Tenacity:  Brittle.  Hardness = 4.5  \( D(\text{meas.}) = 3.35 \)  \( D(\text{calc.}) = 3.41 \)

Optical Properties:  Translucent.  Color:  Very dark brown to blackish gray, pitch-black; brown in transmitted light.  Streak:  Pale brown; gray-brown with an olive tint.  Luster:  Vitreous.  Optical Class:  Biaxial (+), anomalous; isotropic if metamict.  \( n = 1.646(1) \) (metamict).  \( \alpha = 1.655 \)  \( \beta = \sim 1.655 \)  \( \gamma = \text{n.d.} \)  \( 2V(\text{meas.}) = 10^\circ \)

Cell Data:  Space Group:  \([\text{R}3]\) (by analogy to fillowite).  \( a = 15.00 \quad c = 42.75 \quad Z = 18 \)

X-ray Powder Pattern:  Loch Quoich, Scotland.

2.764 (100), 3.70 (70), 3.55 (70), 2.965 (70), 11.20 (50), 2.501 (40), 1.852 (20)

Chemistry:

\[
\begin{array}{ccc}
\text{P}_2\text{O}_5 & 44.7 \\
\text{FeO} & 26.2 \\
\text{MnO} & 5.2 \\
\text{MgO} & 12.9 \\
\text{CaO} & 6.2 \\
\text{Na}_2\text{O} & 4.7 \\
\hline
\text{Total} & 99.9 \\
\end{array}
\]

(1) Loch Quoich, Scotland; by electron microprobe, average of eight analyses, total Fe as FeO, total Mn as MnO; corresponding to \( \text{Na}_{1.43}\text{Ca}_{1.05}(\text{Fe}_{3.47}\text{Mg}_{3.05}\text{Mn}_{0.70})_7(\text{PO}_4)_6 \).

Occurrence:  As one of several primary accessory minerals forming clusters in podiform metamorphic segregations in kyanite-sillimanite-grade gneiss (Loch Quoich, Scotland); a primary mineral in a complex granite pegmatite in staurolite-grade mica schist (Sapucaia mine, Brazil); in type IIIAB iron meteorites.

Association:  Graftonite, apatite, jahnite, phosphosiderite, vivianite, rockbridgeite, mitridatite, almandine-spessartine, muscovite, plagioclase, quartz (Loch Quoich, Scotland); triphylite, frondelite, huréaulite, bermanite, jahnite, rockbridgeite, phosphosiderite, vivianite, autunite, zircon, tourmaline, microcline, albite, quartz (Sapucaia mine, Brazil).

Distribution:  From near the entrance to Glen Cosaidh, Loch Quoich, Inverness-shire, Scotland.  In the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, Minas Gerais, Brazil.  At the Kiluli pegmatite, Rwanda.

Name:  Honors John M. Somerville (1908–1978), who collected the first specimens.


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.