

Crystal Data: Hexagonal, pseudocubic. *Point Group:* $\bar{3} 2/m$. As rhombohedral pseudocubic crystals, to 0.9 mm, with {10 $\bar{1}2$ } and tiny {0001}.

Physical Properties: *Cleavage:* Perfect on {10 $\bar{1}2$ }. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 4.5 D(meas.) = 3.194(2) D(calc.) = 3.206

Optical Properties: Transparent to translucent. *Color:* Pale blue to blue-green, bluish gray, nearly colorless. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (+). $\omega = 1.656(2)$ $\epsilon = 1.682(2)$

Cell Data: *Space Group:* $R\bar{3}c$. $a = 8.687(2)$ $c = 23.877(7)$ $Z = 6$

X-ray Powder Pattern: Mt. Mica, Maine, USA.

4.329 (100), 3.806 (90), 2.928 (90), 6.41 (50), 4.679 (50), 2.502 (50), 1.903 (45)

Chemistry:

| | (1) | (2) | (3) |
|-------------------------------|-------|--------|--------|
| P ₂ O ₅ | 43.3 | 42.2 | 42.04 |
| ZrO ₂ | 44.5 | 47.9 | 48.66 |
| HfO ₂ | 0.5 | 0.9 | |
| FeO | 0.2 | < 0.1 | |
| MnO | 1.0 | < 0.1 | |
| Na ₂ O | 1.4 | < 0.1 | |
| K ₂ O | 8.7 | 9.25 | 9.30 |
| Rb ₂ O | 0.25 | 0.2 | |
| F | 0.20 | 0.2 | |
| -O = F ₂ | 0.08 | 0.08 | |
| Total | 99.97 | 100.57 | 100.00 |

(1) Mt. Mica, Maine, USA; by electron microprobe, total Fe as FeO, total Mn as MnO; corresponds to (K_{0.93}Na_{0.08}Rb_{0.01}) $\Sigma=1.02$ (Zr_{1.81}Na_{0.15}Mn_{0.07}Fe_{0.01}Hf_{0.01}) $\Sigma=2.05$ [P_{1.02}(O_{3.98}F_{0.02}) $\Sigma=4.00$]₃. (2) Black Mountain, Maine, USA; by electron microprobe, total Fe as FeO, total Mn as MnO; corresponds to (K_{0.99}Rb_{0.01}) $\Sigma=1.00$ (Zr_{1.96}Hf_{0.02}) $\Sigma=1.98$ [P_{1.00}(O_{3.98}F_{0.02}) $\Sigma=4.00$]₃. (3) KZr₂(PO₄)₃.

Occurrence: A very rare mineral, formed by late hydrothermal alteration, probably of beryl and zircon, in complex granite pegmatites.

Association: Eosphorite, fluorapatite, moraesite, siderite, zircon, quartz (Mt. Mica, Maine, USA); siderite, albite, quartz (Black Mountain quarry, Maine, USA); wycheproofite, eosphorite, selwynite, cyrilovite, schorl (Wycheproof, Australia).

Distribution: In the USA, at Mt. Mica, near Paris, and in the Black Mountain quarry, near Rumford, Oxford Co., Maine. From Wycheproof, Victoria, Australia.

Name: For Richard A. Kosnar (1946–), American mineral dealer of Black Hawk, Colorado, USA, long interested in pegmatite minerals.

Type Material: National Museum of Natural History, Washington, D.C., USA, 170369, 170370.

References: (1) Brownfield, M.E., E.E. Foord, S.J. Sutley, and T. Botinelly (1993) Kosnarite, KZr₂(PO₄)₃, a new mineral from Mount Mica and Black Mountain, Oxford County, Maine. *Amer. Mineral.*, 78, 653–656. (2) Birch, W.D., A. Pring, D.J.M. Bevan, and Kharisun (1994) Wycheproofite: a new hydrated sodium aluminum zirconium phosphate from Wycheproof, Victoria, Australia, and a new occurrence of kosnarite. *Mineral. Mag.*, 58, 635–639. (3) Šljukić, M., B. Matković, B. Prodić, and D. Anderson (1969) The crystal structure of KZr₂(PO₄)₃. *Zeits. Krist.*, 130, 148–161.

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.