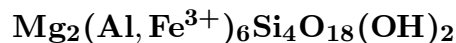


Yoderite

©2001 Mineral Data Publishing, version 1.2

Crystal Data: Monoclinic. *Point Group:* $2/m$. As anhedral grains, bladed or lathlike || [010], to 12 mm.**Physical Properties:** *Cleavage:* Partings [001], good and {100}, poor. Hardness = 6
D(meas.) = 3.39 D(calc.) = [3.33]**Optical Properties:** Transparent. *Color:* Deep purple, emerald-green; in transmitted light, deep blue to olive-green, green to yellow. *Luster:* Vitreous.*Optical Class:* Biaxial (+). *Pleochroism:* Strong; X = pale Prussian blue, green; Y = indigo, light yellow; Z = pale olive-green, yellow. *Orientation:* Y = b; X \wedge a \simeq 9°; Z \wedge c \simeq 7°. *Absorption:* Y > X > Z. $\alpha = 1.689\text{--}1.691$ $\beta = 1.691\text{--}1.693$ $\gamma = 1.712\text{--}1.715$
2V(meas.) = 25°–30°**Cell Data:** *Space Group:* $P2_1/m$. a = 8.022(2) b = 5.816(1) c = 7.250(2)
 $\beta = 104.9(1)^\circ$ Z = [1]**X-ray Powder Pattern:** Mautia Hill, Tanzania.
3.50 (100), 3.03 (80), 2.61 (60), 2.00 (60), 1.82 (60), 3.23 (50), 3.19 (50)**Chemistry:**

	(1)	(2)
SiO ₂	35.94	36.07
TiO ₂	0.11	0.07
Al ₂ O ₃	42.95	42.76
Fe ₂ O ₃	5.16	4.08
Mn ₂ O ₃	0.62	0.85
FeO	0.24	0.19
MnO	0.23	0.13
MgO	12.05	11.83
H ₂ O ⁺	2.69	[2.69]
P ₂ O ₅		0.36
Total	[99.99]	[99.03]

(1) Mautia Hill, Tanzania; Fe²⁺:Fe³⁺ from Mössbauer spectroscopy. (2) Do.; by electron microprobe, Fe²⁺:Fe³⁺ from Mössbauer spectroscopy, H₂O from (1); corresponds to (Mg_{1.95}Fe_{0.02}Mn_{0.01})_{Σ=1.98}(Al_{5.57}Fe_{0.34}Mn_{0.07}Ti_{0.01})_{Σ=5.99}(Si_{3.98}P_{0.03})_{Σ=4.01}O_{18.02}(OH)_{1.98}.**Occurrence:** A major phase in quartz-kyanite-talc schist formed under conditions of ~10 kbar H₂O pressure and 800 °C.**Association:** Kyanite, talc, hematite, quartz.**Distribution:** On Mautia Hill, Kongwa, Central Province, Tanzania.**Name:** For Hatten Schuyler Yoder, Jr. (1921–), petrologist with the Geophysical Laboratory, Washington, D.C., USA.**Type Material:** Geological Survey of Tanzania, JH 2563/2, JH 2563/14; National Museum of Natural History, Washington, D.C., USA, 137854.**References:** (1) McKie, D. (1959) Yoderite, a new hydrous magnesium iron alumino-silicate from Mautia Hill, Tanganyika. *Mineral. Mag.*, 32, 282–307. (2) (1960) *Amer. Mineral.*, 45, 753 (abs. ref. 1). (3) Abu-Eid, R.M., K. Langer, and F. Seifert (1978) Optical absorption and Mössbauer spectra of purple and green yoderite, a kyanite-related mineral. *Phys. Chem. Minerals*, 3, 271–289. (4) Higgins, J.B., P.H. Ribbe, and Y. Nakajima (1982) An ordering model for the commensurate antiphase structure of yoderite. *Amer. Mineral.*, 67, 76–84. (5) Fockenber, T. and W. Schreyer (1991) Yoderite, a mineral with essential ferric iron: its lack of occurrence in the system MgO–Al₂O₃–SiO₂–H₂O. *Amer. Mineral.*, 76, 1052–1060.

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.