

Masutomilite **$K(\text{Li, Al, Mn}^{2+})_3(\text{Si, Al})_4\text{O}_{10}(\text{F, OH})_2$**

©2001 Mineral Data Publishing, version 1.2

Crystal Data: Monoclinic. *Point Group:* 2. As the core of a sharply zoned 10 cm mica crystal; as isolated flakes in a coating on garnet.

Physical Properties: *Cleavage:* {001}, perfect. Hardness = 2.5 D(meas.) = 2.90–2.94 D(calc.) = 2.96

Optical Properties: Transparent to translucent. *Color:* Pale purple-pink, purple; colorless to pink or purple in thin section.

Optical Class: Biaxial (-). *Pleochroism:* X = Z = colorless, pale pink, pale purple; Y = purple. *Orientation:* Y = b; Z \wedge a = 2°–4°. *Dispersion:* r > v, very weak. *Absorption:* Y > Z > X. $\alpha = 1.534\text{--}1.536$ $\beta = 1.569\text{--}1.570$ $\gamma = 1.570\text{--}1.574$ 2V(meas.) = 28°–35°

Cell Data: *Space Group:* C2. a = 5.262(2) b = 9.102(3) c = 10.094(3) $\beta = 100.83(2)^\circ$ Z = [2]

X-ray Powder Pattern: Tanakamiyama, Japan.

3.32 (100), 10.10 (70), 3.35 (65), 3.09 (60), 3.64 (45), 2.589 (45), 1.989 (45)

Chemistry:

	(1)		(1)
SiO ₂	46.85	Li ₂ O	4.45
TiO ₂	0.13	Na ₂ O	0.54
Al ₂ O ₃	19.81	K ₂ O	9.88
Fe ₂ O ₃	0.38	Rb ₂ O	1.54
FeO	1.53	F	7.04
MnO	8.12	H ₂ O ⁺	1.27
MgO	0.00	H ₂ O ⁻	1.36
CaO	0.00	<u>-O = F₂</u>	2.96
		Total	99.94

(1) Tanakamiyama, Japan; corresponding to $(\text{K}_{0.89}\text{Na}_{0.07}\text{Rb}_{0.07})_{\Sigma=1.03}(\text{Li}_{1.27}\text{Al}_{0.98}\text{Mn}_{0.49}^{2+}\text{Fe}_{0.09}^{2+}\text{Fe}_{0.03}^{3+})_{\Sigma=2.86}(\text{Si}_{3.32}\text{Al}_{0.68})_{\Sigma=4.00}\text{O}_{9.82}[\text{F}_{1.58}(\text{OH})_{0.60}]_{\Sigma=2.18}$.

Polymorphism & Series: 1M, 2M₁ polytypes.

Mineral Group: Mica group.

Occurrence: In a druse in a granite pegmatite, as the core of a crystal zoned with manganoan zinnwaldite (Tanakamiyama, Japan); as reaction rims coating spessartine-rich garnets in manganese-rich parts of a lithium pegmatite (Ctidružice, Czech Republic).

Association: Zinnwaldite, topaz, tourmaline, albite, quartz, cassiterite (Tanakamiyama, Japan); manganoan garnet, manganoan elbaite (Ctidružice, Czech Republic).

Distribution: From Tanakamiyama, Otsu, Shiga Prefecture, and Tawara, Gifu Prefecture, Japan. At Washington Pass, Okanogan Co., Washington, USA. From Ctidružice, Czech Republic.

Name: For Dr. Kazunosuke Masutomi, Japanese amateur mineralogist.

Type Material: Kanazawa University, Kanazawa; Tohoku University, Kawauchi, Japan.

References: (1) Harada, K., M. Honda, K. Nagashima, and S. Kanisawa (1977) Masutomilite, manganese analog of zinnwaldite, with special reference to masutomilite-lepidolite-zinnwaldite series. Mineral. J. (Japan), 8, 95–109. (2) (1977) Amer. Mineral., 62, 594 (abs. ref. 1). (3) Němec, J. (1983) Masutomilite in lithium pegmatites of West-Moravia, Czechoslovakia. Neues Jahrb. Mineral., Monatsh., 537–540. (4) Mizota, T., T. Kato, and K. Harada (1986) The crystal structure of masutomilite, Mn analog of zinnwaldite. Mineral. J. (Japan), 13, 13–21.

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.