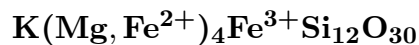


Chayesite



©2001 Mineral Data Publishing, version 1.2

Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$. As tabular, euhedral to subhedral crystals, to 0.1 mm; dominant forms are $\{0001\}$, $\{10\bar{1}0\}$, $\{11\bar{2}0\}$, and $\{10\bar{1}2\}$.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. $D(\text{meas.}) = \text{n.d.}$ $D(\text{calc.}) = 2.68$

Optical Properties: Transparent. *Color:* Deep blue; in transmitted light, light blue to colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Uniaxial (+). *Pleochroism:* $O = \text{sky-blue}$; $E = \text{colorless}$. $\omega = 1.575(1)$
 $\epsilon = 1.578(1)$

Cell Data: *Space Group:* $[P6/mcc]$ (by analogy to the milarite group). $a = 10.153(4)$
 $c = 14.388(6)$ $Z = 2$

X-ray Powder Pattern: Moon Canyon, Utah, USA; close similarity to other milarite group minerals may require chemical analysis for identification.

5.076 (vs), 3.751 (vs), 3.238 (vs), 7.194 (s), 2.7840 (s), 4.148 (m), 2.9350 (m)

Chemistry:

	(1)	(2)
SiO ₂	69.95	70.29
TiO ₂	0.21	0.02
Al ₂ O ₃	0.24	0.00
Fe ₂ O ₃	5.28	
FeO	5.40	12.60
MnO	0.23	0.23
MgO	13.64	11.44
Na ₂ O	0.45	0.04
K ₂ O	5.24	4.48
Total	100.64	99.10

(1) Moon Canyon, Utah, USA; by electron microprobe, $\text{Fe}^{2+}:\text{Fe}^{3+}$ calculated from stoichiometry; corresponds to $(\text{K}_{1.14}\text{Na}_{0.15})_{\Sigma=1.29}(\text{Mg}_{3.48}\text{Fe}_{0.77}^{2+}\text{Fe}_{0.68}^{3+}\text{Mn}_{0.03}\text{Ti}_{0.03}\text{Al}_{0.01})_{\Sigma=5.00}(\text{Si}_{11.96}\text{Al}_{0.04})_{\Sigma=12.00}\text{O}_{30}$. (2) Cancarix, Spain; by electron microprobe, total Fe as FeO, $\text{Fe}^{2+}:\text{Fe}^{3+}$ in empirical formula calculated from stoichiometry; corresponds to $(\text{K}_{0.99}\text{Na}_{0.01})_{\Sigma=1.00}(\text{Mg}_{2.96}\text{Fe}_{1.20}^{2+}\text{Fe}_{0.63}^{3+}\text{Mn}_{0.03})_{\Sigma=4.82}\text{Si}_{12.18}\text{O}_{30}$.

Mineral Group: Milarite group.

Occurrence: A late-crystallizing mineral, nonuniformly distributed in the groundmass of lamproites.

Association: Potassian richterite, diopside, potassic feldspar.

Distribution: From Moon Canyon, east of Francis, Summit Co., Utah, USA. In Spain, at Cancarix, Albacete Province.

Name: In honor of Dr. Felix Chayes (1916–1993) of the Geophysical Laboratory, Carnegie Institute, Washington, D.C., USA.

Type Material: Institute for Mineralogy, Ruhr University, Bochum, Germany; National Museum of Natural History, Washington, D.C., USA, 165807.

References: (1) Velde, D., O. Medenbach, C. Wagner, and W. Schreyer (1989) Chayesite, $\text{K}(\text{Mg}, \text{Fe}^{2+})_4\text{Fe}^{3+}[\text{Si}_{12}\text{O}_{30}]$: a new rock-forming silicate mineral of the osumilite group from the Moon Canyon (Utah) lamproite. *Amer. Mineral.*, 74, 1368–1373.

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.