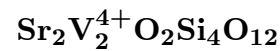


Haradaite



©2001 Mineral Data Publishing, version 1.2

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As tubular aggregates, to 2 mm; massive.

Physical Properties: *Cleavage:* Perfect on {010}, distinct on {100} and {001}.
Hardness = 4.5 D(meas.) = 3.80 D(calc.) = 3.83

Optical Properties: Transparent to translucent. *Color:* Bright green. *Luster:* Vitreous.
Optical Class: Biaxial (-). *Pleochroism:* X = colorless to very pale green; Y = colorless to light yellowish green; Z = bluish green. *Orientation:* X = a; Y = b; Z = c. *Dispersion:* $r < v$, very strong. $\alpha = 1.713(2)$ $\beta = 1.721(2)$ $\gamma = 1.734(2)$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* *Amam*. $a = 7.06$ $b = 14.64$ $c = 5.33$ $Z = 4$

X-ray Powder Pattern: Synthetic.
3.20 (100), 2.88 (90), 3.65 (40), 2.65 (40), 2.12 (40), 2.04 (35), 7.30 (30)

Chemistry:	(1)		(1)	
	SiO ₂	38.38	CaO	1.27
	TiO ₂	0.06	SrO	27.08
	VO ₂	26.16	BaO	4.90
	Al ₂ O ₃	0.36	Na ₂ O	0.01
	FeO	0.12	K ₂ O	0.04
	MnO	0.19	H ₂ O ⁺	1.24
	CuO	0.20	H ₂ O ⁻	0.20
	PbO	0.02		
			Total	100.23

(1) Yamato mine, Japan; corresponds to $(\text{Sr}_{3.26}\text{Ba}_{0.40}\text{Ca}_{0.28}\text{Mn}_{0.03}\text{Fe}_{0.02}\text{K}_{0.01})_{\Sigma=4.00}$
 $(\text{V}_{3.94}\text{Al}_{0.07}\text{Ti}_{0.01})_{\Sigma=4.02}(\text{Si}_{7.98}\text{Al}_{0.02})_{\Sigma=8.00}\text{O}_{28}$.

Occurrence: In coarse-grained rhodonite ore (Noda-Tamagawa mine, Japan); as veinlets cutting rhodonite-goldmanite ore (Yamato mine, Japan).

Association: Rhodonite, quartz.

Distribution: In Japan, in the Yamato mine and on Amamioshima Island, Kagoshima Prefecture; in the Noda-Tamagawa mine, Iwate Prefecture; and in the Matsuo mine, Kochi Prefecture. From the Gambatesa mine, near Chiavari, Val Graveglia, Liguria, Italy.

Name: For Zyunpei Harada (1898–1992), Emeritus Professor, Hokkaido University, Sapporo, Japan.

Type Material: National Science Museum, Tokyo, Japan, M15111.

References: (1) Watanabe, T., A. Kato, J. Ito, T. Yoshimura, H. Momoi, and K. Fukuda (1974) Haradaite, $\text{Sr}_2\text{V}_2(\text{O}_2)(\text{Si}_4\text{O}_{12})$, a new mineral from the Noda Tamagawa mine, Iwate Prefecture, and the Yamato mine, Kagoshima Prefecture, Japan. IMA, 9th General Meeting, 97 (abs.). (2) (1975) Amer. Mineral., 60, 340 (abs. ref. 1). (3) Watanabe, T., A. Kato, J. Ito, T. Yoshimura, H. Momoi, and K. Fukuda (1974) Haradaite, $\text{Sr}_2\text{V}_2^{4+}[\text{O}_2\text{Si}_4\text{O}_{12}]$, from the Noda Tamagawa mine, Iwate Prefecture, and the Yamato mine, Kagoshima Prefecture, Japan. Proc. Japan Acad., Ser. B, 58(2), 21–24 (in English). (4) (1975) Chem. Abs., 96, 146305 (abs. ref. 3). (5) Takéuchi, Y. and W. Joswig (1967) The structure of haradaite and a note on the Si:O bond lengths in silicates. Mineral. J. (Japan), 5, 98–123. (6) (1971) Amer. Mineral., 56, 1123 (abs. ref. 5). (7) Ito, J. (1965). Synthesis of vanadium silicates: haradaite, goldmanite and roscoelite. Mineral. J. (Japan), 4, 299–316.

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.