

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As tabular crystals with dominant forms {100}, {010}, {001}, {1 $\bar{1}$ 0}, {101}, { $\bar{1}$ 01}, and {0 $\bar{1}$ 1}, to 80  $\mu$ m.

**Physical Properties:** *Tenacity:* Brittle. *Hardness* = n.d. *D(meas.)* = n.d.  
*D(calc.)* = 3.814

**Optical Properties:** Opaque, translucent on thin edges. *Color:* Black; deep red-brown through thin edges; medium gray in reflected light. *Streak:* Red-brown. *Luster:* Metallic.  
*Optical Class:* Biaxial. *Anisotropism:* Moderate.

*R<sub>1</sub>-R<sub>2</sub>:* (481) 15.5–20.1, (547) 15.0–18.4, (591) 14.1–17.2, (644) 13.5–17.1

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 8.198(2)$   $b = 9.773(1)$   $c = 6.6510(8)$   $\alpha = 103.82(1)^\circ$   
 $\beta = 101.99(1)^\circ$   $\gamma = 106.74(1)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Izalco volcano, El Salvador.  
3.167 (100), 3.093 (100), 1.659 (70), 3.27 (60), 2.676 (60), 2.603 (60), 1.433 (60)

<b>Chemistry:</b>	(1)	(2)
V <sub>2</sub> O <sub>5</sub>	49.17	50.24
TiO <sub>2</sub>	0.80	
Al <sub>2</sub> O <sub>3</sub>	2.01	
Fe <sub>2</sub> O <sub>3</sub>	23.92	29.40
Mn <sub>2</sub> O <sub>3</sub>	0.73	
CuO	17.29	14.65
Na <sub>2</sub> O	5.6	5.71
K <sub>2</sub> O	0.60	
Total	100.12	100.00

(1) Izalco volcano, El Salvador; by electron microprobe, average of 30 analyses, total Fe as Fe<sub>2</sub>O<sub>3</sub>, total Mn as Mn<sub>2</sub>O<sub>3</sub>; corresponding to (Na<sub>0.98</sub>K<sub>0.07</sub>) $\Sigma=1.05$ Cu<sub>1.06</sub>(Fe<sub>1.63</sub>Al<sub>0.21</sub>Cu<sub>0.12</sub>Mn<sub>0.05</sub>Ti<sub>0.05</sub>) $\Sigma=2.06$ (V<sub>0.98</sub>O<sub>4</sub>)<sub>3</sub>. (2) NaCuFe<sub>2</sub>(VO<sub>4</sub>)<sub>3</sub>.

**Occurrence:** Forms by sublimation around fumaroles on an andesitic volcano.

**Association:** Thenardite, lyonsite.

**Distribution:** Occurs on the Izalco volcano, El Salvador.

**Name:** Honors Dr. Howard Tasker Evans, Jr. (1919–2000), American mineralogist and crystallographer, U.S. Geological Survey, Reston, Virginia, USA.

**Type Material:** Harvard University, Cambridge, Massachusetts, 130752; National Museum of Natural History, Washington, D.C., USA, 165494.

**References:** (1) Hughes, J.M., J.W. Drexler, C.F. Campana, and M.L. Malinconico (1988) Howardevansite, NaCu<sup>2+</sup>Fe<sub>2</sub><sup>3+</sup>(VO<sub>4</sub>)<sub>3</sub><sup>3-</sup>, a new fumarolic sublimate from Izalco volcano, El Salvador: descriptive mineralogy and crystal structure. *Amer. Mineral.*, 73, 181–186.