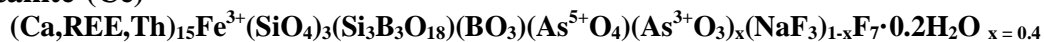


## Vicanite-(Ce)



**Crystal Data:** Hexagonal. *Point Group:* 3m. As terminated prismatic crystals, to 0.3 mm in aggregates to 0.8 mm. *Twinning:* When present gives a pseudocubic habit.

**Physical Properties:** *Cleavage:* None. *Fracture:* Conchoidal. Hardness = 5-6  
D(meas.) = >4.2 D(calc.) = 4.73

**Optical Properties:** Transparent. *Color:* Yellowish green. *Streak:* White. *Luster:* Vitreous.  
*Optical Class:* Uniaxial (-).  $\omega = 1.757(2)$   $\epsilon = 1.722(2)$  *Pleochroism:* None.

**Cell Data:** *Space Group:* R3m.  $a = 10.8112(2)$   $c = 27.3296(12)$   $Z = 3$

**X-ray Powder Pattern:** Tre Croci, Vetralla, Viterbo Province, Italy.  
2.993 (100), 2.950 (70), 7.70 (50), 4.42 (50), 3.13 (50), 2.698 (50), 1.839 (50)

Chemistry:	(1)	(1)
SiO <sub>2</sub>	13.82	UO <sub>2</sub> 1.96
Al <sub>2</sub> O <sub>3</sub>	0.16	La <sub>2</sub> O <sub>3</sub> 12.01
TiO <sub>2</sub>	0.14	Ce <sub>2</sub> O <sub>3</sub> 14.41
P <sub>2</sub> O <sub>5</sub>	0.38	Pr <sub>2</sub> O <sub>3</sub> 2.77
As <sub>2</sub> O <sub>3</sub>	4.49	Nd <sub>2</sub> O <sub>3</sub> 1.79
Fe <sub>2</sub> O <sub>3</sub>	1.66	B <sub>2</sub> O <sub>3</sub> [5.27]
CaO	17.07	F 7.50
Na <sub>2</sub> O	0.14	<u>- O = F</u> 3.16
ThO <sub>2</sub>	18.24	Total 98.65

(1) Tre Croci, Vetralla, Viterbo Province, Italy; electron microprobe analysis supplemented by IR spectroscopy, arsenic partitioned as As<sup>5+</sup> to fill the cation site and the remainder as As<sup>3+</sup>, B<sub>2</sub>O<sub>3</sub> calculated for 4 B apfu; corresponding to (Ca<sub>8.03</sub>Ce<sub>2.32</sub>La<sub>1.95</sub>Th<sub>1.82</sub>Pr<sub>0.44</sub>Nd<sub>0.28</sub>U<sub>0.19</sub>) $\Sigma=15.06$ (As<sup>5+</sup><sub>0.86</sub>P<sub>0.14</sub>) $\Sigma=1.00$ (As<sup>3+</sup><sub>0.34</sub>Na<sub>0.12</sub>) $\Sigma=0.46$ (Fe<sup>3+</sup><sub>0.57</sub>Ti<sub>0.05</sub>Al<sub>0.08</sub>) $\Sigma=0.67$ Si<sub>6.07</sub>B<sub>4</sub>(O<sub>36.57</sub>F<sub>10.43</sub>) $\Sigma=47$ .

**Mineral Group:** Vicanite group.

**Occurrence:** As crystals in miarolitic cavities in volcanic ejecta of syenitic composition.

**Association:** Zircon, thorite, thorian uraninite, betafite, thorian hellandite, titanite, antimonian asbecasite, apatite, stillwellite-(Ce).

**Distribution:** At Tre Croci, Vetralla (north of Rome), Viterbo province, Italy.

**Name:** For the *Vican* volcanic complex (Italy) where the mineral was found.

**Type:** Mineralogical Museum, University of Rome, Italy.

**References:** (1) Maras, A., G.C. Parodi, G. della Ventura, and D. Ohnenstetter (1995) Vicanite-(Ce): A new Ca-Th-REE borosilicate from the Vico volcanic district (Latium, Italy). *Eur. J. Mineral.*, 7, 439-446. (2) Ballirano, P., A. Callegari, F. Caucia, A. Maras, F. Mazzi, and L. Ungarerri (2002) The crystal structure of vicanite-(Ce), a borosilicate showing an unusual (Si<sub>3</sub>B<sub>3</sub>O<sub>18</sub>)<sup>15-</sup> polyanion. *Amer. Mineral.*, 87, 1139-1143.