

**Kimzeyite****Ca<sub>3</sub>(Zr, Ti)<sub>2</sub>(Si, Al, Fe<sup>3+</sup>)<sub>3</sub>O<sub>12</sub>**

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**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . As dodecahedra modified by trapezohedra, up to 5 mm; also in rounded grains.

**Physical Properties:** Hardness =  $\sim 7$  D(meas.) = 4.0 D(calc.) = 4.03

**Optical Properties:** Transparent. *Color:* Dark brown; light brown in thin section.

*Streak:* Light brown. *Luster:* Vitreous.

*Optical Class:* Isotropic.  $n = 1.94(1)$

**Cell Data:** *Space Group:*  $Ia\bar{3}d$ .  $a = 12.46$   $Z = 8$

**X-ray Powder Pattern:** Magnet Cove, Arkansas, USA.

1.667 (10), 2.539 (9), 2.79 (8), 3.12 (6), 4.42 (4), 1.728 (4), 1.395 (4)

**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	9.6	16.63
TiO <sub>2</sub>	5.6	6.95
ZrO <sub>2</sub>	29.9	27.38
Al <sub>2</sub> O <sub>3</sub>	11.0	9.37
Fe <sub>2</sub> O <sub>3</sub>	13.4	
Nb <sub>2</sub> O <sub>5</sub>	1.0	
FeO	0.8	6.43
MgO	0.5	3.32
CaO	29.8	30.25
Total	101.6	100.33

(1) Magnet Cove, Arkansas, USA; corresponding to  $(Ca_{3.11}Fe_{0.07}^{2+}Mg_{0.07})_{\Sigma=3.25}(Zr_{1.42}Ti_{0.40}Nb_{0.05})_{\Sigma=1.87}(Al_{1.26}Fe_{0.98}^{3+}Si_{0.94})_{\Sigma=3.18}O_{12}$ . (2) Stromboli, Italy; by electron microprobe, average of three analyses; corresponding to  $(Ca_{2.94}Mg_{0.06})_{\Sigma=3.00}(Zr_{1.21}Ti_{0.47}Mg_{0.32})_{\Sigma=2.00}(Si_{1.51}Al_{1.00}Fe_{0.49}^{3+})_{\Sigma=3.00}O_{12}$ .

**Mineral Group:** Garnet group.

**Occurrence:** In a carbonatite associated with ijolite (Magnet Cove, Arkansas, USA); in a shoshonitic basaltic lava (Stromboli, Italy).

**Association:** Apatite, calcite, monticellite, magnetite, perovskite, anhydrite, vesuvianite, biotite, pyrite (Magnet Cove, Arkansas, USA).

**Distribution:** In the Kimzey quarry, Magnet Cove, Hot Spring Co., Arkansas, USA. On Stromboli, Lipari Islands, Italy.

**Name:** For Joe Kimzey, the mineral's discoverer, and the Kimzey family, of Magnet Cove, Arkansas, USA.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 117124.

**References:** (1) Milton, C., B.L. Ingram, and L.V. Blade (1961) Kimzeyite, a zirconium garnet from Magnet Cove, Arkansas. *Amer. Mineral.*, 46, 533–548. (2) Munno, R., G. Rossi, and C. Tadini (1980) Crystal chemistry of kimzeyite from Stromboli, Aeolian Islands, Italy. *Amer. Mineral.*, 65, 188–191.