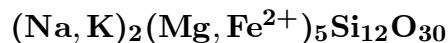


**Roedderite**

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**Crystal Data:** Hexagonal. *Point Group:*  $\bar{6}m2$ . Platy to short prismatic hexagonal crystals, exhibiting dominant  $\{10\bar{1}0\}$  and  $\{0001\}$  with  $\{11\bar{2}0\}$ ,  $\{10\bar{1}2\}$ , and  $\{10\bar{1}4\}$ , to 2 mm.

**Physical Properties:** Hardness = n.d.  $D(\text{meas.}) = \sim 2.6$   $D(\text{calc.}) = 2.63$

**Optical Properties:** Transparent to translucent. *Color:* Colorless, yellowish to reddish brown. *Luster:* Vitreous.

*Optical Class:* Uniaxial (+) to slightly biaxial.  $\omega = 1.537\text{--}1.543$   $\epsilon = 1.536\text{--}1.547$   
 $2V(\text{meas.}) = 2^\circ\text{--}5^\circ$

**Cell Data:** *Space Group:*  $P\bar{6}2c$ .  $a = 10.139(3)$   $c = 14.269(4)$   $Z = 2$

**X-ray Powder Pattern:** Indarch meteorite; essentially identical with eifelite. 3.570 (100), 3.239 (77), 2.922 (67), 3.747 (66), 7.15 (64), 2.772 (44), 5.540 (36)

**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	71.32	71.0
TiO <sub>2</sub>	0.07	
Al <sub>2</sub> O <sub>3</sub>	0.36	0.4
FeO	0.49	2.0
MnO	0.31	
MgO	17.86	19.5
K <sub>2</sub> O	4.16	3.3
Na <sub>2</sub> O	5.29	4.0
Total	99.86	100.2

(1) Bellerberg volcano, Germany; by electron microprobe, corresponds to  $(\text{Na}_{1.72}\text{K}_{0.89})_{\Sigma=2.61}(\text{Mg}_{4.48}\text{Fe}_{0.07}\text{Al}_{0.06}\text{Mn}_{0.04}\text{Ti}_{0.01})_{\Sigma=4.66}(\text{Si}_{11.99}\text{Al}_{0.01})_{\Sigma=12.00}\text{O}_{30}$ . (2) Indarch meteorite; by electron microprobe, average of six analyses; corresponds to  $(\text{Na}_{1.30}\text{K}_{0.69})_{\Sigma=1.99}(\text{Mg}_{4.86}\text{Fe}_{0.27})_{\Sigma=5.13}(\text{Si}_{11.88}\text{Al}_{0.07})_{\Sigma=11.95}\text{O}_{30}$ .

**Polymorphism & Series:** Forms a series with eifelite.

**Mineral Group:** Milarite group.

**Occurrence:** In vesicles in contact metamorphosed basement gneiss xenoliths in leucite tephrite (Bellerberg volcano, Germany); an accessory mineral in an enstatite chondrite (Indarch meteorite).

**Association:** Hematite, tridymite, sanidine, spinel, pyroxene, quartz, sillimanite (Bellerberg volcano, Germany); enstatite, clinoenstatite, troilite, nickel-iron, schreibersite, plagioclase, carbon, tridymite, oldhamite, glass (Indarch meteorite).

**Distribution:** In the Indarch, Wichita County, and Canyon Diablo meteorites. From the Bellerberg volcano, two km north of Mayen, Eifel district, Germany.

**Name:** For Dr. Edwin Woods Roedder (1919– ), mineralogist, U.S. Geological Survey, who noted the synthetic compound.

**Type Material:** n.d.

**References:** (1) Fuchs, L.H., C. Frondel, and C. Klein, Jr. (1966) Roedderite, a new mineral from the Indarch meteorite. *Amer. Mineral.*, 51, 949–955. (2) Hentschel, G., K. Abraham, and W. Schreyer (1980) First terrestrial occurrence of roedderite in volcanic ejecta of the Eifel, Germany. *Contr. Mineral. Petrol.*, 73, 127–130. (3) Abraham, K., W. Gebert, O. Medenbach, W. Schreyer, and G. Hentschel (1983) Eifelite,  $\text{KNa}_3\text{Mg}_4\text{Si}_{12}\text{O}_{30}$ , a new mineral of the osumilite group with octahedral sodium. *Contr. Mineral. Petrol.*, 82, 252–258. (4) Armbruster, T. (1989) Crystal chemistry of double-ring silicates: structure of roedderite at 100 and 300 K. *Eur. J. Mineral.*, 1, 715–718.

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