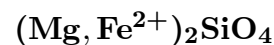


Ringwoodite



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Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As rounded grains, to 100 μm , or massive.

Physical Properties: Hardness = n.d. $D(\text{meas.}) = \text{n.d.}$ $D(\text{calc.}) = 3.90$

Optical Properties: Semitransparent. *Color:* Purple, bluish to smoky gray, colorless.

Optical Class: Isotropic. $n = 1.768(3)$

Cell Data: *Space Group:* $Ia\bar{3}d$. $a = 8.113\text{--}8.127$ $Z = 8$

X-ray Powder Pattern: Tenham meteorite.

2.447 (100), 1.434 (60), 2.028 (40), 2.872 (20), 1.560 (20), 1.0559 (10), 0.8283 (10)

Chemistry:	(1)	(2)
SiO ₂	38.9	38.42
TiO ₂		0.05
FeO	23.4	22.98
MnO		0.30
MgO	37.0	37.86
CaO		0.05
Total	99.3	[99.66]

(1) Tenham meteorite; by electron microprobe, corresponding to $(\text{Mg}_{1.48}\text{Fe}_{0.52}^{2+})_{\Sigma=2.00}\text{SiO}_4$.

(2) Pampa del Infierno meteorite; by electron microprobe, Al₂O₃, Cr₂O₃, NiO, Na₂O, K₂O all < 0.01%, original total given as 99.64%; corresponds to $(\text{Mg}_{1.48}\text{Fe}_{0.52}^{2+})_{\Sigma=2.00}\text{SiO}_4$.

Polymorphism & Series: Trimorphous with forsterite and wadsleyite.

Occurrence: In veinlets cutting the matrix of meteorites and replacing olivine; probably produced during shock metamorphism.

Association: Majorite, magnesian silicate glass.

Distribution: In the Tenham, Pampa del Infierno, Catherwood, and Coorara chondrite meteorites.

Name: For Professor Alfred Edward Ringwood (1930–1993), noted geochemist of the Australian National University, Canberra, Australia.

Type Material: The Natural History Museum, London, England, 1935,792.

References: (1) Binns, R.A., R.J. Davis, and S.J.B. Reed (1969) Ringwoodite, natural $(\text{Mg}, \text{Fe})_2\text{SiO}_4$ spinel in the Tenham meteorite. *Nature*, 221, 943–944. (2) (1969) *Amer. Mineral.*, 54, 1219 (abs. ref. 1). (3) Coleman, L.C. (1977) Ringwoodite and majorite in the Catherwood meteorite. *Can. Mineral.*, 15, 97–101. (4) Boctor, N.Z., P.M. Bell, and H.K. Mao (1982) Petrology and shock metamorphism of Pampa del Infierno chondrite. *Geochim. Cosmochim. Acta*, 46, 1903–1911.