Werdingite \((\text{Mg, Fe}^{2+})_2\text{Al}_{14}\text{B}_4\text{Si}_4\text{O}_{37}\)

Crystal Data: Triclinic. Point Group: \(\overline{1}\). Anhedral to subhedral crystals, up to 3 mm. Twinning: Composition plane \(\parallel [001]\), simple twins, common; also lamellar twins with several individuals.

Physical Properties: Cleavage: Prismatic, poor, or a parting. Fracture: Conchoidal. Hardness = 7 D(meas.) = 3.04(2) D(calc.) = 3.07

Optical Properties: Translucent. Color: Honey-yellow to brownish yellow. Streak: Buff-white. Luster: Vitreous. Optical Class: Biaxial (−). Pleochroism: X = Z = colorless; Y = yellow. Orientation: \(Z = c\). Dispersion: \(r > v\), moderately strong. \(\alpha = 1.614(2)\) \(\beta = 1.646(2)\) \(\gamma = 1.651(2)\) \(2V(\text{meas.}) = 33(1)^\circ\) \(2V(\text{calc.}) = 42^\circ\)

Cell Data: Space Group: \(P\overline{1}\). \(a = 7.995(2)\) \(b = 8.152(1)\) \(c = 11.406(4)\) \(\alpha = 110.45(2)^\circ\) \(\beta = 110.85(2)^\circ\) \(\gamma = 84.66(2)^\circ\) \(T_i = 1\)

X-ray Powder Pattern: Bok se Puts Farm, South Africa. 5.23 (100), 5.43 (80), 4.98 (75), 2.708 (60), 3.392 (50), 2.194 (50), 1.527 (40)

Chemistry: \begin{align*}
\text{SiO}_2 & : 19.83 \\
\text{TiO}_2 & : 0.05 \\
\text{B}_2\text{O}_3 & : 10.19 \\
\text{Al}_2\text{O}_3 & : 59.49 \\
\text{FeO} & : 5.06 \\
\text{MnO} & : 0.00 \\
\text{MgO} & : 4.46 \\
\text{Na}_2\text{O} & : 0.00 \\
\end{align*}
Total 99.08

(1) Bok se Puts Farm, South Africa; by electron microprobe, B by ICP; corresponds to \((\text{Mg}_{0.35}\text{Fe}_{0.86}')_2\text{Al}_{14}\text{B}_3\text{Si}_4\text{O}_{37}\) \(\text{Fe}^{2+} = 0.01\text{Si}_4\text{O}_{36.91}\) .

Occurrence: In granulite facies metamorphosed metasediments and metavolcanic cordierite-sillimanite and biotite gneisses.

Association: Kornerupine, granddidierite, sillimanite, zircon, rutile, hercynite.

Distribution: On the Bok se Puts Farm, Namaqualand, Cape Province, South Africa.

Name: For Dr. Günter Werding, of the Mineralogical Institute, Ruhr University, Bochum, Germany.

Type Material: South African Museum, SAMG 7140–7150, and the University of Cape Town, Cape Town, South Africa.