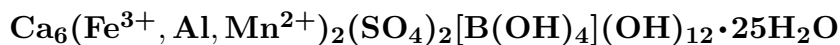


Sturmanite

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Crystal Data: Hexagonal. *Point Group:* $3m$. As dipyramidal tabular to elongated hexagonal crystals, to 40 cm, showing $\{10\bar{1}0\}$, $\{10\bar{1}4\}$, $\{11\bar{2}4\}$, typically in groups, may be in stacked parallel aggregates. *Twinning:* Probably twinned (by analogy to ettringite).

Physical Properties: *Cleavage:* On $\{10\bar{1}0\}$, perfect. *Tenacity:* Brittle. Hardness = ~ 2.5 D(meas.) = 1.847 D(calc.) = 1.855

Optical Properties: Transparent to translucent. *Color:* Bright yellow. *Streak:* Pale yellow, greenish yellow, brownish orange if altered. *Luster:* Vitreous, slightly greasy on fracture surfaces.

Optical Class: Uniaxial (+) or (-). *Pleochroism:* Weak; O = pale green; E = pale yellowish green. *Absorption:* $O < E$. $\omega = 1.499\text{--}1.500$ $\epsilon = 1.497\text{--}1.505$

Cell Data: *Space Group:* $[P31c]$ (by analogy to ettringite). $a = 11.16(3)$ $c = 21.79(9)$ $Z = 2$

X-ray Powder Pattern: Kuruman district, South Africa.

9.67 (100), 5.58 (70), 3.89 (70), 2.582 (60), 2.774 (50), 2.215 (50), 2.161 (40)

Chemistry:

	(1)
SO ₃	14.2
B ₂ O ₃	3.2
Al ₂ O ₃	1.13
Fe ₂ O ₃	8.84
MnO	1.30
CaO	25.6
H ₂ O	46.7
Total	101.0

(1) Kuruman district, South Africa; by AA, B₂O₃ spectrophotometrically, H₂O by the Penfield method; corresponds to $\text{Ca}_{6.0}(\text{Fe}_{1.5}^{3+}\text{Al}_{0.3}\text{Mn}_{0.2}^{2+})_{\Sigma=2.0}(\text{SO}_4)_{2.3}[\text{B}(\text{OH})_4]_{1.2}(\text{OH})_{12.0} \cdot 25.7\text{H}_2\text{O}$.

Mineral Group: Ettringite group.

Occurrence: An uncommon secondary mineral in cavities in metamorphosed bedded manganese deposits.

Association: Barite, manganite, hausmannite, hematite.

Distribution: From the Kuruman district, with large crystals in the Wessels and N'Chwaning II mines, Cape Province, South Africa.

Name: Honors Bozidar Darko Sturman (1937–), Canadian mineralogist, Royal Ontario Museum, Toronto, Ontario, Canada.

Type Material: National Museum of Natural History, Washington, D.C., USA, 148261.

References: (1) Peacor, D.R., P.J. Dunn, and M. Duggan (1983) Sturmanite, a ferric iron, boron analogue of ettringite. *Can. Mineral.*, 21, 705–709. (2) (1988) *Amer. Mineral.*, 73, 195 (abs. ref. 1).