

Hotsonite**Al₅(PO₄)(SO₄)(OH)₁₀•8H₂O**

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Triclinic. *Point Group:* $\bar{1}$ or 1. Crystals are lathlike or acicular, to 15 μm ; as cryptocrystalline chalklike incrustations and veins.

Physical Properties: *Fracture:* Earthy. Hardness = 2.5 in aggregates. $D(\text{meas.}) = 2.060\text{--}2.068$ $D(\text{calc.}) = 2.06$

Optical Properties: Translucent. *Color:* White; colorless in transmitted light. *Luster:* Silky to dull, earthy.

Optical Class: Biaxial. *Orientation:* Length-fast. $\alpha = 1.519$ $\beta = \text{n.d.}$ $\gamma = 1.521$
 $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 11.288(59)$ $b = 11.658(60)$ $c = 10.550(67)$
 $\alpha = 112^\circ 32(3)'$ $\beta = 107^\circ 31(3)'$ $\gamma = 64^\circ 27(3)'$ $Z = 1$

X-ray Powder Pattern: Koenabib, South Africa.

10.05 (100), 8.45 (40), 4.63 (20), 5.20 (10), 5.01 (10), 4.43 (10), 3.67 (10)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
SO ₃	16.80	13.73	12.51	CaO	0.24	0.89	
P ₂ O ₅	9.85	9.06	11.09	Na ₂ O	0.21		
SiO ₂	0.35	0.16		K ₂ O	0.0		
TiO ₂		0.01		H ₂ O ⁺		31.29	
Al ₂ O ₃	39.15	39.60	39.82	H ₂ O ⁻		4.28	
Fe ₂ O ₃	0.03	0.18		H ₂ O	33.30		36.58
MgO	0.28	0.41		insol.		0.33	
				<hr/>	<hr/>	<hr/>	<hr/>
				Total	100.21	99.94	100.00

(1) Koenabib, South Africa; by X-ray fluorescence, average of four analyses, H₂O by a modified Penfield method, P₂O₅ and SO₃ by wet chemical methods. (2) Blyavinski mine, Russia.

(3) Al₅(PO₄)(SO₄)(OH)₁₀•8H₂O.

Occurrence: A weathering product derived from natroalunite and zaherite in an arid climate (Koenabib, South Africa).

Association: Zaherite, natroalunite, sillimanite (Koenabib, South Africa).

Distribution: Found in the Hotson 6 quarry, Koenabib, 65 km west of Pofadder, Cape Province, South Africa. From the Blyavinski mine, Ural Mountains, Russia.

Name: For Hotson 42, the farm in South Africa on which the first specimens were collected.

Type Material: National Museum, Bloemfontein, South Africa, K2359; National Museum of Natural History, Washington, D.C., USA, 162230.

References: (1) Beukes, G.J., A.E. Schoch, W.A. Van der Westhuizen, L.D.C. Bok, and H. de Bruijn (1984) Hotsonite, a new hydrated aluminum-phosphate-sulfate from Pofadder, South Africa. *Amer. Mineral.*, 69, 979–983. (2) de Bruijn, H., G.J. Beukes, W.A. Van der Westhuizen, and E.A.W. Tordiffe (1989) Unit cell dimensions of the hydrated aluminum phosphate-sulphate minerals sanjuanite, kribergite, and hotsonite. *Mineral. Mag.*, 53, 385–386. (3) Ivanov, O.K., L.L. Shiryaeva, L.A. Khoroshilova, and V.G. Petrisheva (1990) Hotsonite – confirmation of discovery and new data (Blyavinski mine, Urals). *Zap. Vses. Mineral. Obsch.*, 119(1), 121–126 (in Russian).