

**Crystal Data:** Hexagonal (6R). *Point group:*  $\bar{3}$ . or Cubic (3C). *Point group:*  $4/m\bar{3}2/m$ . Microcrystalline powdery. Crystals platy, likely from pseudomorphism (England).

**Physical Properties:** *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Splintery. Hardness = ~3 D(meas.) = n.d. D(calc.) = 6.025 (Synthetic)

**Optical Properties:** Translucent. *Color:* Colorless, yellow. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Isotropic (3C).  $n = 2.24$

**Cell Data:** *Space Group:*  $R\bar{3}$ .  $a = 7.2882(2)$   $c = 35.7056(14)$   $Z = 9$  (6R)  
 $Fd\bar{3}m$ .  $a = 10.3065(3)$   $Z = 16$  (3C)

**X-ray Powder Pattern:** Elsmore Hill, New England region, New South Wales, Australia. (3C) 5.88 (100), 2.944 (78), 3.08 (62), 1.804 (23), 1.964 (17), 1.725 (14), 1.538 (14)

Chemistry:	(1)	(2)	(1)	(2)
WO <sub>3</sub>	77.49	70.15	CaO	0.49
As <sub>2</sub> O <sub>5</sub>	0.15	0.12	BaO	0.10
TiO <sub>2</sub>	n.d.	0.06	K <sub>2</sub> O	0.22
Fe <sub>2</sub> O <sub>3</sub>	5.83	8.17	Na <sub>2</sub> O	1.97
Al <sub>2</sub> O <sub>3</sub>	2.41	0.97	H <sub>2</sub> O	[7.40]
			Total	96.08
				90.85

(1) Drakelands mine, Devon, England (3C); average of 15 electron microprobe analyses, H<sub>2</sub>O calculated from structure and for charge balance, systematically low totals are due to dehydration under electron beam; corresponds to  $[\square_{1.46}\text{Na}_{0.28}(\text{H}_2\text{O})_{0.20}\text{Ca}_{0.04}\text{K}_{0.02}]_{\Sigma=2.00}(\text{W}_{1.47}\text{Fe}^{3+}_{0.32}\text{Al}_{0.21}\text{As}^{5+}_{0.01})_{\Sigma=2.00}[\text{O}_{4.79}(\text{OH})_{1.21}]_{\Sigma=6.00}(\text{H}_2\text{O})$ . (2) Drakelands mine, Devon, England (6R); average of 7 electron microprobe analyses, H<sub>2</sub>O calculated from structure and for charge balance, systematically low totals are due to dehydration under electron beam; corresponds to  $[\square_{1.06}(\text{H}_2\text{O})_{0.63}\text{Na}_{0.24}\text{Ca}_{0.04}\text{K}_{0.03}]_{\Sigma=2.00}(\text{W}_{1.42}\text{Fe}^{3+}_{0.49}\text{Al}_{0.08}\text{As}^{5+}_{0.01})_{\Sigma=2.00}[\text{O}_{4.65}(\text{OH})_{1.35}]_{\Sigma=6.00}(\text{H}_2\text{O})$ .

**Mineral Group:** Pyrochlore supergroup (general formula -  $A_2B_2X_6Y$ ); elsmoreite group ( $B = \text{W}^{6+}$ ).

**Occurrence:** Secondary in the weathering zone of greisen vein and stockwork systems in granite.

**Association:** Wolframite, quartz (England); quartz, white mica, cassiterite, arsenopyrite, native bismuth, chalcopyrite, ferberite, molybdenite (Elsmore, Australia).

**Distribution:** From the Drakelands mine (formerly known as the Hemerdon mine), ~ 10 km east of Plymouth, Devon, England (3C and 6R). From the Elsmore tin deposit, Elsmore Hill, 17 km east of Inverell and adjacent to Elsmore, New England region, New South Wales, Australia (3C). From the Flo property, Kalzas Mountain, Yukon, Canada (3C). Also reported from the Wolfram Wonder prospect, 15 km north of Cathcart, New South Wales and Pittong, Victoria, Australia.

**Name:** For a member of the *elsmoreite* group with prefixes to indicate dominant H<sub>2</sub>O (*hydro*) in the Y site and essential vacancies (*keno*) in the A site. Suffix indicates the polytype. Was 'elsmoreite'.

**Type Material:** Natural History Museum, London, England (BM 2006,118 and BM 2008,56) and the Australian Museum, Sydney, New South Wales, Australia (D53020).

**References:** (1) Mills, S.J., A.G. Christy, M.S. Rumsey, and J. Spratt (2016) The crystal chemistry of elsmoreite from the Hemerdon (Drakelands) mine, UK: hydrokenoelsmoreite-3C and hydrokenoelsmoreite-6R. *Mineral. Mag.*, 80(7), 1195-1203. (2) (2018) *Amer. Mineral.*, 103, 2048 (abs. ref. 1). (3) Atencio, D., M.B. Andrade, A.G. Christy, R. Gieré, and P.M. Kartashov (2010) The pyrochlore supergroup of minerals: nomenclature. *Can. Mineral.*, 48, 673-698. (4) Williams, P.A., P. Leverett, J.L. Sharpe, D.M. Colchester, and J. Rankin (2005) Elsmoreite, cubic  $\text{WO}_3 \cdot 0.5\text{H}_2\text{O}$ , a new mineral species from Elsmore, New South Wales, Australia. *Can. Mineral.*, 43, 1061-1064. (5) (2006) *Amer. Mineral.*, 91, 217 (abs. ref. 4).