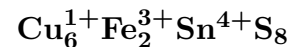


Mawsonite



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Crystal Data: Tetragonal. *Point Group:* $\bar{4}2m$. Typically as rounded to irregular inclusions, to 1.3 mm, exsolved from bornite.

Physical Properties: *Cleavage:* Two imperfect at right angles suggested by fractures during hardness tests. Hardness = 3.5–4 VHN = n.d. D(meas.) = n.d. D(calc.) = 4.65 Magnetic.

Optical Properties: Opaque. *Color:* In polished section, brownish orange.

Pleochroism: Strong, orange to brown with slight orange tint. *Anisotropism:* Very strong, from bright straw-yellow to bright royal blue to dark blue.

R₁–R₂: (400) 15.0–19.0, (420) 16.0–20.0, (440) 17.1–21.0, (460) 18.6–22.0, (480) 20.3–23.1, (500) 22.5–24.2, (520) 25.0–25.3, (540) 28.1–26.4, (560) 31.2–27.4, (580) 33.8–28.5, (600) 36.4–29.6, (620) 38.5–30.8, (640) 39.9–32.0, (660) 40.9–33.1, (680) 41.4–33.8, (700) 41.6–34.4

Cell Data: *Space Group:* $P\bar{4}m2$. $a = 7.603(2)$ $c = 5.358(1)$ $Z = 1$

X-ray Powder Pattern: Mt. Lyell, Tasmania, Australia.

3.09 (100), 1.895 (80), 1.618 (60), 2.680 (50), 1.063 (50), 1.232 (30), 5.37 (20)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
Cu	44.3	45.0	43.91	Sn	10.4	11.8	13.67
Fe	12.5	11.8	12.87	S	33.0	30.3	29.55
Zn		< 0.1					
				Total	100.2	98.9	100.00

(1) North Lyell mine, Australia; by electron microprobe, corresponds to $\text{Cu}_{5.42}\text{Fe}_{1.74}\text{Sn}_{0.68}\text{S}_{8.00}$.

(2) Tingha, Australia; by electron microscope, corresponds to $\text{Cu}_{6.00}\text{Fe}_{1.79}\text{Sn}_{0.84}\text{S}_{8.00}$.

(3) $\text{Cu}_6\text{Fe}_2\text{SnS}_8$.

Occurrence: In massive to disseminated hydrothermal copper ores within highly altered volcanic rocks; in skarns; disseminated in altered granites; rare in copper porphyry deposits.

Association: Bornite, pyrite, chalcopyrite, chalcocite, digenite, idaite, stannite, stannoidite, pyrrotite, pentlandite, tetrahedrite–tennantite, enargite, luzonite–famatinitite, kiddcreekite, mohite, bismuth, galena, sphalerite.

Distribution: In Australia, from the North Lyell [TL] and Crown Lyell mines, Mt. Lyell district, Queenstown, Tasmania; and in New South Wales, at the Royal George mine, near Tingha, New England district [TL]. In Bolivia, from Vila Apacheta. In Peru, at the Colquijirca mine, Junín. From the New Brunswick Tin Mines deposit, New Brunswick; the Maggie porphyry copper deposit, 15 km north of Ashcroft, British Columbia; and at the Kidd Creek mine, near Timmins, Ontario, Canada. From Bisbee, Cochise Co., Arizona, USA. At Neves-Corvo, Portugal. From Chizeuil, Saône-et-Loire, France. At Tsumeb, Namibia. In the Khayragatsch and Kochbulak gold deposits, Chatkal-Kuramin Mountains, eastern Uzbekistan. At the Akenobe, Tada, and Ikuno mines, Hyogo Prefecture; the Ashio mine, Tochigi Prefecture; the Fukoku mine, Kyoto Prefecture; and the Konjo mine, Okayama Prefecture, Japan. In the Ulsan mine, Kyongsang Province, South Korea. Now known from a number of other localities.

Name: Honoring Sir Douglas Mawson (1882–1958), noted English-Australian geologist and Antarctic explorer.

Type Material: The Australian Museum, Sydney, Australia, D48487; The Natural History Museum, London, England, 1965,347; Harvard University, Cambridge, Massachusetts, USA.

References: (1) Markham, N.L. and L.J. Lawrence (1965) Mawsonite, a new copper–iron–tin sulfide from Mt. Lyell, Tasmania and Tingha, New South Wales. *Amer. Mineral.*, 50, 900–908. (2) Szymanski, J.T. (1976) The crystal structure of mawsonite, $\text{Cu}_6\text{Fe}_2\text{SnS}_8$. *Can. Mineral.*, 14, 529–535. (3) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 360.

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