

Symesite**Pb₁₀(SO₄)O₇Cl₄(H₂O)**

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As blocky crystal 'blebs', to 2 mm; as crystalline aggregates to 1 cm.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Uneven.
Tenacity: n.d. *Hardness* = 4 *D(meas.)* = 7.3(2) *D(calc.)* = 7.23

Optical Properties: Translucent. *Color:* Pink; gray in reflected light. *Streak:* White.
Luster: Vitreous.

Orientation: n.d. *Anisotropism:* Weak.

Optical Class: n.d. $n = > 2$

R₁-R₂: (400) 17.20-17.95, (420) 16.50-17.40, (440) 15.90-16.90, (460) 15.50-16.50, (470) 15.20-16.30, (480) 15.10-16.10, (500) 14.90-15.80, (520) 14.50-15.50, (540) 14.30-15.30, (546) 14.20-15.30, (560) 14.10-15.20, (580) 14.00-15.00, (589) 13.90-15.00, (600) 13.90-14.90, (620) 13.80-14.80, (640) 13.80-14.80, (650) 13.70-14.70, (660) 13.70-14.70, (680) 13.60-14.65, (700) 13.60-14.60

Cell Data: *Space Group:* $B\bar{1}$. $a = 19.727(2)$ $b = 8.796(1)$ $c = 13.631(2)$ $\alpha = 82.21(1)^\circ$
 $\beta = 78.08(1)^\circ$ $\gamma = 100.04(1)^\circ$ $Z = 4$

X-ray Powder Pattern: Merehead Quarry, Somerset, England.
2.911 (100), 3.286 (90), 2.955 (90), 2.793 (80), 6.573 (40), 3.768 (40), 3.805 (30)

Chemistry:	(1)	(2)
PbO	90.66	91.48
SO ₃	3.15	3.28
Cl	5.83	5.81
H ₂ O	-	0.74
<u>-O=Cl</u>	<u>1.32</u>	<u>1.31</u>
Total	98.32	100.00

(1) Merehead Quarry, Somerset, England; average of 17 electron microprobe analyses, H₂O from stoichiometry, corresponding to (Na_{0.99}Sr_{0.03}K_{0.01}) $\Sigma=1.03$ Ca_{2.01}Be_{2.99}Si_{3.98}O₁₃(OH)·2H₂O.

Occurrence: A secondary low-temperature mineral formed from metalliferous brines moving along fractures through Mn and Fe-oxide mineral deposits in limestone.

Association: Cerussite, hydrocerussite, paralaurionite, blixite, chloroxiphite, pyrolusite, coronadite, hematite, parkinsonite, mereheadite.

Distribution: Merehead Quarry, near Cranmore, Somerset, England.

Name: Honors Robert Symes (1937–) of the Department of Mineralogy, the Natural History Museum (London, England), in recognition of his many contributions to the mineralogy of the ore deposits of South-West England.

Type Material: Natural History Museum, London, England (Specimen BM1998,37).

References: (1) Welch, M.D., M.A. Cooper, F.C. Hawthorne, and A.J. Criddle (2000) Symesite, Pb₁₀(SO₄)O₇Cl₄(H₂O), a new PbO-related sheet mineral: Description and crystal structure. *Amer. Mineral.*, 85, 1526-1533.