Mercallite $KHSO_4$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Tabular crystals, to a few mm, aggregated in stalactites.

Physical Properties: Hardness = n.d. D(meas.) = 2.31 D(calc.) = 2.32 Soluble in H_2O, acid taste.

Optical Properties: Transparent. *Color:* Colorless, may be blue if impure; colorless in transmitted light. *Luster:* Vitreous.
Optical Class: Biaxial (+). *Orientation:* $X = b$; $Y = c$; $Z = a$. *Dispersion:* $r < v$, weak.
$\alpha = 1.445$ $\beta = [1.460]$ $\gamma = 1.491$ 2V(meas.) = 56°

Cell Data: *Space Group: Pbca.* $a = 8.429(3)$ $b = 18.976(6)$ $c = 9.807(3)$ Z = 16

X-ray Powder Pattern: Synthetic. (ICDD 11-649).
3.84 (100), 3.52 (85), 3.41 (85), 3.26 (85), 3.87 (65), 3.03 (65), 2.472 (30)

Chemistry:

	(1)	(2)	(3)
HSO_4	65.68	74.92	71.29
SO_4	4.25		
Al_2O_3	0.12		
Cu	0.77		
Ca	0.25		
Na	3.67		
K	21.99	25.08	28.71
H_2O^+	0.64		
H_2O^-	1.81		
insol.	0.57		
Total	99.75	[100.00]	100.00

(1) Vesuvius, Italy. (2) Do.; recalculated to 100% after deduction of misenite and thénardite estimated 6%–7% and other impurities. (3)$KHSO_4$.

Occurrence: In fumaroles.

Association: Halite, misenite, hieratite, carobbiite.

Distribution: On Vesuvius, Campania, Italy.

Name: To honor Giuseppe Mercalli (1850–1914), a Director of the Vesuvius Observatory, Italy.

Type Material: University of Florence, Florence, Italy, 1976/I.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 395. (2) Payan, F. and R. Haser (1976) On the hydrogen bonding in potassium hydrogen sulphate. Comparison with a previous crystal structure determination. Acta Cryst., 32, 1875–1879.