



>>Entry Name: Molybdenum(VI) chloride oxide (MoCl₂O₂)

Synonym(s): Molybdenum dichloride dioxide. Molybdenum dioxydichloride. Dichlorodioxomolybdenum (VI)

CAS Registry Number: 13637-68-8

MoO₂Cl₂

Molecular Formula: Cl₂MoO₂

Molecular Weight: 198.844

Accurate Mass: 199.83294

Percentage Composition: Cl 35.66%; Mo 48.25%; O 16.09%

Source/Synthesis: Synth. by chlorination of MoO₂ with Cl₂ or of MoO₃ with CCl₄

Physical Description: Yellow to orange solid. Converts to brilliant red form on cooling at 77.4K. Absorbs moisture from air

Melting Point: Mp 170-175° (184-185° in sealed capillary)

Solubility: Sol. H₂O, EtOH; sl. sol. dichloroethane, trichloroethane; insol. C₆H₆, Et₂O

Other Data: Readily hydrol. to MoO(OH)₂Cl₂. Forms adducts with organic molecules e.g. MoO₂Cl₂.2L where L = acid anhydrides, esters, ethers, ketones. Shows temp.-independent paramagnetism, $\mu_{\text{eff}} = 0.78\mu_{\text{B}}$

Aldrich: 37371-0

>>Derivative: Monohydrate

CAS Registry Number: 26412-90-8

Source/Synthesis: Synth. from MoO₃ and 2HCl in the presence of H₂O vapour at 105-200°

Physical Description: Pale yellow cryst.

Other Data: Two polytypes known

>>Derivative: Dihydrate

CAS Registry Number: 54518-98-8

References:

Brisdon, B.J., *Inorg. Chem.*, 1967, **6**, 1791, (complexes)

Singleton, D.L. *et al.*, *Inorg. Chem.*, 1972, **11**, 1208, (ms)

Schroeder, F.A. *et al.*, *Z. Anorg. Allg. Chem.*, 1972, **392**, 107, (cryst struct, monohydrate)

Schroeder, F.A. *et al.*, *Z. Naturforsch., B*, 1972, **27**, 25, (ir, Raman)

Schulz, H. *et al.*, *Acta Chem. Scand.*, 1973, **29**, 322, (cryst struct)

Bernard, J.L. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1974, **279**, 1128, (synth)

Burroughs, P. *et al.*, *J.C.S. Faraday 2*, 1974, 1895, (pe)

Strachle, J. *et al.*, *Z. Anorg. Allg. Chem.*, 1981, **474**, 171, (synth)

Levason, W. *et al.*, *J.C.S. Dalton*, 1982, 2009, (ir, uv)

Topol, I.A. *et al.*, *Theor. Chim. Acta*, 1982, **61**, 369, (electronic struct, uv)

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