



>>Entry Name: Molybdenum(VI) oxide (MoO₃)

Synonym(s): Molybdenum trioxide. Molybdic oxide. Molybdic anhydride

CAS Registry Number: 1313-27-5

Related CAS Registry Numbers(s): 11098-99-0

MoO₃

Molecular Formula: MoO₃

Molecular Weight: 143.938

Accurate Mass: 145.890151

Percentage Composition: Mo 66.65%; O 33.35%

Source/Synthesis: Synth. by roasting MoS₂ in air; purif. by subl.

Use/Importance: MoO₃ and more basic metal oxides are used as heterogeneous catalysts. Used in fertilizer. *n*-Type semiconductor. Commercially available

Physical Description: Photosensitive. White solid. Acidic oxide

Melting Point: Mp 795° (801°)

Solubility: Spar. sol. H₂O; sol. aq. alkalis, NH₃

Other Data: Weakly paramagnetic. On heating Mo and MoO₃ *in vacuo* a number of sub-stoichiometric oxides are formed typically having shear-structs, and forming series including Mo_nO_{3n-1}

Aldrich: 20381-5

Fluka: 69850

Sigma: M2277

>>Variant: Mineral-form

Synonym(s): Molybdate

Molecular Formula: MoO₃

Molecular Weight: 143.938

Accurate Mass: 145.890151

Percentage Composition: Mo 66.65%; O 33.35%

Source/Synthesis: Occurs in quartz with molybdenite (MoS₂) in Czechoslovakia

Physical Description: Light greenish yellow to colourless transparent needles or plates

>>Variant: Molybdenum(V) oxide (Mo₂O₅)

Synonym(s): Dimolybdenum pentoxide. Shear phase

CAS Registry Number: 12163-73-4

Molecular Formula: Mo₂O₅

Molecular Weight: 271.877

Accurate Mass: 275.785387

Percentage Composition: Mo 70.58%; O 29.42%

Source/Synthesis: Synth. by heating a mixture of Mo and MoO₃ in stoichiometric quantities at 750°

Physical Description: Violet solid

Solubility: Sol. warm acids

>>Variant: Molybdenum oxide (Mo₄O₁₁)

Synonym(s): Shear phase

CAS Registry Number: 12033-38-4

Molecular Formula: Mo₄O₁₁

Molecular Weight: 559.753

Accurate Mass: 567.565689

Percentage Composition: Mo 68.56%; O 31.44%

Physical Description: Oxidised in air between 230-350°

Solubility: Insol. non-oxidising aq. acids, alkalis

>>Derivative: Monoclinic-form

Source/Synthesis: Obt. below 615° by heating Mo + MoO₃ *in vacuo*

Physical Description: Wine-red cryst.

>>Derivative: Monoclinic-form (isotype)