



>>Entry Name: Uranium(VI) oxide sulfate (UO₂(SO₄))

Synonym(s): Uranium dioxide sulfate. Uranyl sulfate

CAS Registry Number: 1314-64-3

Related CAS Registry Numbers(s): 17192-72-2 19126-66-0 69251-89-4

UO₂(SO₄)

Molecular Formula: O₆SU

Molecular Weight: 366.091

Accurate Mass: 365.992344

Percentage Composition: O 26.22%; S 8.76%; U 65.02%

Source/Synthesis: Formed on dehyd. of hydrates above 300°. β-form obt. at *ca.* 755°.

Use/Importance: Solns. used in certain nuclear reactors

Physical Description: Yellow cryst.

Solubility: Sol. H₂O

>>Derivative: Monohydrate

CAS Registry Number: 19415-82-8

Molecular Formula: H₂O₇SU

Molecular Weight: 384.107

Accurate Mass: 384.002909

Percentage Composition: H 0.52%; O 29.16%; S 8.35%; U 61.97%

Source/Synthesis: Synth. from UO₂ + UO₂SO₄·3H₂O at 200° in sealed vessel or from UO₂SO₄·2H₂O at 210°

Physical Description: Yellow cryst.

Other Data: Unstable at r.t.

>>Derivative: Dihydrate

Molecular Formula: H₄O₈SU

Molecular Weight: 402.122

Percentage Composition: H 1.00%; O 31.83%; S 7.97%; U 59.19%

Source/Synthesis: Formed from trihydrate at 100°

Physical Description: Yellow cryst.

>>Derivative: 2.5 Hydrate

CAS Registry Number: 12412-63-4

Physical Description: Yellow-green cryst.

Melting Point: Mp 100 dec.°

Solubility: Sol. H₂O, conc. HCl, H₂SO₄

Other Data: Ir ν_{U=O} 939 cm⁻¹. At 500° forms anhyd. UO₂SO₄. Contains 7-coord. U in pentagonal bipyramidal environment. Possibly identical to the trihydrate

>>Derivative: Trihydrate

CAS Registry Number: 20910-28-5

Molecular Formula: H₆O₉SU

Molecular Weight: 420.137

Percentage Composition: H 1.44%; O 34.27%; S 7.63%; U 56.66%

Physical Description: Yellow-green cryst.

Melting Point: Mp 100° (dec.)

Solubility: V. sol. H₂O, HCl, H₂SO₄

Other Data: Possibly identical to 2.5 hydrate

>>Derivative: 3.5 Hydrate

CAS Registry Number: 39448-26-5

Physical Description: Yellow cryst.

Solubility: Sol. dil. H₂SO₄, H₂O

Other Data: Pentag. bipyramidal struct possibly unstable phase at r.t.