>>**Entry Name: Copper(*II*) sulfate**
Synonym(s): Cupric sulfate, USAN. Copper sulfate, BSI

CAS Registry Number: 7758-98-7
Related CAS Registry Numbers(s): 33772-44-0
Extra CAS Registry Numbers(s): 10124-44-4 18939-61-2

$CuSO_4$

Molecular Formula: CuO_4S
Molecular Weight: 159.61
Accurate Mass: 158.891328
Percentage Composition: Cu 39.81%; O 40.10%; S 20.09%
Source/Synthesis: Rare mineral
Use/Importance: Drying agent
Biological Use/Importance: Phosphorus antidote, topical antifungal agent, molluscicide; used with cupric hydroxide as *Bordeaux mixture*
Physical Description: Hygroscopic white rhomb. cryst. or amorph. powder
Melting Point: Mp 200°
Solubility: V. sol. H_2O; sol. MeOH, glycerol; sl. sol. EtOH
Other Data: Dec. above 560°; forms CuO at 650°
Hazard & Toxicity: Ingestion of large amounts of copper salts (15-75 mg Cu) causes gastrointestinal disturbances. Haemolysis, hepatotoxic and nephrotoxic effects, and death also result from acute exposure. Chronic copper toxicity usually only encountered with inherited metabolic copper disorders (e.g. Wilson's disease). LD_{50} (rat, orl) 300 mg/kg. Exp. reprod. and teratogenic effects

Aldrich: 20917-1
Fluka: 61230
Sigma: C1297

>>**Variant:** Mineral-form
Synonym(s): Chalcocyanite, 9CI**.** Chalcokyonite. Blue Copperas. Chalcanthite

CAS Registry Number: 24270-43-7
Molecular Formula: CuO_4S
Molecular Weight: 159.61
Accurate Mass: 158.891328
Percentage Composition: Cu 39.81%; O 40.10%; S 20.09%
Source/Synthesis: Found as a sublimation product in fumaroles after various eruptions of Mount Vesuvius, Italy
Physical Description: V. hygroscopic pale green, sky-blue or yellowish-brown orthorhombic cryst.
Solubility: V. sol. H_2O
Other Data: Pure artificial cryst. are colourless

>>**Derivative:** Pentahydrate
Synonym(s): Hydrocyanite. Pentaaquasulfatocopper(*II*). Bluestone. Blue vitriol. Roman vitriol. Salzburg vitriol

CAS Registry Number: 7758-99-8

Molecular Formula: $CuH_{10}O_9S$
Molecular Weight: 249.686
Percentage Composition: Cu 25.45%; H 4.04%; O 57.67%; S 12.84%
Use/Importance: Lewis acid catalyst for alcohol dehydration, acetonide formation, acetal exchange; reagent for formation of Cu carbenoids, intramolecular cyclopropanations; redox catalyst with $KMnO_4$ for oxidation of alcohols and alkenes
Physical Description: Blue cryst. (H_2O)
Solubility: V. sol. H_2O; sol. MeOH, glycerol; sl. sol. EtOH
Other Data: Loses $2H_2O$ at 30°, two more at 110°, becomes anhyd. by 250°. Acidic: 0.2*M* aq. soln. has pH 4.0

Aldrich: 46913-0
Fluka: 61245
Sigma: C2284

References: