

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** Molybdovanadate Reagent  
**Catalog Number:** 1420716

HACH LANGE GmbH  
Willstätterstrasse 11  
40549 Düsseldorf, Germany  
+49-(0)211-52880  
E-mail:SDS@hach-lange.de

Emergency Telephone Numbers:  
(Poison Information Center Mainz)  
(+49 (0) 6131 19240) 24 HR

**SDS Number:** M00297

**Chemical Name:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Use of the substance/preparation:** Indicator for phosphate

**CAS No.:** Not applicable

**Hazard:** Harmful if inhaled. Carcinogen. Causes eye burns.

**Safety Data Sheet written according to Regulation (EU) No. 1907/2006 (REACH):**

**Date of MSDS Preparation:**

**Day:** 20

**Month:** April

**Year:** 2010

**Additional Emergency Response Numbers:**

**Additional European Addresses:**

**Austria:**

**Belgium:**

**Denmark:**

**France:**

**Ireland:**

**Italy:**

**Netherlands:**

**Spain:**

**Sweden:**

**Switzerland:**

**United Kingdom:**

## 2. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, yellow liquid

**Odor:** None

**EU Symbols:** C - CORROSIVE

**R PHRASES:** R 35: Causes severe burns.

**Protective Equipment:**

**Potential Health Effects:**

**Eye Contact (EC):** Causes severe burns

**Skin Contact (EC):** Causes severe burns

**Skin Absorption (EC):** None Reported

**Target Organs (SA E):** None Reported

**Ingestion (EC):** Causes: severe burns May cause: loss of coordination copper deficiency gout May effect enzyme activity. Molybdenum compounds may cause loss of coordination, enzyme activity effects, copper deficiency and gout.

**Target Organs (Ing E):** None Reported

**Inhalation:** Causes: severe burns May cause: difficult breathing mouth soreness teeth erosion

**Target Organs (Inh E):** Lungs

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions Gout

**Chronic Effects:** Molybdenum poisoning signs include loss of appetite, listlessness and reduced growth rate.

Excessive exposure to molybdenum compounds may cause gout and anemia. Chronic overexposure may cause erosion of the teeth enzyme activity effects copper deficiency chronic irritation or inflammation of the lungs cancer

**Cancer / Reproductive Toxicity Information:**

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental teratogen. an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

#### Ammonium Molybdate

**EEC Number:** 2347224

**CAS No.:** 12054-85-2

**Percent Range:** 1,0 - 5,0

**Percent Range Units:** weight / volume

**Ingredient EEC Symbol:** Not applicable

**Ingredient R phrase(s):** Not applicable

**TLV:** 5 mg/m<sup>3</sup> as Mo

**PEL:** 5 mg/m<sup>3</sup> as Mo

**EU Occupational Exposure Limits:** 5 mg/m<sup>3</sup> as Mo. 3 mg/m<sup>3</sup>, Inhalable dust. For ammonia<sub>g</sub> 20 ppm (14 mg/m<sup>3</sup>);

STEL: 50 ppm (36 mg/m<sup>3</sup>) Recommended

#### Ammonium Metavanadate

**EEC Number:** 2322613

**CAS No.:** 7803-55-6

**Percent Range:** < 1,0

**Percent Range Units:** weight / volume

**Ingredient EEC Symbol:** Not applicable

**Ingredient R phrase(s):** Not applicable

**TLV:** 0,05 mg/m<sup>3</sup> as V<sub>2</sub>O<sub>5</sub>

**PEL:** Ceiling 0.05 mg/m<sup>3</sup> as V<sub>2</sub>O<sub>5</sub>

**EU Occupational Exposure Limits:** For ammonia<sub>g</sub> 20 ppm (14 mg/m<sup>3</sup>); STEL: 50 ppm (36 mg/m<sup>3</sup>) Recommended

#### Demineralized Water

**EEC Number:** 2317912

**CAS No.:** 7732-18-5

**Percent Range:** 50,0 - 60,0

**Percent Range Units:** volume / volume

**Ingredient EEC Symbol:** Not applicable

**Ingredient R phrase(s):** Not applicable

**TLV:** Not established

**PEL:** Not established

**EU Occupational Exposure Limits:** Not established

#### Other component

**EEC Number:** Not applicable

**CAS No.:** Not applicable

**Percent Range:** < 1,0

**Percent Range Units:** weight / volume

**Ingredient EEC Symbol:** Not applicable

**Ingredient R phrase(s):** Not applicable

**TLV:** Not established

**PEL:** Not established  
**EU Occupational Exposure Limits:** Not established

#### **Sulfuric Acid**

**EEC Number:** 2316395  
**CAS No.:** 7664-93-9  
**Percent Range:** 35,0 - 45,0  
**Percent Range Units:** weight / volume  
**Ingredient EEC Symbol:** C - CORROSIVE  
**Ingredient R phrase(s):** R 35: Causes severe burns.  
**TLV:** 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL)  
**PEL:** 1 mg/m<sup>3</sup>  
**EU Occupational Exposure Limits:** 0,1 mg/m<sup>3</sup>

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### **4. FIRST AID MEASURES**

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.  
**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.  
**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.  
**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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### **5. FIRE FIGHTING MEASURES**

**Flammable Properties:** During a fire, corrosive and toxic gases may be generated by thermal decomposition. Not flammable, but reacts with most metals to form flammable hydrogen gas.  
**Hazardous Combustion Products:** Toxic fumes of: ammonia nitrogen oxides. sulfur oxides.  
**Fire / Explosion Hazards:** May react violently with: reducers  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Dry chemical. Do NOT use water.  
**Extinguishing Media NOT To Be Used:** Not applicable Do NOT use water.  
**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

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### **6. ACCIDENTAL RELEASE MEASURES**

**Spill Response Notice:**  
Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.  
**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.  
**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.  
**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

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### **7. HANDLING AND STORAGE**

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.  
**Storage:** Store between 10° and 25°C. Protect from: light Store away from: oxidizers reducers metals  
**Special Packaging Instructions:** Not applicable  
**Use of the substance/preparation:** Indicator for phosphate

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin / Hand Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: light

**TLV:** Not established

**PEL:** Not established

**EU Occupational Exposure Limits:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, yellow liquid

**Physical State:** Liquid

**Odor:** None

**pH:** < 0,5

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** 100°C (212°F)

**Melting Point:** Not determined

**Flash Point:** Not applicable

**Method:** Not applicable

**Autoignition Temperature:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Specific Gravity (water = 1):** 1,375

**Evaporation Rate (water = 1):** 0,06

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 11,273 in/yr

**Aluminum:** Not determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures Heating to decomposition.

**Reactivity / Incompatibility:** May react violently in contact with: oxidizers reducers Incompatible with: metals

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: ammonia nitrogen oxides sulfur oxides Contact with metals may release flammable hydrogen gas.

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** This product is not corrosive to skin. Slight to well defined erythema. Absent to slight edema. (OECD Number 404, Acute Dermal Irritation/Corrosion)

**Mutation Data:** Ammonium Metavanadate: DNA damage - Human lymphocytes and ovary - 200 µmol/L; Mutation in somatic cells - hamster - lung - 5 µmol/L

**Reproductive Effects Data:** Intraperitoneal hamster TDLo = 2820 µg/kg - Musculoskeletal abnormalities; Intraperitoneal hamster TDLo = 11280 µg/kg - Post-implantation mortality

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**Ingredient Toxicological Data:** Sulfuric Acid: Oral rat LD50 = 2140 mg/kg, Inhalation rat LC50 = 347 ppm/1 hr; Ammonium Metavanadate: Oral rat LD50 = 58 mg/kg, Ammonium Molybdate (anhydrous): Oral rat LD50 = 333 mg/kg

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen  
Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** Sulfuric Acid: The 48-Hour TLm in flounder is 100-300 ppm.

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## 13. DISPOSAL CONSIDERATIONS

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(<45% Sulfuric Acid in Solution)

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number:** UN3264

**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(<45% Sulfuric Acid in Solution)

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. UN Number:** UN3264

**I.M.O. Packing Group:** III

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(<45% Sulfuric Acid in Solution)

**A.D.R Hazard Class:** 8

**A.D.R. Subsidiary Risk:** NA

**A.D.R. UN-Number:** UN3264

**A.D.R. Packing Group:** III

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item

IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

**National Inventories:**

**EEC Inventory Status:** All ingredients used to make this product are listed on EINECS / ELINCS.

**EEC Number:** Not applicable

**EEC LABEL COPY:**

**EU Symbols:** C - CORROSIVE

**R PHRASES:** R 35: Causes severe burns.

**S PHRASES:** S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 36/37/39: Wear suitable protective clothing, gloves and eye/face protection. S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Ingredients:** Sulfuric Acid;

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## 16. OTHER INFORMATION

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. In-house information. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987.

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

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