

### Safety Data Sheet acc. to OSHA HCS (HazCom 2012)

Printing date 12/06/2017

Reviewed on 12/06/2017

## 1 Identification

- **Product identifier**
- **Trade name:** Vario Molybdate 3 Reagent Solution
- **Catalogue number:** 00531739, 531730, 4531730, 424447, 531730-0
- **Application of the substance / the mixture:** Reagent for water analysis
- **Manufacturer/Supplier:**  
Tintometer Inc.  
6456 Parkland Drive  
Sarasota, FL 34243  
USA  
phone: (941) 756-6410  
fax: (941) 727-9654  
www.lovibond.us  
Made in Germany
- **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.  
Skin Corr. 1A H314 Causes severe skin burns and eye damage.  
Eye Dam. 1 H318 Causes serious eye damage.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
- **Hazard pictograms**



GHS05

- **Signal word** Danger
- **Hazard-determining components of labeling:**  
sulphuric acid 23 %
- **Hazard statements**  
H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.
- **Precautionary statements**  
P260 Do not breathe mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection.  
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing.  
P310 Immediately call a poison center/doctor.
- **Other hazards** No further relevant information available.

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### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of inorganic compounds.
- **Composition and Information on Ingredients:**  
Cancer Status IARC: Strong inorganic acid mists containing sulphuric acid can cause cancer.  
Percent ranges are used due to the confidential product information.

CAS: 7664-93-9 EINECS: 231-639-5 Index number: 016-020-00-8 RTECS: WS5600000	sulphuric acid	☞ Met. Corr.1, H290; Skin Corr. 1A, H314	20–30%
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- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### 4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:**  
Supply fresh air or oxygen.  
In case of unconsciousness remove to fresh air, apply artificial respiration, and consult a physician.  
Call a doctor immediately.
- **After skin contact:**  
Wash with polyethylene glycol 400 and then rinse with copious amounts of water.  
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.
- **After eye contact:**  
Rinse opened eye for several minutes (at least 15 min) under running water.  
Call a doctor immediately.
- **After swallowing:**  
Rinse out mouth and then drink 1-2 glasses of water.  
Do not induce vomiting; immediately call for medical help.
- **Most important symptoms and effects, both acute and delayed**  
strong caustic effect  
after inhalation:  
damage to the affected mucous membranes  
breathing difficulty  
after swallowing:  
sickness  
vomiting  
diarrhoea  
pain
- **Danger:** Danger of gastric perforation.
- **Indication of any immediate medical attention and special treatment needed:**  
If swallowed or in case of vomiting, danger of entering the lungs.  
Later observation for pneumonia and pulmonary edema.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder.
- **For safety reasons unsuitable extinguishing agents:** Water
- **Special hazards arising from the substance or mixture**  
The product is not combustible.  
Formation of toxic gases is possible during heating or in case of fire.  
In case of fire, the following can be released:  
Sulfur oxides (SO<sub>x</sub>)
- **Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
Wear fully protective suit.
- **Additional information**  
Collect contaminated fire fighting water separately. It must not enter the sewage system.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

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 Ambient fire may liberate hazardous vapours.
 

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### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
- **Advice for non-emergency personnel:**
  - Wear protective equipment. Keep unprotected persons away.
  - Avoid substance contact.
  - Do not breathe vapors/spray.
  - Ensure adequate ventilation
- **Advice for emergency responders:** Protective equipment: see section 8
- **Environmental precautions:** Do not allow product to reach sewage system or any water course.
- **Methods and material for containment and cleaning up:**
  - Ensure adequate ventilation.
  - Neutralize with diluted sodium hydroxide solution.
  - Absorb with liquid-binding material (sand, diatomite, universal binders).
  - Dispose contaminated material as waste according to item 13.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
  - Ensure good ventilation/exhaustion at the workplace.
  - Prevent formation of aerosols.
- **Advice on safe handling:**
  - Open and handle receptacle with care.
  - Ensure good ventilation/exhaustion at the workplace.
  - Prevent formation of aerosols.
- **Hygiene measures:**
  - Do not inhale gases / fumes / aerosols.
  - Do not get in eyes, on skin, or on clothing.
  - Take off immediately all contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Do not eat, drink or smoke when using this product.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:**
  - Store away from metals.
  - Do not store together with alkalis (caustic solutions).
  - Store away from flammable substances.
- **Further information about storage conditions:**
  - Store in cool, dry conditions in well sealed receptacles.
  - Protect from heat and direct sunlight.
  - Protect from exposure to the light.
  - Protect from humidity and water.
  - This product is hygroscopic.
  - Store in dry conditions.
- **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)
- **Specific end use(s)** No further relevant information available.

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### 8 Exposure controls/personal protection

- Control parameters

- Components with limit values that require monitoring at the workplace:

**CAS: 7664-93-9 sulphuric acid**

PEL (USA)	Long-term value: 1 mg/m <sup>3</sup>
REL (USA)	Long-term value: 1 mg/m <sup>3</sup>
TLV (USA)	Long-term value: 0.2* mg/m <sup>3</sup> *as thoracic fraction
EL (Canada)	Long-term value: 0.2 mg/m <sup>3</sup> ACGIH A2; IARC 1
EV (Canada)	Long-term value: 0.2 mg/m <sup>3</sup>

- Additional information:** The lists that were valid during the creation were used as basis.

- Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. See item 7.

- Personal protective equipment:**

- Breathing equipment:** Use respiratory protective device against the effects of fumes/dust/aerosol.

- Recommended filter device for short term use:** Filter P2

- Protection of hands:**

Acid resistant gloves

Preventive skin protection by use of skin-protecting agents is recommended.

After use of gloves apply skin-cleaning agents and skin cosmetics.

- Material of gloves**

Nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.7$  mm

- Penetration time of glove material**

Value for the permeation: Level  $\leq 1$  (10 min)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Eye protection:** Tightly sealed goggles

- Body protection:** Acid resistant protective clothing

- Limitation and supervision of exposure into the environment:** No further relevant information available.

### 9 Physical and chemical properties

- Information on basic physical and chemical properties

- Appearance:**

<b>Form / Physical state:</b>	Fluid
<b>Color:</b>	Colorless

- Odor:** Odorless

- Odor threshold:** Not applicable.

- pH-value at 20 °C (68 °F):** 1,2  
Strongly acidic

- Melting point/freezing point:** Not determined.

- Initial boiling point and boiling range:** Not determined.

- Flash point:** Not applicable.

- Flammability (solid, gas):** Not applicable.

- Ignition temperature:** Not determined.

- Decomposition temperature:** Not determined.

- Auto-ignition temperature:** Product is not self-igniting.

- Danger of explosion:** Product does not present an explosion hazard.

- Flammability or explosive limits:**

**Lower:** Not applicable.

**Upper:** Not applicable.

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· <b>Oxidizing properties:</b>	none
· <b>Vapor Pressure:</b>	Not determined.
· <b>Density at 20 °C (68 °F):</b>	1,23 g/cm <sup>3</sup> (10.26 lbs/gal)
· <b>Relative density:</b>	Not determined.
· <b>Vapor density:</b>	Not determined.
· <b>Evaporation rate:</b>	Not determined.
· <b>Solubility(ies)</b> <b>Water:</b>	Fully miscible.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	Not determined.
· <b>Dynamic:</b>	Not determined.
· <b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b> <b>Organic solvents:</b>	0,0 %
<b>Water:</b>	> 70 %
<b>Solids content:</b>	< 12 %
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** see section "Possibility of hazardous reactions"
- **Chemical stability** Stable at ambient temperature (room temperature).
- **Possibility of hazardous reactions**
  - Corrosive action on metals.
  - Reacts with metals forming hydrogen (Danger of explosion!)
  - When diluting, always add acid to water, never vice versa.
  - Diluting or dissolving in water always causes rapid heating.
  - Reacts with reducing agents.
  - Reacts with acids and alkali (lyes).
  - Reacts with ammonia (NH<sub>3</sub>).
- **Conditions to avoid** strong heating
- **Incompatible materials:**
  - metals
  - halogen compounds
  - combustible materials
  - organic solvents
  - nitriles
  - peroxides
  - oxidizing agents
- **Hazardous decomposition products:**
  - Sulfur oxides (SO<sub>x</sub>)
  - hydrogen
  - see section 5

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:** Based on available data, the classification criteria are not met.

### · LD/LC50 values that are relevant for classification:

CAS: 7664-93-9 sulphuric acid

Oral	LD50	2140 mg/kg (rat) (IUCLID)
	LC 50	510 mg/m <sup>3</sup> /2h (rat) IUCLID

- **Primary irritant effect:**
- **on the skin:** Causes severe skin burns.

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- **on the eye:**  
Causes serious eye damage.  
Risk of blindness!
- **Sensitization:** Based on available data, the classification criteria are not met.
- **Carcinogenic categories**

<b>· IARC (International Agency for Research on Cancer)</b>	
CAS: 7664-93-9 sulphuric acid	1

<b>· NTP (National Toxicology Program)</b>	
CAS: 7664-93-9 sulphuric acid	K

<b>· OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	
None of the ingredients is listed.	

- **Other information:**  
see section 8 / 15  
Cancer Status of Sulfuric acid: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.  
A2 (Suspected for humans) by ACGIH
- **Synergistic Products:** None
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):**  
CAS-No. 7664-93-9:  
carcinogenic: Category 4  
The following statements refer to the mixture:
  - **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
  - **Carcinogenicity** Based on available data, the classification criteria are not met.
  - **Reproductive toxicity** Based on available data, the classification criteria are not met.
  - **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
  - **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.
  - **Aspiration hazard** Based on available data, the classification criteria are not met.
- **Additional toxicological information:**  
In case of an acute molybdenum(VI) intoxication: diarrhoea, anaemia, fatigue, loss of appetite.  
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
The aerosol is corrosive to the eyes, the skin and the respiratory tract. Inhalation of aerosols may cause lung oedema.  
Sulfuric acid: erosion of the teeth, cancer
- **Experience with humans:** Mo(VI): Can cause liver, kidney damages.

## 12 Ecological information

- **Toxicity**

<b>· Aquatic toxicity:</b>	
<b>CAS: 7664-93-9 sulphuric acid</b>	
EC50	>100 mg/l/48h (Daphnia magna) (OECD 202) (ECHA)
LC50	16–29 mg/l/96h (bluegill) (Merck)

- **Bacterial toxicity:** sulfates toxic > 2.5 g/l
- **Other information:**  
Toxic for fish:  
sulfates > 7 g/l  
molybdenum compounds in general: > 25 mg/l
- **Persistence and degradability .**
- **Other information:**  
Mixture of inorganic compounds.  
Methods for the determination of biodegradability are not applicable to inorganic substances.
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Remark:** neutralization possible
- **Other adverse effects**  
Harmful effect due to pH shift.

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Forms corrosive mixtures with water even if diluted.  
Avoid transfer into the environment.

### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Hand over to hazardous waste disposers.  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

· <b>UN-Number</b> · <b>DOT, IMDG, IATA</b>	UN2796
· <b>UN proper shipping name</b> · <b>DOT</b> · <b>IMDG, IATA</b>	Sulfuric acid solution SULPHURIC ACID solution
· <b>Transport hazard class(es)</b> · <b>DOT</b>	
	
· <b>Class</b> · <b>Label</b>	8 Corrosive substances 8
· <b>IMDG, IATA</b>	
	
· <b>Class</b> · <b>Label</b>	8 Corrosive substances 8
· <b>Packing group</b> · <b>DOT, IMDG, IATA</b>	II
· <b>Environmental hazards:</b> · <b>Marine pollutant:</b>	No
· <b>Special precautions for user</b> · <b>Danger code (Kemler):</b> · <b>EMS Number:</b> · <b>Segregation groups</b> · <b>Stowage Category</b>	Warning: Corrosive substances 80 F-A,S-B Acids B
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b> · <b>DOT</b> · <b>Quantity limitations</b> · <b>Limited quantity (LQ):</b> · <b>Excepted quantities (EQ)</b>	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L 1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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<ul style="list-style-type: none"> <li>• <b>IMDG</b></li> <li>• <b>Limited quantities (LQ)</b></li> <li>• <b>Excepted quantities (EQ)</b></li> </ul>	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
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### \*15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

#### • Section 355 (Extremely hazardous substances):

CAS: 7664-93-9 sulphuric acid

#### • Section 313 (Specific toxic chemical listings):

CAS: 7664-93-9 sulphuric acid

#### • TSCA (Toxic Substances Control Act):

All ingredients are listed.

#### • Proposition 65

##### • Chemicals known to cause cancer:

None of the ingredients is listed.

##### • Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

##### • Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

##### • Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

##### • New Jersey Right-to-Know List:

CAS: 7664-93-9 sulphuric acid

##### • New Jersey Special Hazardous Substance List:

CAS: 7664-93-9 sulphuric acid

CA, CO, R2

##### • Pennsylvania Right-to-Know List:

CAS: 7664-93-9 sulphuric acid

##### • Pennsylvania Special Hazardous Substance List:

CAS: 7664-93-9 sulphuric acid

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##### • EPA (Environmental Protection Agency)

None of the ingredients is listed.

##### • NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

- **Information about limitation of use:** Employment restrictions concerning young persons must be observed.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

#### • Relevant phrases

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

- **Recommended restriction of use:** professional/industrial use only

- **Date of preparation / last revision** 12/06/2017 / 19

#### • Abbreviations and acronyms:

EC50: effective concentration, 50 percent (in vivo)

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STOT: specific target organ toxicity

SE: single exposure

RE: repeated exposure

EC50: half maximal effective concentration

IC50: half maximal inhibitory concentration

NOEL or NOEC: No Observed Effect Level or Concentration

ACGIH<sup>®</sup> - American Conference of Governmental Industrial Hygienists

•A1 - Confirmed human carcinogen

•A2 - Suspected human carcinogen

•A3 - Confirmed animal carcinogen with unknown relevance to humans

•A4 - Not classifiable as a human carcinogen

•A5 - Not suspected as a human carcinogen

IARC - International Agency for Research on Cancer

•Group 1 - Carcinogenic to humans

•Group 2A - Probably carcinogenic to humans

•Group 2B - Possibly carcinogenic to humans

•Group 3 - Not classifiable as to carcinogenicity to humans

•Group 4 - Probably not carcinogenic to humans

NTP - National Toxicology Program, U.S. Department of Health and Human Services

•Group K - Known to be Human Carcinogens

•Group R - Reasonably Anticipated to be Human Carcinogens

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety &amp; Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Met. Corr. 1: Corrosive to metals – Category 1

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

### • Sources

Data arise from safety data sheets, reference works and literature.

International Chemical Safety Cards (ICSCs)

GESTIS- Stoffdatenbank (Substance Database, Germany)

• \* Data compared to the previous version altered.

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