

Safety data sheet according to 1907/2006/EC, Article 31

Printing date 15.07.2013

Version number 80

Revision: 15.07.2013

1 Identification of the substance/mixture and of the company/undertaking

· 1.1 Product identifier

· **Product name:** **COD Reagent Vario LR**

· **Catalog number:** 420720, 2420720, 420725, 2420725

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.

· **Application of the substance / the preparation:** Reagent for water analysis

· **1.3 Details of the supplier of the safety data sheet**

· **Supplier:**

Tintometer GmbH
Schleefstr. 8-12
DE-44287 Dortmund
Made in Germany
www.lovibond.com

phone: +49 (0) 231 945100
E-Mail: sales@tintometer.de

· **Informing department:**

e-mail: produktsicherheit@tintometer.de
Product Safety Department

· **Contact for technical details:**

Technical Department
e-mail: technik@tintometer.de

· **1.4 Emergency telephone number:**

Poison Center Berlin, Germany
phone: 0049-30 30686 790

* 2 Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



GHS06 skull and crossbones

Acute Tox. 3 H311 Toxic in contact with skin.



GHS08 health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 corrosion

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



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.
Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

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GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC


T; Toxic

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.



C; Corrosive

R35: Causes severe burns.

R33-52/53: Danger of cumulative effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 The product is classified and labelled according to the CLP regulation.

Hazard pictograms GHS05, GHS06, GHS08, GHS09

Signal word Danger

Hazard-determining components of labelling:
sulphuric acid
mercury sulphate
Hazard statements

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H373 May cause damage to organs through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

P273 Avoid release to the environment.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Remove/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.

P309 IF exposed or if you feel unwell:

P310 Immediately call a POISON CENTER or doctor/physician.

* 3 Composition/information on ingredients

3.2 Mixtures
Description: sulfuric acid solution

Dangerous components:

The percent content of the chromium compound mentioned below refers to the amount of the pure chromium therein.

The percent content of the mercury compound mentioned below refers to the amount of the pure mercury therein.

CAS: 7664-93-9 EINECS: 231-639-5 Index number: 016-020-00-8	sulphuric acid C R35 Met. Corr.1, H290; Skin Corr. 1A, H314	80-90%
CAS: 7783-35-9 EINECS: 231-992-5 Index number: 080-002-00-6	mercury sulphate T+ R26/27/28; N R50/53 R33 Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; STOT RE 2, H373; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	0.1-1.0%

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











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CAS: 10294-26-5 EINECS: 233-653-7	disilver(1+) sulphate  Xi R41  Eye Dam. 1, H318;  Aquatic Acute 1, H400;  Aquatic Chronic 1, H410	0.5-3%
CAS: 7778-50-9 EINECS: 231-906-6 Index number: 024-002-00-6	potassium dichromate  T+ R26;  T Carc. Cat. 2, Muta. Cat. 2, Repr. Cat. 2 R45-46-60-61-25-48/23;  C R34;  Xn R21;  Xn R42/43;  O R8;  N R50/53  Ox. Sol. 2, H272;  Acute Tox. 3, H301;  Acute Tox. 2, H330;  Resp. Sens. 1, H334; Muta. 1B, H340; Carc. 1B, H350; Repr. 1B, H360FD; STOT RE 1, H372;  Skin Corr. 1B, H314;  Aquatic Acute 1, H400;  Aquatic Chronic 1, H410;  Acute Tox. 4, H312;  Skin Sens. 1, H317	≤ 0.1%

- **REACH - Pre-registered substances** All components are REACH pre-registered.
- **Additional information** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

4.1 Description of first aid measures

General information

Personal protection for the First Aider!

Instantly remove any clothing soiled by the product.

Remove breathing apparatus only after soiled clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness bring patient into stable side position for transport.

After skin contact

Instantly wash with polyethylene glycol 400.

Instantly rinse with 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 10 min) under running water.

Call a doctor immediately.

After swallowing

Do not induce vomiting; instantly call for medical help.

Rinse out mouth and then drink 1-2 glasses of water.

4.2 Most important symptoms and effects, both acute and delayed

burns

after inhalation:

damage to the affected mucous membranes

coughing

breathing difficulty

after swallowing:

metallic taste

bloody diarrhoea

pain

strong caustic effect.

unconsciousness

methaemoglobinaemia

Danger

Danger of system failure.

Danger of gastric perforation.

4.3 Indication of any immediate medical attention and special treatment needed

If swallowed or in case of vomiting, danger of entering the lungs

Subsequent observation for pneumonia and pulmonary oedema

5 Firefighting measures

5.1 Extinguishing media

• **Suitable extinguishing agents** CO₂, sand, extinguishing powder. Do not use water.

• **For safety reasons unsuitable extinguishing agents** Water.

5.2 Special hazards arising from the substance or mixture

Development of hazardous combustion gases or vapours possible in the event of fire.

nitrous gases

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Sulphur oxides (SO_x)

mercury vapours

Dipotassium oxide

- **5.3 Advice for firefighters**

- **Protective equipment:**

Wear self-contained breathing apparatus.

Wear full protective suit.

- **Additional information**

Collect contaminated fire fighting water separately. It must not enter drains.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation

Wear protective equipment. Keep unprotected persons away.

- **6.2 Environmental precautions:**

Do not allow product to reach sewage system or water bodies.

Inform respective authorities in case product reaches water or sewage system.

- **6.3 Methods and material for containment and cleaning up:**

Ensure adequate ventilation.

Neutralize with diluted sodium hydroxide solution.

Dispose of contaminated material as waste according to item 13.

Absorb with liquid-binding material (sand, diatomite, universal binders).

- **6.4 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 information on disposal.

* 7 Handling and storage

- **7.1 Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

Use only in well ventilated areas.

- **Information about protection against explosions and fires:** The product is not flammable

- **7.2 Conditions for safe storage, including any incompatibilities**

- **Storage**

- **Requirements to be met by storerooms and containers:** Store in cool location.

- **Information about storage in one common storage facility:** Store away from metals.

- **Further information about storage conditions:**

Keep container tightly sealed.

Store under dry conditions.

Protect from humidity and keep away from water.

Protect from the effects of light.

This product is hygroscopic.

- **Recommended storage temperature:** 20 °C +/- 5 °C

- **Storage class** 6.1 B

- **7.3 Specific end use(s)** No further relevant information available.

* 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **8.1 Control parameters**

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

7664-93-9 sulphuric acid (80-90%)	
WEL (Great Britain)	Long-term value: 0.05* mg/m ³ *mist: is defined as fraction

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IOELV (European Union) OEL (Sweden)	Long-term value: 0.05 mg/m ³ Short-term value: 0.2 mg/m ³ Long-term value: 0.1 mg/m ³ C
10294-26-5 disilver(1+) sulphate (0.1-1.0%)	
WEL (Great Britain)	Long-term value: 0.01 mg/m ³ as Ag
· Ingredients with biological limit values:	
7783-35-9 mercury sulphate (0.1-1.0%)	
BMGV (Great Britain)	20 µmol/mol creatinine Medium: urine Sampling time: random Parameter: mercury

· 8.2 Exposure controls

· Personal protective equipment

· General protective and hygienic measures

- Keep away from foodstuffs, beverages and food.
- Take off immediately all contaminated clothing
- Wash hands during breaks and at the end of the work.
- Store protective clothing separately.
- Do not inhale gases / fumes / aerosols.
- Avoid contact with the eyes and skin.
- Do not eat, drink or smoke while working.

· **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.

· **Recommended filter device for short term use:** Filter B

· 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

- Butyl rubber, BR
- Recommended thickness of the material: ≥ 0.11 mm

· Penetration time of glove material

- The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
- Value for the permeation: Level ≤ 1 (>10 min)

· **Eye protection:** Tightly sealed safety glasses.

· **Body protection:** Acid resistant protective clothing

9 Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· Appearance:

- **Form:** Fluid
- **Colour:** Yellow-brown
- **Odour:** Recognizable
- **Odour threshold:** Not determined.

· **pH-value at 20 °C:** ~ 1

· **Melting point/Melting range:** Not applicable

· **Boiling point/Boiling range:** Not determined

· **Flash point:** Not applicable

· **Danger of explosion:** Product is not explosive.

· **Density at 20 °C** 1.76 g/cm³

· Solubility in / Miscibility with

· **Water:** Fully miscible

· Solvent content:

· **Organic solvents:** 0.0 %

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Water:	< 20 %
Solids content:	< 1 %
9.2 Other information	No further relevant information available.

*10 Stability and reactivity

- **Reactivity**
- **Thermal decomposition / conditions to be avoided:** strong heating
- **Possibility of hazardous reactions**
 - Corrosive action on metals
 - When diluting, always add acid to water, never vice versa
 - Reacts with metals forming hydrogen (--> Explosive!)
 - Reacts with organic substances
 - Diluting or dissolving in water always causes rapid heating
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:**
 - ammonia (NH₃)
 - alkali compounds
 - alkalis
 - acids
 - metals
 - halogen compounds
 - combustible substances
 - organic solvents
 - nitriles
 - peroxides
 - oxidizing agents
- **Hazardous decomposition products:**
 - nitrous gases
 - Sulphur oxides (SO_x)
 - see chapter 5

*11 Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

- **LD/LC50 values that are relevant for classification:**

Oral	ATE _(MIX)	694 mg/kg (.)
Dermal	ATE _(MIX)	694 mg/kg (.)

7664-93-9 sulphuric acid

Oral	LD50	2140 mg/kg (rat) (IUCLID)
Inhalative	LC 50	510 (pure) mg/m ³ /2h (rat) IUCLID

7783-35-9 mercury sulphate

Oral	LD50	57 mg/kg (rat) (RTECS)
Dermal	LD50	625 mg/kg (rat)

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:** strong caustic effect.
- **Sensitization:** Sensitizing effect by skin contact is possible by prolonged/repeated exposure.
- **Subacute to chronic toxicity:** sulfuric acid: erosion of the teeth, cancer
- **Additional toxicological information:**
 - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
 - Mercury compounds have a cytotoxic and protoplasmatoxic effect.
 - The principal signs manifest themselves in the CNS.

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· CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

CAS-No. 7664-93-9:

carcinogenic: Category 4

*12 Ecological information

· 12.1 Toxicity
· Aquatic toxicity:

The following applies to the water-soluble matter contained in inorganic Hg compounds in general:

The toxicity of mercury(II) ions for water organism depends on the water hardness (IPCS).

7664-93-9 sulphuric acid

Daphnia EC50	29 mg/l/24h (Daphnia magna)
LC50	16-29 mg/l/96h (Lepomis macrochirus) MERCK

7783-35-9 mercury sulphate

EC50	0.005-3.6 mg/l/48h (Daphnia magna)
LC50	0.5 mg/l/48h (Leuciscus idus) 0.19 mg/l/96h (Pimephales promelas)

· 12.2 Persistence and degradability No further relevant information available.

· Other information:

Quantitative data on the ecological effect of this product are not available.

Does not cause biological oxygen deficit.

· 12.3 Bioaccumulative potential No further relevant information available.

· Behaviour in environmental systems:
· 12.4 Mobility in soil No further relevant information available.

· Ecotoxicological effects:
· Remark:

Forms corrosive mixtures with water even if diluted.

Harmful to aquatic organisms

Harmful to fish

· Remark: neutralization possible

· Additional ecological information:
· General notes:

Water hazard class 2 (German Regulation) (Self-assessment acc. VwVwS Annex 4): hazardous for water.

Do not allow product to reach ground water, water bodies or sewage system.

Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms.

· 12.5 Results of PBT and vPvB assessment no data available

· vPvB assessments: no data available

· 12.6 Other adverse effects No further relevant information available.

13 Disposal considerations

· 13.1 Waste treatment methods
· Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Hand over to disposers of hazardous waste.

· European waste catalogue

16 05 07 | discarded inorganic chemicals consisting of or containing dangerous substances

· Uncleaned packagings:
· Recommendation: Disposal must be made according to official regulations.

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* 14 Transport information

<ul style="list-style-type: none"> · 14.1 UN-Number · ADR, IMDG, IATA 	UN2922
<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR · IMDG · IATA 	2922 CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE), ENVIRONMENTALLY HAZARDOUS CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE), MARINE POLLUTANT CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE)
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR 	
<ul style="list-style-type: none"> · Class · Label 	8 (CT1) Corrosive substances. 8+6.1
<ul style="list-style-type: none"> · IMDG 	
<ul style="list-style-type: none"> · Class · Label 	8 Corrosive substances. 8+6.1
<ul style="list-style-type: none"> · IATA 	
<ul style="list-style-type: none"> · Class · Label 	8 Corrosive substances. 8+6.1
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	II
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: · Special marking (ADR): 	Yes Symbol (fish and tree) Symbol (fish and tree)
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Kemler Number: · EMS Number: · Segregation groups 	Warning: Corrosive substances. 86 F-A,S-B Acids
<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	Not applicable.
<ul style="list-style-type: none"> · Transport/Additional information: 	
<ul style="list-style-type: none"> · ADR · Limited quantities (LQ) · Transport category · Tunnel restriction code 	1L 2 E

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*15 Regulatory information

- **15.4 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Information about limitation of use:**
Observe employment restrictions for pregnant and nursing mothers according to the 'mother protection guideline' (92/85/EEC) .
Employment restrictions concerning young persons must be observed.

· Substances of very high concern (SVHC) according to REACH, Article 57	
7778-50-9	potassium dichromate

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

16 Other information

- **Relevant phrases**

- | | |
|-----------|--|
| H272 | May intensify fire; oxidiser. |
| H290 | May be corrosive to metals. |
| H300 | Fatal if swallowed. |
| H301 | Toxic if swallowed. |
| H310 | Fatal in contact with skin. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H330 | Fatal if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H340 | May cause genetic defects. |
| H350 | May cause cancer. |
| H360FD | May damage fertility. May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| | |
| R21 | Harmful in contact with skin. |
| R25 | Toxic if swallowed. |
| R26 | Very toxic by inhalation. |
| R26/27/28 | Very toxic by inhalation, in contact with skin and if swallowed. |
| R33 | Danger of cumulative effects. |
| R34 | Causes burns. |
| R35 | Causes severe burns. |
| R41 | Risk of serious damage to eyes. |
| R42/43 | May cause sensitisation by inhalation and skin contact. |
| R45 | May cause cancer. |
| R46 | May cause heritable genetic damage. |
| R48/23 | Toxic: danger of serious damage to health by prolonged exposure through inhalation. |
| R50/53 | Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. |
| R60 | May impair fertility. |
| R61 | May cause harm to the unborn child. |
| R8 | Contact with combustible material may cause fire. |

- **Abbreviations and acronyms:**

EC50: effective concentration, 50 percent (in vivo)
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 IATA: International Air Transport Association
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals
 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

- **Sources**

IUCLID (International Uniform Chemical Information Database)
 GESTIS-Stoffdatenbank

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International Chemical Safety Cards (ICSCs)

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· * Data compared to the previous version altered.

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