

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

Printing date 15.07.2013

Version number 12

Revision: 15.07.2013

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

· **1.1 Product identifier**

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

· **Catalog number:** CW2420721, CW/24.20.721, 1129392

· **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:**

Camlab Limited

Camlab House, Norman Way, Over, Cambridgeshire, CB24 5WE, United Kingdom

Made in Germany

phone: +44 (0) 1954 233 100  
E-Mail: sales@camlab.co.uk

· **Informing department:**

e-mail: support@camlab.co.uk

· **Contact for technical details:**

Technical Department

e-mail: support@camlab.co.uk

· **1.4 Emergency telephone number:**

National Poison Information Service, United Kingdom. Tel 0870 600 6266 or see www.npis.org

Alternatively dial 111 for NHS 111 or NHS 24 in England, Wales and Scotland

In Northern Ireland contact your GP or pharmacist or see www.gpoutofhours.hscni.net In Republic of Ireland dial 01 806 2166

### \* 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

Muta. 1B      H340 May cause genetic defects.

Carc. 1B      H350 May cause cancer.

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

R45-46-23/24/25: May cause cancer. May cause heritable genetic damage. 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  
 potassium dichromate

**Hazard statements**

Contains potassium dichromate. May produce an allergic reaction.

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H340 May cause genetic defects.

H350 May cause cancer.

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

H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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.

P309 IF exposed or if you feel unwell:

P310 Immediately call a POISON CENTER or doctor/physician.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

**Additional information:**

Contains potassium dichromate. May produce an allergic reaction.

Restricted to professional users.

### \* 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	sulphuric acid	80-90%
EINECS: 231-639-5	C R35	
Index number: 016-020-00-8	Met. Corr.1, H290; Skin Corr. 1A, H314	

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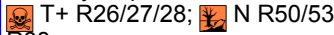
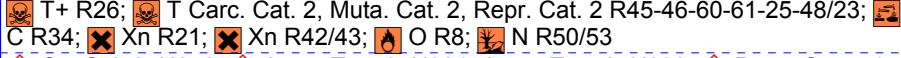
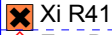
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		(Contd. of page 2)
CAS: 7783-35-9 EINECS: 231-992-5 Index number: 080-002-00-6	mercury sulphate  R33 Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; STOT RE 2, H373; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	0.1-1.0%
CAS: 7778-50-9 EINECS: 231-906-6 Index number: 024-002-00-6	potassium dichromate  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	0.1-0.3%
CAS: 10294-26-5 EINECS: 233-653-7	disilver(1+) sulphate  Eye Dam. 1, H318; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	0.1-1.0%

· **REACH - Pre-registered substances** All components are REACH pre-registered.

· **SVHC**

7778-50-9	potassium dichromate
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· **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.

#### · 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:  
breathing difficulty  
coughing  
damage to the affected mucous membranes  
after swallowing:  
metallic taste  
bloody diarrhoea  
pain  
strong caustic effect.  
unconsciousness  
methaemoglobin formation  
vomiting  
cramps

#### · 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

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### 5 Firefighting measures

- **5.1 Extinguishing media**
  - **Suitable extinguishing agents** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
  - **For safety reasons unsuitable extinguishing agents** Water.
  - **5.2 Special hazards arising from the substance or mixture**  
Formation of toxic gases is possible during heating or in case of fire.  
nitrous gases  
Sulphur oxides (SO<sub>x</sub>)  
mercury vapours  
chromium trioxide  
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**  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation
  - **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:**  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
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.  
suitable material for container: HDPE
- **Information about storage in one common storage facility:**  
Store away from water.  
Store away from metals.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Protect from heat and direct sunlight.  
Protect from humidity and keep away from water.  
Protect from the effects of light.
- **Recommended storage temperature:** 20 °C +/- 5 °C
- **Storage class** 6.1 D

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 · **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:**

<b>7664-93-9 sulphuric acid (80-90%)</b>	
WEL (Great Britain)	Long-term value: 0.05* mg/m <sup>3</sup> *mist: is defined as fraction
IOELV (European Union)	Long-term value: 0.05 mg/m <sup>3</sup>
OEL (Sweden)	Short-term value: 0.2 mg/m <sup>3</sup> Long-term value: 0.1 mg/m <sup>3</sup> C
<b>10294-26-5 disilver(1+) sulphate (0.1-1.0%)</b>	
WEL (Great Britain)	Long-term value: 0.01 mg/m <sup>3</sup> as Ag
<b>7778-50-9 potassium dichromate (0.1-1.0%)</b>	
WEL (Great Britain)	Long-term value: 0.05 mg/m <sup>3</sup> as Cr; Carc, Sen
OEL (Sweden)	Short-term value: 0.015* mg/m <sup>3</sup> Long-term value: 0.005** mg/m <sup>3</sup> *Cr(VI) föreningar: C, S; **totaldamm
<b>Ingredients with biological limit values:</b>	
<b>7783-35-9 mercury sulphate (0.1-1.0%)</b>	
BMGV (Great Britain)	20 µmol/mol creatinine Medium: urine Sampling time: random Parameter: mercury
<b>7778-50-9 potassium dichromate (0.1-1.0%)</b>	
BMGV (Great Britain)	10 µmol/mol creatinine Medium: urine Sampling time: post shift Parameter: chromium

 · **8.2 Exposure controls**

 · **Personal protective equipment**

 · **General protective and hygienic measures**

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

Value for the permeation: Level ≤ 1 (&gt;10 min)

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

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

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### \* 9 Physical and chemical properties

· <b>9.1 Information on basic physical and chemical properties</b>	
· <b>Appearance:</b>	
Form:	Liquid
Colour:	Yellow-brown
· <b>Odour:</b>	Recognizable
· <b>pH-value at 20 °C:</b>	1
· <b>Melting point/Melting range:</b>	Not applicable
· <b>Boiling point/Boiling range:</b>	Not determined
· <b>Flash point:</b>	Not applicable
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Density at 20 °C</b>	1.758 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible
· <b>Solvent content:</b>	
Organic solvents:	0.0 %
Water:	< 20 %
· <b>Solids content:</b>	< 5 %
· <b>9.2 Other information</b>	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!)
  - Forms hydrogen in aqueous solution with metals
  - Reacts with organic substances
  - Diluting or dissolving in water always causes rapid heating
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:**
  - organic substances
  - ammonia (NH<sub>3</sub>)
  - alkali compounds
  - alkalis
  - acids
  - metals
  - halogen compounds
  - combustible substances
  - organic solvents
  - nitriles
  - peroxides
  - reducing agents
  - oxidizing agents
- **Hazardous decomposition products:**
  - nitrous gases
  - Sulphur oxides (SO<sub>x</sub>)
  - 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 <sub>(MIX)</sub>	687 mg/kg (.)
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Dermal	ATE <sub>(MIX)</sub>	694 mg/kg (.)
Inhalative	ATE <sub>(MIX)</sub>	56.6 mg/l (.)
<b>7664-93-9 sulphuric acid</b>		
Oral	LD50	2140 mg/kg (rat) (IUCLID)
Inhalative	LC 50	510 (pure) mg/m <sup>3</sup> /2h (rat) IUCLID
<b>7783-35-9 mercury sulphate</b>		
Oral	LD50	57 mg/kg (rat) (RTECS)
Dermal	LD50	625 mg/kg (rat)
<b>7778-50-9 potassium dichromate</b>		
Oral	LD	(human)
	LD50	25 mg/kg (rat) (RTECS)
	LDLo	26 mg/kg (child) 143 mg/kg (man)
Dermal	LD50	1170 mg/kg (rat) 14 mg/kg (rabbit) (Sigma-Aldrich)
Inhalative	LC50	0.094 mg/l/4h (rat)
	LD50 IPR	28 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 inhalation and skin contact is possible by prolonged exposure.

- **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.

Inhalable chromium (VI) compounds have clearly shown themselves to be carcinogenic in animal experiments.

Poor tendency for ulcers to heal following penetration of substance into the wound.

Lethal dose (man): 0.5 g

Antidotes: chelating agents such as EDTA, DMPS

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

The product can cause inheritable damage.

Carcinogenic

May cause harm to the unborn child. Pregnant women should not be exposed to the product.

Product is suspected to cause injury to foetus.

Muta. 1B, Carc. 1B

## \*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).

<b>7664-93-9 sulphuric acid</b>		
Daphnia EC50	29 mg/l/24h (Daphnia magna)	
LC50	16-29 mg/l/96h (Lepomis macrochirus)	
	MERCK	
<b>7783-35-9 mercury sulphate</b>		
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)	

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**7778-50-9 potassium dichromate**

EC50	0.77 mg/l/48h (Daphnia magna) (in soft water - Merck/IUCLID)
LC50	58.5 mg/l/96h (byr) 160 mg/l/96h (Poecilia reticulata) 26.13 mg/l/96h (Pimephales promelas) (Merck/IUCLID)

- **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:**  
Toxic for fish:  
sulphates > 7 g/l  
Forms corrosive mixtures with water even if diluted.  
Harmful to aquatic organisms
- **Algae toxicity:** CAS-No. 7778-50-9: Chlorella vulgaris IC50: 0.16 - 0.59 mg/l/96 h
- **Bacterial toxicity:** CAS-No. 7778-50-9: Photobacterium phosphoreum EC50: 58 mg/l/30 min Microtox-Test (MERCK)
- **Remark:** neutralization possible
- **Additional ecological information:**
- **General notes:**  
Water danger class 3 (German Regulation) (Self-assessment acc. VwVwS Annex 4): extremely hazardous for water.  
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into soil.  
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** Hand over to disposers of hazardous waste.

**European waste catalogue**

16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances
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- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

### \* 14 Transport information

- |                                       |  |
|---------------------------------------|--|
| · <b>14.1 UN-Number</b>               | UN2922   |
| · <b>ADR, IMDG, IATA</b>              |  |
| · <b>14.2 UN proper shipping name</b> | 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE), ENVIRONMENTALLY HAZARDOUS |
| · <b>ADR</b>                          | CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE), MARINE POLLUTANT               |
| · <b>IMDG</b>                         | CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE)                                 |
| · <b>IATA</b>                         | CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE)                                 |

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· <b>14.3 Transport hazard class(es)</b>	
· <b>ADR</b>	
	
· <b>Class</b>	8 (CT1) Corrosive substances.
· <b>Label</b>	8+6.1
· <b>IMDG</b>	
	
· <b>Class</b>	8 Corrosive substances.
· <b>Label</b>	8+6.1
· <b>IATA</b>	
	
· <b>Class</b>	8 Corrosive substances.
· <b>Label</b>	8+6.1
· <b>14.4 Packing group</b>	
· <b>ADR, IMDG, IATA</b> II	
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	Yes Symbol (fish and tree)
· <b>Special marking (ADR):</b>	Symbol (fish and tree)
· <b>14.6 Special precautions for user</b> Warning: Corrosive substances.	
· <b>Kemler Number:</b>	86
· <b>EMS Number:</b>	F-A,S-B
· <b>Segregation groups</b>	Acids
· <b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b> Not applicable.	
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	1L
· <b>Transport category</b>	2
· <b>Tunnel restriction code</b>	E

## \*15 Regulatory information

· **15.4 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **National regulations**

· **Additional classification according to Decree on Hazardous Materials, Annex II:**

Carcinogenic hazardous material group III (dangerous)

· **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

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

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### \* 16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **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  
 International Chemical Safety Cards (ICSCs)  
 Data arise from reference works and literature.

· \* **Data compared to the previous version altered.**