

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**14032-68 ZincoVer 5 Zinc Reagent**

Revision date: 13.02.2017

Product code: 1403268

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

14032-68 ZincoVer 5 Zinc Reagent

**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of the substance/mixture**

Water analysis

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

Company name: HACH LANGE GmbH  
Street: Willstätterstr. 11  
Place: D-40549 Düsseldorf  
Telephone: +49 (0)211 5288-383  
e-mail: SDS@hach.com  
Internet: www.de.hach.com  
Responsible Department: HACH LANGE Ltd.  
5, Pacific Way  
Salford Manchester M50 1DL - United Kingdom  
Tel. +44 (0) 161 872 1487 \* Fax +44 (0) 161 848 7324  
e-Mail: info-uk@hach.com

HACH LANGE Ltd.  
Unit 1, Chestnut Road Western Industrial Estate  
IRL-Dublin 12  
Tel. +353 (0)1 4602522  
e-Mail: info-ie@hach.com

**1.4. Emergency telephone number:**

Poison Control Center Mainz: Tel: +49 (0) 6131 19240 - 24 hour emergency service -

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

Hazard categories:

Acute toxicity: Acute Tox. 3

Acute toxicity: Acute Tox. 4

Skin corrosion/irritation: Skin Irrit. 2

Serious eye damage/eye irritation: Eye Irrit. 2

Reproductive toxicity: Repr. 1B

Specific target organ toxicity - single exposure: STOT SE 3

Hazardous to the aquatic environment: Aquatic Acute 1

Hazardous to the aquatic environment: Aquatic Chronic 1

Hazard Statements:

Toxic in contact with skin.

Harmful if swallowed.

Harmful if inhaled.

Causes skin irritation.

Causes serious eye irritation.

May damage fertility. May damage the unborn child.

May cause respiratory irritation.

Very toxic to aquatic life with long lasting effects.

**2.2. Label elements****Regulation (EC) No. 1272/2008**

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#### Hazard components for labelling

Potassium borate  
diboron trioxide; boric oxide  
Potassium cyanide

**Signal word:** Danger

**Pictograms:**



#### Hazard statements

H311 Toxic in contact with skin.  
H302 Harmful if swallowed.  
H332 Harmful if inhaled.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H360FD May damage fertility. May damage the unborn child.  
H335 May cause respiratory irritation.  
H410 Very toxic to aquatic life with long lasting effects.

#### Precautionary statements

P201 Obtain special instructions before use.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 IF ON SKIN: Wash with plenty of water.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.  
P361 Take off immediately all contaminated clothing.  
P391 Collect spillage.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### Special labelling of certain mixtures

EUH032 Contact with acids liberates very toxic gas.

#### Additional advice on labelling

The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008.

#### 2.3. Other hazards

Toxic to Reproduction Category 2 Pregnant women or women of child-bearing age should not be exposed to this product. Harmful by inhalation, in contact with skin and if swallowed.

Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

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**Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
1332-77-0	Potassium borate			50-60 %
	215-575-5			
	Repr. 1B, Skin Irrit. 2, Eye Irrit. 2, STOT SE 3; H360FD H315 H319 H335			
134-03-2	(+)-Sodium L-ascorbate			20-30 %
	205-126-1			
1303-86-2	diboron trioxide; boric oxide			15-25 %
	215-125-8	005-008-00-8		
	Repr. 1B; H360FD			
151-50-8	Potassium cyanide			3-7 %
	205-792-3	006-007-00-5		
	Acute Tox. 1, Acute Tox. 2, Acute Tox. 2, Aquatic Acute 1 (M-Factor = 10), Aquatic Chronic 1 (M-Factor = 10); H310 H330 H300 H400 H410 EUH032			

Full text of H and EUH statements: see section 16.

**Further Information**

This product contains substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).  
diboron trioxide; boric oxide

**SECTION 4: First aid measures**
**4.1. Description of first aid measures**
**General information**

Take off contaminated clothing and shoes immediately.  
Show this safety data sheet to the doctor in attendance.

**After inhalation**

Move to fresh air. Call a physician immediately.

**After contact with skin**

Wash off immediately with soap and plenty of water. Take off all contaminated clothing immediately. Call a physician immediately.

**After contact with eyes**

Rinse immediately with plenty of water for at least 15 minutes.  
Consult a physician. Show this safety data sheet to the doctor in attendance.

**After ingestion**

Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person.  
Call a physician immediately. Show this safety data sheet to the doctor in attendance.

**4.2. Most important symptoms and effects, both acute and delayed**

May cause skin irritation. May cause eye irritation.

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**SECTION 5: Firefighting measures**
**5.1. Extinguishing media**

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#### Suitable extinguishing media

Dry powder

#### Unsuitable extinguishing media

Carbon dioxide (CO<sub>2</sub>)

#### 5.2. Special hazards arising from the substance or mixture

Fire may liberate hazardous vapours.

In the event of fire the following can be released: Cyanides, Carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), dense black smoke.

Dust may form explosive mixture in air.

#### 5.3. Advice for firefighters

In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

In the event of fire, wear self-contained breathing apparatus.

In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

Suppress (knock down) gases/vapours/mists with a water spray jet.

#### Additional information

Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

## SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Only qualified personnel equipped with suitable protective equipment may intervene. Immediately evacuate personnel to safe areas.

Do not breathe vapours, mist or gas.

Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

#### 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

#### 6.3. Methods and material for containment and cleaning up

Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13).

#### 6.4. Reference to other sections

13. Disposal considerations

## SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

##### Advice on safe handling

Use only in well-ventilated areas.

Avoid contact with skin and eyes.

Do not breathe vapours/dust.

Wash thoroughly after handling.

##### Advice on protection against fire and explosion

See also section 5 Observe label precautions.

#### 7.2. Conditions for safe storage, including any incompatibilities

##### Requirements for storage rooms and vessels

Keep containers dry and tightly closed to avoid moisture absorption and contamination.

##### Hints on joint storage

Do not store near acids.

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#### Further information on storage conditions

Keep locked up or in an area accessible only to qualified or authorised persons.

#### 7.3. Specific end use(s)

Laboratory chemicals

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Exposure limits (EH40)

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
1303-86-2	Diboron trioxide	-	10		TWA (8 h)	WEL
		-	20		STEL (15 min)	WEL
151-50-8	Potassium cyanide (as cyanide)	-	5		TWA (8 h)	WEL

#### Additional advice on limit values

None known.

#### 8.2. Exposure controls

##### Appropriate engineering controls

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

##### Protective and hygiene measures

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

##### Eye/face protection

Safety glasses with side-shields

##### Hand protection

Use barrier skin cream.

Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374. In full contact:

Gloves material: Viton, Layer thickness: 0.70 mm, Breakthrough time: &gt;480 min. In splash contact: Glove

material: nitrile rubber, Layer thickness 0,20 mm, Breakthrough time: &gt; 30 min

##### Skin protection

Avoid contact with skin, eyes and clothing.

##### Respiratory protection

Avoid breathing dust or vapour.

Use with local exhaust ventilation.

##### Environmental exposure controls

Do not flush into surface water or sanitary sewer system.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state:	solid
Colour:	pink
Odour:	odourless
pH-Value (at 20 °C):	8,7

#### Changes in the physical state

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Melting point:	155 °C
Initial boiling point and boiling range:	not applicable
Sublimation point:	no data available
Softening point:	no data available
Pour point:	not applicable
:	no data available
Flash point:	not applicable
Sustaining combustion:	No data available
<b>Flammability</b>	
Solid:	not applicable
Gas:	not applicable
<b>Explosive properties</b>	
no data available	
Lower explosion limits:	no data available
Upper explosion limits:	no data available
Ignition temperature:	no data available
<b>Auto-ignition temperature</b>	
Solid:	no data available
Gas:	no data available
Decomposition temperature:	no data available
<b>Oxidizing properties</b>	
no data available	
Vapour pressure:	no data available
Vapour pressure:	no data available
Density (at 20 °C):	1,83 g/cm <sup>3</sup>
Bulk density:	no data available
Water solubility:	soluble
<b>Solubility in other solvents</b>	
Incompatible with acids.	
Partition coefficient:	not applicable
Viscosity / dynamic:	not applicable
Viscosity / kinematic:	not applicable
Flow time:	not applicable
Vapour density:	not applicable
Evaporation rate:	not applicable
Solvent separation test:	not applicable
Solvent content:	not applicable
<b>9.2. Other information</b>	
Solid content:	no data available
no data available	

**SECTION 10: Stability and reactivity****10.1. Reactivity**

Reactivity Hazard: Acids

**10.2. Chemical stability**

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Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

Reacts with the following substances: Acids

**10.4. Conditions to avoid**

Product is sensitive to light and moisture.

**10.5. Incompatible materials**

None known.

**10.6. Hazardous decomposition products**

Thiocyanates can develop poisonous gas in contact with strong acids.

**SECTION 11: Toxicological information**
**11.1. Information on toxicological effects**
**Acute toxicity**

LD50/oral/rat = 383 mg/kg (Information given is based on tests on the mixture itself.)

**ATEmix calculated**

ATE (oral) 166,7 mg/kg; ATE (dermal) 1110,0 mg/kg; ATE (inhalation vapour) 0,50 mg/l; ATE (inhalation aerosol) 1,667 mg/l

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
1332-77-0	Potassium borate				
	oral	LD50 mg/kg	3690	ratte	
1303-86-2	diboron trioxide; boric oxide				
	oral	LD50 mg/kg	3163	Mice	GESTIS
151-50-8	Potassium cyanide				
	oral	LD50	5 mg/kg	rat	
	dermal	LD50 mg/kg	14,29	rabbits	ECHA
	inhalation (4 h) vapour	LC50	,051 mg/l	rat	
	inhalation (4 h) aerosol	LC50 mg/l	0,051	rat	

**Irritation and corrosivity**

The product causes irritation of eyes, skin and mucous membranes.

**Carcinogenic/mutagenic/toxic effects for reproduction**

H360 - May damage fertility or the unborn child.

**STOT-single exposure**

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

**Specific effects in experiment on an animal**

LD50/oral/rat = 383 mg/kg

**Further information**

Other dangerous properties can not be excluded. Handle in accordance with good industrial hygiene and safety practice.

**SECTION 12: Ecological information**
**12.1. Toxicity**

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No data is available on the product itself. Information given is based on data on the components and the ecotoxicology of similar products.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
1303-86-2	diboron trioxide; boric oxide					
	Acute crustacea toxicity	EC50 370 - 490 mg/l	48 h	Daphnia Magna	IUCLID	
151-50-8	Potassium cyanide					
	Acute fish toxicity	LC50 0,068 mg/l	96 h			
	Acute crustacea toxicity	EC50 0,25 mg/l	48 h			

#### 12.2. Persistence and degradability

No data is available on the product itself.

#### 12.3. Bioaccumulative potential

No data is available on the product itself.

#### 12.4. Mobility in soil

No data is available on the product itself.

#### 12.5. Results of PBT and vPvB assessment

No data is available on the product itself.

#### 12.6. Other adverse effects

Environmental Effects

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

##### **Advice on disposal**

In accordance with local and national regulations.

##### **Waste disposal number of waste from residues/unused products**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

##### **Waste disposal number of used product**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

##### **Waste disposal number of contaminated packaging**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

##### **Contaminated packaging**

Dispose of as unused product.

The hazard and precautionary statements displayed on the label also apply to any residues left in the container.

### SECTION 14: Transport information

#### Land transport (ADR/RID)

##### 14.1. UN number:

UN 1588

##### 14.2. UN proper shipping name:

Cyanides, inorganic, solid, n.o.s. (Potassium cyanide mixture)

##### 14.3. Transport hazard class(es):

6.1



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#### **14.4. Packing group:**

III

Hazard label:

6.1



Classification code:

T5

Special Provisions:

47 274

Limited quantity:

5 kg

Excepted quantity:

E1

Transport category:

2

Hazard No:

60

Tunnel restriction code:

E

#### **Inland waterways transport (ADN)**

##### **Other applicable information (inland waterways transport)**

Not tested

#### **Marine transport (IMDG)**

##### **14.1. UN number:**

UN 1588

##### **14.2. UN proper shipping name:**

Cyanides, inorganic, solid, n.o.s. (Potassium Cyanide mixture)

##### **14.3. Transport hazard class(es):**

6.1

##### **14.4. Packing group:**

III

Hazard label:

6.1



Marine pollutant:

P

Special Provisions:

47, 223, 274

Limited quantity:

5 kg

Excepted quantity:

E1

EmS:

F-A, S-A

#### **Air transport (ICAO-TI/IATA-DGR)**

##### **14.1. UN number:**

UN 1588

##### **14.2. UN proper shipping name:**

Cyanides, inorganic, solid, n.o.s. (Potassium Cyanide mixture)

##### **14.3. Transport hazard class(es):**

6.1

##### **14.4. Packing group:**

III

Hazard label:

6.1



Special Provisions:

A3 A13

Limited quantity Passenger:

10 kg

Passenger LQ:

Y645

Excepted quantity:

E1

IATA-packing instructions - Passenger:

670

IATA-max. quantity - Passenger:

100 kg

IATA-packing instructions - Cargo:

677

IATA-max. quantity - Cargo:

200 kg

#### **14.5. Environmental hazards**

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ENVIRONMENTALLY HAZARDOUS: yes



Danger releasing substance: Potassium cyanide

**14.6. Special precautions for user**

no data available

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

Not relevant

**Other applicable information**

Additional Information: This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit, Hazard Class: 9, UN Number 3316, Package group II, EMS Code: F-A, S-P

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Authorisations (REACH, annex XIV):

Substances of very high concern, SVHC (REACH, article 59):  
diboron trioxide; boric oxide

Restrictions on use (REACH, annex XVII):

Entry 30: diboron trioxide; boric oxide

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe employment restrictions for women of child-bearing age.

Water contaminating class (D):

3 - highly water contaminating

**15.2. Chemical safety assessment**

Chemical safety assessments for substances in this mixture were not carried out.

**SECTION 16: Other information****Changes**

Revision: 13.02.2017

Safety datasheet sections which have been updated: 2, 8, 10, 11

Revision: 1.02.2017

Safety datasheet sections which have been updated: 11

Revision: 18.07.2016

Safety datasheet sections which have been updated: 2.2

Revision: 11.04.2016

Safety datasheet sections which have been updated: 3

Revision: 28.04.2015

Safety datasheet sections which have been updated: 2, 11

Revision: 03.01.2014

Safety datasheet sections which have been updated: 2-16

Revision: 08.11.2012

Safety datasheet sections which have been updated: 1, 2, 3, 15

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#### Relevant H and EUH statements (number and full text)

H300	Fatal if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H360FD	May damage fertility. May damage the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
EUH032	Contact with acids liberates very toxic gas.

#### Further Information

The information is based on present level of our knowledge. It does not, however, give assurances of product properties and establishes no contract legal rights.

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*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*

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**14033-32 Cyclohexanone**

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Product code: 1403332

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

14033-32 Cyclohexanone

CAS No: 108-94-1  
Index No: 606-010-00-7  
EC No: 203-631-1

**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of the substance/mixture**

Laboratory chemicals

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

Company name: HACH LANGE GmbH  
Street: Willstätterstr. 11  
Place: D-40549 Düsseldorf  
Telephone: +49 (0)211 5288-383  
e-mail: SDS@hach.com  
Internet: www.de.hach.com  
Responsible Department: HACH LANGE Ltd.  
5, Pacific Way  
Salford Manchester M50 1DL - United Kingdom  
Tel. +44 (0) 161 872 1487 \* Fax +44 (0) 161 848 7324  
e-Mail: info-uk@hach.com

HACH LANGE Ltd.  
Unit 1, Chestnut Road Western Industrial Estate  
IRL-Dublin 12  
Tel. +353 (0)1 4602522  
e-Mail: info-ie@hach.com

**1.4. Emergency telephone number:**

Poison Control Center Mainz: Tel: +49 (0) 6131 19240 - 24 hour emergency service -

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

Hazard categories:  
Flammable liquid: Flam. Liq. 3  
Acute toxicity: Acute Tox. 4  
Acute toxicity: Acute Tox. 4  
Acute toxicity: Acute Tox. 4  
Skin corrosion/irritation: Skin Irrit. 2  
Serious eye damage/eye irritation: Eye Dam. 1  
Hazard Statements:  
Flammable liquid and vapour.  
Harmful if inhaled.  
Harmful in contact with skin.  
Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye damage.

**2.2. Label elements****Regulation (EC) No. 1272/2008**

Signal word: Danger

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#### Pictograms:



#### Hazard statements

H226 Flammable liquid and vapour.  
H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.

#### Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### Additional advice on labelling

The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008.

#### 2.3. Other hazards

no data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
108-94-1	cyclohexanone			100 %
	203-631-1	606-010-00-7		
	Flam. Liq. 3, Acute Tox. 4, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1; H226 H332 H312 H302 H315 H318			

Full text of H and EUH statements: see section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### General information

Take off all contaminated clothing immediately.  
Show this safety data sheet to the doctor in attendance.

#### After inhalation

Move to fresh air.  
If not breathing, give artificial respiration. Consult a physician.

#### After contact with skin

Wash off immediately with plenty of water for at least 15 minutes.  
If skin irritation persists, call a physician.

#### After contact with eyes

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### After ingestion

Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.  
Call a physician immediately.

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#### **4.2. Most important symptoms and effects, both acute and delayed**

irritant effects, headache, Nausea, Vomiting, Diarrhoea, Dizziness, narcosis Salivation.  
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

### **SECTION 5: Firefighting measures**

#### **5.1. Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Carbon dioxide (CO<sub>2</sub>), Alcohol-resistant foam, Dry powder

##### **Unsuitable extinguishing media**

No Limit

#### **5.2. Special hazards arising from the substance or mixture**

Combustible material  
Vapours are heavier than air and may spread along floors. Vapours may form explosive mixture with air. Pay attention to flashback.  
Fire may liberate hazardous vapours.  
In the event of fire the following can be released: Carbon dioxide (CO<sub>2</sub>), Carbon monoxide

#### **5.3. Advice for firefighters**

In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

Cool closed containers exposed to fire with water spray.

#### **Additional information**

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

### **SECTION 6: Accidental release measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Only qualified personnel equipped with suitable protective equipment may intervene. Immediately evacuate personnel to safe areas.  
Do not breathe vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
For personal protection see section 8.

#### **6.2. Environmental precautions**

Do not flush into surface water or sanitary sewer system.  
Risk of explosion.

#### **6.3. Methods and material for containment and cleaning up**

Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13).

#### **6.4. Reference to other sections**

13. Disposal considerations

### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

##### **Advice on safe handling**

Avoid contact with skin and eyes. Use only in well-ventilated areas. Do not breathe vapours or spray mist.

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#### Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition.  
Take measures to prevent the build up of electrostatic charge.

#### Further information on handling

Observe label precautions.

#### 7.2. Conditions for safe storage, including any incompatibilities

##### Requirements for storage rooms and vessels

Keep away from open flames, hot surfaces and sources of ignition. Store in a cool and shaded area.  
Keep at temperatures between 10 and 25 °C.

##### Hints on joint storage

Incompatible with oxidizing agents.  
Do not store together with Solvent, Acids and bases

##### Further information on storage conditions

Keep locked up or in an area accessible only to qualified or authorised persons.

#### 7.3. Specific end use(s)

Laboratory chemicals  
Reagent for analysis

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Exposure limits (EH40)

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
108-94-1	Cyclohexanone	10	41		TWA (8 h)	WEL
		20	82		STEL (15 min)	WEL

##### Biological Monitoring Guidance Values (EH40)

CAS No	Substance	Parameter	Value	Test material	Sampling time
108-94-1	Cyclohexanone	cyclohexanol (creatinine)	2 mmol/mol	urine	Post shift

#### 8.2. Exposure controls

##### Appropriate engineering controls

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

##### Protective and hygiene measures

Wash hands before breaks and after work.  
General industrial hygiene practice.

##### Eye/face protection

Safety glasses with side-shields

##### Hand protection

Use barrier skin cream.  
Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

In case of full contact:

Glove material : butyl-rubber  
Layer thickness: > 0,7 mm

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Break through time: 480 min

In case of contact through splashing:

Glove material : Viton (R)

Layer thickness: &gt; 0,7 mm

Break through time: &gt; 120 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves.

**Skin protection**

Avoid contact with skin, eyes and clothing.

**Respiratory protection**

Ensure adequate ventilation, especially in confined areas.

In the case of vapour formation use a respirator with an approved filter.

Recommended Filter type: A, Colour: brown

**Environmental exposure controls**

Do not flush into surface water or sanitary sewer system.

Prevent further leakage or spillage if safe to do so.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state:	liquid
Colour:	colourless
Odour:	no data available
pH-Value (at 20 °C):	no data available

**Changes in the physical state**

Melting point:	-47 °C
Initial boiling point and boiling range:	155,6 °C
Sublimation point:	not applicable
Softening point:	no data available
Pour point:	no data available
:	no data available
Flash point:	44 °C

**Flammability**

Solid:	no data available
Gas:	no data available

**Explosive properties**

no data available

Lower explosion limits:	1,3 vol. %
Upper explosion limits:	9,4 vol. %
Ignition temperature:	420 °C

**Auto-ignition temperature**

Solid:	no data available
Gas:	no data available

Decomposition temperature: no data available

**Oxidizing properties**

no data available



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Vapour pressure: (at 38,7 °C)	13,3 hPa
Vapour pressure: (at 20 °C)	4,5 hPa
Density (at 20 °C):	0,948 g/cm <sup>3</sup>
Bulk density:	no data available
Water solubility: (at 20 °C)	86 g/L

**Solubility in other solvents**

no data available

Partition coefficient:	log Pow 0,81
Viscosity / dynamic:	2,2 mPa·s
Viscosity / kinematic:	no data available
Flow time:	no data available
Vapour density:	3,39
Evaporation rate:	no data available
Solvent separation test:	no data available
Solvent content:	no data available

**9.2. Other information**

Solid content:	no data available
no data available	

**SECTION 10: Stability and reactivity****10.1. Reactivity**

Vapour/air-mixtures are explosive at intense warming.

**10.2. Chemical stability**

Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**Reacts with the following substances:  
Oxidizing agents, Acids and bases.**10.4. Conditions to avoid**Heat, flames and sparks.  
Exposure to light.**10.5. Incompatible materials**

None known.

**10.6. Hazardous decomposition products**Carbon monoxide, Carbon dioxide (CO<sub>2</sub>)**SECTION 11: Toxicological information****11.1. Information on toxicological effects****Acute toxicity**LD<sub>50</sub>/oral/rat = 1535 mg/kg; LD<sub>50</sub>/oral/mouse = 1400 mg/kg  
LC<sub>50</sub>/inhalation/4 h/rat = 8000 ppm

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CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
108-94-1	cyclohexanone				
	oral	ATE 500 mg/kg			
	dermal	ATE 1100 mg/kg			
	inhalation vapour	ATE 11 mg/l			
	inhalation aerosol	ATE 1,5 mg/l			

#### Irritation and corrosivity

The product causes irritation of eyes, skin and mucous membranes.

#### Sensitising effects

May cause sensitisation by skin contact.

#### Carcinogenic/mutagenic/toxic effects for reproduction

Contains no ingredient listed as a carcinogen

#### STOT-single exposure

This information is not available.

#### STOT-repeated exposure

This information is not available.

#### Aspiration hazard

This information is not available.

#### Specific effects in experiment on an animal

LD50/rabbit skin = 948 mg/kg

#### Practical experience

#### Observations relevant to classification

Adverse human effects: mutagenic effects

#### Other observations

Risk of damages after often repeated exposure. Cough Skin irritation Shortness of breath Headache Vomiting

#### Further information

Other dangerous properties can not be excluded. Handle in accordance with good industrial hygiene and safety practice.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Acute fish toxicity = LD50 = 536 mg/l/48 h

#### 12.2. Persistence and degradability

Inherent biodegradability = 87 % after 14 days (IUCLID)

Readily biodegradable.

#### 12.3. Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 0,81

#### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
108-94-1	cyclohexanone	0,81

#### 12.4. Mobility in soil

no data available

#### 12.5. Results of PBT and vPvB assessment

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This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). no data available

**12.6. Other adverse effects**

Discharge into the environment must be avoided.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Advice on disposal**

In accordance with local and national regulations.

**Waste disposal number of waste from residues/unused products**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

**Waste disposal number of used product**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

**Waste disposal number of contaminated packaging**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste

**Contaminated packaging**

Dispose of as unused product.

**SECTION 14: Transport information****Land transport (ADR/RID)**

<b>14.1. UN number:</b>	UN 1915
<b>14.2. UN proper shipping name:</b>	CYCLOHEXANONE
<b>14.3. Transport hazard class(es):</b>	3
<b>14.4. Packing group:</b>	III
Hazard label:	3



Classification code:	F1
Limited quantity:	5 L
Transport category:	3
Hazard No:	30
Tunnel restriction code:	D/E

**Other applicable information (land transport)**

Excepted Quantities: E1

**Inland waterways transport (ADN)****Other applicable information (inland waterways transport)**

Not tested

**Marine transport (IMDG)**

<b>14.1. UN number:</b>	UN 1915
<b>14.2. UN proper shipping name:</b>	CYCLOHEXANONE
<b>14.3. Transport hazard class(es):</b>	3

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**14.4. Packing group:** III  
Hazard label: 3



Special Provisions: -  
Limited quantity: 5 L  
EmS: F-E, S-D

**Other applicable information (marine transport)**

Excepted Quantities: E1

**Air transport (ICAO-TI/IATA-DGR)**

**14.1. UN number:** UN 1915  
**14.2. UN proper shipping name:** CYCLOHEXANONE  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** III  
Hazard label: 3



Limited quantity Passenger: 10 L  
IATA-packing instructions - Passenger: 355  
IATA-max. quantity - Passenger: 60 L  
IATA-packing instructions - Cargo: 366  
IATA-max. quantity - Cargo: 220 L

**Other applicable information (air transport)**Excepted Quantities: E1  
Passenger-LQ: Y344**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: no

**14.6. Special precautions for user**

no data available

**14.7. Transport in bulk according to Annex II of Marpol and the IBC Code**

Not relevant

**Other applicable information**

Additional Information: This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit, Hazard Class: 9, UN Number 3316, Package group II, EMS Code: F-A, S-P  
These transport data apply to the entire pack

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Restrictions on use (REACH, annex XVII):

Entry 3: cyclohexanone

2010/75/EU (VOC): 100 % (948 g/l)  
2004/42/EC (VOC): 100 % (948 g/l)

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Information according to 2012/18/EU  
(SEVESO III):

P5c FLAMMABLE LIQUIDS

**Additional information**

The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008.

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water contaminating class (D):

1 - slightly water contaminating

**15.2. Chemical safety assessment**

For this substance a chemical safety assessment has not been carried out.

**SECTION 16: Other information****Changes**

Revision: 17.14.2018

Safety datasheet sections which have been updated: 2, 9, 11, 12

Revision: 28.02.2018

Safety datasheet sections which have been updated: 2, 11, 15

Revision: 30.06.2014

Safety datasheet sections which have been updated: 4-16

**Relevant H and EUH statements (number and full text)**

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H302+H312+H332	Harmful if swallowed, in contact with skin or if inhaled.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H332	Harmful if inhaled.