

## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 5.1 Revision Date 12.10.2013

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

#### 1.1 Product identifiers

Product name : Cyclohexanone

Product Number : W390909

Brand : Aldrich

Index-No. : 606-010-00-7

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. : 108-94-1

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

#### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Company Ltd.  
The Old Brickyard  
NEW ROAD, GILLINGHAM  
Dorset  
SP8 4XT  
UNITED KINGDOM

Telephone : +44 (0)1747 833000

Fax : +44 (0)1747 833313

E-mail address : eurtechserv@sial.com

#### 1.4 Emergency telephone number

Emergency Phone # : +44 (0)1747 833100

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3), H226

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Acute toxicity, Dermal (Category 4), H312

Skin irritation (Category 2), H315

Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

##### Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn	Harmful	R10
Xi	Irritant	R20/21/22
		R38, R41

For the full text of the R-phrases mentioned in this Section, see Section 16.

#### 2.2 Label elements

##### Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Danger

Hazard statement(s)

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 statement(s)

P280

Wear protective gloves/ 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.

Supplemental Hazard  
Statements

none

## 2.3 Other hazards - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula	:	C <sub>6</sub> H <sub>10</sub> O
Molecular Weight	:	98.14 g/mol
CAS-No.	:	108-94-1
EC-No.	:	203-631-1
Index-No.	:	606-010-00-7

#### Hazardous ingredients according to Regulation (EC) No 1272/2008

Component		Classification	Concentration
<b>Cyclohexanone</b>			
CAS-No.	108-94-1	Flam. Liq. 3; Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; H226, H302 + H312 + H332, H315, H318	<= 100 %
EC-No.	203-631-1		
Index-No.	606-010-00-7		

#### Hazardous ingredients according to Directive 1999/45/EC

Component		Classification	Concentration
<b>Cyclohexanone</b>			
CAS-No.	108-94-1	Xn, R10 - R20/21/22 - R38 - R41	<= 100 %
EC-No.	203-631-1		
Index-No.	606-010-00-7		

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

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

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

no data available

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**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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

Carbon oxides

**5.3 Advice for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**5.4 Further information**

Use water spray to cool unopened containers.

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**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing 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**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**6.3 Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

**6.4 Reference to other sections**

For disposal see section 13.

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**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

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

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**7.3 Specific end use(s)**

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

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**SECTION 8: Exposure controls/personal protection****8.1 Control parameters**

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Cyclohexanone	108-94-1	STEL	20 ppm	UK. EH40 WEL - Workplace Exposure Limits
	Remarks	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
		TWA	10 ppm	UK. EH40 WEL - Workplace Exposure Limits
		Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
		TWA	10 ppm 40.8 mg/m <sup>3</sup>	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Identifies the possibility of significant uptake through the skin Indicative		
		STEL	20 ppm 81.6 mg/m <sup>3</sup>	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Identifies the possibility of significant uptake through the skin Indicative		

#### Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Cyclohexanone	108-94-1	cyclohexanol	2mmol/mol creatinine	Urine	UK. Biological monitoring guidance values
	Remarks	Post shift			

## 8.2 Exposure controls

### Appropriate engineering controls

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

### Personal protective equipment

#### Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact

Material: Nature latex/chloroprene

Minimum layer thickness: 0.6 mm

Break through time: 35 min

Material tested: Lapren® (KCL 706 / Aldrich Z677558, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de,  
test method: EN374

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. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                                                 |                                                                    |
|-------------------------------------------------|--------------------------------------------------------------------|
| a) Appearance                                   | Form: clear, liquid<br>Colour: colourless                          |
| b) Odour                                        | no data available                                                  |
| c) Odour Threshold                              | no data available                                                  |
| d) pH                                           | no data available                                                  |
| e) Melting point/freezing point                 | Melting point/range: -47 °C - lit.                                 |
| f) Initial boiling point and boiling range      | 155 °C - lit.                                                      |
| g) Flash point                                  | 44 °C - closed cup                                                 |
| h) Evaporation rate                             | no data available                                                  |
| i) Flammability (solid, gas)                    | no data available                                                  |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 9.4 %(V)<br>Lower explosion limit: 1.1 %(V) |
| k) Vapour pressure                              | 4.5 hPa at 20 °C<br>13.3 hPa at 38.7 °C                            |
| l) Vapour density                               | 3.39 - (Air = 1.0)                                                 |
| m) Relative density                             | 0.947 g/cm <sup>3</sup> at 25 °C                                   |
| n) Water solubility                             | 86 g/l at 20 °C                                                    |
| o) Partition coefficient: n-octanol/water       | log Pow: 0.81                                                      |
| p) Auto-ignition temperature                    | 420 °C at 1,013 hPa                                                |
| q) Decomposition temperature                    | no data available                                                  |

- r) Viscosity no data available
- s) Explosive properties no data available
- t) Oxidizing properties no data available

## 9.2 Other safety information

- Surface tension 35.05 mN/m at 20 °C
- Relative vapour density 3.39 - (Air = 1.0)

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

no data available

### 10.4 Conditions to avoid

Heat, flames and sparks.

### 10.5 Incompatible materials

Oxidizing agents, Plastics

### 10.6 Hazardous decomposition products

Other decomposition products - no data available  
In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - rat - 1,534 mg/kg

LC50 Inhalation - rat - 4 h - > 6.2 mg/l

LD50 Dermal - rabbit - 794 - 3,160 mg/kg

#### Skin corrosion/irritation

Skin - rabbit

Result: Irritating to skin.  
(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Eyes - rabbit

Result: Risk of serious damage to eyes. - 24 h

#### Respiratory or skin sensitisation

no data available

#### Germ cell mutagenicity

Not mutagenic in Ames Test. In vitro tests showed mutagenic effects

Ames test

S. typhimurium

Result: negative

Human

fibroblast

Result: Laboratory experiments have shown mutagenic effects.

#### Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Cyclohexanone)

### **Reproductive toxicity**

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

### **Specific target organ toxicity - single exposure**

no data available

Acute inhalation toxicity - Breathing difficulties

### **Specific target organ toxicity - repeated exposure**

no data available

### **Aspiration hazard**

no data available

### **Additional Information**

RTECS: GW1050000

Prolonged or repeated exposure to skin causes defatting and dermatitis., Cough, Shortness of breath, Headache, Nausea, Vomiting, Central nervous system depression, Incoordination., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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## **SECTION 12: Ecological information**

### **12.1 Toxicity**

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 820 mg/l - 24 h

### **12.2 Persistence and degradability**

Biodegradability Result: 90 - 100 % - Readily biodegradable.

### **12.3 Bioaccumulative potential**

no data available

### **12.4 Mobility in soil**

no data available

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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### **12.6 Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

#### **Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

#### **Contaminated packaging**

Dispose of as unused product.

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## **SECTION 14: Transport information**

### **14.1 UN number**

ADR/RID: 1915

IMDG: 1915

IATA: 1915

### **14.2 UN proper shipping name**

ADR/RID: CYCLOHEXANONE

IMDG: CYCLOHEXANONE

IATA: Cyclohexanone

**14.3 Transport hazard class(es)**

ADR/RID: 3

IMDG: 3

IATA: 3

**14.4 Packaging group**

ADR/RID: III

IMDG: III

IATA: III

**14.5 Environmental hazards**

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

**14.6 Special precautions for user**

no data available

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**SECTION 15: Regulatory information**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

no data available

**15.2 Chemical Safety Assessment**

For this product a chemical safety assessment was not carried out

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**SECTION 16: Other information****Full text of H-Statements referred to under sections 2 and 3.**

Acute Tox.	Acute toxicity
Eye Dam.	Serious eye damage
Flam. Liq.	Flammable liquids
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.

**Full text of R-phrases referred to under sections 2 and 3**

Xn	Harmful
R10	Flammable.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.

**Further information**

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