# SAFETY DATA SHEET

According to 13 December 2014, No:29204, “Ministry of Environment and Urbanization; Regulation on Safety data sheets regarding hazardous substances and mixtures”.

# Cyclohexanone

| Version | Revision Date: | SDS Number: | Date of last issue: - |
|---|---|---|---|
| 1.0 | 21.02.2019 | 300000020184 | Date of first issue: 21.02.2019 |

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

### 1.1 Product identifier

| | | |
|---|---|---|
| Trade name | : | Cyclohexanone |
| Product code | : | 000000005725970040 |
| Substance name | : | 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 | : | Solvent |

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

| | | |
|---|---|---|
| Company | : | Biesterfeld International GmbH<br>Ferdinandstr. 41<br>20095 Hamburg<br>Germany |
| Telephone | : | +4940320080 |
| E-mail address of person responsible for the SDS | : | sds-inquiry@biesterfeld.com |

### 1.4 Emergency telephone number

CHEMTREC
Emergency telephone number :+1 703-741-5970

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification T.R. SEA No 28848**

| | |
|---|---|
| Flammable liquids, Category 3 | H226: Flammable liquid and vapour. |
| Acute toxicity, Category 4 | H302: Harmful if swallowed. |
| Acute toxicity, Category 4 | H332: Harmful if inhaled. |

| | |
|---|---|
| Skin irritation, Category 2 | H315: Causes skin irritation. |
| Serious eye damage, Category 1 | H318: Causes serious eye damage. |

### 2.2 Label elements

**Labelling T.R. SEA No 28848**

Hazard pictograms :

Signal word : Danger

Hazard statements :
H226 Flammable liquid and vapour.
H302 + H332 Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H318 Causes serious eye damage.

Precautionary statements :

**Prevention:**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Substance name : cyclohexanone

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

EC-No. : 203-631-1

Chemical nature : organic

**Hazardous components**

| Chemical name | CAS-No.<br>EC-No. | Concentration (% w/w) |
|---|---|---|
| cyclohexanone | 108-94-1<br>203-631-1 | >= 90 - <= 100 |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

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

None known.

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

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing : High volume water jet

media

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

Hazardous combustion products : See section 10.

**5.3 Advice for firefighters**

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Further information : For safety reasons in case of fire, cans should be stored separately in closed containments.
Use water spray to cool unopened containers.

## SECTION 6: Accidental release measures

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

Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.

**6.2 Environmental precautions**

Environmental precautions : Try to prevent the material from entering drains or water courses.

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

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

**6.4 Reference to other sections**

## SECTION 7: Handling and storage

**7.1 Precautions for safe handling**

Advice on safe handling : Avoid exceeding the given occupational exposure limits (see section 8).
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.

Advice on protection against fire and explosion : Avoid formation of aerosol. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

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

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place.

Further information on storage stability : No decomposition if stored and applied as directed.

### 7.3 Specific end use(s)

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Occupational Exposure Limits**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters | Basis |
|---|---|---|---|---|
| cyclohexanone | 108-94-1 | STEL 15 min | 20 ppm<br>81,6 mg/m3 | TR OEL |
| Further information | A skin notation assigned to the OEL identifies the possibility of significant uptake through the skin. | | | |
| | | TWA (8 Hour) | 10 ppm<br>40,8 mg/m3 | TR OEL |
| Further information | A skin notation assigned to the OEL identifies the possibility of significant uptake through the skin. | | | |
| | | TWA | 10 ppm<br>40,8 mg/m3 | 2000/39/EC |
| Further information | Identifies the possibility of significant uptake through the skin, Indicative | | | |
| | | STEL | 20 ppm<br>81,6 mg/m3 | 2000/39/EC |
| Further information | Identifies the possibility of significant uptake through the skin, Indicative | | | |

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

| Substance name | End Use | Exposure routes | Potential health effects | Value |
|---|---|---|---|---|
| cyclohexanone | Workers | Inhalation | Long-term systemic effects | 40 mg/m3 |
| | Workers | Inhalation | Acute systemic effects | 80 mg/m3 |
| | Workers | Inhalation | Long-term local effects | 40 mg/m3 |
| | Workers | Inhalation | Acute local effects | 80 mg/m3 |
| | Workers | Dermal | Long-term systemic effects | 4 mg/kg bw/day |

| | | | | |
|---|---|---|---|---|
| | Workers | Dermal | Acute systemic effects | 4 mg/kg bw/day |
| | Consumers | Inhalation | Long-term systemic effects | 10 mg/m3 |
| | Consumers | Inhalation | Acute systemic effects | 20 mg/m3 |
| | Consumers | Inhalation | Long-term local effects | 20 mg/m3 |
| | Consumers | Inhalation | Acute systemic effects | 40 mg/m3 |
| | Consumers | Dermal | Long-term systemic effects | 1 mg/kg bw/day |
| | Consumers | Dermal | Acute systemic effects | 1 mg/kg bw/day |
| | Consumers | Ingestion | Long-term systemic effects | 1,5 mg/kg bw/day |
| | Consumers | Ingestion | Acute systemic effects | 1,5 mg/kg bw/day |

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

| Substance name | Environmental Compartment | Value |
|---|---|---|
| cyclohexanone | Fresh water | 0,033 mg/l |
| | Marine water | 0,003 mg/l |
| | Sewage treatment plant | 10 mg/l |
| | Fresh water sediment | 0,168 mg/kg dry weight (d.w.) |
| | Marine sediment | 0,017 mg/kg dry weight (d.w.) |
| | Soil | 0,014 mg/kg dry weight (d.w.) |

### 8.2 Exposure controls

**Personal protective equipment**

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

Hand protection

Material : butyl-rubber
Break through time : 60 min
Glove thickness : 0,3 mm

Remarks : Solvent-resistant gloves The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Before removing gloves clean them with soap and water.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

| | | |
|---|---|---|
| Respiratory protection | : | No personal respiratory protective equipment normally required.<br><br>In the case of vapour formation use a respirator with an approved filter. |
| Filter type | : | Type A (A) |

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | liquid |
| Colour | : | colourless |
| Odour | : | camphor-like |
| pH | : | No data available<br><br>No data available |
| Melting point/range | : | -31 °C |
| Boiling point/boiling range | : | 153 - 156 °C |
| Flash point | : | 44 °C |
| Upper explosion limit / Upper flammability limit | : | 9,4 %(V)<br>380 g/m3 |
| Lower explosion limit / Lower flammability limit | : | 1,3 %(V)<br>53 g/m3 |
| Vapour pressure | : | 7 hPa (30 °C) |
| Relative density | : | 3,38<br>Reference substance: Air |
| Density | : | 0,9465 g/cm3 (20 °C) |
| Solubility(ies)<br>Water solubility | : | 86 g/l (20 °C)<br><br>86 g/l (20 °C) |
| Partition coefficient: n-octanol/water | : | log Pow: 0,86 (25 °C) |
| Auto-ignition temperature | : | 420 °C |

Viscosity
Viscosity, dynamic : 2,2 mPa.s (25 °C)

**9.2 Other information**

Refractive index : 1,4522

Molecular weight : 98,15 g/mol

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

Stable under recommended storage conditions.

**10.2 Chemical stability**

No decomposition if stored and applied as directed.

**10.3 Possibility of hazardous reactions**

Hazardous reactions : Stable under recommended storage conditions.
No decomposition if used as directed.

Vapours may form explosive mixture with air.

**10.4 Conditions to avoid**

Conditions to avoid : Heat, flames and sparks.

**10.5 Incompatible materials**

Materials to avoid : Strong oxidizing agents
Peroxides
Nitric acid

**10.6 Hazardous decomposition products**

Carbon oxides

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity**

**Components:**

**cyclohexanone:**

Acute oral toxicity : LD50 (Rat, male and female): 1.890 mg/kg

Acute inhalation toxicity : LC50 (Rat): 6,2 mg/l
Exposure time: 4,0 h

Acute dermal toxicity : Remarks: No data available

**Skin corrosion/irritation**

**Product:**

Result : Irritating to skin.

**Components:**

**cyclohexanone:**

Species : Rabbit
Assessment : Irritating to skin.
Method : OECD Test Guideline 404
Result : Skin irritation

**Serious eye damage/eye irritation**

**Product:**

Result : Irreversible effects on the eye

**Components:**

**cyclohexanone:**

Result : Irreversible effects on the eye

**Respiratory or skin sensitisation**

**Product:**

Remarks : No data available

**Components:**

**cyclohexanone:**

Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Result : negative

**Germ cell mutagenicity**

**Components:**

**cyclohexanone:**

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

**Carcinogenicity**

**Components:**

**cyclohexanone:**

| | | |
|---|---|---|
| Method | : | OECD Test Guideline 453 |
| Result | : | negative |
| Remarks | : | IARC (International Agency for Research on Cancer ) No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |

**Reproductive toxicity**

**Components:**

**cyclohexanone:**

| | | |
|---|---|---|
| Effects on fertility | : | Method: OECD Test Guideline 416<br>Result: Animal testing did not show any effects on fertility. |
| Effects on foetal development | : | Method: OECD Test Guideline 414<br>Result: No teratogenic effects |

**Repeated dose toxicity**

**Components:**

**cyclohexanone:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| NOAEL | : | 143 mg/kg bw/day |
| Application Route | : | Oral |
| Method | : | OECD Test Guideline 408 |

**Further information**

**Product:**

| | | |
|---|---|---|
| Remarks | : | Solvents may degrease the skin. |

## SECTION 12: Ecological information

### 12.1 Toxicity

**Components:**

**cyclohexanone:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Pimephales promelas (fathead minnow)): 527 mg/l |

Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (activated sludge): > 1.000 mg/l
Exposure time: 0,5 h
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity) : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: No data available

### 12.2 Persistence and degradability

**Components:**

**cyclohexanone:**

Biodegradability : Result: rapidly biodegradable
Biodegradation: 90 - 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

### 12.3 Bioaccumulative potential

**Components:**

**cyclohexanone:**

Partition coefficient: n-octanol/water : log Pow: 0,86 (25 °C)

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

**Product:**

Assessment : This substance/mixture contains no components considered

to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

### 12.6 Other adverse effects

**Product:**

Additional ecological information : There is no data available for this product.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

## SECTION 14: Transport information

### 14.1 UN number

**ADN** : UN 1915

**ADR** : UN 1915

**RID** : UN 1915

**IMDG** : UN 1915

**IATA** : UN 1915

### 14.2 UN proper shipping name

**ADN** : CYCLOHEXANONE

**ADR** : CYCLOHEXANONE

**RID** : CYCLOHEXANONE

**IMDG** : CYCLOHEXANONE

**IATA** : Cyclohexanone

### 14.3 Transport hazard class(es)

**ADN** : 3

| | | |
|---|---|---|
| **ADR** | : | 3 |
| **RID** | : | 3 |
| **IMDG** | : | 3 |
| **IATA** | : | 3 |

**14.4 Packing group**

**ADN**

| | | |
|---|---|---|
| Packing group | : | III |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 30 |
| Labels | : | 3 |

**ADR**

| | | |
|---|---|---|
| Packing group | : | III |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 30 |
| Labels | : | 3 |
| Tunnel restriction code | : | (D/E) |

**RID**

| | | |
|---|---|---|
| Packing group | : | III |
| Classification Code | : | F1 |
| Hazard Identification Number | : | 30 |
| Labels | : | 3 |

**IMDG**

| | | |
|---|---|---|
| Packing group | : | III |
| Labels | : | 3 |
| EmS Code | : | F-E, S-D |

**IATA (Cargo)**

| | | |
|---|---|---|
| Packing instruction (cargo aircraft) | : | 366 |
| Packing instruction (LQ) | : | Y344 |
| Packing group | : | III |
| Labels | : | Flammable Liquids |

**IATA (Passenger)**

| | | |
|---|---|---|
| Packing instruction (passenger aircraft) | : | 355 |
| Packing instruction (LQ) | : | Y344 |
| Packing group | : | III |
| Labels | : | Flammable Liquids |

**14.5 Environmental hazards**

**ADN**

| | | |
|---|---|---|
| Environmentally hazardous | : | no |

**ADR**

| | | |
|---|---|---|
| Environmentally hazardous | : | no |

**RID**

| | | |
|---|---|---|
| Environmentally hazardous | : | no |

**IMDG**
Marine pollutant : no

### 14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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

Not applicable for product as supplied.

## SECTION 15: Regulatory information

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

Ministry of Environment and Forestry; Regulation on Restriction Regarding to Manufacture, Placing on the Market and Use of Certain Hazardous Substances, Preparations and Articles. Dated 26 December 2008, Numbered 27092 (Bis). : Not applicable

**Other regulations:**

According to 13 December 2014, No:29204, “Ministry of Environment and Urbanization; Regulation on Safety data sheets regarding hazardous substances and mixtures”.
Regulation on Classification, Packaging and Labelling of Dangerous Substances and Preparations. Dated 26 December 2008, Numbered 27092 (Bis) Ministry of Environment and Forestry”.
Regulation on Classification, Labelling and Packaging of Substances and Mixtures. Dated 11 December 2013, Numbered 28848 (Bis) Ministry of Environment and Forestry.
Regulation on Health and Safety Measures Of Working with Chemicals Substances Dated 12.08.13, numbered 28733 Ministry of Labour and Social Security.

## SECTION 16: Other information

**Full text of other abbreviations**

| | | |
|---|---|---|
| 2000/39/EC | : | Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values |
| TR OEL | : | Turkey. Chemical Agents at Work - Annex I: Indicative occupational exposure limit values |
| 2000/39/EC / TWA | : | Limit Value - eight hours |
| 2000/39/EC / STEL | : | Short term exposure limit |
| TR OEL / TWA (8 Hour) | : | Measured or calculated in relation to a reference period of eight-hour time-weighted average |
| TR OEL / STEL 15 min | : | A limit value above which exposure should not occur and is related to a 15-minute priod, unless otherwise specified |

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous

Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

**Further information**

| | | |
|---|---|---|
| Sources of key data used to compile the Safety Data Sheet | : | ECHA Information on Registered Substances. http://apps.echa.europa.eu/registered/registered-sub.aspx |

SDS Author

Name: Ahmet Murat Göktan

Certificate Number: TSE-GBF-A-0-2463

Valid until: 07.12.2019

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

TR / EN