

1 Identification

Product identifier

Product name: Cyclohexyl isocyanate

Stock number: B23059, L13768

CAS Number:

3173-53-3

EC number:

221-639-3

Relevant identified uses of the substance or mixture and uses advised against.

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 1 H330 Fatal if inhaled.



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.



GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

STOT SE 3 H335 May cause respiratory irritation.

Hazards not otherwise classified Lachrymator

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms



GHS02 GHS05 GHS06 GHS08

Signal word

Danger

Hazard statements

H226 Flammable liquid and vapour.

H301+H311 Toxic if swallowed or in contact with skin.

H330 Fatal if inhaled.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P320 Specific treatment is urgent (see on this label).

P361 Take off immediately all contaminated clothing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

B3 - Combustible liquid

D1A - Very toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects

Product name: Cyclohexyl isocyanate

(Contd. of page 1)



Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

| | | |
|------------|---|----------------------------|
| HEALTH | 4 | Health (acute effects) = 4 |
| FIRE | 2 | Flammability = 2 |
| REACTIVITY | 1 | Physical Hazard = 1 |

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances
CAS# Description:
3173-53-3 Cyclohexyl isocyanate
Identification number(s):
EC number: 221-639-3

4 First-aid measures

Description of first aid measures
General information
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed No further relevant information available.
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents CO₂, sand, extinguishing powder. Do not use water.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Hydrogen cyanide (HCN)
Nitrogen oxides (NO_x)
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.
Methods and material for containment and cleaning up:
Keep away from ignition sources.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Prevention of secondary hazards: Keep away from ignition sources.
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 disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.
Prevent formation of aerosols.
Information about protection against explosions and fires:
Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.
Keep ignition sources away.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
Store away from oxidizing agents.

(Contd. on page 3)
USA

Product name: **Cyclohexyl isocyanate**

(Contd. of page 2)

Store away from water/moisture.
Further information about storage conditions:
Store under dry inert gas.
This product is moisture sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from humidity and water.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Control parameters
Components with limit values that require monitoring at the workplace: Not required.
Additional information: No data
Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment: Use self-contained respiratory protective device in emergency situations.
Protection of hands:
Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.
Eye protection: Tightly sealed goggles
Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form: Liquid
Color: Colorless
Odor: Pungent
Odor threshold: Not determined.

pH-value: Not determined.

Change in condition

Melting point/Melting range: -80 °C (-112 °F)
Boiling point/Boiling range: 168-170 °C (334-338 °F)
Sublimation temperature / start: Not determined

Flash point: 48 °C (118 °F)
Flammability (solid, gaseous) Not determined.
Ignition temperature: 390 °C (734 °F)
Decomposition temperature: Not determined
Auto igniting: Not determined.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

Explosion limits:

Lower: Not determined
Upper: Not determined
Vapor pressure at 20 °C (68 °F): 2.2 hPa (2 mm Hg)
Density at 20 °C (68 °F): 0.98 g/cm³ (8.178 lbs/gal)
Relative density Not determined.
Vapor density Not determined.
Evaporation rate Not determined.
Solubility in / Miscibility with
Water: Decomposes
Alcohols: Decomposes
Partition coefficient (n-octanol/water): Not determined.
Viscosity:
dynamic: Not determined.
kinematic: Not determined.
Other information No further relevant information available.

10 Stability and reactivity

Reactivity No information known.
Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions No dangerous reactions known
Conditions to avoid No further relevant information available.
Incompatible materials:
Oxidizing agents
Alcohols
Amines
Water/moisture
Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Hydrogen cyanide
Nitrogen oxides

Product name: Cyclohexyl isocyanate

(Contd. of page 3)

11 Toxicological information

Information on toxicological effects

Acute toxicity:

Toxic in contact with skin.

Toxic if swallowed.

Fatal if inhaled.

Danger through skin absorption.

LD/LC50 values that are relevant for classification: No data

Skin irritation or corrosion: Causes skin irritation.

Eye irritation or corrosion:

This product is a lachrymator.

Causes serious eye damage.

Sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity: No effects known.

Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity: No effects known.

Specific target organ system toxicity - repeated exposure: No effects known.

Specific target organ system toxicity - single exposure: May cause respiratory irritation.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: No effects known.

Subacute to chronic toxicity:

Isocyanates are extremely irritating to the skin, eyes and mucous membranes. Exposure may be fatal. Symptoms include burning sensation, coughing, wheezing, laryngitis, headache, nausea and vomiting.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information

Toxicity

Aquatic toxicity: No further relevant information available.

Persistence and degradability: No further relevant information available.

Bioaccumulative potential: No further relevant information available.

Mobility in soil: No further relevant information available.

Ecotoxicological effects:

Remark: Toxic for aquatic organisms

Additional ecological information:

General notes:

Do not allow material to be released to the environment without proper governmental permits.

Toxic for aquatic organisms

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

Danger to drinking water if even small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Toxic to aquatic life.

May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods

Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information

UN-Number

DOT, IMDG, IATA

UN2488

UN proper shipping name

DOT

IMDG, IATA

Cyclohexyl isocyanate
CYCLOHEXYL ISOCYANATE

Transport hazard class(es)

DOT



Class

Label

Class

Label

IMDG, IATA

6.1 Toxic substances.

6.1+3

6.1 (TF1) Toxic substances

6.1+3



Class

Label

6.1 Toxic substances.

6.1+3

Packing group

DOT, IMDG, IATA

I

Environmental hazards:

Environmentally hazardous substance, liquid

Special precautions for user

Warning: Toxic substances





Poison inhalation hazard:

Yes

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

(Contd. on page 5)
USA

| | |
|--|--|
| Product name: Cyclohexyl isocyanate | |
| (Contd. of page 4) | |
| Transport/Additional information: | |
| DOT | No |
| Marine Pollutant (DOT): | |
| Remarks: | This material is poisonous by inhalation in Hazard Zone B. |
| UN "Model Regulation": | UN2488, Cyclohexyl isocyanate, 6.1 (3), I |

| | |
|--|--|
| 15 Regulatory information | |
| Safety, health and environmental regulations/legislation specific for the substance or mixture | |
| GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) | |
| Hazard pictograms | |
|     | |
| GHS02 GHS05 GHS06 GHS08 | |
| Signal word Danger | |
| Hazard statements | |
| H226 | Flammable liquid and vapour. |
| H301+H311 | Toxic if swallowed or in contact with skin. |
| H330 | Fatal if inhaled. |
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| Precautionary statements | |
| P210 | Keep away from heat/sparks/open flames/hot surfaces. No smoking. |
| P301+P310 | IF SWALLOWED: Immediately call a POISON CENTER/ doctor/... |
| P303+P361+P353 | If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P320 | Specific treatment is urgent (see on this label). |
| P361 | Take off immediately all contaminated clothing. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container in accordance with local/regional/national/international regulations. |
| National regulations | |
| All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. | |
| All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL). | |
| SARA Section 313 (specific toxic chemical listings) Substance is not listed. | |
| California Proposition 65 | |
| Prop 65 - Chemicals known to cause cancer Substance is not listed. | |
| Prop 65 - Developmental toxicity Substance is not listed. | |
| Prop 65 - Developmental toxicity, female Substance is not listed. | |
| Prop 65 - Developmental toxicity, male Substance is not listed. | |
| Information about limitation of use: For use only by technically qualified individuals. | |
| Other regulations, limitations and prohibitive regulations | |
| Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. | |
| The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed. | |
| Substance is not listed. | |
| Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. | |
| Chemical safety assessment: A Chemical Safety Assessment has not been carried out. | |

| | |
|---|--|
| 16 Other information | |
| Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. | |
| Department issuing SDS: Global Marketing Department | |
| Date of preparation / last revision 11/23/2015 / - | |
| Abbreviations and acronyms: | |
| RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) | |
| IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) | |
| ICAO: International Civil Aviation Organization | |
| ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO) | |
| 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 | |
| DOT: US Department of Transportation | |
| IATA: International Air Transport Association | |
| EINECS: European Inventory of Existing Commercial Chemical Substances | |
| CAS: Chemical Abstracts Service (division of the American Chemical Society) | |
| HMIS: Hazardous Materials Identification System (USA) | |
| WHMIS: Workplace Hazardous Materials Information System (Canada) | |
| LC50: Lethal concentration, 50 percent | |
| LD50: Lethal dose, 50 percent | |
| vPvB: very Persistent and very Bioaccumulative | |
| ACGIH: American Conference of Governmental Industrial Hygienists (USA) | |
| OSHA: Occupational Safety and Health Administration (USA) | |
| NTP: National Toxicology Program (USA) | |
| IARC: International Agency for Research on Cancer | |
| EPA: Environmental Protection Agency (USA) | |