

ALFAA44087

## Dicyclohexylmethane 4,4'-diisocyanate

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

产品说明: 二环己基甲烷-4,4'-二异氰酸酯, 异构体混合物  
 Product Description: Dicyclohexylmethane 4,4'-diisocyanate

Cat No. : 44087  
 CAS No 5124-30-1  
 Molecular Formula C15 H22 N2 O2

Supplier Alfa Aesar  
 Avocado Research Chemicals, Ltd.  
 Shore Road  
 Port of Heysham Industrial Park  
 Heysham, Lancashire LA3 2XY  
 United Kingdom  
 Office Tel: +44 (0) 1524 850506  
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Emergency Telephone Number Call Carechem 24 at  
 +44 (0) 1865 407333 (English only);  
 +44 (0) 1235 239670 (Multi-language)

E-mail address uktech@alfa.com  
 www.alfa.com  
 Product Safety Department

Recommended Use Laboratory chemicals.  
 Uses advised against No Information available

### SECTION 2. HAZARD IDENTIFICATION

**Physical State**  
 Liquid

**Appearance**  
 No information available

**Odor**  
 No information available

#### Emergency Overview

Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. Moisture sensitive.

#### Classification of the substance or mixture

|  |            |
|--|------------|
| Acute Inhalation Toxicity - Vapors                 | Category 2 |
| Skin Corrosion/Irritation                          | Category 2 |
| Serious Eye Damage/Eye Irritation                  | Category 2 |
| Respiratory Sensitization                          | Category 1 |
| Skin Sensitization                                 | Category 1 |
| Specific target organ toxicity - (single exposure) | Category 3 |

#### Label Elements

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## Dicyclohexylmethane 4,4'-diisocyanate

**Signal Word****Danger****Hazard Statements**

H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H319 - Causes serious eye irritation  
H330 - Fatal if inhaled  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H335 - May cause respiratory irritation

**Precautionary Statements****Prevention**

P264 - Wash face, hands and any exposed skin thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P272 - Contaminated work clothing should not be allowed out of the workplace  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P285 - In case of inadequate ventilation wear respiratory protection

**Response**

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician  
P362 + P364 - Take off contaminated clothing and wash it before reuse

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up

**Disposal**

P501 - Dispose of contents/ container to an approved waste disposal plant

**Physical and Chemical Hazards**

None identified.

**Health Hazards**

Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.

**Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

**Other Hazards****SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Component                                | CAS No    | Weight % |
|--|-----------|----------|
| 4,4'-Methylenebis(cyclohexyl isocyanate) | 5124-30-1 | >88      |

**SECTION 4. FIRST AID MEASURES****General Advice**

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

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**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

**Ingestion**

Do NOT induce vomiting. Call a physician or poison control center immediately.

**Most important symptoms and effects**

May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

**Self-Protection of the First Aider**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**Notes to Physician**

Treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**

No information available.

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions**

Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

**Environmental Precautions**

Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

**Methods for Containment and Clean Up**

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

Refer to protective measures listed in Sections 8 and 13.

### SECTION 7. HANDLING AND STORAGE

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## Dicyclohexylmethane 4,4'-diisocyanate

### Handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

### Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere.

### Specific Use(s)

Use in laboratories

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

| Component                                | China | Taiwan | Hong Kong | The United Kingdom   |
|--|-------|--------|-----------|--|
| 4,4'-Methylenebis(cyclohexyl isocyanate) | -     | -      | -         | STEL: 0.07 mg/m <sup>3</sup> 15 min<br>TWA: 0.02 mg/m <sup>3</sup> 8 hr<br>Resp. Sens. |

| Component                                | ACGIH TLV      | OSHA PEL   | NIOSH IDLH   | European Union |
|--|----------------|--|--|----------------|
| 4,4'-Methylenebis(cyclohexyl isocyanate) | TWA: 0.005 ppm | Skin<br>(Vacated) Ceiling: 0.01 ppm<br>(Vacated) Ceiling: 0.11 mg/m <sup>3</sup> | Ceiling: 0.01 ppm<br>Ceiling: 0.11 mg/m <sup>3</sup> |                |

### Exposure Controls

#### Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

#### Personal protective equipment

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Nitrile rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Neoprene       | recommendations   |                 |             |                       |
| Natural rubber |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection** Long sleeved clothing

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to

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## Dicyclohexylmethane 4,4'-diisocyanate

EN14387

**Small scale/Laboratory use**

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

When RPE is used a face piece Fit Test should be conducted

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

Prevent product from entering drains. Do not allow material to contaminate ground water system.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**
**Appearance****Physical State**

Liquid

**Odor**

No information available

**Odor Threshold**

No data available

**pH**

No information available

**Melting Point/Range**

19 - 23 °C / 66.2 - 73.4 °F

**Softening Point**

No data available

**Boiling Point/Range**

112 - 114 °C / 233.6 - 237.2 °F @ 1010 hPa

**Flash Point**

113 °C / 235.4 °F

**Method -** No information available**Evaporation Rate**

No data available

**Flammability (solid,gas)**

Not applicable

Liquid

**Explosion Limits**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

(Air = 1.0)

**Specific Gravity / Density**

1.066

**Bulk Density**

Not applicable

Liquid

**Water Solubility**

Soluble

**Solubility in other solvents**

No information available

**Partition Coefficient (n-octanol/water)****Autoignition Temperature**

No data available

**Decomposition Temperature**

No data available

**Viscosity**

No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**Molecular Formula**

C15 H22 N2 O2

**Molecular Weight**

262.35

**SECTION 10. STABILITY AND REACTIVITY**
**Stability**

Moisture sensitive.

**Hazardous Reactions**

None under normal processing.

**Hazardous Polymerization**

Hazardous polymerization does not occur.

**Conditions to Avoid**

Incompatible products. Excess heat. Exposure to moist air or water.

**Materials to avoid**

Strong oxidizing agents. Amines. Strong bases. Heavy metals. Alcohols.

**Hazardous Decomposition Products** Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>).

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## Dicyclohexylmethane 4,4'-diisocyanate

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Product Information

#### (a) acute toxicity; Toxicology data for the components

| Component                                | LD50 Oral                 | LD50 Dermal                   | LC50 Inhalation                          |
|--|---------------------------|-------------------------------|--|
| 4,4'-Methylenebis(cyclohexyl isocyanate) | LD50 = 9900 mg/kg ( Rat ) | LD50 > 10000 mg/kg ( Rabbit ) | LC50 = 434 mg/m <sup>3</sup> ( Rat ) 4 h |

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

Respiratory Category 1  
Skin Category 1

May cause sensitization by skin contact

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system

(i) STOT-repeated exposure; No data available

Target Organs No information available.

(j) aspiration hazard; No data available

**Symptoms / effects, both acute and delayed** Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity effects

Do not empty into drains. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

| Component                                | Freshwater Fish        | Water Flea | Freshwater Algae | Microtox |
|--|------------------------|------------|------------------|----------|
| 4,4'-Methylenebis(cyclohexyl isocyanate) | 1.2-2.76 mg/L LC50 96h |            |                  |          |

#### Persistence and Degradability

##### Persistence

Soluble in water, Persistence is unlikely, based on information available.

##### Degradation in sewage treatment plant

Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

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## Dicyclohexylmethane 4,4'-diisocyanate

|  |   |
|--|---|
| <b>Bioaccumulative Potential</b>       | Bioaccumulation is unlikely   |
| <b>Mobility in soil</b>                | The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility Highly mobile in soils |
| <b>Endocrine Disruptor Information</b> | This product does not contain any known or suspected endocrine disruptors   |
| <b>Persistent Organic Pollutant</b>    | This product does not contain any known or suspected substance  |
| <b>Ozone Depletion Potential</b>       | This product does not contain any known or suspected substance  |

### SECTION 13. DISPOSAL CONSIDERATIONS

|  |  |
|--|--|
| <b>Waste from Residues/Unused Products</b> | Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. |
| <b>Contaminated Packaging</b>              | Dispose of this container to hazardous or special waste collection point.  |
| <b>Other Information</b>                   | Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.                   |

### SECTION 14. TRANSPORT INFORMATION

#### Road and Rail Transport

|                                |                                       |
|--------------------------------|---------------------------------------|
| <b>UN-No</b>                   | UN2206                                |
| <b>Proper Shipping Name</b>    | Isocyanates, toxic, n.o.s.            |
| <b>Technical Shipping Name</b> | Methylene bis(4-cyclohexylisocyanate) |
| <b>Hazard Class</b>            | 6.1                                   |
| <b>Packing Group</b>           | II                                    |

#### IMDG/IMO

|                                |                                       |
|--------------------------------|---------------------------------------|
| <b>UN-No</b>                   | UN2206                                |
| <b>Proper Shipping Name</b>    | Isocyanates, toxic, n.o.s.            |
| <b>Technical Shipping Name</b> | Methylene bis(4-cyclohexylisocyanate) |
| <b>Hazard Class</b>            | 6.1                                   |
| <b>Packing Group</b>           | II                                    |

#### IATA

|                                |                                       |
|--------------------------------|---------------------------------------|
| <b>UN-No</b>                   | UN2206                                |
| <b>Proper Shipping Name</b>    | Isocyanates, toxic, n.o.s.            |
| <b>Technical Shipping Name</b> | Methylene bis(4-cyclohexylisocyanate) |
| <b>Hazard Class</b>            | 6.1                                   |
| <b>Packing Group</b>           | II                                    |

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Special Precautions for User</b> | No special precautions required |
|-------------------------------------|---------------------------------|

### SECTION 15. REGULATORY INFORMATION

#### **International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

| Component | The Inventory of | List of dangerous | TCSI | IECSC | EINECS | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL |
|-----------|------------------|-------------------|------|-------|--------|------|-----|-------|------|------|------|------|
|-----------|------------------|-------------------|------|-------|--------|------|-----|-------|------|------|------|------|

# SAFETY DATA SHEET

## Dicyclohexylmethane 4,4'-diisocyanate

|  |   |                              |   |   |           |   |   |   |   |   |   |          |
|--|---|------------------------------|---|---|-----------|---|---|---|---|---|---|----------|
|  | <b>Hazardous Chemicals (2015 Edition)</b> | <b>goods GB 12268 - 2012</b> |   |   |           |   |   |   |   |   |   |          |
| 4,4'-Methylenebis(cyclohexyl isocyanate) | -   | -                            | X | X | 225-863-2 | X | X | X | X | X | X | KE-23837 |

### National Regulations

## SECTION 16. OTHER INFORMATION

**Prepared By** Health, Safety and Environmental Department  
**Creation Date** 11-Feb-2011  
**Revision Date** 26-Jan-2021  
**Revision Summary** Not applicable.

### Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** (volatile organic compound)

### Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Physical hazards** On basis of test data  
**Health Hazards** Calculation method  
**Environmental hazards** Calculation method



# SAFETY DATA SHEET

Dicyclohexylmethane 4,4'-diisocyanate

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## Disclaimer

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

**End of Safety Data Sheet**