

# SAFETY DATA SHEET

CALDOFIX-2 HARDENER



## Section 1. Identification

**Product identifier** : CALDOFIX-2 HARDENER  
**Cat. No.** : 40200086, 50209095  
**Container size** : 325 ml, 500 ml  
**Chemical name** : 4,4'-methylenebis(cyclohexylamine)  
**Other means of identification** : Cyclohexanamine, 4,4'-methylenebis-; Bis(4-aminocyclohexyl)methane; Cyclohexylamine, 4,4'-methylenebis-; 4,4'-Diaminodicyclohexylmethane; 4,4'-Methylenebis(cyclohexan-1-amine); Diaminodicyclohexylmethane; 4,4'-Methylenebiscyclohexylamine; BIS(CYCLOHEXYLAMINE), 4,4'-METHYLENE-; Methylenebiscyclohexanamine, 4,4'-; 4,4 diaminodicyclohexylmethane; Cyclohexanamine, 4,4'-methylenebis-  
**Product type** : Liquid.

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

**Product use** : For embedding and impregnation of materialographic specimens  
**Area of application** : Professional applications.

**Supplier's details** : Struers Ltd  
6200 Edwards Blvd.  
Ontario  
L5T 2V7 Mississauga  
Canada  
  
Telephone: +1 (905) 814 8855

**e-mail address of person responsible for this SDS** : sdsquestions@struers.dk

**Emergency telephone number (with hours of operation)** : Alberta & NWT:  
Poison & Drug Information Service (PADIS): 1-800-332-1414  
British Columbia:  
Drug and Poison Information Centre (DPIC): 604-682-5050 / 1-800-567-8911  
Ontario:  
Poison Centre: 1-800-268-9017  
Québec:  
Poison Control Centre: 1-800-463-5060  
Infotrac:  
1-800-535-5053

## Section 2. Hazard identification

**Classification of the substance or mixture** : H302 ACUTE TOXICITY (oral) - Category 4  
H314 SKIN CORROSION - Category 1B  
H318 SERIOUS EYE DAMAGE - Category 1  
H317 SKIN SENSITIZATION - Category 1B  
H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2  
Health Hazards Not Otherwise Classified - Category 1

### GHS label elements

**Date of issue/Date of revision** : 20/03/2026 **Date of previous issue** : 13/01/2025 **Version** : 3 1/14



## Section 2. Hazard identification

### Hazard pictograms



### Signal word

: Danger

### Hazard statements

: H302 - Harmful if swallowed.  
 H314 - Causes severe skin burns and eye damage.  
 H317 - May cause an allergic skin reaction.  
 H373 - May cause damage to organs through prolonged or repeated exposure.  
 (liver, muscle tissue)  
 Causes severe digestive tract burns.

### Precautionary statements

#### Prevention

: P280 - Wear protective gloves, protective clothing and eye or face protection.  
 P260 - Do not breathe vapor.  
 P270 - Do not eat, drink or smoke when using this product.  
 P264 - Wash thoroughly after handling.  
 P272 - Contaminated work clothing should not be allowed out of the workplace.

#### Response

: P304 + P340, P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.  
 P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.  
 P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor.  
 P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.  
 P363 - Wash contaminated clothing before reuse.  
 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.

#### Storage

: P405 - Store locked up.

#### Disposal

: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

### Supplemental label elements

: Do not taste or swallow. Wash thoroughly after handling.

**Other hazards which do not result in classification** : None known.

## Section 3. Composition/information on ingredients

### Substance/mixture

: Substance

### Chemical name

: 4,4'-methylenebis(cyclohexylamine)

### Other means of identification

: Cyclohexanamine, 4,4'-methylenebis-; Bis(4-aminocyclohexyl)methane;  
 Cyclohexylamine, 4,4'-methylenebis-; 4,4'-Diaminodicyclohexylmethane; 4,4'-  
 Methylenebis(cyclohexan-1-amine); Diaminodicyclohexylmethane; 4,4'-  
 Methylenebiscyclohexylamine; BIS(CYCLOHEXYLAMINE), 4,4'-METHYLENE-;  
 Methylenebiscyclohexanamine, 4,4'-; 4,4 diaminodicyclohexylmethane;  
 Cyclohexanamine, 4,4'-methylenebis-

| Ingredient name                    | Other names | % (w/w) | Identifiers    |
|------------------------------------|-------------|---------|----------------|
| 4,4'-methylenebis(cyclohexylamine) | -           | 100     | CAS: 1761-71-3 |



## Section 3. Composition/information on ingredients

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First-aid measures

### Description of necessary first aid measures

- |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Inhalation</b>   | : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| <b>Skin contact</b> | : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Ingestion</b>    | : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.                                                                                                               |

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- |                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Causes serious eye damage.                                                            |
| <b>Inhalation</b>   | : No known significant effects or critical hazards.                                     |
| <b>Skin contact</b> | : Causes severe burns. May cause an allergic skin reaction.                             |
| <b>Ingestion</b>    | : Severely corrosive to the digestive tract. Causes severe burns. Harmful if swallowed. |

#### Over-exposure signs/symptoms



## Section 4. First-aid measures

|                     |                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Adverse symptoms may include the following:<br>pain<br>watering<br>redness                           |
| <b>Inhalation</b>   | : No specific data.                                                                                    |
| <b>Skin contact</b> | : Adverse symptoms may include the following:<br>pain or irritation<br>redness<br>blistering may occur |
| <b>Ingestion</b>    | : Adverse symptoms may include the following:<br>stomach pains                                         |

### **Indication of immediate medical attention and special treatment needed, if necessary**

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Notes to physician</b>         | : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.                                                                                                                                                                                                                               |
| <b>Specific treatments</b>        | : No specific treatment.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Protection of first-aiders</b> | : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### **Extinguishing media**

|                                       |                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------|
| <b>Suitable extinguishing media</b>   | : In case of fire, use water spray (fog), foam, dry chemical or CO <sub>2</sub> . |
| <b>Unsuitable extinguishing media</b> | : Do not use water jet.                                                           |

**Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.

|                                                 |                                                                                                                       |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Hazardous thermal decomposition products</b> | : Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|

**Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**Remark** : Not considered to be a product presenting a risk of explosion.



## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.



## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

None.

#### Biological exposure indices

No exposure indices known.

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

#### Skin protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Recommended: Butyl rubber gloves. The breakthrough time must be greater than the end use time of the product.

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.



## Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### Appearance

|                                                                              |                                                                                                                                                              |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical state</b>                                                        | : Liquid.                                                                                                                                                    |
| <b>Color</b>                                                                 | : Colorless.                                                                                                                                                 |
| <b>Odor</b>                                                                  | : Ammonia.                                                                                                                                                   |
| <b>Odor threshold</b>                                                        | : Not available.                                                                                                                                             |
| <b>Melting point and freezing point</b>                                      | : Not available.                                                                                                                                             |
| <b>Boiling point or initial boiling point and boiling range</b>              | : 320°C (608°F) [OECD 103]                                                                                                                                   |
| <b>Evaporation rate</b>                                                      | : Not available.                                                                                                                                             |
| <b>Flammability</b>                                                          | : Not considered to be flammable.                                                                                                                            |
| <b>Lower and upper explosion limit or lower and upper flammability limit</b> | : Lower: 0.9%<br>Upper: 4.4%                                                                                                                                 |
| <b>Flash point</b>                                                           | : Closed cup: 160°C (320°F)                                                                                                                                  |
| <b>Auto-ignition temperature</b>                                             | : 300°C (572°F) [EU A.15]                                                                                                                                    |
| <b>Decomposition temperature</b>                                             | : Not available.                                                                                                                                             |
| <b>pH</b>                                                                    | : 11.6                                                                                                                                                       |
| <b>Viscosity</b>                                                             | : Dynamic (room temperature): Not available.<br>Kinematic (room temperature): 31.2 mm <sup>2</sup> /s (31.2 cSt)<br>Kinematic (40°C (104°F)): Not available. |

|                        |          |              |                   |
|------------------------|----------|--------------|-------------------|
| <b>Solubility(ies)</b> | <b>:</b> | <b>Media</b> | <b>Result</b>     |
|                        |          | water        | Partially soluble |

|                                                                    |                                                   |
|--------------------------------------------------------------------|---------------------------------------------------|
| <b>Solubility in water</b>                                         | : 12.3 g/l                                        |
| <b>Miscible with water</b>                                         | : No.                                             |
| <b>Partition coefficient — n-octanol/water (logarithmic value)</b> | : 2.03 [OECD 107]                                 |
| <b>Vapor pressure</b>                                              | : 0.000055 kPa (0.00041178 mm Hg) [OECD 104]      |
| <b>Density</b>                                                     | : 0.95 g/cm <sup>3</sup> [25°C (77°F)] [OECD 109] |
| <b>Relative density</b>                                            | : 0.964 [OECD 109]                                |
| <b>Relative vapor density</b>                                      | : 7.24 [Air = 1]                                  |
| <b>Molecular weight</b>                                            | : 210.41 g/mole                                   |

### Particle characteristics

|                             |                   |
|-----------------------------|-------------------|
| <b>Median particle size</b> | : Not applicable. |
|-----------------------------|-------------------|

### Other information

|                                              |                              |
|----------------------------------------------|------------------------------|
| <b>Physical/chemical properties comments</b> | : No additional information. |
|----------------------------------------------|------------------------------|

## Section 10. Stability and reactivity

|                                           |                                                                                                                                                                                 |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reactivity</b>                         | : No specific test data related to reactivity available for this product or its ingredients.                                                                                    |
| <b>Chemical stability</b>                 | : The product is stable.                                                                                                                                                        |
| <b>Possibility of hazardous reactions</b> | : Under normal conditions of storage and use, hazardous reactions will not occur.<br>Under normal conditions of storage and use, hazardous polymerization will not occur.       |
| <b>Conditions to avoid</b>                | : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.<br>No smoking.                                                                             |
| <b>Incompatible materials</b>             | : Reactive or incompatible with the following materials:<br>acids<br>Reactive or incompatible with the following materials: oxidizing materials and metals.<br>(aluminum, zinc) |
| <b>Hazardous decomposition products</b>   | : Under normal conditions of storage and use, hazardous decomposition products should not be produced.                                                                          |

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name            | Result                                                                                              |                                      |
|------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------|
| 4,4'-methylenebis(cyclohexylamine) | <b>Rabbit - Male, Female - Dermal - LD50</b><br>2110 mg/kg<br><b>Rat - Oral - LD50</b><br>380 mg/kg | EPA [OPP 81-2 Acute Dermal Toxicity] |

**Conclusion/Summary [Product]** : Not available.

#### Skin corrosion/irritation

**Conclusion/Summary [Product]** : Not available.

#### Serious eye damage/eye irritation

**Conclusion/Summary [Product]** : Not available.

#### Respiratory corrosion/irritation

**Conclusion/Summary [Product]** : Not available.

#### Respiratory or skin sensitization

| Product/ingredient name | Result |
|-------------------------|--------|
|-------------------------|--------|



## Section 11. Toxicological information

**4,4'-methylenebis(cyclohexylamine)** **Guinea pig - skin** OECD 406 [Skin Sensitization]  
Result: Sensitizing

### Skin

**Conclusion/Summary [Product]** : Not available.

### Respiratory

**Conclusion/Summary [Product]** : Not available.

### Germ cell mutagenicity

| <b>Product/ingredient name</b>            | <b>Result</b>                      |                                                           |
|-------------------------------------------|------------------------------------|-----------------------------------------------------------|
| <b>4,4'-methylenebis(cyclohexylamine)</b> | <b>In vitro - Bacteria</b>         | OECD 471 [Bacterial Reverse Mutation Test]                |
|                                           | <u>Result:</u> Negative            |                                                           |
|                                           | <b>In vitro - Mammalian-Animal</b> | OECD 473 [In vitro Mammalian Chromosomal Aberration Test] |
|                                           | <u>Result:</u> Negative            |                                                           |
|                                           | <b>In vitro - Mammalian-Animal</b> | OECD 476 [In vitro Mammalian Cell Gene Mutation Test]     |
|                                           | <u>Result:</u> Negative            |                                                           |

**Conclusion/Summary [Product]** : Not available.

### Carcinogenicity

**Conclusion/Summary [Product]** : Not available.

### Reproductive toxicity

**Conclusion/Summary [Product]** : Not available.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

| <b>Product/ingredient name</b>            | <b>Result</b>                                                                          |
|-------------------------------------------|----------------------------------------------------------------------------------------|
| <b>4,4'-methylenebis(cyclohexylamine)</b> | SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (liver, muscle tissue) - Category 2 |

### Aspiration hazard

Not available.

### Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

### Potential acute health effects

**Eye contact** : Causes serious eye damage.

## Section 11. Toxicological information

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| <b>Inhalation</b>   | : No known significant effects or critical hazards.                                     |
| <b>Skin contact</b> | : Causes severe burns. May cause an allergic skin reaction.                             |
| <b>Ingestion</b>    | : Severely corrosive to the digestive tract. Causes severe burns. Harmful if swallowed. |

### Symptoms related to the physical, chemical and toxicological characteristics

|                     |                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Adverse symptoms may include the following:<br>pain<br>watering<br>redness                           |
| <b>Inhalation</b>   | : No specific data.                                                                                    |
| <b>Skin contact</b> | : Adverse symptoms may include the following:<br>pain or irritation<br>redness<br>blistering may occur |
| <b>Ingestion</b>    | : Adverse symptoms may include the following:<br>stomach pains                                         |

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

|                                    |                  |
|------------------------------------|------------------|
| <b>Potential immediate effects</b> | : Not available. |
| <b>Potential delayed effects</b>   | : Not available. |

#### Long term exposure

|                                    |                  |
|------------------------------------|------------------|
| <b>Potential immediate effects</b> | : Not available. |
| <b>Potential delayed effects</b>   | : Not available. |

### Potential chronic health effects

**Conclusion/Summary [Product]** : Not available.

|                              |                                                                                                                                                                          |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>               | : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. |
| <b>Carcinogenicity</b>       | : No known significant effects or critical hazards.                                                                                                                      |
| <b>Mutagenicity</b>          | : No known significant effects or critical hazards.                                                                                                                      |
| <b>Reproductive toxicity</b> | : No known significant effects or critical hazards.                                                                                                                      |

### Numerical measures of toxicity

#### Acute toxicity estimates

| Product/ingredient name            | Oral (mg/kg) | Dermal (mg/kg) | Inhalation (gases) (ppm) | Inhalation (vapors) (mg/l) | Inhalation (dusts and mists) (mg/l) |
|------------------------------------|--------------|----------------|--------------------------|----------------------------|-------------------------------------|
| 4,4'-methylenebis(cyclohexylamine) | 380          | 2110           | N/A                      | N/A                        | N/A                                 |



## Section 11. Toxicological information

## Section 12. Ecological information

### Toxicity

| Product/ingredient name            | Result                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4,4'-methylenebis(cyclohexylamine) | <b>Acute - EC50</b><br>Fish - <i>Leuciscus idus</i><br>>100 mg/l [96 hours]<br><b>Acute - EC50</b><br>Daphnia - <i>Daphnia magna</i><br>6.84 mg/l [48 hours]<br><b>Chronic - NOEC</b><br>Daphnia - <i>Daphnia magna</i><br>4 mg/l [21 days]<br><b>Acute - EC50</b><br>Algae<br>141.2 mg/l [72 hours]<br><b>Acute - EC50</b><br>Daphnia - <i>Daphnia magna</i><br>9.24 mg/l [48 hours] |

**Conclusion/Summary [Product]** : Not available.

### Persistence and degradability

| Product/ingredient name            | Result         |                                                               |
|------------------------------------|----------------|---------------------------------------------------------------|
| 4,4'-methylenebis(cyclohexylamine) | <10% [28 days] | OECD 302B [Inherent Biodegradability: Zahn-Wellens/EMPA Test] |

**Conclusion/Summary [Product]** : Not available.

| Product/ingredient name            | Aquatic half-life | Photolysis | Biodegradability |
|------------------------------------|-------------------|------------|------------------|
| 4,4'-methylenebis(cyclohexylamine) | -                 | -          | Not readily      |

### Bioaccumulative potential

| Product/ingredient name            | LogP <sub>ow</sub> | BCF | Potential |
|------------------------------------|--------------------|-----|-----------|
| 4,4'-methylenebis(cyclohexylamine) | 2.03               | -   | Low       |

### Mobility in soil

**Soil/Water partition coefficient** : 144.598 Koc

### Other adverse effects

No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

|                            | TDG Classification                                                                      | DOT Classification                                                                      | IMDG                                                                                     | IATA                                                                                      |
|----------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| UN number                  | UN2735                                                                                  | UN2735                                                                                  | UN2735                                                                                   | UN2735                                                                                    |
| UN proper shipping name    | AMINES, LIQUID, CORROSIVE, N.O.S. (4,4'-methylenebis (cyclohexylamine))                 | Amines, liquid, corrosive, n.o.s. (4,4'-methylenebis (cyclohexylamine))                 | AMINES, LIQUID, CORROSIVE, N.O.S. (4,4'-methylenebis (cyclohexylamine))                  | Amines, liquid, corrosive, n.o.s. (4,4'-methylenebis (cyclohexylamine))                   |
| Transport hazard class(es) | 8<br> | 8<br> | 8<br> | 8<br> |
| Packing group              | II                                                                                      | II                                                                                      | II                                                                                       | II                                                                                        |
| Environmental hazards      | No.                                                                                     | No.                                                                                     | No.                                                                                      | No.                                                                                       |

### Additional information

**TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8).  
**Explosive Limit and Limited Quantity Index** 1  
**Passenger Carrying Road or Rail Index** 1  
**Special provisions** 16

**DOT Classification** : **Limited quantity** Yes.  
**Packaging instruction** Exceptions: 154. Non-bulk: 202. Bulk: 242.  
**Quantity limitation** Passenger aircraft/rail: 1 L. Cargo aircraft: 30 L.  
**Special provisions** B2, IB2, T11, TP1, TP27

**IMDG** : **Emergency schedules** F-A, S-B  
**Special provisions** 274

**IATA** : **Quantity limitation** Passenger and Cargo Aircraft: 1 L. Packaging instructions: 851. Cargo Aircraft Only: 30 L. Packaging instructions: 855. Limited Quantities - Passenger Aircraft: 0.5 L. Packaging instructions: Y840.  
**Special provisions** A3, A803

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

## Section 14. Transport information

## Section 15. Regulatory information

### Canadian lists

- Canadian NPRI : This material is not listed.  
 CEPA Toxic substances : This material is not listed.  
 Canada inventory : This material is listed or exempted.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

## Section 16. Other information

### History

- Date of issue/Date of revision : 20/03/2026  
 Date of previous issue : 13/01/2025  
 Version : 3  
 Prepared by : Sphera Solutions
- Key to abbreviations** : ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 DOT = Department of Transportation  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 HPR = Hazardous Products Regulations  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 IMO = International Maritime Organization  
 LogPow = logarithm of the octanol/water partition coefficient  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 N/A = Not available  
 SGG = Segregation Group  
 UN = United Nations

### Procedure used to derive the classification



## Section 16. Other information

| Classification                                                                                                                                                                                                                                                       | Justification                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| ACUTE TOXICITY (oral) - Category 4<br>SKIN CORROSION - Category 1B<br>SERIOUS EYE DAMAGE - Category 1<br>SKIN SENSITIZATION - Category 1B<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2<br>Health Hazards Not Otherwise Classified - Category 1 | On basis of test data<br>Expert judgment<br>On basis of test data<br>Expert judgment<br>Expert judgment<br>On basis of test data |

**References** : HPR = Hazardous Products Regulations

▢ Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

