

## Safety Data Sheet

According to Regulation EC No. 1907/2006

### Hardener GP 440-1

Date of issue/Date of revision: 16.06.2021

en / GB - Version 1.1

#### 1. Identification of the substance/preparation and of the company/undertaking

##### 1.1 Identification of the substance

**or preparation:** Hardener GP 440-1

**1.2 Use of the substance/preparation:** Hardener

##### 1.3 Company/undertaking identification

Company name: Gößl + Pfaff GmbH  
 Street: Münchener Str. 13  
 Place: 85123 Karlskron/Brautlach  
 Telephone: +49 (0) 8450 / 932-0  
 Fax.: +49 (0) 8450 / 932-13  
 Contact person: Management: Mr. Gößl, Mr. Pfaff  
 E-Mail: info@goessl-pfaff.de  
 Internet: [www.goessl-pfaff.de](http://www.goessl-pfaff.de)  
 Responsible Department: Management

##### 1.4 Emergency telephone

**Emergency CONTACT (24-Hour-Number): GBK GmbH +49 (0) 6132-84463**

#### 2. Hazards identification

##### 2.1 Classification of the substance or mixture

###### Classification (REGULATION (EC) No 1272/2008)

|  |  |
|--|--|
| Acute toxicity, Category 4   | H302: Harmful if swallowed.  |
| Skin corrosion, Sub-category 1A  | H314: Causes severe skin burns and eye damage.                           |
| Serious eye damage, Category 1   | H318: Causes serious eye damage.   |
| Skin sensitisation, Category 1   | H317: May cause an allergic skin reaction.                               |
| Reproductive toxicity, Category 2  | H361: Suspected of damaging fertility or the unborn child                |
| Specific target organ toxicity - single exposure, Category 3, Respiratory system | H335: May cause respiratory irritation.                                  |
| Specific target organ toxicity - repeated exposure, Category 2                   | H373: May cause damage to organs through prolonged or repeated exposure. |
| Long-term (chronic) aquatic hazard, Category 3                                   | H412: Harmful to aquatic life with long lasting effects.                 |

##### 2.2 Label elements

###### Labelling (REGULATION (EC) No 1272/2008)

###### 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.  
 H335 May cause respiratory irritation.  
 H361 Suspected of damaging fertility or the unborn child  
 H373 May cause damage to organs through prolonged or repeated exposure.  
 H412 Harmful to aquatic life with long lasting effects.

###### Precautionary statements:

###### Prevention:

P201 Obtain special instructions before use.

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P260 Do not breathe mist or vapours.

P280 Wear protective gloves/ protective clothing/eye protection/ face protection.

**Response:**

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P310

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

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/doctor.

Hazardous components which must be listed on the label:

3-Aminomethyl-3,5,5-trimethylcyclohexylamine

4,4'-Methylenbis(cyclohexylamine)

Cyclohex-1,2-ylenediamine

2-Piperazin-1-ylethylamine

**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.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 3. Composition/information on ingredients

**3.2 Mixtures**

Chemical nature: Amines

| Chemical Name  | CAS-No.<br>EC-No.<br>INDEX-No.<br>Registration number      | Classification   | Concentration<br>(% w/w) |
|--|--|--|--------------------------|
| 3-Aminomethyl-3,5,5-trimethylcyclohexylamine                               | 2855-13-2<br>220-666-8<br>612-067-00-9<br>01-2119514687-32 | Acute Tox. 4; H302<br>Acute Tox. 4; H312<br>Skin Corr. 1B; H314<br>Eye Dam. 1; H318<br>Skin Sens. 1; H317<br>Aquatic Chronic 3; H412 | ≥ 30 – < 50              |
| 4,4'-Methylenbis(cyclohexylamine)  | 1761-71-3<br>217-168-8<br>01-2119541673-38                 | Acute Tox. 4; H302<br>Skin Corr. 1B; H314<br>Skin Sens. 1; H317<br>STOT RE 2; H373   | ≥ 20 – < 30              |
| Cyclohex-1,2-ylendiamin  | 694-83-7<br>211-776-7<br>01-2119976312-37                  | Acute Tox. 4; H302<br>Acute Tox. 4; H332<br>Acute Tox. 4; H312<br>Skin Corr. 1A; H314<br>Eye Dam. 1; H318<br>STOT SE 3; H335         | ≥ 20 – < 30              |
| Propylidynetrimethanol,<br>propoxylated, reaction products with<br>ammonia | 39423-51-3<br>500-105-6<br>01-2119556886-20                | Acute Tox. 4; H302<br>Acute Tox. 4; H312<br>Eye Dam. 1; H318<br>Aquatic Chronic 2; H411  | ≥ 10 – < 20              |

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|                            |   |  |                |
|----------------------------|---|--|----------------|
| 2-Piperazin-1-ylethylamine | 140-31-8<br>205-411-0<br>612-105-00-4<br>01-2119471486-30 | Acute Tox. 4; H302<br>Acute Tox. 3; H311<br>Skin Corr. 1B; H314<br>Eye Dam. 1; H318<br>Skin Sens. 1; H317<br>Repr. 2; H361<br>STOT RE 1; H372<br>(Respiratory Tract)<br>Aquatic Chronic 3; H412<br>Acute toxicity estimate<br>Acute oral toxicity: 500 mg/kg | $\geq 3 - < 5$ |
|----------------------------|---|--|----------------|

For explanation of abbreviations see section 16.

**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.  
Treat symptomatically.  
Get medical attention if symptoms occur.

**Protection of first-aiders:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.  
Avoid inhalation, ingestion and contact with skin and eyes.  
No action shall be taken involving any personal risk or without suitable training.  
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

**If inhaled**

Consult a physician after significant exposure.  
If inhaled, remove to fresh air.  
Get medical attention if symptoms occur.

**In case of skin contact**

Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
If on skin, rinse well with water.  
If on clothes, remove clothes.

**In case of eye contact**

Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.

**If swallowed**

Keep respiratory tract clear.  
Do NOT induce vomiting.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.

**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**

Treatment: Treat symptomatically.

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#### 5. Fire-fighting measures

##### 5.1 Extinguishing media

###### Suitable extinguishing media :

Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

###### Unsuitable extinguishing:

Exercise caution when using a high volume water jet as it may scatter and spread fire

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

###### Specific hazards during firefighting:

Do not allow run-off from fire fighting to enter drains or water courses.

###### Hazardous combustion products:

Ammonia  
Nitrogen oxides (NO<sub>x</sub>)  
Carbon monoxide  
Carbon dioxide (CO<sub>2</sub>)  
Carbon oxides

##### 5.3 Advice for firefighters

###### Special protective equipment for firefighters:

Wear self-contained breathing apparatus for firefighting if necessary.

###### Specific extinguishing methods:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

###### Further information:

Collect contaminated fire extinguishing water separately.  
This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

#### 6. Accidental release measures

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

###### Personal precautions

Use personal protective equipment.  
Ensure adequate ventilation.  
Refer to protective measures listed in sections 7 and 8.

##### 6.2 Environmental precautions

###### Environmental precautions

Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

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

###### Methods for cleaning up

Neutralise with acid.  
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

For disposal considerations see section 13., See Section 1 for emergency contact information.,  
For personal protection see section 8.

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#### 7. Handling and storage

##### 7.1 Precautions for safe handling

###### Advice on safe handling

Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.

Do not breathe vapours/dust.

Avoid exposure - obtain special instructions before use.

Avoid contact with skin and eyes.

For personal protection see section 8.

Smoking, eating and drinking should be prohibited in the application area.

To avoid spills during handling keep bottle on a metal tray.

Dispose of rinse water in accordance with local and national regulations.

###### Advice on protection against fire and explosion

Normal measures for preventive fire protection.

###### Hygiene measures

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

Keep container tightly closed in a dry and well-ventilated place.

Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Observe label precautions.

Keep in properly labelled containers.

###### Advice on common storage

Do not store near acids.

**Storage class (TRGS 510):** 8A, Combustible, corrosive hazardous materials

**Recommended storage temperature:** 2–40 °C

###### Further information on storage stability

Stable under normal conditions.

##### 7.3 Specific end use(s)

###### Specific use(s)

No data available.

#### 8. Exposure controls/personal protection

##### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

| Substance name                                | End Use   | Exposure routes | Potential health effects   | Value                   |
|---|-----------|-----------------|----------------------------|-------------------------|
| 2-piperazin-1-ylethylamine                    | Workers   | Inhalation      | Long-term systemic effects | 10,6 mg/m <sup>3</sup>  |
|   | Workers   | Inhalation      | Acute systemic effects     | 10,6 mg/m <sup>3</sup>  |
|   | Workers   | Inhalation      | Long-term local effects    | 0,015 mg/m <sup>3</sup> |
|   | Workers   | Inhalation      | Acute local effects        | 80 mg/m <sup>3</sup>    |
| 3-aminomethyl-3,5,5- trimethylcyclohexylamine | Workers   | Dermal          | Long-term systemic effects | 3,33 mg/kg bw/day       |
|   | Workers   | Inhalation      | Long-term local effects    | 0,073 mg/m <sup>3</sup> |
|   | Workers   | Inhalation      | Acute local effects        | 0,073 mg/m <sup>3</sup> |
| 4,4'- Methylenebis(cyclohexylamine)           | Consumers | Oral            | Long-term systemic effects | 0,526 mg/kg bw/day      |
|   | Workers   | Dermal          | Acute systemic             | 0,63 mg/kg              |
|   | Workers   | Inhalation      | Acute systemic effects     | 1,5 mg/m <sup>3</sup>   |

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|  |           |            |                            |                        |
|--|-----------|------------|----------------------------|------------------------|
|  | Workers   | Inhalation | Systemic effects           | 1,5 mg/m <sup>3</sup>  |
|  | Workers   | Dermal     | Long-term systemic effects | 0,21 mg/kg             |
|  | Workers   | Inhalation | Long-term systemic effects | 0,5 mg/m <sup>3</sup>  |
|  | Workers   | Inhalation | Systemic effects           | 0,5 mg/m <sup>3</sup>  |
|  | Consumers | Oral       | Long-term systemic effects | 0,125 mg/kg            |
|  | Consumers | Dermal     | Long-term systemic effects | 0,125 mg/kg            |
| Propylidynetrimethanol, propoxylated, reaction products with ammonia | Workers   | Inhalation | Long-term systemic effects | 14,1 mg/m <sup>3</sup> |
|  | Workers   | Dermal     | Long-term systemic effects | 1,6 mg/kg bw/day       |

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

| Substance name   | Environmental Compartment | Value                         |
|--|---------------------------|-------------------------------|
| 2-piperazin-1-ylethylamine   | Fresh water               | 0,058 mg/l                    |
| Remarks:   | Assessment Factors        |                               |
|  | Marine water              | 0,006 mg/l                    |
|  | Assessment Factors        |                               |
|  | Freshwater - intermittent | 0,58 mg/l                     |
|  | Assessment Factors        |                               |
|  | Fresh water sediment      | 215 mg/kg dry weight (d.w.)   |
|  | Equilibrium method        |                               |
|  | Marine sediment           | 21,51 mg/kg dry weight (d.w.) |
|  | Equilibrium method        |                               |
|  | Sewage treatment plant    | 250 mg/l                      |
|  | Assessment Factors        |                               |
|  | Soil                      | 1 mg/kg dry weight (d.w.)     |
|  | Assessment Factors        |                               |
| 3-aminomethyl-3,5,5- trimethylcyclohexylamine                        | Fresh water               | 0,06 mg/l                     |
|  | Assessment Factors        |                               |
|  | Marine water              | 0,006 mg/l                    |
|  | Assessment Factors        |                               |
|  | Sewage treatment plant    | 3,18 mg/l                     |
|  | Assessment Factors        |                               |
|  | Fresh water sediment      | 5,784 mg/kg dry weight (d.w.) |
|  | Equilibrium method        |                               |
|  | Marine sediment           | 0,578 mg/kg dry weight (d.w.) |
|  | Soil                      | 1,121 mg/kg dry weight (d.w.) |
| 4,4'- Methylenebis(cyclohexylamine)                                  | Fresh water               | 0,008 mg/l                    |
|  | Marine water              | 0,0008 mg/l                   |
|  | Freshwater - intermittent | 0,08 mg/l                     |
|  | Sewage treatment plant    | 80 mg/l                       |
|  | Fresh water sediment      | 0,39 mg/kg                    |
|  | Marine sediment           | 0,039 mg/kg                   |
|  | Soil                      | 0,072 mg/kg                   |
| Propylidynetrimethanol, propoxylated, reaction products with ammonia | Fresh water               | 0,004 mg/l                    |
|  | Intermittent use/release  | 0,044 mg/l                    |
|  | Marine water              | 0 mg/l                        |
|  | Fresh water sediment      | 0,022 mg/kg dry weight (d.w.) |
|  | Marine sediment           | 0,002 mg/kg dry weight (d.w.) |
|  | Sewage treatment plant    | 10 mg/l                       |
|  | Soil                      | 0,002 mg/kg dry weight (d.w.) |

#### 8.2 Exposure controls

**Personal protective equipment:**

**Eye protection:**

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Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

**Hand protection:**

Material: butyl-rubber

Material: Ethyl Vinyl Alcohol Laminate (EVAL)

Break through time: &gt; 8 h

Material: Nitrile rubber

Break through time: 10–480 min

**Remarks:**

Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

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. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

**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:**

Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines

**Filter type:**

Organic vapour type (A)

Ensure adequate ventilation.

Suitable respiratory equipment:

Respirator with a half face mask

Recommended Filter type:

Combined particulates and organic vapour type

Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type A-P2 (organic vapours, particles)

In the case of vapour formation use a respirator with an approved filter.

**9. Physical and chemical properties****9.1 Information on basic physical and chemical properties**

|   |   |
|---|---|
| Appearance:   | liquid                                      |
| Colour:   | light yellow                                |
| Odour:  | amine-like                                  |
| Odour Threshold:                                    | No data is available on the product itself. |
| pH:   | 11,3  |
| Freezing point/Melting point:                       | No data is available on the product itself. |
| Boiling point:                                      | > 200 °C                                    |
| Flash point:  | > 100 °C                                    |
|   | Method: Pensky-Martens closed cup           |
| Evaporation rate:                                   | No data is available on the product itself. |
| Flammability (solid, gas):                          | No data is available on the product itself. |
| Burning rate:                                       | No data is available on the product itself. |
| Upper Explosion limit/<br>Upper flammability limit: | No data is available on the product itself. |



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|---|---|
| Lower Explosion limit/<br>lower flammability limit: | No data is available on the product itself. |
| Vapour pressure:                                    | No data is available on the product itself. |
| Relative vapour density:                            | No data is available on the product itself. |
| Relative density:                                   | 0,95 (25 °C)                                |
| density:  | 0,95 g/cm <sup>3</sup> (25 °C)              |
| Solubility  |   |
| Water Solubility:                                   | insoluble (20 °C)                           |
| Solubility in other solvents:                       | No data is available on the product itself. |
| Partition coefficient:                              |   |
| n-Octanol/water:                                    | No data is available on the product itself. |
| Auto-ignition temperature:                          | No data is available on the product itself. |
| Decomposition temperature:                          | > 200 °C                                    |
| Viscosity   |   |
| Viscosity, dynamic:                                 | 15 – 30 mPa·s (25 °C)                       |
| Explosive properties:                               | No data is available on the product itself. |
| Oxidising properties:                               | No data is available on the product itself. |

#### 9.2 Other information

No data available

### 10. Stability and reactivity

#### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

#### 10.2 Chemical stability

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions

Hazardous reactions:

No hazards to be specially mentioned.

#### 10.4 Conditions to avoid

Conditions to avoid:

Heat, flames and sparks.

#### 10.5 Incompatible materials

Materials to avoid:

Strong acids

Strong bases

Strong oxidizing agents

#### 10.6 Hazardous decomposition products

Hazardous decomposition products:

carbon dioxide

carbon monoxide

### 11. Toxicological information

#### 11.1 Information on toxicological effects

##### Acute toxicity

Acute oral toxicity – Product:

Acute toxicity estimate : 681.94 mg/kg

Method: Calculation method



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Acute inhalation toxicity – Product:

Acute toxicity estimate : &gt; 5 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Method: Calculation method

Acute dermal toxicity – Product:

Acute toxicity estimate : &gt; 2,000 mg/kg

Method: Calculation method

Assessment: The substance or mixture has no acute dermal toxicity

Acute toxicity (other routes of administration)

No data available.

**Skin corrosion/irritation****Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Species: Rabbit

Assessment: Causes burns.

4,4'-Methylenebis(cyclohexylamine):

Species: Rabbit

Result: Corrosive after 3 minutes to 1 hour of exposure

Cyclohex-1,2-ylenediamine:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Causes severe burns. GLP: no

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Mild skin irritation

Species: reconstructed human epidermis (RhE)

Method: OECD Test Guideline 431

Result: No skin irritation

2-Piperazin-1-ylethylamine:

Species: Rabbit

Result: Causes burns.

**Serious eye damage/eye irritation****Components:**

Cyclohex-1,2-ylenediamine:

Species: Rabbit

Result: Risk of serious damage to eyes.

GLP: no

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Method: OECD Test Guideline 405

Result: Irreversible effects on the eye

2-Piperazin-1-ylethylamine:

Species: Rabbit

Result: Risk of serious damage to eyes.

**Respiratory or skin sensitisation****Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Exposure routes: Skin

Species: Guinea pig

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 406

Result: Causes sensitisation.

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4,4'-Methylenebis(cyclohexylamine):

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Cyclohex-1,2-ylenediamine:

Exposure routes: Skin

Species: Guinea pig

Result: negative

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Exposure routes: Skin

Species: Guinea pig

Assessment: Did not cause sensitisation on laboratory animals.

Method: OECD Test Guideline 406

Result: Did not cause sensitisation on laboratory animals.

2-Piperazin-1-ylethylamine:

Exposure routes: Skin

Species: Guinea pig

Assessment: The product is a skin sensitiser, sub-category 1B.

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Assessment: No data available

#### Germ cell mutagenicity

##### Components:

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Genotoxicity in vitro:

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Concentration: 2 mg/ml

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells

Concentration: 1375 µg/L

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Test Type: reverse mutation assay

Test system: Salmonella typhimurium

Concentration: 5000 µg/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

4,4'-Methylenebis(cyclohexylamine):

Genotoxicity in vitro:

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Metabolic activation: with and without metabolic activation

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Method: OECD Test Guideline 476

Result: negative

Cyclohex-1,2-ylenediamine:

Genotoxicity in vitro:

Concentration: 15 - 1500 µg/plate

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: yes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

GLP: yes

Concentration: 33 - 1142 µg/L

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

GLP: yes

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Genotoxicity in vitro:

Test Type: reverse mutation assay

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: unscheduled DNA synthesis assay

Test system: rat hepatocytes

Metabolic activation: Metabolic activation

Method: OECD Test Guideline 482

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

2-Piperazin-1-ylethylamine:

Genotoxicity in vitro

Test Type: reverse mutation assay

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Result: negative

Test Type: gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Result: negative

Test Type: sister chromatid exchange assay

Test system: Chinese hamster ovary cells

Metabolic activation: negative

Result: negative

**Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Genotoxicity in vivo

Test Type: In vivo micronucleus test

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Test species: Mouse (male and female)

Cell type: Bone marrow

Application Route: Oral

Dose: 500 mg/kg

Method: Directive 67/548/EEC, Annex V, B.12.

Result: negative

4,4'-Methylenebis(cyclohexylamine):

Genotoxicity in vivo:

Cell type: Somatic

Application Route: Intraperitoneal injection

Dose: 50 mg/kg

Method: OECD Test Guideline 474

Result: negative

Cyclohex-1,2-ylenediamine:

Genotoxicity in vivo

Application Route: Inhalation Exposure time: 13 Weeks

Dose: 1.6 - 160 mg/m<sup>3</sup>

Method: OECD Test Guideline 474 Result: negative

GLP: yes

Application Route: Oral

Dose: 75 - 750 mg/kg

Method: OECD Test Guideline 475 Result: negative

GLP: yes

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Genotoxicity in vivo:

Cell type: Somatic

Application Route: Intraperitoneal injection

Dose: 2.5 mg/kg

Method: OECD Test Guideline 474

Result: negative

2-Piperazin-1-ylethylamine:

Genotoxicity in vivo:

Application Route: Intraperitoneal injection

Dose: 175 - 560 mg/kg

Method: OECD Test Guideline 474

Result: negative

Germ cell mutagenicity- Assessment:

No data available

**Carcinogenicity**

No data available

Carcinogenicity – Assessment:

No data available.

**Reproductive toxicity**

4,4'-Methylenebis(cyclohexylamine):

Effects on fertility:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 422

Result: positive

Cyclohex-1,2-ylenediamine:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 416

GLP: yes

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Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Species: Rat, male and female

Application Route: Dermal

Dose: 0, 10, 50, 100 mg/kg

General Toxicity - Parent: No observed adverse effect level:

&gt; 100 mg/kg body weight

General Toxicity F1: No observed adverse effect level:

&gt; 100 mg/kg body weight

Method: OECD Test Guideline 421

Result: No effects on fertility and early embryonic development were detected.

2-piperazin-1-ylethylamine:

Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test

Species: Rat, male and female

Application Route: Oral

Dose: 500/2000/8000 ppm

Duration of Single Treatment: 28 d

General Toxicity - Parent: No observed adverse effect concentration: 8 000 ppm

General Toxicity F1: No-observed-effect level: 8 000 ppm

Method: OECD Test Guideline 422

**Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Effects on foetal development:

Species: Rat, female

Application Route: Oral

Dose: 10/50/250 milligram per kilogram

General Toxicity Maternal: No-observed-effect level:

50 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Cyclohex-1,2-ylenediamine:

Species: Rat, male and female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

ca. 184 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

GLP: no

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Test Type: Pre-natal

Species: Rat, female

Application Route: Oral

Dose: 0/10/100/125/200 milligram per kilogram

Duration of Single Treatment: 16 d

General Toxicity Maternal: No-observed-effect level: 125 mg/kg body weight

Developmental Toxicity: No-observed-effect level: 125 mg/kg body weight

Method: OECD Test Guideline 414

2-piperazin-1-ylethylamine:

Test Type: reproductive and developmental toxicity study

Species: Rat, male and female

Application Route: Oral

General Toxicity Maternal: Lowest observed adverse effect concentration: 8 000 g/m<sup>3</sup>

Developmental Toxicity: No-observed-effect level: 8 000 ppm

Method: OECD Test Guideline 422

Test Type: Pre-natal

Species: Rat, female

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Application Route: Oral

Duration of Single Treatment: 14 d

General Toxicity Maternal: No observed adverse effect level: 1 000 mg/kg body weight

Developmental Toxicity: No-observed-effect level: 1 000 mg/kg body weight

Method: OECD Test Guideline 414

Test Type: Pre-natal

Species: Rabbit, female

Application Route: Oral

Duration of Single Treatment: 23 d

General Toxicity Maternal: No observed adverse effect level: 75 mg/kg body weight

Developmental Toxicity: No observed adverse effect level: 75 mg/kg body weight

Method: OECD Test Guideline 414

**Components:**

2-Piperazin-1-ylethylamine:

Reproductive toxicity – Assessment:

Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

**STOT - single exposure****Components:**

Cyclohex-1,2-ylenediamine:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

**STOT - repeated exposure****Components:**

4,4'-Methylenebis(cyclohexylamine): Exposure routes: Ingestion

Target Organs: Liver

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

2-Piperazin-1-ylethylamine:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: Causes damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity****Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Species: Rat, male and female

NOAEL: 60 mg/kg

Application Route: Ingestion

Exposure time: 90 d Dose: 20, 60, 160 mg/kg

Method: OECD Test Guideline 408

Target Organs: Kidney

Species: Rat, male and female

NOEC: 200

Application Route: Inhalation

Test atmosphere: dust/mist

Exposure time: 216 h

Number of exposures: 6h

Method: Subacute toxicity

Target Organs: respiratory tract irritation

4,4'-Methylenebis(cyclohexylamine):

Species: Rat, male and female

NOEC: 15 mg/kg, 12.2

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 864 h

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Number of exposures: 7 d

Method: OECD Test Guideline 413

Cyclohex-1,2-ylenediamine:

Species: Rat, male and female

NOEC: 16

Test atmosphere: dust/mist

Exposure time: 2,184 h

Method: OECD Test Guideline 413

Propylidynetrimethanol, propoxylated, reaction products with ammonia:

Species: Rat, male and female

NOAEL:  $\geq$  100 mg/kg

Application Route: Oral

Exposure time: 90 d

Dose: 0, 10, 75, 100, 150, 200 mg/kg

Method: OECD Test Guideline 408

Species: Rat, male and female

NOAEL:  $>$  160 mg/kg

Application Route: Dermal

Exposure time: 90 d 6 h Number of exposures: 5 days/week

Dose: 0/16/50/160 mg/kg bw7day

Method: OECD Test Guideline 411

2-Piperazin-1-ylethylamine:

Species: Rat, male and female

NOAEL: 152

Application Route: Oral (drinking water)

Exposure time: 28 d

Method: OECD Test Guideline 422

Species: Rat, male and female

NOAEL:  $>$  1000

Application Route: Dermal

Exposure time: 29 d

Number of exposures: 6h/application, 5d/week

Method: OECD Test Guideline 410

Species: Rat, male and female

NOEC: 0.2

Application Route: Inhalation

Exposure time: 90 d

Number of exposures: 6h/d, 5d/week

Method: OECD Test Guideline 413

Target Organs: Respiratory Tract

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Species: Rat, male and female

NOEC: 53.3

Application Route: Inhalation

Exposure time: 90 d

Number of exposures: 6h/d, 5d/week

Method: OECD Test Guideline 413

Repeated dose toxicity – Assessment:

No data available.

**Aspiration toxicity**

No data available.

**Endocrine disrupting properties****Product:**



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Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**Experience with human exposure****General Information:** No data available.**Inhalation:** No data available.**Skin contact:** No data available.**Eye contact:** No data available.**Ingestion:** No data available.**Toxicology, Metabolism, Distribution**

No data available.

**Neurological effects:**

No data available.

**Further information****Ingestion:**

No data available.

**12. Ecological information****12.1 Toxicity****Components:**

3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Toxicity to fish:

LC50 (Leuciscus idus (Golden orfe)): 110 mg/l

Exposure time: 96 h

Test Type: semi-static test

Analytical monitoring: yes

Test substance: Fresh water

Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 23 mg/l

End point: mortality

Exposure time: 48 h

Test Type: static test

Analytical monitoring: yes

Test substance: Fresh water

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:

EC50 (Desmodesmus subspicatus (green algae)): 37 mg/l

Exposure time: 72 h

Test Type: static test

Analytical monitoring: no

Test substance: Fresh water

Method: Directive 67/548/EEC, Annex V, C.3.

EC10 (Desmodesmus subspicatus (green algae)): 11,2 mg/l

Exposure time: 72 h

Test Type: static test

Analytical monitoring: no

Test substance: Fresh water

Method: Directive 67/548/EEC, Annex V, C.3.

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Toxicity to microorganisms:

EC10 (*Pseudomonas putida*): 1,120 mg/l

Exposure time: 18 h

Test Type: static test

Method: Measured

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC: 3 mg/l

Exposure time: 21 d

Species: *Daphnia magna* (Water flea)

Test Type: semi-static test

Analytical monitoring: yes

Test substance: Fresh water

Method: OECD Test Guideline 202

Remarks: No-observed-effect level

**4,4'-Methylenebis(cyclohexylamine):**

Toxicity to fish:

LC50 (*Leuciscus idus* (Golden orfe)): 68 mg/l

Exposure time: 96 h

Test Type: static test

Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates:

EC50 : 6.84 mg/l

Exposure time: 48 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:

ErC50 (*Desmodesmus subspicatus* (green algae)): 140 - 200 mg/l

Exposure time: 72 h

Test Type: static test

Test substance: Fresh water

Method: DIN 38412

Toxicity to microorganisms:

EC50 (*Pseudomonas putida*): ca. 156 mg/l

Exposure time: 0.5 h

Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC: 4 mg/l

Exposure time: 21 d

Species: *Daphnia magna* (Water flea)

Test Type: semi-static test

Method: OECD Test Guideline 211

Ecotoxicology Assessment:

Chronic aquatic toxicity:

This product has no known ecotoxicological effects.

**Cyclohex-1,2-ylenediamine:**

Toxicity to fish:

LC50 (*Leuciscus idus* (Golden orfe)): 200 mg/l

Exposure time: 48 h

Test substance: Fresh water

Method: DIN 38412

GLP: yes

Remarks: Toxic to aquatic organisms.

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Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 19.8 mg/l

Exposure time: 48 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 202

GLP: no

Toxicity to algae/aquatic plants:

EC50 : 29.6 mg/l

Exposure time: 72 h

Toxicity to fish (Chronic toxicity):

GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC: 4.16 mg/l

Exposure time: 21 d

Species: Daphnia magna (Water flea)

Test Type: semi-static test

Test substance: Fresh water

Method: OECD Test Guideline 211

**Propylidynetrimethanol, propoxylated, reaction products with ammonia:**

Toxicity to fish:

LC50 (Oncorhynchus mykiss (rainbow trout)): &gt; 100 mg/l

Exposure time: 96 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 13 mg/l

Exposure time: 48 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants:

ErC50 (Selenastrum capricornutum (green algae)): 4.4 mg/l

Exposure time: 72 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 201

NOEC (Selenastrum capricornutum (green algae)): 1 mg/l

Exposure time: 72 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 201

Toxicity to microorganisms:

EC50 (activated sludge): ca. 1,000 mg/l

Exposure time: 0.5 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 209

**2-Piperazin-1-ylethylamine:**

Toxicity to fish:

LC50 : 2,190 mg/l

Exposure time: 96 h

Test Type: static test

Test substance: Fresh water

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Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 58 mg/l

Exposure time: 48 h

Test Type: static test

Method: OECD Test Guideline 202

Remarks: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to algae/aquatic plants:

EC50 (Selenastrum capricornutum (green algae)): &gt; 1,000 mg/l

Exposure time: 72 h

Test substance: Fresh water

Method: OECD Test Guideline 201

Toxicity to microorganisms:

EC50 (Bacteria): &gt; 100 mg/l, mg/kg

Exposure time: 28 d

Method: OECD Test Guideline 216

EC50 (activated sludge): 511 mg/l

Exposure time: 2 h

Test Type: static test

Test substance: Fresh water

Method: ISO Method, other

Toxicity to soil dwelling organisms:

LC50: 712 mg/kg

Exposure time: 56 d

Species: Eisenia fetida (earthworms)

Method: OECD Test Guideline 222

NOEC: 500 mg/kg

Exposure time: 56 d

Species: Eisenia fetida (earthworms)

Method: OECD Test Guideline 222

**12.2 Persistence and degradability****Components:****3-Aminomethyl-3,5,5-trimethylcyclohexylamine:**

Biodegradability

Test Type: aerobic

Inoculum: activated sludge

Concentration: 6.9 mg/l

Result: Not readily biodegradable.

Biodegradation: 8 %

Exposure time: 28 d

Method: Directive 67/548/EEC Annex V, C.4.A.

**4,4'-Methylenebis(cyclohexylamine):**

Biodegradability

Inoculum: activated sludge

Result: Not readily biodegradable.

Biodegradation: &lt; 10 %

Exposure time: 28 d

Method: OECD Test Guideline 302B

**Cyclohex-1,2-ylenediamine:**

Biodegradability

Result: Readily biodegradable.

Exposure time: 17 d

Method: OECD Test Guideline 301D

Stability in water:

Method: No information available.

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GLP: No information available.

Remarks: see user defined free text

Photodegradation:

Rate constant: &lt; .001

GLP: no

**Propylidynetrimethanol, propoxylated, reaction products with ammonia:**

Biodegradability

Concentration: 100 mg/l

Result: Not readily biodegradable.

Biodegradation: &lt; 5 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

Stability in water:

Degradation half life (DT50): &gt; 1 yr (25 °C)

pH: 7.5

Method: OECD Test Guideline 111

Remarks: Fresh water

**2-Piperazin-1-ylethylamine:**

Biodegradability

Test Type: aerobic

Inoculum: activated sludge

Result: Not readily biodegradable.

Biodegradation: 0 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

Biochemical Oxygen Demand (BOD)

5 mg/l

Incubation time: 5 d

Chemical Oxygen Demand (COD)

560 mg/l

Photodegradation:

Test Type: Air

Degradation (direct photolysis): 50 %

**12.3 Bioaccumulative potential****Components:****3-Aminomethyl-3,5,5-trimethylcyclohexylamine:**

Partition coefficient: n-octanol/water

log Pow: 0.99 (23 °C)

pH: 6.34

Method: OECD Test Guideline 107

**4,4'-Methylenebis(cyclohexylamine):**

Bioaccumulation

Bioconcentration factor (BCF): 10.15

Partition coefficient: n-octanol/water

log Pow: 2.03 (25 °C)

Method: OECD Test Guideline 107

**Cyclohex-1,2-ylenediamine:**

Partition coefficient: n-octanol/water

log Pow: &lt; -0.9 (20 °C)

pH: 7

Method: OECD Test Guideline 107

GLP: yes

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#### Propylidyntrimethanol, propoxylated, reaction products with ammonia:

Partition coefficient: n-octanol/water

log Pow: -1.13 (20 - 25 °C)

pH: 12.7

Method: Partition coefficient

#### 2-Piperazin-1-ylethylamine:

Bioaccumulation

Species: Fish

Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water

log Pow: -1.48 (20 °C)

#### 12.4 Mobility in soil

##### Components:

##### 3-Aminomethyl-3,5,5-trimethylcyclohexylamine:

Distribution among environmental compartments: Koc: 928

##### 4,4'-Methylenebis(cyclohexylamine):

Distribution among environmental compartments: Koc: 446

##### 2-Piperazin-1-ylethylamine:

Distribution among environmental compartments: Koc: Ca. 37.000

#### 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 Endocrine disrupting properties

##### Product:

##### Assessment:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### 12.6 Other adverse effects

##### Product:

##### Additional ecological information:

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life.

Harmful to aquatic life with long lasting effects.

### 13. Disposal considerations

#### 13.1 Waste treatment methods

##### Product:

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

Do not dispose of waste into sewer.

Do not contaminate ponds, waterways or ditches with chemical or used container.

##### Contaminated packaging:

Empty remaining contents.

Dispose of as unused product.

Do not re-use empty containers.

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**14. Transport information****IATA**

|  |  |
|--|--|
| <b>14.1 UN number</b>                    | UN 2735  |
| <b>14.2 UN proper shipping name</b>      | Amines, liquid, corrosive, n.o.s.<br>(1,2-DIAMINO CYCLOHEXANE, ISOPHORONE DIAMINE) |
| <b>14.3 Transport hazard class(es)</b>   | 8  |
| <b>14.4 Packing group</b>                | II   |
| Labels                                   | Corrosive  |
| Packing instruction (cargo aircraft)     | 855  |
| Packing instruction (passenger aircraft) | 851  |

**IMDG**

|  |  |
|--|--|
| <b>14.1 UN number</b>                  | UN 2735  |
| <b>14.2 UN proper shipping name</b>    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(1,2-DIAMINO CYCLOHEXANE, ISOPHORONE DIAMINE) |
| <b>14.3 Transport hazard class(es)</b> | 8  |
| <b>14.4 Packing group</b>              | II   |
| Labels                                 | 8  |
| EmS Code                               | F-A, S-B   |

**14.5 Environmental hazards****Marine pollutant** no**ADR**

|  |  |
|--|--|
| <b>14.1 UN number</b>                  | UN 2735  |
| <b>14.2 UN proper shipping name</b>    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(1,2-DIAMINO CYCLOHEXANE, ISOPHORONE DIAMINE) |
| <b>14.3 Transport hazard class(es)</b> | 8  |
| <b>14.4 Packing group Labels</b>       | II   |
| <b>14.5 Environmental hazards</b>      | 8  |
| Environmentally hazardous              | no   |

**RID**

|  |  |
|--|--|
| <b>14.1 UN number</b>                  | UN 2735  |
| <b>14.2 UN proper shipping name</b>    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(1,2-DIAMINO CYCLOHEXANE, ISOPHORONE DIAMINE) |
| <b>14.3 Transport hazard class(es)</b> | 8  |
| <b>14.4 Packing group</b>              | II   |
| Labels                                 | 8  |
| <b>14.5 Environmental hazards</b>      |  |
| Environmentally hazardous              | no   |

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

Not applicable for product as supplied.

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

REACH - List of substances subject to authorisation (Annex XIV): Not applicable.

REACH - List of substances subject to authorisation - Future sunset date: Not applicable.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59):

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances: Not applicable.

Water contaminating class (Germany): WGK 3 highly hazardous to water  
Classification according to AwSV, Annex 1 (5.2)

TA Luft List (Germany):

Total dust: Not applicable

Inorganic substances in powdered form: Not applicable



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Inorganic substances in vapour or gaseous form: Not applicable

Organic Substances: Not applicable

Carcinogenic substances: Not applicable

Mutagenic: Not applicable

Toxic to reproduction: Not applicable

**Other regulations:**

Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act - MuSchG).

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

**The components of this product are reported in the following inventories:**

DSL: All components of this product are on the Canadian DSL.

AICS: On the inventory, or in compliance with the inventory.

NZIoC: Not in compliance with the inventory

ENCS: On the inventory, or in compliance with the inventory.

KECI: On the inventory, or in compliance with the inventory.

PICCS: On the inventory, or in compliance with the inventory.

IECSC: On the inventory, or in compliance with the inventory.

TCSI: On the inventory, or in compliance with the inventory.

TSCA: All substances listed as active on the TSCA inventory

**Inventories:**

AICS (Australia), AII (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

**15.2 Chemical safety assessment**

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

**16. Other information****Full text of H-Statements**

H302: Harmful if swallowed.

H311: Toxic in contact with skin.

H312: Harmful in contact with skin.

H314: Causes severe skin burns and eye damage.

H317: May cause an allergic skin reaction.

H318: Causes serious eye damage.

H332: Harmful if inhaled.

H335: May cause respiratory irritation.

H361: Suspected of damaging fertility or the unborn child.

H372: Causes damage to organs through prolonged or repeated exposure if inhaled.

H373: May cause damage to organs through prolonged or repeated exposure if swallowed.

H411: Toxic to aquatic life with long lasting effects.

H412: Harmful to aquatic life with long lasting effects.

**Full text of other abbreviations**

Acute Tox.: Acute toxicity

Aquatic Chronic: Long-term (chronic) aquatic hazard

Eye Dam.: Serious eye damage

Repr.: Reproductive toxicity

Skin Corr.: Skin corrosion

Skin Sens.: Skin sensitization

STOT RE: Specific target organ toxicity - repeated exposure

STOT SE: Specific target organ toxicity - single exposure

**Further information****Classification of the mixture:**

Acute Tox. 4 H302

Skin Corr. 1A H314

Eye Dam. 1 H318

**Classification procedure:**

Calculation method

Calculation method

Calculation method

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|                   |      |                    |
|-------------------|------|--------------------|
| Skin Sens. 1      | H317 | Calculation method |
| Repr. 2           | H361 | Calculation method |
| STOT SE 3         | H335 | Calculation method |
| STOT RE 2         | H373 | Calculation method |
| Aquatic Chronic 3 | H412 | Calculation method |

Changes in section(s): 2–9, 11–16

The information of this MSDS is based on the present state of our knowledge and meets the requirements of EU and national laws. The user's working conditions however, are beyond our knowledge and control. The product is not to be used for purposes other than those specified under Section 1 without a written permission. It remains the responsibility of the user to ensure that the necessary steps are taken to meet the laws and regulations. Handling of the product may only be done by people above 18 years of age, who are satisfactorily informed of how to do the work, the hazardous properties and necessary safety precautions. The information given in this SDS is to describe the product only in terms of health and safety requirements and should not, therefore, be construed as guaranteeing specific properties.