# Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU

**Ethylenediamine ≥99,5 %, for synthesis**

article number: **4218**
Version: **4.0 en**
Replaces version of: 04.01.2022
Version: (3)

date of compilation: 08.04.2016
Revision: 02.03.2024

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

### 1.1 Product identifier

| | |
|---|---|
| Identification of the substance | **Ethylenediamine** ≥99,5 %, for synthesis |
| Article number | 4218 |
| Registration number (REACH) | 01-2119480383-37-xxxx |
| Index number in CLP Annex VI | 612-006-00-6 |
| EC number | 203-468-6 |
| CAS number | 107-15-3 |

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

| | |
|---|---|
| Relevant identified uses: | Laboratory chemical<br>Laboratory and analytical use |
| Uses advised against: | Do not use for squirting or spraying. Do not use for products which come into direct contact with the skin. Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household). Food, drink and animal feedingstuffs. |

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

Carl Roth GmbH + Co. KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

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**Website:** www.carlroth.de

| | |
|---|---|
| Competent person responsible for the safety data sheet: | Department Health, Safety and Environment |
| **e-mail (competent person):** | **sicherheit@carlroth.de** |

### 1.4 Emergency telephone number

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008 (CLP)**

| Section | Hazard class | Category | Hazard class and category | Hazard statement |
|---|---|---|---|---|
| 2.6 | Flammable liquid | 3 | Flam. Liq. 3 | H226 |
| 3.1O | Acute toxicity (oral) | 4 | Acute Tox. 4 | H302 |
| 3.1D | Acute toxicity (dermal) | 3 | Acute Tox. 3 | H311 |

| Section | Hazard class | Cat-egory | Hazard class and category | Hazard statement |
|---|---|---|---|---|
| 3.1I | Acute toxicity (inhal.) | 4 | Acute Tox. 4 | H332 |
| 3.2 | Skin corrosion/irritation | 1B | Skin Corr. 1B | H314 |
| 3.3 | Serious eye damage/eye irritation | 1 | Eye Dam. 1 | H318 |
| 3.4R | Respiratory sensitisation | 1 | Resp. Sens. 1 | H334 |
| 3.4S | Skin sensitisation | 1 | Skin Sens. 1 | H317 |
| 4.1C | Hazardous to the aquatic environment - chronic hazard | 3 | Aquatic Chronic 3 | H412 |

For full text of abbreviations: see SECTION 16

**The most important adverse physicochemical, human health and environmental effects**

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis. The product is combustible and can be ignited by potential ignition sources. Spillage and fire water can cause pollution of watercourses.

## 2.2 Label elements

**Labelling according to Regulation (EC) No 1272/2008 (CLP)**

**Signal word** **Danger**

**Pictograms**

GHS02, GHS05, GHS06, GHS08

**Hazard statements**

| | |
|---|---|
| H226 | Flammable liquid and vapour |
| H302+H332 | Harmful if swallowed or if inhaled |
| H311 | Toxic in contact with skin |
| H314 | Causes severe skin burns and eye damage |
| H317 | May cause an allergic skin reaction |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled |
| H412 | Harmful to aquatic life with long lasting effects |

**Precautionary statements**

**Precautionary statements - prevention**

| | |
|---|---|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |

**Precautionary statements - response**

| | |
|---|---|
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower] |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing |
| P310 | Immediately call a POISON CENTER/doctor |

**Labelling of packages where the contents do not exceed 125 ml**

Signal word: **Danger**

Symbol(s)

| | |
|---|---|
| H311 | Toxic in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H412 | Harmful to aquatic life with long lasting effects. |

| | |
|---|---|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310 | Immediately call a POISON CENTER/doctor. |

## 2.3 Other hazards

### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

### Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

# SECTION 3: Composition/information on ingredients

## 3.1 Substances

| | |
|---|---|
| Name of substance | Ethylenediamine |
| Molecular formula | $C_2H_8N_2$ |
| Molar mass | 60,1 $^{g}/_{mol}$ |
| REACH Reg. No | 01-2119480383-37-xxxx |
| CAS No | 107-15-3 |
| EC No | 203-468-6 |
| Index No | 612-006-00-6 |

**Substance of Very High Concern (SVHC)**

| Name of substance | CAS No | EC No | Listed in | Remarks |
|---|---|---|---|---|
| Ethylenediamine | 107-15-3 | 203-468-6 | Candidate list | RSP (57f-hh) |

**Legend**
Candidate list — Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
RSP (57f-hh) — Respiratory sensitising properties (article 57(f) - human health)

**Substance, Specific Conc. Limits, M-factors, ATE**

| Specific Conc. Limits | M-Factors | ATE | Exposure route |
|---|---|---|---|
| - | - | 866 $^{mg}/_{kg}$<br>560 $^{mg}/_{kg}$<br>14,7 $^{mg}/_{l}$/4h | oral<br>dermal<br>inhalation: vapour |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

**General notes**

Take off immediately all contaminated clothing. Self-protection of the first aider.

**Following inhalation**

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

**Following skin contact**

After contact with skin, wash immediately with plenty of water. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

**Following eye contact**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye.

**Following ingestion**

Rinse mouth immediately and drink plenty of water. Rinse mouth with water (only if the person is conscious). Call a physician immediately. If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects).

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

Corrosion, Vomiting, Risk of blindness, Gastric perforation, Risk of serious damage to eyes, Allergic reactions, Cough, Dyspnoea

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**

co-ordinate firefighting measures to the fire surroundings!
water spray, alcohol resistant foam, dry extinguishing powder, BC-powder, carbon dioxide ($CO_2$)

**Unsuitable extinguishing media**

water jet

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

Combustible. In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours may form explosive mixtures with air.

**Hazardous combustion products**

In case of fire may be liberated: Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide ($CO_2$)

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Do not allow firefighting water to enter drains or water courses. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

## SECTION 6: Accidental release measures

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

**For non-emergency personnel**

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray. Avoidance of ignition sources.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

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

**Advice on how to contain a spill**

Covering of drains.

**Advice on how to clean up a spill**

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

**Other information relating to spills and releases**

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Provision of sufficient ventilation. Handle and open container with care. Clear contaminated areas thoroughly.

**Measures to prevent fire as well as aerosol and dust generation**

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharge.

**Advice on general occupational hygiene**

Thorough skin-cleansing after handling the product. When using do not smoke.

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

Keep container tightly closed.

**Incompatible substances or mixtures**

Observe hints for combined storage.

**Consideration of other advice:**

Store locked up. Ground/bond container and receiving equipment.

**Ventilation requirements**

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation.

**Specific designs for storage rooms or vessels**

Recommended storage temperature: 15 – 25 °C

### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**National limit values**

**Occupational exposure limit values (Workplace Exposure Limits)**

This information is not available.

**Human health values**

**Relevant DNELs and other threshold levels**

| Endpoint | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
|---|---|---|---|---|
| DNEL | 25 mg/m³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| DNEL | 3,6 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |

**Environmental values**

**Relevant PNECs and other threshold levels**

| End-point | Threshold level | Organism | Environmental compartment | Exposure time |
|---|---|---|---|---|
| PNEC | 0,167 mg/l | aquatic organisms | water | intermittent release |
| PNEC | 0,016 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| PNEC | 0,002 mg/l | aquatic organisms | marine water | short-term (single instance) |
| PNEC | 0,5 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| PNEC | 7,68 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| PNEC | 0,768 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| PNEC | 4,36 mg/kg | terrestrial organisms | soil | short-term (single instance) |

## 8.2 Exposure controls

### Individual protection measures (personal protective equipment)

**Eye/face protection**

Use safety goggle with side protection. Wear face protection.

**Skin protection**

**• hand protection**

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

**• type of material**

Butyl caoutchouc (butyl rubber)

**• material thickness**

0,7mm

**• breakthrough times of the glove material**

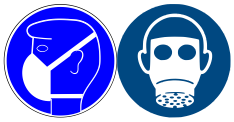
>480 minutes (permeation: level 6)

**• Splash protection - Protective gloves**
• type of material: NBR (Nitrile rubber)
• material thickness: 0,4 mm
• breakthrough times of the glove material: >30 minutes (permeation: level 2)

**• other protection measures**

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

**Respiratory protection**



Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).

**Environmental exposure controls**

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | liquid |
| Colour | colourless |
| Odour | amine |
| Melting point/freezing point | 11,1 °C (ECHA) |
| Boiling point or initial boiling point and boiling range | 117,1 °C at 1.013 hPa (ECHA) |
| Flammability | flammable liquid in accordance with GHS criteria |
| Lower and upper explosion limit | 2,5 vol% (LEL) - 16,3 vol% (UEL) |
| Flash point | 42 °C at 1.013 hPa (ECHA) |
| Auto-ignition temperature | 405 °C (ECHA) (auto-ignition temperature (liquids and gases)) |
| Decomposition temperature | not relevant |
| pH (value) | 12,2 (in aqueous solution: 100 $^{g}/_{l}$, 20 °C) |
| Kinematic viscosity | not determined |
| Dynamic viscosity | 1,265 – 1,725 mPa s at 25 °C |
| Solubility(ies) | |
| Water solubility | 1.000 $^{g}/_{l}$ (ECHA) |
| Partition coefficient | |
| Partition coefficient n-octanol/water (log value): | -1,62 (pH value: >12, 25 °C) (ECHA) |
| Soil organic carbon/water (log KOC) | 3,679 (ECHA) |
| Vapour pressure | 12 hPa at 20 °C<br>22 hPa at 30 °C<br>70 hPa at 50 °C |
| Density and/or relative density | |
| Density | 0,897 $^{g}/_{cm^3}$ at 20 °C (ECHA) |
| Relative vapour density | Information on this property is not available. |
| Particle characteristics | not relevant (liquid) |
| Other safety parameters | |
| Oxidising properties | none |

### 9.2 Other information

| | |
|---|---|
| Information with regard to physical hazard classes: | There is no additional information. |
| Other safety characteristics: | |
| Temperature class (EU, acc. to ATEX) | T2<br>Maximum permissible surface temperature on the equipment: 300°C |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

It's a reactive substance. Risk of ignition.

**If heated**

Risk of ignition. Vapours may form explosive mixtures with air.

### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

### 10.3 Possibility of hazardous reactions

**Violent reaction with:** Aldehydes, Alcohols, Halogenated hydrocarbons, Perchlorates,
**Exothermic reaction with:** Acrylic acid, Acetic acid, Acetic anhydride, Oxidisers, Acids, Carbon disulfide, Hydrochloric gas

### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

### 10.5 Incompatible materials

aluminium, iron, copper, bronze, brass, zinc

### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

**Classification according to GHS (1272/2008/EC, CLP)**

**Acute toxicity**

Harmful if swallowed. Toxic in contact with skin. Harmful if inhaled.

**Acute toxicity**

| Exposure route | Endpoint | Value | Species | Method | Source |
|---|---|---|---|---|---|
| oral | LD50 | 866 $^{mg}/_{kg}$ | rat | | ECHA |
| inhalation: vapour | LC50 | 14,7 $^{mg}/_{l}$/4h | rat | | ECHA |
| dermal | LD50 | 560 $^{mg}/_{kg}$ | rabbit | | ECHA |

**Skin corrosion/irritation**

Causes severe skin burns and eye damage.

**Serious eye damage/eye irritation**

Causes serious eye damage.

**Respiratory or skin sensitisation**

May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

**Germ cell mutagenicity**

Shall not be classified as germ cell mutagenic.

**Carcinogenicity**

Shall not be classified as carcinogenic.

**Reproductive toxicity**

Shall not be classified as a reproductive toxicant.

**Specific target organ toxicity - single exposure**

Shall not be classified as a specific target organ toxicant (single exposure).

**Specific target organ toxicity - repeated exposure**

Shall not be classified as a specific target organ toxicant (repeated exposure).

**Aspiration hazard**

Shall not be classified as presenting an aspiration hazard.

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

**• If swallowed**

If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects)

**• If in eyes**

causes burns, Causes serious eye damage, risk of blindness

**• If inhaled**

May produce an allergic reaction, cough, Dyspnoea

**• If on skin**

causes severe burns, causes poorly healing wounds, May produce an allergic reaction, pruritis, localised redness

**• Other information**

Other adverse effects: Liver and kidney damage

### 11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

### 11.3 Information on other hazards

There is no additional information.

## SECTION 12: Ecological information

### 12.1 Toxicity

Harmful to aquatic life with long lasting effects.

| Aquatic toxicity (acute) | | | | |
|---|---|---|---|---|
| **Endpoint** | **Value** | **Species** | **Source** | **Exposure time** |
| LC50 | 640 $^{mg}/_{l}$ | fish | ECHA | 96 h |
| EC50 | 16,7 $^{mg}/_{l}$ | aquatic invertebrates | ECHA | 48 h |
| ErC50 | 645 $^{mg}/_{l}$ | algae | ECHA | 72 h |

### 12.2 Persistence and degradability

Theoretical Oxygen Demand (without nitrification): 1,331 $^{mg}/_{mg}$
Theoretical Oxygen Demand (with nitrification): 2,462 $^{mg}/_{mg}$
Theoretical Carbon Dioxide: 1,465 $^{mg}/_{mg}$

**Biodegradation**

The substance is readily biodegradable.

| Process of degradability | | |
|---|---|---|
| **Process** | **Degradation rate** | **Time** |
| biotic/abiotic | 94 % | 28 d |
| oxygen depletion | 10 % | 5 d |

### 12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

| | |
|---|---|
| n-octanol/water (log KOW) | -1,62 (pH value: >12, 25 °C) (ECHA) |

### 12.4 Mobility in soil

| | |
|---|---|
| Henry's law constant | 0,6 $^{Pa\ m^3}/_{mol}$ at 25 °C (ECHA) |
| The Organic Carbon normalised adsorption coefficient | 3,679 (ECHA) |

### 12.5 Results of PBT and vPvB assessment

Data are not available.

### 12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Sewage disposal-relevant information**

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

**Waste treatment of containers/packagings**

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

### 13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

**Properties of waste which render it hazardous**

**HP 3** flammable
**HP 4** irritant - skin irritation and eye damage
**HP 6** acute toxicity
**HP 8** corrosive
**HP 13** sensitising
**HP 14** ecotoxic

### 13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

## SECTION 14: Transport information

### 14.1 UN number or ID number

| | |
|---|---|
| ADR | UN 1604 |
| IMDG-Code | UN 1604 |
| ICAO-TI | UN 1604 |

### 14.2 UN proper shipping name

| | |
|---|---|
| ADR | ETHYLENEDIAMINE |
| IMDG-Code | ETHYLENEDIAMINE |
| ICAO-TI | Ethylenediamine |

### 14.3 Transport hazard class(es)

| | |
|---|---|
| ADR | 8 (3) |
| IMDG-Code | 8 (3) |
| ICAO-TI | 8 (3) |

### 14.4 Packing group

| | |
|---|---|
| ADR | II |
| IMDG-Code | II |
| ICAO-TI | II |

### 14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

### 14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

### 14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

### 14.8 Information for each of the UN Model Regulations

**Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)Additional information**

| | |
|---|---|
| Proper shipping name | ETHYLENEDIAMINE |
| Particulars in the transport document | UN1604, ETHYLENEDIAMINE, 8 (3), II, (D/E) |
| Classification code | CF1 |
| Danger label(s) | 8+3 |

| | |
|---|---|
| Excepted quantities (EQ) | E2 |
| Limited quantities (LQ) | 1 L |
| Transport category (TC) | 2 |
| Tunnel restriction code (TRC) | D/E |
| Hazard identification No | 83 |

**International Maritime Dangerous Goods Code (IMDG) - Additional information**

| | |
|---|---|
| Proper shipping name | ETHYLENEDIAMINE |
| Particulars in the shipper's declaration | UN1604, ETHYLENEDIAMINE, 8 (3), II, 42°C c.c. |
| Marine pollutant | - |
| Danger label(s) | 8+3 |

| | |
|---|---|
| Special provisions (SP) | - |
| Excepted quantities (EQ) | E2 |
| Limited quantities (LQ) | 1 L |
| EmS | F-E, S-C |
| Stowage category | A |
| Segregation group | 18 - Alkalis |

**International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information**

| | |
|---|---|
| Proper shipping name | Ethylenediamine |
| Particulars in the shipper's declaration | UN1604, Ethylenediamine, 8 (3), II |
| Danger label(s) | 8+3 |

| | |
|---|---|
| Excepted quantities (EQ) | E2 |

| | |
|---|---|
| Limited quantities (LQ) | 0,5 L |

## SECTION 15: Regulatory information

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

**Relevant provisions of the European Union (EU)**

**Restrictions according to REACH, Annex XVII**

**Dangerous substances with restrictions (REACH, Annex XVII)**

| Name of substance | Name acc. to inventory | CAS No | Restriction | No |
|---|---|---|---|---|
| Ethylenediamine | this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC | | R3 | 3 |
| Ethylenediamine | flammable / pyrophoric | | R40 | 40 |
| Ethylenediamine | substances in tattoo inks and permanent make-up | | R75 | 75 |

**Legend**

R3 1. Shall not be used in:
- ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
- tricks and jokes,
- games for one or more participants, or any article intended to be used as such, even with ornamental aspects,

2. Articles not complying with paragraph 1 shall not be placed on the market.
3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
— can be used as fuel in decorative oil lamps for supply to the general public, and
— present an aspiration hazard and are labelled with H304.
4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
5. Without prejudice to the implementation of other Union provisions relating to the classification, labelling and packaging of substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
(a) lamp oils, labelled with H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil – or even sucking the wick of lamps – may lead to life-threatening lung damage";
(b) grill lighter fluids, labelled with H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter fluid may lead to life threatening lung damage';
(c) lamps oils and grill lighters, labelled with H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.';

R40 1. Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following:
- metallic glitter intended mainly for decoration,
- artificial snow and frost,
- 'whoopee' cushions,
- silly string aerosols,
- imitation excrement,
- horns for parties,
- decorative flakes and foams,
- artificial cobwebs,
- stink bombs.

2. Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances, suppliers shall ensure before the placing on the market that the packaging of aerosol dispensers referred to above is marked visibly, legibly and indelibly with:
'For professional users only'.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/324/EEC (2).
4. The aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless they conform to the requirements indicated.

**Legend**

R75 1. Shall not be placed on the market in mixtures for use for tattooing purposes, and mixtures containing any such substances shall not be used for tattooing purposes, after 4 January 2022 if the substance or substances in question is or are present in the following circumstances:
(a) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight;
(b) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as reproductive toxicant category 1A, 1B or 2, the substance is present in the mixture in a concentration equal to or greater than 0,001 % by weight;
(c) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as skin sensitiser category 1, 1A or 1B, the substance is present in the mixture in a concentration equal to or greater than 0,001 % by weight;
(d) in the case of a substance classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 as skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2, or as serious eye damage category 1 or eye irritant category 2, the substance is present in the mixture in a concentration equal to or greater than:
(i) 0,1 % by weight, if the substance is used solely as a pH regulator;
(ii) 0,01 % by weight, in all other cases;
(e) in the case of a substance listed in Annex II to Regulation (EC) No 1223/2009 (*1), the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight;
(f) in the case of a substance for which a condition of one or more of the following kinds is specified in column g (Product type, Body parts) of the table in Annex IV to Regulation (EC) No 1223/2009, the substance is present in the mixture in a concentration equal to or greater than 0,00005 % by weight:
(i) “Rinse-off products”;
(ii) “Not to be used in products applied on mucous membranes”;
(iii) “Not to be used in eye products”;
(g) in the case of a substance for which a condition is specified in column h (Maximum concentration in ready for use preparation) or column i (Other) of the table in Annex IV to Regulation (EC) No 1223/2009, the substance is present in the mixture in a concentration, or in some other way, that does not accord with the condition specified in that column;
(h) in the case of a substance listed in Appendix 13 to this Annex, the substance is present in the mixture in a concentration equal to or greater than the concentration limit specified for that substance in that Appendix.
2. For the purposes of this entry use of a mixture “for tattooing purposes” means injection or introduction of the mixture into a person’s skin, mucous membrane or eyeball, by any process or procedure (including procedures commonly referred to as permanent make-up, cosmetic tattooing, micro-blading and micro-pigmentation), with the aim of making a mark or design on his or her body.
3. If a substance not listed in Appendix 13 falls within more than one of points (a) to (g) of paragraph 1, the strictest concentration limit laid down in the points in question shall apply to that substance. If a substance listed in Appendix 13 also falls within one or more of points (a) to (g) of paragraph 1, the concentration limit laid down in point (h) of paragraph 1 shall apply to that substance.
4. By way of derogation, paragraph 1 shall not apply to the following substances until 4 January 2023:
(a) Pigment Blue 15:3 (CI 74160, EC No 205-685-1, CAS No 147-14-8);
(b) Pigment Green 7 (CI 74260, EC No 215-524-7, CAS No 1328-53-6).
5. If Part 3 of Annex VI to Regulation (EC) No 1272/2008 is amended after 4 January 2021 to classify or re-classify a substance such that the substance then becomes caught by point (a), (b), (c) or (d) of paragraph 1 of this entry, or such that it then falls within a different one of those points from the one within which it fell previously, and the date of application of that new or revised classification is after the date referred to in paragraph 1 or, as the case may be, paragraph 4 of this entry, that amendment shall, for the purposes of applying this entry to that substance, be treated as taking effect on the date of application of that new or revised classification.
6. If Annex II or Annex IV to Regulation (EC) No 1223/2009 is amended after 4 January 2021 to list or change the listing of a substance such that the substance then becomes caught by point (e), (f) or (g) of paragraph 1 of this entry, or such that it then falls within a different one of those points from the one within which it fell previously, and the amendment takes effect after the date referred to in paragraph 1 or, as the case may be, paragraph 4 of this entry, that amendment shall, for the purposes of applying this entry to that substance, be treated as taking effect from the date falling 18 months after entry into force of the act by which that amendment was made.
7. Suppliers placing a mixture on the market for use for tattooing purposes shall ensure that, after 4 January 2022, the mixture is marked with the following information:
(a) the statement “Mixture for use in tattoos or permanent make-up”;
(b) a reference number to uniquely identify the batch;
(c) the list of ingredients in accordance with the nomenclature established in the glossary of common ingredient names pursuant to Article 33 of Regulation (EC) No 1223/2009, or in the absence of a common ingredient name, the IUPAC name. In the absence of a common ingredient name or IUPAC name, the CAS and EC number. Ingredients shall be listed in descending order by weight or volume of the ingredients at the time of formulation. “Ingredient” means any substance added during the process of formulation and present in the mixture for use for tattooing purposes. Impurities shall not be regarded as ingredients. If the name of a substance, used as ingredient within the meaning of this entry, is already required to be stated on the label in accordance with Regulation (EC) No 1272/2008, that ingredient does not need to be marked in accordance with this Regulation;
(d) the additional statement “pH regulator” for substances falling under point (d)(i) of paragraph 1;
(e) the statement "Contains nickel. Can cause allergic reactions." if the mixture contains nickel below the concentration limit specified in Appendix 13;
(f) the statement "Contains chromium (VI). Can cause allergic reactions." if the mixture contains chromium (VI) below the concentration limit specified in Appendix 13;
(g) safety instructions for use insofar as they are not already required to be stated on the label by Regulation (EC) No 1272/2008.
The information shall be clearly visible, easily legible and marked in a way that is indelible.
The information shall be written in the official language(s) of the Member State(s) where the mixture is placed on the market, unless the Member State(s) concerned provide(s) otherwise.
Where necessary because of the size of the package, the information listed in the first subparagraph, except for point (a), shall be included instead in the instructions for use.
Before using a mixture for tattooing purposes, the person using the mixture shall provide the person undergoing the procedure with the information marked on the package or included in the instructions for use pursuant to this paragraph.
8. Mixtures that do not contain the statement “Mixture for use in tattoos or permanent make-up” shall not be used for tattooing purposes.

**Legend**

9. This entry does not apply to substances that are gases at temperature of 20 °C and pressure of 101,3 kPa, or generate a vapour pressure of more than 300 kPa at temperature of 50 °C, with the exception of formaldehyde (CAS No 50-00-0, EC No 200-001-8).
10. This entry does not apply to the placing on the market of a mixture for use for tattooing purposes, or to the use of a mixture for tattooing purposes, when placed on the market exclusively as a medical device or an accessory to a medical device, within the meaning of Regulation (EU) 2017/745, or when used exclusively as a medical device or an accessory to a medical device, within the same meaning. Where the placing on the market or use may not be exclusively as a medical device or an accessory to a medical device, the requirements of Regulation (EU) 2017/745 and of this Regulation shall apply cumulatively.

### List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list

**Substance of Very High Concern (SVHC)**

| Name acc. to inventory | CAS No | Listed in | Remarks | Latest application date | Sunset date | Date of inclusion |
|---|---|---|---|---|---|---|
| ethylenediamine (EDA) | 107-15-3 | Candidate list | RSP (57f-hh) | | | 27.06.2018 |

**Legend**

Candidate list Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
RSP (57f-hh) Respiratory sensitising properties (article 57(f) - human health)

### Seveso Directive

**2012/18/EU (Seveso III)**

| No | Dangerous substance/hazard categories | Qualifying quantity (tonnes) for the application of lower and upper-tier requirements | | Notes |
|---|---|---|---|---|
| P5c | flammable liquids (cat. 2, 3) | 5.000 | 50.000 | 51) |

**Notation**

51) Flammable liquids, categories 2 or 3 not covered by P5a and P5b

### Deco-Paint Directive

| | |
|---|---|
| VOC content | 100 % |
| VOC content | 897 $^{g}/_{l}$ |

### Industrial Emissions Directive (IED)

| | |
|---|---|
| VOC content | 100 % |
| VOC content | 897 $^{g}/_{l}$ |

### Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

### Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

### Water Framework Directive (WFD)

**List of pollutants (WFD)**

| Name of substance | Name acc. to inventory | CAS No | Listed in | Remarks |
|---|---|---|---|---|
| Ethylenediamine | Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment | | a) | |

**Legend**
a) Indicative list of the main pollutants

### Regulation on the marketing and use of explosives precursors
not listed

### Regulation on drug precursors
not listed

### Regulation on substances that deplete the ozone layer (ODS)
not listed

### Regulation concerning the export and import of hazardous chemicals (PIC)
not listed

### Regulation on persistent organic pollutants (POP)
not listed

### Other information
Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

### National inventories

| Country | Inventory | Status |
|---|---|---|
| AU | AIIC | substance is listed |
| CA | DSL | substance is listed |
| CN | IECSC | substance is listed |
| EU | ECSI | substance is listed |
| EU | REACH Reg. | substance is listed |
| JP | CSCL-ENCS | substance is listed |
| JP | ISHA-ENCS | substance is listed |
| KR | KECI | substance is listed |
| MX | INSQ | substance is listed |
| NZ | NZIoC | substance is listed |
| PH | PICCS | substance is listed |
| TR | CICR | substance is listed |

| Country | Inventory | Status |
|---|---|---|
| TW | TCSI | substance is listed |
| US | TSCA | substance is listed (ACTIVE) |
| VN | NCI | substance is listed |

**Legend**

| | |
|---|---|
| AIIC | Australian Inventory of Industrial Chemicals |
| CICR | Chemical Inventory and Control Regulation |
| CSCL-ENCS | List of Existing and New Chemical Substances (CSCL-ENCS) |
| DSL | Domestic Substances List (DSL) |
| ECSI | EC Substance Inventory (EINECS, ELINCS, NLP) |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| INSQ | National Inventory of Chemical Substances |
| ISHA-ENCS | Inventory of Existing and New Chemical Substances (ISHA-ENCS) |
| KECI | Korea Existing Chemicals Inventory |
| NCI | National Chemical Inventory |
| NZIoC | New Zealand Inventory of Chemicals |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances (PICCS) |
| REACH Reg. | REACH registered substances |
| TCSI | Taiwan Chemical Substance Inventory |
| TSCA | Toxic Substance Control Act |

### 15.2 Chemical safety assessment

According to REACH, Article 14 (1) a chemical safety assessment has been carried out for this substance or components of this mixture when the substance has been registered in quantities of 10 tonnes or more per year per registrant.

## SECTION 16: Other information

### Indication of changes (revised safety data sheet)

| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---|---|---|---|
| 2.3 | | Endocrine disrupting properties:<br>Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%. | yes |
| 15.1 | VOC content:<br>100 %<br>, 897 $^{g}/_{l}$ | VOC content:<br>100 % | yes |
| 15.1 | | VOC content:<br>897 $^{g}/_{l}$ | yes |
| 15.1 | | National inventories:<br>change in the listing (table) | yes |
| 15.2 | Chemical Safety Assessment:<br>No Chemical Safety Assessment has been carried out for this substance. | Chemical safety assessment:<br>According to REACH, Article 14 (1) a chemical safety assessment has been carried out for this substance or components of this mixture when the substance has been registered in quantities of 10 tonnes or more per year per registrant. | yes |

### Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|---|---|
| ADR | Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road) |
| ATE | Acute Toxicity Estimate |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| CLP | Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DNEL | Derived No-Effect Level |
| EC50 | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| EC No | The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union) |
| ED | Endocrine disruptor |
| EINECS | European Inventory of Existing Commercial Chemical Substances |
| ELINCS | European List of Notified Chemical Substances |
| EmS | Emergency Schedule |
| ErC50 | ≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control |
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |
| ICAO-TI | Technical instructions for the safe transport of dangerous goods by air |
| IMDG | International Maritime Dangerous Goods Code |
| IMDG-Code | International Maritime Dangerous Goods Code |
| index No | The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008 |
| LC50 | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval |
| LD50 | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval |
| LEL | Lower explosion limit (LEL) |
| NLP | No-Longer Polymer |
| PBT | Persistent, Bioaccumulative and Toxic |
| PNEC | Predicted No-Effect Concentration |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| SVHC | Substance of Very High Concern |
| UEL | Upper explosion limit (UEL) |
| VOC | Volatile Organic Compounds |

| Abbr. | Descriptions of used abbreviations |
|---|---|
| vPvB | Very Persistent and very Bioaccumulative |

### Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### List of relevant phrases (code and full text as stated in section 2 and 3)

| Code | Text |
|---|---|
| H226 | Flammable liquid and vapour. |
| H302 | Harmful if swallowed. |
| H311 | Toxic 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. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H412 | Harmful to aquatic life with long lasting effects. |

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.