

SAFETY DATA SHEET

according to REACH Regulation (EC) No. 1907/2006, as amended by UK REACH Regulations SI 2019/758



Di-(2-ethylhexyl) amine
10190

Version / Revision 6.01
Supersedes Version 6.00***

Revision Date 25-Jan-2023
Issuing date 25-Jan-2023

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

1.1. Product identifier

Identification of the substance/preparation

Di-(2-ethylhexyl) amine

CAS-No 106-20-7
EC No. 203-372-4

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

Identified uses Intermediate
Lubricants and lubricant additives Formulation
Uses advised against None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking Identification **OQ Chemicals GmbH**
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Acute oral toxicity Category 4, H302
Acute dermal toxicity Category 3, H311
Acute inhalation toxicity Category 3, H331
Skin corrosion/irritation Category 1B, H314
Serious eye damage/eye irritation Category 1, H318
Environmental hazard Aquatic Chronic 1; H410
M-Factor: 11 (self-classification)

Additional information

For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

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Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms



Signal word

Danger

Hazard statements

H302: Harmful if swallowed.
H311: Toxic in contact with skin.
H331: Toxic if inhaled.
H314: Causes severe skin burns and eye damage.
H410: Very toxic to aquatic life with long lasting effects.

Precautionary statements

P260: Do not breathe gas/mist/vapours.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P321: Specific treatment: IF ON SKIN: Wash off with 3% acetic acid followed by large amounts of plain water for at least 5 min as a final step.
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.
P391: Collect spillage.
P403 + P233: Store in a well ventilated place. Keep container tightly closed.

2.3. Other hazards

Components of the product may be absorbed into the body through the skin
Vapour/air-mixtures are explosive at intense warming

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

Endocrine disrupting assessments

The substance is not listed on the candidate list according to Art. 59(1), REACH. The substance was not assessed as having endocrine disrupting properties according to regulation 2017/2100/EU or 2018/605/EU.

SECTION 3: Composition / information on ingredients

3.1. Substances

| Component | CAS-No | 1272/2008/EC | Concentration (%) |
|--------------------------|----------|---|-------------------|
| Bis-(2-ethylhexyl)-amine | 106-20-7 | Acute Tox. 4; H302 Acute Tox. 3; H311 Acute Tox. 3, H331 Skin Corr. 1B; H314 | > 99,0 |

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| | | | |
|--|--|--|--|
| | | Eye Dam. 1; H318 Aquatic Chronic 1; H410 M-Factor: 1 (self-classification) ATE = 1008 mg/kg (oral) ATE = 958 mg/kg (dermal) ATE = 0,91 mg/L (inhalation) (dust/mist) | |
|--|--|--|--|

For full text of Hazard- and EU Hazard-statements see SECTION 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

Keep at rest. Aerate with fresh air. Call a physician immediately. Symptoms of poisoning may develop many hours after exposure.

Skin

Wash off with 3% acetic acid followed by large amounts of plain water for at least 5 min as a final step. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

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

Main symptoms

shortness of breath, convulsions, cough, hypertensive effect, nausea, vomiting, circulatory collapse, discomfort.

Special hazard

Stomach perforation, Lung oedema.

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

General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat as an alkaline substance (similar to ammonia). If ingested, irrigate the stomach. Treat skin and mucous membranes with antihistamine and corticoids. In case of lung irritation, first treatment with cortisone spray. Symptoms may be delayed. Later control for pneumonia and lung oedema.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

alcohol-resistant foam, dry chemical, carbon dioxide (CO₂), water spray

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

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5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:
carbon monoxide (CO)
carbon dioxide (CO₂)
nitrogen oxides (NO_x)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors
Vapour/air-mixtures are explosive at intense warming

5.3. Advice for firefighters

Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Water run-off and vapor cloud may be corrosive. Water run-off can cause environmental damage. Keep people away from and upwind of fire. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.
For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant). Water runoff can cause environmental damage.

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.

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Advice on safe handling

Avoid contact with skin, eyes and clothing. Do not use compressed air for filling, discharging or handling. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms. Refill and handle product only in closed system.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Incompatible products

strong acids
oxidizing agents

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour/air-mixtures are explosive at intense warming.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture. Keep at temperatures between -1 and 38 °C (30 and 100 °F).

Temperature class

T3

7.3. Specific end use(s)

Intermediate

Lubricants and lubricant additives Formulation

For specific end use information see the annex of this safety data sheet

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

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Workers

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| | |
|--|--------------------------------------|
| DN(M)EL - long-term exposure - systemic effects - Inhalation | 1,76 mg/m ³ |
| DN(M)EL - acute / short-term exposure - systemic effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - local effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - acute / short-term exposure - local effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - systemic effects - Dermal | 0,25 mg/kg bw/day |
| DN(M)EL - acute / short-term exposure - systemic effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - local effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - acute / short-term exposure - local effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - local effects - eyes | Medium hazard (no threshold derived) |

General population

| | |
|--|--------------------------------------|
| DN(M)EL - long-term exposure - systemic effects - Inhalation | 0,435 mg/m ³ |
| DN(M)EL - acute / short-term exposure - systemic effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - local effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - acute / short-term exposure - local effects - Inhalation | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - systemic effects - Dermal | 0,125 mg/kg bw/day |
| DN(M)EL - acute / short-term exposure - systemic effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - local effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - acute / short-term exposure - local effects - Dermal | Medium hazard (no threshold derived) |
| DN(M)EL - long-term exposure - systemic effects - Oral | 0,125 mg/kg bw/day |
| DN(M)EL - acute / short-term exposure - systemic effects - Oral | Low hazard (no threshold derived) |
| DN(M)EL - local effects - eyes | Medium hazard (no threshold derived) |

Environment

| | |
|--|---|
| PNEC aqua - freshwater | 0,001 mg/l |
| PNEC aqua - marine water | 0,0001 mg/l |
| PNEC aqua - intermittent releases | 0,0155 mg/l |
| PNEC STP | 1,8 mg/l |
| PNEC sediment - freshwater | 43,6 mg/kg dw |
| PNEC sediment - marine water | 4,36 mg/kg dw |
| PNEC Air | No hazard identified |
| PNEC soil | 0,2 mg/kg dw |
| Secondary poisoning | No potential to cause toxic effects if accumulated (in higher organisms) via the food chain |

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8.2. Exposure controls

Special adaptations (REACH)

Not applicable.

Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Equipment should conform to EN 166

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

| | |
|---------------------------|---|
| Suitable material | Viton |
| Evaluation | according to EN 374: level 6 |
| Glove thickness | approx 0,5 mm |
| Break through time | > 480 min |
| Suitable material | polyvinylchloride |
| Evaluation | Information derived from practical experience |
| Glove thickness | approx 0,8 mm |

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection

Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Environmental exposure controls

Use product only in closed system. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

Additional advice

Further details on substance data can be found in the registration dossier under the following link:
<http://echa.europa.eu/information-on-chemicals/registered-substances>. For specific exposure controls see the annex to this safety data sheet.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | | | | | |
|--|---|--------------|-----------|------|--------|
| Physical state | liquid | | | | |
| Colour | colourless | | | | |
| Odour | amine-like | | | | |
| Odour threshold | No data available | | | | |
| Melting point/freezing point | - 89 °C | | | | |
| Method | DIN ISO 3016 | | | | |
| Boiling point or initial boiling point and boiling range | 277 °C @ 1013 hPa | | | | |
| Method | DIN 53171 | | | | |
| Flammability | Even if not classified as flammable, the product is capable of catching fire or being set on fire.*** | | | | |
| Lower explosion limit | 0,6 Vol % | | | | |
| Upper explosion limit | 3,7 Vol % | | | | |
| Flash point | 130 °C @ 1013 hPa | | | | |
| Method | DIN EN ISO 2719 | | | | |
| Autoignition temperature | 245 °C @ 1001 hPa | | | | |
| Method | DIN 51794 | | | | |
| Decomposition temperature | No data available | | | | |
| pH | 9,0 (0,01 g/l in water @ 25 °C (77 °F)) DIN 19268 | | | | |
| Kinematic Viscosity | 4,602 mm ² /s @ 20 °C | | | | |
| Method | ASTM D445 | | | | |
| Solubility | 14 mg/l @ 20 °C, in water, OECD 105 | | | | |
| Partition coefficient n-octanol/water (log value) | 7,3 (measured) OECD 117 | | | | |
| Vapour pressure | | | | | |
| Values [hPa] | Values [kPa] | Values [atm] | @ °C | @ °F | Method |
| 0,0023 | 0,0002 | < 0,001 | 20 | 68 | |
| 0,037 | 0,0037 | < 0,001 | 50 | 122 | |
| Density and/or relative density | | | | | |
| Values | @ °C | @ °F | Method | | |
| 0,8040 | 20 | 68 | DIN 51757 | | |
| Relative vapour density | No data available | | | | |
| Particle characteristics | not applicable | | | | |

9.2. Other information

| | |
|-----------------------|---|
| Explosive properties | Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties |
| Oxidizing properties | Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties |
| Molecular weight | 241,46 |
| Molecular formula | C ₁₆ H ₃₅ N |
| log K _{oc} | 5,5 @ 23 °C OECD 121 |
| Dissociation constant | pK _a 10,59 @ 25 °C (77 °F) (calculated) |
| Refractive index | 1,442 @ 20 °C |
| Surface tension | 48,0 mN/m (0,0125 g/l @ 20°C (68°F)), OECD 115 |
| Evaporation rate | No data available |

SECTION 10: Stability and Reactivity

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10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Vapour/air-mixtures are explosive at intense warming.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

strong acids, oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed. If heated to thermal decomposition the following decomposition products may occur depending on the conditions. carbon monoxide (CO). nitrogen oxides (NOx). cyanides. nitric acid. nitriles.

SECTION 11: Toxicological information

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

Likely routes of exposure Ingestion, Inhalation, Skin contact, Eye contact

| Acute toxicity | | | | |
|--|----------|----------------|------------------|------------------|
| Bis-(2-ethylhexyl)-amine (106-20-7) | | | | |
| Routes of Exposure | Endpoint | Values | Species | Method |
| Oral | LD50 | 1008 mg/kg | rat, male/female | OECD 401 |
| Dermal | LD50 | 958 mg/kg | rabbit | |
| Inhalative | LC50 | 0,91 mg/l (4h) | rat, male/female | aerosol OECD 403 |

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Assessment

The available data lead to the classification given in section 2

| Irritation and corrosion | | | | |
|--|---------|------------|----------------------|--|
| Bis-(2-ethylhexyl)-amine (106-20-7) | | | | |
| Target Organ Effects | Species | Result | Method | |
| Skin | rabbit | corrosive | | |
| Respiratory tract | rat | irritating | Inhalation Risk Test | |
| Respiratory tract | mouse | irritating | RD50 | |
| Eyes | rabbit | corrosive | | |

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

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Assessment

The available data lead to the classification given in section 2

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Assessment

Skin sensitization was not tested due to the corrosive properties of the substance
For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

Bis-(2-ethylhexyl)-amine (106-20-7)

| Type | Dose | Species | Method | |
|-------------------|-------------------|------------------|----------|------|
| Subacute toxicity | NOAEL: 75 mg/kg/d | rat, male/female | OECD 422 | Oral |

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Assessment

Based on available data, the classification criteria are not met for:
STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

Bis-(2-ethylhexyl)-amine (106-20-7)

| Type | Dose | Species | Evaluation | Method | |
|------------------------|-----------------|--|------------|---|----------------|
| Mutagenicity | | Salmonella typhimurium Escherichia coli | negative | OECD 471 (Ames) | In vitro study |
| Mutagenicity | | V79 cells, Chinese hamster | negative | OECD 476 (Mammalian Gene Mutation) HPRT | In vitro study |
| Reproductive toxicity | NOEL 75 mg/kg/d | rat | | OECD 422 | |
| Developmental Toxicity | NOEL 75 mg/kg/d | rat | | OECD 422 | |
| Mutagenicity | | V79 cells, Chinese hamster | negative | OECD 487 micronucleus test | In vitro study |

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

Evaluation

In vitro tests did not show mutagenic effects
No reprotoxic effects in the absence of maternal toxicity
No cancer study was conducted

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Main symptoms

shortness of breath, convulsions, cough, hypertensive effect, nausea, vomiting, circulatory collapse, discomfort.

Target Organ Systemic Toxicant - Single exposure

no data available

Target Organ Systemic Toxicant - Repeated exposure

no data available

Aspiration toxicity

no data available

11.2. Information on other hazards

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Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Other adverse effects

Components of the product may be absorbed into the body through the skin.

Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://echa.europa.eu/information-on-chemicals/registered-substances>.

SECTION 12: Ecological information

12.1. Toxicity

| Acute aquatic toxicity | | | |
|-------------------------------------|---------------|-------------------------------|--------------------|
| Bis-(2-ethylhexyl)-amine (106-20-7) | | | |
| Species | Exposure time | Dose | Method |
| Leuciscus idus (Golden orfe) | 96h | LC50: > 1,5 - < 2,2 mg/l | DIN 38412, part 15 |
| Daphnia magna (Water flea) | 48h | EC50: 2,2 mg/l | 79/831/EEC.C2 |
| Desmodesmus subspicatus | 72h | EC50: 1,55 mg/l (Growth rate) | OECD 201 |
| Activated sludge (bacteriae) | 3 h | EC50: 89 mg/l | OECD 209 |

| Long term toxicity | | | |
|-------------------------------------|----------------------------|------------------------|----------|
| Bis-(2-ethylhexyl)-amine (106-20-7) | | | |
| Type | Species | Dose | Method |
| Reproductive toxicity | Daphnia magna (Water flea) | NOEC: 0,069 mg/l (21d) | OECD 211 |
| Reproductive toxicity | Daphnia magna (Water flea) | LOEC: 0,133 mg/l/21d | OECD 211 |
| Reproductive toxicity | Earthworm | NOEC: 20 mg/l (56d) | OECD 222 |
| Aquatic toxicity | Desmodesmus subspicatus | NOEC: 0,14 mg/l (3d) | OECD 201 |

12.2. Persistence and degradability

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

Biodegradation

69 % (28 d), activated sludge (domestic), adapted, aerobic, OECD 301 B, Readily biodegradable, failing 10-d window.

| Abiotic Degradation | | |
|-------------------------------------|--------------------------|---------------|
| Bis-(2-ethylhexyl)-amine (106-20-7) | | |
| Type | Result | Method |
| Hydrolysis | not expected | |
| Photolysis | Half-life (DT50): 3,67 h | SRC AOP v1.92 |

12.3. Bioaccumulative potential

| Bis-(2-ethylhexyl)-amine (106-20-7) |
|-------------------------------------|
|-------------------------------------|

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| Type | Result | Method |
|---------|--|--------------------|
| log Pow | 7,3 | measured, OECD 117 |
| BCF | Significant bioaccumulation not to be expected | QSAR |

12.4. Mobility in soil

| Bis-(2-ethylhexyl)-amine (106-20-7) | | |
|--|---|---------------------------------------|
| Type | Result | Method |
| Surface tension | 48,0 mN/m (0,0125 g/l @ 20°C (68°F)) | OECD 115 |
| Adsorption/Desorption | log Koc: 5,5 @ pH 7 | OECD 121 |
| Distribution to environmental compartments | Air: 0% Soil: 49,5% Water: 0% Sediment: 50,1% Suspended sediment: 0,3% | Calculation according Mackay, Level I |

12.5. Results of PBT and vPvB assessment

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

12.7. Other adverse effects

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

No data available

Note

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

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ADR/RID

| | |
|---|---|
| 14.1. UN number or ID number | UN 2922 |
| 14.2. UN proper shipping name | Corrosive liquid, toxic, n.o.s. (Di-(2-ethylhexyl) amine) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 6.1 |
| 14.4. Packing group | II |
| 14.5. Environmental hazards | Fish and tree |
| 14.6. Special precautions for user | (E) |
| ADR Tunnel restriction code | CT1 |
| Classification Code | 86 |
| Hazard Number | |

ADN

| | |
|---|---|
| 14.1. UN number or ID number | UN 2922 |
| 14.2. UN proper shipping name | Corrosive liquid, toxic, n.o.s. (Di-(2-ethylhexyl) amine) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 6.1 |
| 14.4. Packing group | II |
| 14.5. Environmental hazards | Fish and tree |
| 14.6. Special precautions for user | |
| Classification Code | CT1 |
| Hazard Number | 86 |

ICAO-TI / IATA-DGR

| | |
|---|---|
| 14.1. UN number or ID number | UN 2922 |
| 14.2. UN proper shipping name | Corrosive liquid, toxic, n.o.s. (Di-(2-ethylhexyl) amine) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 6.1 |
| 14.4. Packing group | II |
| 14.5. Environmental hazards | Fish and tree |
| 14.6. Special precautions for user | no data available |

IMDG

| | |
|--|---|
| 14.1. UN number or ID number | UN 2922 |
| 14.2. UN proper shipping name | Corrosive liquid, toxic, n.o.s. (Di-(2-ethylhexyl) amine) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 6.1 |
| 14.4. Packing group | II |
| 14.5. Environmental hazards | Fish and tree |
| Marking | yes |
| Marine pollutant | |
| 14.6. Special precautions for user | F-A, S-B |
| EmS | not applicable |
| 14.7. Maritime transport in bulk according to IMO instruments | |

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SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

not listed

DI 2012/18/EU (Seveso III)

Category

Annex I, part 1:
H2
E1

DI 1999/13/EC (VOC Guideline)

| Component | Status |
|---|-------------|
| Bis-(2-ethylhexyl)-amine CAS: 106-20-7 | not subject |

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758

| Component | Status |
|---|--|
| Bis-(2-ethylhexyl)-amine CAS: 106-20-7 | The substance will not be pre-registered |

For details and further information please refer to the original regulation.

International Inventories

Bis-(2-ethylhexyl)-amine, CAS: 106-20-7

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2033724 (EU)
ENCS (2)-138 (JP)
ENCS (2)-176 (JP)
ISHL (2)-138 (JP)
ISHL (2)-176 (JP)
ISHL 2-(10)-66 (JP)
KECI 97-1-120 (KR)
KECI KE-05-0210 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

not subject

Releases to water (Pollution Inventory Substances)

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not subject

Releases to sewer (Pollution Inventory Substances)

not subject

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H302: Harmful if swallowed.

H311: Toxic in contact with skin.

H314: Causes severe skin burns and eye damage.

H318: Causes serious eye damage.

H331: Toxic if inhaled.

H410: Very toxic to aquatic life with long lasting effects.

Abbreviations

A table of terms and abbreviations can be found under the following link:

http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

Training advice

For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet

Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

Disclaimer

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ Chemicals makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet

Annex to the extended Safety Data Sheet (eSDS)

General information

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Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described below and you are unsure if they are also safe
The RMMs described suffice to control risks for both local and systemic effects
Acute Health Hazard:
Local Human hazard:
Qualitative approach used to conclude safe use.

Operational conditions and risk management measures

Handle substance within closed system
Avoid frequent and direct contact with substance
Avoid inhalation of the product
Workers should be warned to avoid skin and eye contact, to wash off any skin contamination immediately and to report skin/eye problems that may develop
Regular cleaning of equipment and work area
Clear spills immediately
Wear protective gloves and eye/face protection
Avoid contact with eyes
Ensure segregation of worker from the source.
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Minimization of manual phases
Minimize number of staff exposed
Avoid contact with contaminated tools and objects.
Containment as appropriate
Substance/Task appropriate respirator, based on potential exposure to the use

Exposure scenario identification

- 1 Industrial use resulting in manufacture of another substance (use of intermediates)**
- 2 Lubricants and lubricant additives Formulation**

Number of the ES 1

Short title of the exposure scenario

Industrial use resulting in manufacture of another substance (use of intermediates)

List of use descriptors

Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Environmental release categories [ERC]

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Manufacture of the substance or use as an intermediate, process chemical or extracting agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (ncluding marine vessel/barge, road/rail car and bulk container).

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Further explanations

Industrial use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System

Contributing Scenarios

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 6a

Further specification

Assessment tool used: Chesar 3.2 release factors for (Sp)ERC were modified

Amounts used

Daily amount per site: 4.5 to

Annual amount per site: 90 to

Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 5%

Release fraction to wastewater from process: 0.0001%

Release fraction to soil from process: 0.1%

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2E3

Water flow in sewage/river (m³/day): 1.8E4

The minimum grade of elimination in the sewage plant is (%): 83.03

Conditions and measures related to external treatment of waste for disposal

Dispose of waste product or used containers according to local regulations

Number of the contributing scenario 2
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification

Assessment tool used: Chesar 3.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor and outdoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 3
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification

Assessment tool used: Chesar 3.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

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with local exhaust ventilation. provide a good standard of controlled ventilation (5 to 10 air changes per hour) . Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification

Assessment tool used: Chesar 3.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

provide a good standard of controlled ventilation (5 to 10 air changes per hour) . Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear respiratory protection (Efficiency: 90 %).

Number of the contributing scenario 5
Contributing exposure scenario controlling worker exposure for PROC 4

Further specification

Assessment tool used: Chesar 3.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

4 h (half shift)

Other given operational conditions affecting workers exposure

Indoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

provide a good standard of controlled ventilation (5 to 10 air changes per hour) . with local exhaust ventilation. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear respiratory protection (Efficiency: 90 %).

Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

| | |
|-----------------------------------|---------------------------------|
| Fresh Water (Pelagic) | PEC: 3.49E-5 mg/l; RCR: 0.025 |
| Fresh Water (Sediment) | PEC: 0.229 mg/kg dw; RCR: 0.052 |
| Marine Water (Pelagic) | PEC: 3.49E-6 mg/l; RCR: 0.025 |
| Marine Water (Sediment) | PEC: 0.023 mg/kg dw; RCR: 0.052 |
| Agricultural Soil | PEC: 0.138 mg/kg dw; RCR: 0.01 |
| Sewage Treatment Plant (Effluent) | PEC: 0.138 mg/l; RCR: 0.688 |

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios.

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| | |
|--------|------------------|
| Proc 1 | EE(inhal): 0.402 |
| Proc 2 | EE(inhal): 1.207 |
| Proc 3 | EE(inhal): 0.362 |
| Proc 4 | EE(inhal): 0.604 |

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio.

| | |
|--------|-------------------|
| Proc 1 | RCR(inhal): 0.327 |
| Proc 2 | RCR(inhal): 0.982 |
| Proc 3 | RCR(inhal): 0.295 |
| Proc 4 | RCR(inhal): 0.491 |

Number of the ES 2

Short title of the exposure scenario

Lubricants and lubricant additives Formulation

List of use descriptors

Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Further explanations

Industrial use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios

Number of the contributing scenario

1

Contributing exposure scenario controlling environmental exposure for ERC 2

Further specification

Assessment tool used: Chesar 3.2, release factors for (Sp)ERC were modified.

Amounts used

Daily amount per site: 2 to

Annual amount per site: 20 to

Technical conditions and measures at process level (source) to prevent release

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Release fraction to air from process: 2.5%
Release fraction to wastewater from process: 1E-4%
Release fraction to soil from process: 0%

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2E3
Water flow in sewage/river (m³/day): 1.8E4

The minimum grade of elimination in the sewage plant is (%): 83.03

Conditions and measures related to external treatment of waste for disposal

Dispose of waste product or used containers according to local regulations

Number of the contributing scenario 2
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification

Assessment tool used: Chesar 3.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

provide a good standard of controlled ventilation (5 to 10 air changes per hour) . Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear respiratory protection (Efficiency: 90 %).

Number of the contributing scenario 3
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification

Assessment tool used: Chesar 2.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 95 % (inhalative); 0 % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear respiratory protection (Efficiency: 90 %).

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification

Assessment tool used: Chesar 2.2

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid

Frequency and duration of use

8 h (full shift)

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Other given operational conditions affecting workers exposure

Indoor use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Technical conditions and measures to control dispersion from source towards the worker

provide a good standard of controlled ventilation (5 to 10 air changes per hour) . Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear respiratory protection (Efficiency: 90 %).

Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

| | |
|--------------------------------------|---------------------------------|
| Fresh Water (Pelagic) | PEC: 1.56E-5 mg/l; RCR: 0.011 |
| Fresh Water (Sediment) | PEC: 0.102 mg/kg dw; RCR: 0.023 |
| Marine Water (Pelagic) | PEC: 1.56E-6 mg/l; RCR: 0.011 |
| Marine Water (Sediment) | PEC: 0.01 mg/kg dw; RCR: 0.023 |
| Agricultural Soil | PEC: 0.041 mg/kg dw; RCR: 0.205 |
| Sewage Treatment Plant (Effluent) | PEC: 0.008 mg/l; RCR: 0.01 |

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios.

| | |
|---------|------------------|
| Proc 8a | EE(inhal): 1.207 |
| Proc 8b | EE(inhal): 0.704 |
| Proc 9 | EE(inhal): 0.604 |

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio.

| | |
|---------|-------------------|
| Proc 8a | RCR(inhal): 0.982 |
| Proc 8b | RCR(inhal): 0.573 |
| Proc 9 | RCR(inhal): 0.491 |

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Usage of release factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as $M(\text{site})$ [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

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