

SAFETY DATA SHEET



Isopropylamine 70%
10360

Version / Revision
Supersedes Version

5.01
5.00***

Revision Date
Issuing date

14-Dec-2020
14-Dec-2020

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

1.1. Product identifier

Identification of the
substance/preparation

Isopropylamine 70%

CAS-No 75-31-0
EC No. 200-860-9
Registration number (REACH) 01-2119463274-39

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

Identified uses Intermediate
Formulation
Distribution of substance
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)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flammable liquid Category 2, H225
Acute oral toxicity Category 3, H301
Acute dermal toxicity Category 3, H311
Acute inhalation toxicity Category 4, H332
Skin corrosion/irritation Category 1A, H314
Serious eye damage/eye irritation Category 1, H318
Target Organ Systemic Toxicant - Single exposure Category 3, H335

Additional information

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

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2.2. Label elements

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

Hazard pictograms



Signal word

Danger

Hazard statements

H225: Highly flammable liquid and vapour.
H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H332: Harmful if inhaled.
H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.

Precautionary statements

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P260: Do not breathe gas/mist/vapours.
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.
P403 + P235: Store in a well ventilated place. Keep cool.***

contains

Isopropylamine (CAS 75-31-0)

2.3. Other hazards

Components of the product may be absorbed into the body by inhalation, ingestion and through the skin
Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback
Vapours may form explosive mixture with air

PBT and vPvB assessment Not required

SECTION 3: Composition / information on ingredients

3.2. Mixtures

| Component | CAS-No | REACH-No | 1272/2008/EC | Concentration (%) |
|-----------|--------|----------|--------------|-------------------|
|-----------|--------|----------|--------------|-------------------|

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| | | | | |
|----------------|-----------|------------------|--|---------|
| Isopropylamine | 75-31-0 | 01-2119463274-39 | Flam. Liq. 1; H224 Acute Tox. 3; H301 Acute Tox. 3; H311 Acute Tox. 3; H331 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 | 70 - 72 |
| Water | 7732-18-5 | - | - | 28 - 30 |

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, narcosis, unconsciousness, discomfort, nausea.

Special hazard

Stomach perforation, Lung oedema, Pneumonia, Dermatitis.

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

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

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)
hydrogen cyanide (hydrocyanic acid)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback
Vapours may form explosive mixture with air

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. Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

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).

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

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7.1. Precautions for safe handling

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

Advice on safe handling

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

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

acids
Halogenated hydrocarbon
strong oxidizing agents
acid anhydrides
acid chlorides

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 is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air. The pressure in sealed containers can increase under the influence of heat.

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 -18 and 38 °C (0 and 100 °F).

Suitable material

mild steel, stainless steel

Unsuitable material

Aluminium, copper, zinc, Tin, lead, including their alloys

Temperature class

T2

7.3. Specific end use(s)

Intermediate
Formulation
Distribution of substance
For specific end use information see the annex of this safety data sheet

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

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Exposure limits European Union

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

Isopropylamine, CAS: 75-31-0 Workers

| | |
|---|------------------------------------|
| DN(M)EL - long-term exposure - systemic effects - Inhalation | 10 mg/m ³ |
| DN(M)EL - acute / short-term exposure - systemic effects - Inhalation | No hazard identified |
| DN(M)EL - long-term exposure - local effects - Inhalation | 12 mg/m ³ |
| DN(M)EL - acute / short-term exposure - local effects - Inhalation | 24 mg/m ³ |
| DN(M)EL - long-term exposure - systemic effects - Dermal | 1.92 mg/kg bw/day |
| DN(M)EL - acute / short-term exposure - systemic effects - Dermal | High hazard (no threshold derived) |
| DN(M)EL - long-term exposure - local effects - Dermal | High hazard (no threshold derived) |
| DN(M)EL - acute / short-term exposure - local effects - Dermal | High hazard (no threshold derived) |
| DN(M)EL - local effects - eyes | High hazard (no threshold derived) |

General population

| | |
|---|------------------------|
| DN(M)EL - long-term exposure - systemic effects - Inhalation | 1,79 mg/m ³ |
| DN(M)EL - acute / short-term exposure - systemic effects - Inhalation | No hazard identified |
| DN(M)EL - long-term exposure - local effects - Inhalation | 6 mg/m ³ |
| DN(M)EL - acute / short-term exposure - local effects - Inhalation | 12 mg/m ³ |
| DN(M)EL - long-term exposure - systemic effects - Dermal | No hazard identified |
| DN(M)EL - acute / short-term exposure - systemic effects - Dermal | No hazard identified |
| DN(M)EL - long-term exposure - local effects - Dermal | No hazard identified |
| DN(M)EL - acute / short-term exposure - local effects - Dermal | No hazard identified |
| DN(M)EL - long-term exposure - systemic effects - Oral | 0,725 mg/kg bw/day |
| DN(M)EL - acute / short-term exposure - systemic effects - Oral | 4,35 mg/kg bw/day |
| DN(M)EL - local effects - eyes | No hazard identified |

Environment

| | |
|-----------------------------------|-------------------|
| PNEC aqua - freshwater | 19 µg/l |
| PNEC aqua - marine water | 1,9 µg/l |
| PNEC aqua - intermittent releases | 0,19 mg/l |
| PNEC STP | 30 mg/l |
| PNEC sediment - freshwater | 271,7 µg/kg dw*** |
| PNEC sediment - marine water | 27,2 µg/kg dw*** |

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PNEC Air
PNEC soil
Secondary poisoning

No hazard identified
43,1*** mg/kg
No potential for bioaccumulation

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 | butyl-rubber |
| Evaluation | according to EN 374: level 2 |
| Glove thickness | approx 0,3 mm |
| Break through time | approx 20 min |

| | |
|---------------------------|------------------------------|
| Suitable material | nitrile rubber |
| Evaluation | according to EN 374: level 1 |
| Glove thickness | approx 0,55 mm |
| Break through time | approx 10 min |

Skin and body protection

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

Respiratory protection

Respirator with K- 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. Observe the exposure limits, clean exhaust air if needed. 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.

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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>.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | | | | | |
|----------------------------------|---|--------------|-----------|------|--------|
| Appearance | liquid | | | | |
| Colour | colourless | | | | |
| Odour | ammonia-like | | | | |
| Odour threshold | No data available | | | | |
| pH | No data available | | | | |
| Melting point/range | -80 °C | | | | |
| Boiling point/range | 44 °C @ 1013 hPa | | | | |
| Flash point | -26 °C | | | | |
| Method | closed cup | | | | |
| Evaporation rate | No data available | | | | |
| Flammability (solid, gas) | Does not apply, the substance is a liquid | | | | |
| Lower explosion limit | 2 Vol % (100 % Isopropylamine)*** | | | | |
| Upper explosion limit | 11,5 Vol % (100 % Isopropylamine)*** | | | | |
| Vapour pressure | *** | | | | |
| Values [hPa] | Values [kPa] | Values [atm] | @ °C | @ °F | Method |
| 367 | 36,7 | 0,362 | 20 | 68 | |
| Vapour density | No data available | | | | |
| Relative density | *** | | | | |
| Values | @ °C | @ °F | Method | | |
| 0,8339 | 20 | 68 | DIN 51757 | | |
| Solubility | miscible, in water*** | | | | |
| log Pow | -0,5 @ 25 °C (77 °F), OECD 117, (100 % Isopropylamine)*** | | | | |
| Autoignition temperature | 355 °C @ 1016 hPa (100 % Isopropylamine)*** | | | | |
| Method | DIN 51794 | | | | |
| Decomposition temperature | No data available | | | | |
| Viscosity | No data available | | | | |
| 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 | | | | |

9.2. Other information

Molecular weight 59,11
Molecular formula C₃ H₉ N

SECTION 10: Stability and Reactivity

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.

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10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

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

10.5. Incompatible materials

acids, strong oxidizing agents, halogenated hydrocarbon, acid anhydrides, acid chlorides.

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 toxicological effects

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

| Acute toxicity | | | | |
|--------------------------|----------|---------------|------------------|----------|
| Isopropylamine (75-31-0) | | | | |
| Routes of Exposure | Endpoint | Values | Species | Method |
| Oral | LD50 | < 173 mg/kg | rat, male | OECD 425 |
| Dermal | LD50 | > 400 mg/kg | rat, male/female | OECD 402 |
| Inhalative | LC50 | 8,7 mg/l (4h) | rat, male/female | OECD 403 |

Isopropylamine, CAS: 75-31-0

Assessment

The available data lead to the classification given in section 2

| Irritation and corrosion | | | | |
|--------------------------|----------|------------------|----------------|-----------|
| Isopropylamine (75-31-0) | | | | |
| Target Organ Effects | Species | Result | Method | |
| Skin | rabbit | corrosive | OECD 404 | 3 min |
| Eyes | rabbit | corrosive | OECD 405 | 24h*** |
| Respiratory tract*** | mouse*** | RD50: 157 ppm*** | ASTM 981-84*** | 15 min*** |

Isopropylamine, CAS: 75-31-0

Assessment

The available data lead to the classification given in section 2***

| Sensitization | | | | |
|--------------------------|--|--|--|--|
| Isopropylamine (75-31-0) | | | | |

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| Target Organ Effects | Species | Evaluation | Method | |
|----------------------|------------|-----------------|----------|---------------------------|
| Skin | guinea pig | not sensitizing | OECD 406 | 10 %, aqueous solution*** |

Isopropylamine, CAS: 75-31-0

Assessment

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

Skin sensitization

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

Isopropylamine (75-31-0)

| Type | Dose | Species | Method | |
|---------------------|--|------------------|----------|------------|
| Subchronic toxicity | NOAEC: 500 mg/m ³ (90 d) | rat, male/female | OECD 413 | Inhalation |

Isopropylamine, CAS: 75-31-0

Assessment

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

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

Isopropylamine (75-31-0)

| Type | Dose | Species | Evaluation | Method | |
|------------------------|-------------------------------|------------------------------------|---|------------------------------------|---------------------------------|
| Developmental Toxicity | NOAEC: 1000 mg/m ³ | rat | | OECD 414 | Teratogenicity Inhalation |
| Developmental Toxicity | NOAEC: 500 mg/m ³ | rat | | OECD 414 | Maternal toxicity Inhalation |
| Mutagenicity | | mouse lymphoma cells | negative (with metabolic activation) | OECD 476 (Mammalian Gene Mutation) | In vitro study*** |
| Mutagenicity | | mouse lymphoma cells | negative (without metabolic activation) | OECD 476 (Mammalian Gene Mutation) | In vitro study*** |
| Mutagenicity | | Salmonella typhimurium | negative (with metabolic activation) | OECD 471 (Ames) | In vitro study*** |
| Mutagenicity | | Salmonella typhimurium | negative (without metabolic activation) | OECD 471 (Ames) | In vitro study*** |
| Mutagenicity | | human lymphocytes | negative (with metabolic activation) | OECD 473 (Chromosomal Aberration) | In vitro study*** |
| Mutagenicity | | human lymphocytes | negative (without metabolic activation) | OECD 473 (Chromosomal Aberration) | In vitro study*** |
| Reproductive toxicity | NOAEC: 500 mg/m ³ | rat, parental | | OECD 415 | Inhalation |
| Reproductive toxicity | NOAEC: 500 mg/m ³ | rat, 1. Generation, male/female*** | | OECD 415 | Inhalation |

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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
Animal testing did not show any effects on fertility
In the absence of specific alerts no cancer testing is required

Isopropylamine, CAS: 75-31-0

Main symptoms

shortness of breath, convulsions, cough, hypertensive effect, narcosis, unconsciousness, discomfort, nausea.

Target Organ Systemic Toxicant - Single exposure

STOT SE

respiratory system

The available data lead to the classification given in section 2

Target Organ Systemic Toxicant - Repeated exposure

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

STOT RE

Other adverse effects

Components of the product may be absorbed into the body by inhalation, ingestion and 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 | | | |
|-------------------------------------|---------------|--------------------------------------|-------------------|
| Isopropylamine (75-31-0) | | | |
| Species | Exposure time | Dose | Method |
| Daphnia magna (Water flea) | 48h | EC50: 47,4 mg/l | 79/831/EEC.C2 |
| Desmodesmus subspicatus | 72h | EC50: 18,9 mg/l (Growth rate) | DIN 38412, part 9 |
| Oncorhynchus mykiss (rainbow trout) | 96h | LC50: 40 mg/l | OECD 203 |
| Activated sludge (domestic) | 30 min | EC50: >1000 mg/l (Growth inhibition) | OECD 209 |

| Long term toxicity | | | | |
|---------------------------------|-------------------------|--|--------------------|--|
| Isopropylamine (75-31-0) | | | | |
| Type | Species | Dose | Method | |
| Aquatic toxicity | Desmodesmus subspicatus | NOEC: 1,25 mg/l (3d) Growth inhibition | DIN 38412 / part 9 | |

12.2. Persistence and degradability

Isopropylamine, CAS: 75-31-0

Biodegradation

70 - 80 % (28 d), activated sludge, aerobic, domestic, OECD 301 F.

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| Abiotic Degradation | | |
|--------------------------|-------------------|--------|
| Isopropylamine (75-31-0) | | |
| Type | Result | Method |
| Hydrolysis | not expected | |
| Photolysis | No data available | |

12.3. Bioaccumulative potential

| Isopropylamine (75-31-0) | | |
|--------------------------|-------------------------|--------------------|
| Type | Result | Method |
| log Pow | -0,5 @ 25 °C (77 °F)*** | measured, OECD 117 |
| BCF | not expected | |

12.4. Mobility in soil

| Isopropylamine (75-31-0) | | |
|---|---------------------------------|-------------------------|
| Type | Result | Method |
| Surface tension | 68,5 mN/m (1 g/l @ 20°C (68°F)) | OECD 115 |
| Adsorption/Desorption*** | Koc: 15-107*** | OECD 106 read across*** |
| Distribution to environmental compartments*** | no data available*** | |

12.5. Results of PBT and vPvB assessment

Isopropylamine, CAS: 75-31-0

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. Other adverse effects

Isopropylamine, CAS: 75-31-0

No data available

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 | UN 2734 |
| 14.2. UN proper shipping name | Amines, liquid, corrosive, flammable, n.o.s. (Isopropylamine solution) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 3 |
| 14.4. Packing group | I |
| 14.5. Environmental hazards | no |
| 14.6. Special precautions for user | |
| ADR Tunnel restriction code | (D/E) |
| Classification Code | CF1 |
| Hazard Number | 883 |

ADN

ADN Container

| | |
|---|---|
| 14.1. UN number | UN 2734 |
| 14.2. UN proper shipping name | Amines, liquid, corrosive, flammable, n.o.s. (Isopropylamine solution) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 3 |
| 14.4. Packing group | I |
| 14.5. Environmental hazards | no |
| 14.6. Special precautions for user | |
| Classification Code | CF1 |
| Hazard Number | 883 |

ADN

ADN Tanker
forbidden

ICAO-TI / IATA-DGR

| | |
|---|---|
| 14.1. UN number | UN 2734 |
| 14.2. UN proper shipping name | Amines, liquid, corrosive, flammable, n.o.s. (Isopropylamine solution) |
| 14.3. Transport hazard class(es) | 8 |
| Subsidiary Risk | 3 |
| 14.4. Packing group | I |
| 14.5. Environmental hazards | no |
| 14.6. Special precautions for user | no data available |

IMDG

| | |
|---|---|
| 14.1. UN number | UN 2734 |
| 14.2. UN proper shipping name | Amines, liquid, corrosive, flammable, n.o.s. (Isopropylamine solution) |
| 14.3. Transport hazard class(es) | 8 |

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| | |
|---|----------------|
| Subsidiary Risk | 3 |
| 14.4. Packing group | I |
| 14.5. Environmental hazards | no |
| 14.6. Special precautions for user | |
| EmS | F-E, S-C |
| 14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code | not applicable |

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

Isopropylamine, CAS: 75-31-0

| | |
|--------------------------|--|
| Classification | Flam. Liq. 1; H224 Eye Irrit. 2; H319 STOT SE 3; H335 Skin Irrit. 2; H315 |
| Hazard pictograms | GHS02 Flame GHS07 Exclamation mark |
| Signal word | Danger |
| Hazard statements | H224, H319, H335, H315 |

DI 2012/18/EU (Seveso III)

| | |
|-----------------|--|
| Category | Annex I, part 1: P5a - c; depending on conditions H2 |
|-----------------|--|

DI 1999/13/EC (VOC Guideline)

| Component | Status |
|--------------------------------|-----------|
| Isopropylamine CAS: 75-31-0 | regulated |

International Inventories

Isopropylamine, CAS: 75-31-0

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2008609 (EU)
ENCS (2)-131 (JP)
ISHL (2)-131 (JP)
KECI KE-29257 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

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National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

not subject

Releases to water (Pollution Inventory Substances)

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

H224: Extremely flammable liquid and vapour.

H225: Highly flammable liquid and vapour.

H301: Toxic if swallowed.

H311: Toxic in contact with skin.

H314: Causes severe skin burns and eye damage.

H315: Causes skin irritation.

H318: Causes serious eye damage.

H319: Causes serious eye irritation.

H331: Toxic if inhaled.

H332: Harmful if inhaled.

H335: May cause respiratory irritation.

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 makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other

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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

A quantitative approach used to conclude safe use for:

Environmental compartment

Long-term Systemic effects via inhalation

Long term local hazards via inhalation

Acute local hazards via inhalation

A qualitative approach used to conclude safe use for:

Acute systemic hazards via skin

Acute local hazards via skin

Long term local hazards via skin

Acute systemic hazards via skin

Local hazards via eyes

The exposure scenarios described in the following section have been calculated for the pure Isopropylamine.***

Operational conditions and risk management measures

Following operational conditions and risk management measures, are based on qualitative risk characterisation:

Wear suitable face shield.

Substance/task appropriate gloves

Full skin coverage with appropriate light-weight barrier material

Chemical goggles or safety glasses***

Exposure scenario identification***

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

2*** Formulation & (re)packing of substances and mixtures***

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

SU8: Manufacture of bulk, large scale chemicals (including petroleum products)

SU9: Manufacture of fine chemicals***

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

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

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PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent***

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

Use as an intermediate (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).***

Further explanations

Industrial use

Assessment tool used:

Chesar 2.2

Advanced Reach Tool (ART) 1.5 for:

PROC 15

liquid

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

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

Assumes an advanced standard of occupational Health and Safety Management System***

Contributing exposure scenario controlling environmental exposure for ERC 6a***

Further specification

Specific Environmental Release Categories [SPERC] release factors for (Sp)ERC were modified***

Amounts used

Daily amount per site: 10 to

Annual amount per site: 1000 to

Fraction of Regional tonnage used locally: 1***

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

Release fraction to air from process: 5%

Release fraction to wastewater from process: 0,025%

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): 2000

The minimum grade of elimination in the sewage plant is (%): 87,74

Do not apply industrial sludge to natural soils***

Number of the contributing scenario

2***

Contributing exposure scenario controlling worker exposure for PROC 1***

Frequency and duration of use

8 h (full shift)***

Other given operational conditions affecting workers exposure

Indoor and outdoor 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).***

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

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Wear suitable gloves (tested to EN374) and eye protection.***

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

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear respiratory protection (Efficiency: 95 %). Wear suitable gloves (tested to EN374) and eye protection.***

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

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear respiratory protection (Efficiency: 95 %). Wear suitable gloves (tested to EN374) and eye protection.***

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

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %). Wear suitable gloves (tested to EN374) and eye protection.***

Number of the contributing scenario 6***
Contributing exposure scenario controlling worker exposure for PROC 5***

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

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

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario 7***
Contributing exposure scenario controlling worker exposure for PROC 8a***

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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

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

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).^{***}

Number of the contributing scenario

8^{***}

Contributing exposure scenario controlling worker exposure for

PROC 8a^{***}

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 1 hour^{***}

Other given operational conditions affecting workers exposure

Indoor use^{***}

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal). provide a basic standard of general ventilation (1 to 3 air changes per hour).^{***}

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).^{***}

Number of the contributing scenario

9^{***}

Contributing exposure scenario controlling worker exposure for

PROC 9^{***}

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).^{***}

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).^{***}

Number of the contributing scenario

10^{***}

Contributing exposure scenario controlling worker exposure for

PROC 15^{***}

Further specification

Assessment tool used: Chesar 2.2^{***}

Product characteristics

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

Liquid

Vapour pressure @ 20 °C (kPa): 63;1

Activity class

Transfer of liquid products - falling liquids^{***}

Amounts used

Use rate: < 0,1 L/min Splash loading^{***}

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 1 hour^{***}

Other given operational conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Indoor use

room size 30 m³

Primary emission sources:

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The task is carried out inside the breathing zone of worker (within 1 m from the worker's head)

Secondary emission sources:

No secondary emission sources present in the workroom***

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

Handling that reduces contact between product and adjacent air***

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

provide a good standard of controlled ventilation (10 to 15 air changes per hour). Handle in a fume cupboard or under extract ventilation. Effectiveness of LEV (local exhaust ventilation): 99 % (inhalative); 90 % (dermal).***

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

Wear suitable gloves (tested to EN374) and eye protection.***

Exposure estimation and reference to its source ***

| | |
|---------------------------------------|--|
| Fresh Water (Pelagic) | PEC: 0,015 mg/l; RCR: 0,807*** |
| Fresh Water (Sediment) | PEC: 0,219 mg/kg dw; RCR: 0,807*** |
| Marine Water (Pelagic) | PEC: 0,002 mg/l; RCR: 0,807*** |
| Marine Water (Sediment) | PEC: 0,022 mg/kg dw; RCR: 0,806*** |
| Agricultural Soil | PEC: 0,006 mg/kg dw; RCR: 0.139*** |
| Sewage Treatment Plant (Effluent) | PEC: 0,153 mg/l; RCR: < 0.01*** |
| Man via environment – Inhalation | Concentration in air: 0.038 mg/m ³ ; RCR: 0.021*** |
| Man via environment – Oral | Exposure via food consumption: 8.055E-4 mg/kg bw/day; RCR: < 0.01*** |
| Man via environment - combined routes | RCR: 0.022*** |

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. EE(inhal): Estimated inhalative exposure [mg/m³]. EE(derm): Estimated dermal exposure [mg/kg b.w./d]. Exposure estimates are given for short-term or long-term, systemic or local exposure depending on which lead to more conservative risk characterization ratios. The RMMs described above suffice to control risks for both local and systemic effects.***

| | |
|---------|---|
| Proc 1 | EE(inhal): 0,069; EE(derm): 0,007*** |
| Proc 2 | EE(inhal): 0,862; EE(derm): 0,027*** |
| Proc 3 | EE(inhal): 1,724; EE(derm): 0,014*** |
| Proc 4 | EE(inhal): 3,448; EE(derm): 0,034*** |
| Proc 5 | EE(inhal): 3,694; EE(derm): 0,069*** |
| Proc 8a | EE(inhal): 3,694; EE(derm): 0,069 - Contributing Scenarios 7 EE(inhal): 12.31; EE(derm): 0.137 - Contributing Scenarios 8*** |
| Proc 9 | EE(inhal): 6.896; EE(derm): 0.034*** |
| Proc 15 | EE(inhal): 5; EE(derm): 0,001*** |

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

| | |
|---------|---|
| Proc 1 | RCR(inhal): < 0,01; RCR(derm): < 0,01*** |
| Proc 2 | RCR(inhal): 0,036; RCR(derm): 0,014*** |
| Proc 3 | RCR(inhal): 0,072; RCR(derm): < 0,01*** |
| Proc 4 | RCR(inhal): 0,144; RCR(derm): 0,018*** |
| Proc 5 | RCR(inhal): 0,154; RCR(derm): 0,036*** |
| Proc 8a | RCR(inhal): 0,154; RCR(derm): 0,036 - Contributing Scenarios 7 RCR(inhal): 0.513; RCR(derm): 0.071 - Contributing Scenarios 8*** |
| Proc 9 | RCR(inhal): 0,287; RCR(derm): 0,018*** |
| Proc 15 | RCR(inhal): 0,2; RCR(derm): < 0,01*** |

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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**

Number of the ES 2***

Short title of the exposure scenario

Formulation & (re)packing of substances and mixtures***

Sector of uses [SU]

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

SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)**

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

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

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)

PROC15: Use as laboratory reagent***

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

Assessment tool used:

Chesar 2.2

Advanced Reach Tool (ART) 1.5 for:

PROC 15

liquid

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

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

Assumes an advanced standard of occupational Health and Safety Management System***

Number of the contributing scenario

1***

Contributing exposure scenario controlling environmental exposure for

ERC 2***

Further specification

assessment tool used: Chesar 2.2, Specific Environmental Release Categories [SPERC], release factors for (Sp)ERC were modified.***

Amounts used

Daily amount per site: 10 to

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Annual amount per site: 1000 to

Fraction of Regional tonnage used locally: 1***

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

Release fraction to air from process: 2,5%

Release fraction to wastewater from process: 0,025%

Release fraction to soil from process: 0,1%***

Conditions and measures related to municipal sewage treatment plant

Size of industrial sewage treatment plant (m3/d): 2000

The minimum grade of elimination in the sewage plant is (%): 87,74

Do not apply industrial sludge to natural soils***

Number of the contributing scenario

2***

Contributing exposure scenario controlling worker exposure for PROC 1***

Frequency and duration of use

8 h (full shift)***

Other given operational conditions affecting workers exposure

Indoor and outdoor 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).***

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

Wear suitable gloves (tested to EN374) and eye protection.***

Number of the contributing scenario

3***

Contributing exposure scenario controlling worker exposure for PROC 2***

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario

4***

Contributing exposure scenario controlling worker exposure for PROC 3***

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario

5***

Contributing exposure scenario controlling worker exposure for PROC 4***

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

Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %). Wear suitable gloves (tested to EN374) and eye protection.***

Number of the contributing scenario

6***

Contributing exposure scenario controlling worker exposure for PROC 5***

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

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

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %). Wear suitable gloves (tested to EN374) and eye protection.***

Number of the contributing scenario

7***

Contributing exposure scenario controlling worker exposure for PROC 8a***

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

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

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario

8***

Contributing exposure scenario controlling worker exposure for PROC 8b***

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

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

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario

9***

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)***

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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Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 90 % (dermal). provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).***

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

Wear suitable gloves and eye/face protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).***

Number of the contributing scenario

10***

Contributing exposure scenario controlling worker exposure for PROC 15***

Further specification

Assessment tool used: Chesar 2.2 Advanced Reach Tool (ART) 1.5***

Product characteristics

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

Liquid

Vapour pressure @ 20 °C (kPa): 63,1

Activity class

Transfer of liquid products - falling liquids***

Amounts used

Use rate: < 0,1 L/min Splash loading***

Frequency and duration of use

Avoid carrying out activities involving exposure for more than 1 hour***

Other given operational conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Indoor use

room size 30 m³

Primary emission sources:

The task is carried out inside the breathing zone of worker (within 1 m from the worker's head)

Secondary emission sources:

No secondary emission sources present in the workroom***

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

Handling that reduces contact between product and adjacent air***

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

provide a good standard of controlled ventilation (10 to 15 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 99 % (inhalative); 90 % (dermal). Handle in a fume cupboard or under extract ventilation.***

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

Wear suitable gloves (tested to EN374) and eye protection.***

Fresh Water (Pelagic) PEC: 0,015 mg/l; RCR: 0,807***

Fresh Water (Sediment) PEC: 0,219 mg/kg dw; RCR: 0,807***

Marine Water (Pelagic) PEC: 0,002 mg/l; RCR: 0,807***

Marine Water (Sediment) PEC: 0,022 mg/kg dw; RCR: 0,806***

Agricultural Soil PEC: 0,003 mg/kg dw; RCR: 0,07***

Sewage Treatment Plant PEC: 0,153 mg/l; RCR: < 0.01***

(Effluent)

Man via environment – Inhalation Concentration in air: 0,019 mg/m³; RCR: 0,011***

Man via environment – Oral Exposure via food consumption: 4,68E-4 mg/kg bw/day; RCR: 0,01***

Man via environment - combined RCR: 0,011***

routes

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. EE(inhal): Estimated inhalative exposure [mg/m³]. EE(derm): Estimated dermal exposure [mg/kg b.w./d]. Exposure estimates are given for short-term or long-term, systemic or local exposure depending on which lead to more conservative risk characterization ratios. The RMMs described above suffice to control risks for both local and systemic effects.***

Proc 1 EE(inhal): 0,069; EE(derm): 0,007***

Proc 2 EE(inhal): 0,862; EE(derm): 0,027***

Proc 3 EE(inhal): 1,724; EE(derm): 0,014***

Proc 4 EE(inhal): 3,448; EE(derm): 0,034***

Proc 5 EE(inhal): 3,694; EE(derm): 0,069***

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| | |
|---------|--------------------------------------|
| Proc 8a | EE(inhal): 3.694; EE(derm): 0.069*** |
| Proc 8b | EE(inhal): 2,586; EE(derm): 0,034*** |
| Proc 9 | EE(inhal): 6,896; EE(derm): 0.034*** |
| Proc 15 | EE(inhal): 5; EE(derm): 0,001*** |

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

| | |
|---------|--|
| Proc 1 | RCR(inhal): 0,01; RCR(derm): 0,01*** |
| Proc 2 | RCR(inhal): 0,036; RCR(derm): 0,014*** |
| Proc 3 | RCR(inhal): 0,072; RCR(derm): 0,01*** |
| Proc 4 | RCR(inhal): 0,144; RCR(derm): 0,018*** |
| Proc 5 | RCR(inhal): 0,154; RCR(derm): 0,036*** |
| Proc 8a | RCR(inhal): 0,154; RCR(derm): 0,036*** |
| Proc 8b | RCR(inhal): 0,108; RCR(derm): 0,018*** |
| Proc 9 | RCR(inhal): 0,287; RCR(derm): 0,018*** |
| Proc 15 | RCR(inhal): 0.2; RCR(derm): 0,01*** |

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(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***

Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.***

| | |
|---------|---------------------------------------|
| Proc 1 | EE(inhal): 0.025 ; EE(derm): 0.069*** |
| Proc 2 | EE(inhal): 2.463 ; EE(derm): 0.027*** |
| Proc 3 | EE(inhal): 6.157 ; EE(derm): 0.007*** |
| Proc 4 | EE(inhal): 4.926 ; EE(derm): 0.137*** |
| Proc 8a | EE(inhal): 7.389 ; EE(derm): 0.027*** |
| Proc 8b | EE(inhal): 3.694 ; EE(derm): 0.137*** |
| Proc 9 | EE(inhal): 1.231 ; EE(derm): 0.137*** |
| Proc 15 | EE(inhal): 2.463 ; EE(derm): 0.007*** |

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.***

| | |
|--------|---|
| Proc 1 | RCR(inhal): 0.002 ; RCR(derm): 0.014*** |
| Proc 2 | RCR(inhal): 0.205 ; RCR(derm): 0.006*** |
| Proc 3 | RCR(inhal): 0.513 ; RCR(derm): 0.001*** |

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| | |
|---------|---|
| Proc 4 | RCR(inhal): 0.411 ; RCR(derm): 0.029*** |
| Proc 8a | RCR(inhal): 0.616 ; RCR(derm): 0.006*** |
| Proc 8b | RCR(inhal): 0.308 ; RCR(derm): 0.029*** |
| Proc 9 | RCR(inhal): 0.103 ; RCR(derm): 0.029*** |
| Proc 15 | RCR(inhal): 0.205 ; RCR(derm): 0.001*** |

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***