# Safety data sheet Safety data sheet

acc. to Safe Work Australia - Code of Practice

**Oxidation reagent (-Fast) for DNA synthesis**

article number: **A133**
Version: **GHS 3.0 en**
Replaces version of: 2022-09-27
Version: (GHS 2)

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

### 1.1 Product identifier

Identification of the substance — **Oxidation reagent** (-Fast) for DNA synthesis

Article number — A133

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

Relevant identified uses: — Laboratory chemical
Laboratory and analytical use

Uses advised against: — Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household).

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

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

**Telephone:**+49 (0) 721 - 56 06 0
**Telefax:** +49 (0) 721 - 56 06 149
**e-mail:** sicherheit@carlroth.de
**Website:** www.carlroth.de

Competent person responsible for the safety data sheet: — :Department Health, Safety and Environment

**e-mail (competent person):** — **sicherheit@carlroth.de**

### 1.4 Emergency telephone number

| Name | Street | Postal code/city | Telephone | Website |
|---|---|---|---|---|
| NSW Poisons Information Centre Childrens Hospital | Hawkesbury Road | 2145 West-mead, NSW | 131126 | |

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification acc. to GHS**

| Section | Hazard class | Cat-egory | Hazard class and category | Hazard statement |
|---|---|---|---|---|
| 2.6 | Flammable liquid | 2 | Flam. Liq. 2 | H225 |
| 3.1O | Acute toxicity (oral) | 4 | Acute Tox. 4 | H302 |
| 3.2 | Skin corrosion/irritation | 2 | Skin Irrit. 2 | H315 |
| 3.3 | Serious eye damage/eye irritation | 2 | Eye Irrit. 2 | H319 |
| 3.6 | Carcinogenicity | 2 | Carc. 2 | H351 |

| Section | Hazard class | Category | Hazard class and category | Hazard statement |
|---|---|---|---|---|
| 3.8R | Specific target organ toxicity - single exposure (respiratory tract irritation) | 3 | STOT SE 3 | H335 |
| 3.8D | Specific target organ toxicity - single exposure (narcotic effects, drowsiness) | 3 | STOT SE 3 | H336 |
| 3.9 | Specific target organ toxicity - repeated exposure | 2 | STOT RE 2 | H373 |

### Supplemental hazard information

| Code | Supplemental hazard information |
|---|---|
| EUH019 | may form explosive peroxides |

For full text of abbreviations: see SECTION 16

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

Delayed or immediate effects can be expected after short or long-term exposure. The product is combustible and can be ignited by potential ignition sources.

## 2.2 Label elements

### Labelling

**Signal word** **Danger**

**Pictograms**

GHS02, GHS07, GHS08

**Hazard statements**

| | |
|---|---|
| H225 | Highly flammable liquid and vapour |
| H302 | Harmful if swallowed |
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |
| H336 | May cause drowsiness or dizziness |
| H351 | Suspected of causing cancer |
| H373 | May cause damage to organs (thyroid gland) through prolonged or repeated exposure (if swallowed) |

**Precautionary statements**

**Precautionary statements - prevention**

| | |
|---|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray |

**Precautionary statements - response**

| | |
|---|---|
| P302+P352 | IF ON SKIN: Wash with plenty of soap and water |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing |
| P370+P378 | In case of fire: Use sand, carbon dioxide or powder extinguisher for extinction |

**Precautionary statements - storage**

P403+P233 Store in a well-ventilated place. Keep container tightly closed
P403+P235 Store in a well-ventilated place. Keep cool

For professional users only

**Hazardous ingredients for labelling:** Tetrahydrofuran, Iodine, Pyridine

### 2.3 Other hazards

**Results of PBT and vPvB assessment**

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

not relevant (mixture)

### 3.2 Mixtures

**Description of the mixture**

| Name of sub-stance | Identifier | Wt% | Classification acc. to GHS | Pictograms | Notes |
|---|---|---|---|---|---|
| Tetrahydrofuran | CAS No<br>109-99-9 | ≥ 50 | Flam. Liq. 2 / H225<br>Acute Tox. 4 / H302<br>Eye Irrit. 2 / H319<br>Carc. 2 / H351<br>STOT SE 3 / H335<br>STOT SE 3 / H336<br>EUH019 |  | |
| Pyridine | CAS No<br>110-86-1 | 10 – < 25 | Flam. Liq. 2 / H225<br>Acute Tox. 4 / H302<br>Acute Tox. 4 / H312<br>Acute Tox. 4 / H332<br>Skin Irrit. 2 / H315<br>Eye Irrit. 2A / H319 |  | |
| Iodine | CAS No<br>7553-56-2 | 1 – 2.5 | Acute Tox. 4 / H302<br>Acute Tox. 4 / H312<br>Acute Tox. 4 / H332<br>Skin Irrit. 2 / H315<br>Eye Irrit. 2A / H319<br>STOT SE 3 / H335<br>STOT RE 1 / H372 |  | |
| Water | CAS No<br>7732-18-5 | 2.1 | | | |

For full text of abbreviations: see SECTION 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

**General notes**

Take off contaminated clothing.

**Following inhalation**

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

**Following skin contact**

Rinse skin with water/shower. In case of skin irritation, consult a physician.

**Following eye contact**

Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

**Following ingestion**

Rinse mouth with water (only if the person is conscious). In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

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

Following inhalation: Cough, Dyspnoea, Headache, Vertigo, Drowsiness, Dizziness, Narcosis,
Following skin contact: Localised redness, oedema, pruritis and/or pain,
After eye contact: Irritation,
Following ingestion: Nausea, Vomiting

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**

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

**Unsuitable extinguishing media**

water jet

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

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

**Hazardous combustion products**

In case of fire may be liberated: Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide ($CO_2$), May produce toxic fumes of carbon monoxide if burning.

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

## SECTION 6: Accidental release measures

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

**For non-emergency personnel**

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

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Danger of explosion.

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

**Advice on how to contain a spill**

Covering of drains.

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

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

**Other information relating to spills and releases**

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

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

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Provision of sufficient ventilation. Avoid exposure.

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

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharge. Due to danger of explosion, prevent leakage

of vapours into cellars, flues and ditches.

**Advice on general occupational hygiene**

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs. When using do not smoke.

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

Store in a well-ventilated place. Keep container tightly closed.

**Incompatible substances or mixtures**

Observe hints for combined storage.

**Protect against external exposure, such as**

high temperatures, UV-radiation/sunlight, contact with air/oxygen

**Consideration of other advice:**

Ground/bond container and receiving equipment.

**Ventilation requirements**

Use local and general ventilation.

**Specific designs for storage rooms or vessels**

Recommended storage temperature: 15 – 25 °C

### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**National limit values**

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

| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m³] | STEL [ppm] | STEL [mg/m³] | Ceiling-C [ppm] | Ceiling-C [mg/m³] | Notation | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AU | tetrahydrofuran | 109-99-9 | WES | 100 | 295 | | | | | H | WES |
| AU | pyridine | 110-86-1 | WES | 5 | 16 | | | | | | WES |
| AU | iodine | 7553-56-2 | WES | | | | | 0.1 | 1 | | WES |

**Notation**

| | |
|---|---|
| Ceiling-C | Ceiling value is a limit value above which exposure should not occur |
| H | Absorbed through the skin |
| STEL | Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified) |
| TWA | Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified) |

**Relevant DNELs of components of the mixture**

| Name of substance | CAS No | End-point | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
|---|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | DNEL | 72.4 mg/m³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Tetrahydrofuran | 109-99-9 | DNEL | 96 mg/m³ | human, inhalatory | worker (industry) | acute - systemic effects |
| Tetrahydrofuran | 109-99-9 | DNEL | 150 mg/m³ | human, inhalatory | worker (industry) | chronic - local effects |
| Tetrahydrofuran | 109-99-9 | DNEL | 300 mg/m³ | human, inhalatory | worker (industry) | acute - local effects |
| Tetrahydrofuran | 109-99-9 | DNEL | 12.6 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Pyridine | 110-86-1 | DNEL | 2.5 mg/m³ | human, inhalatory | worker (industry) | chronic - systemic effects |

**Relevant DNELs of components of the mixture**

| Name of substance | CAS No | End-point | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
|---|---|---|---|---|---|---|
| Pyridine | 110-86-1 | DNEL | 7.5 mg/m³ | human, inhalatory | worker (industry) | acute - systemic effects |
| Pyridine | 110-86-1 | DNEL | 0.14 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| Pyridine | 110-86-1 | DNEL | 0.42 mg/kg bw/day | human, dermal | worker (industry) | acute - systemic effects |
| Iodine | 7553-56-2 | DNEL | 0.07 mg/m³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Iodine | 7553-56-2 | DNEL | 0.01 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |

**Relevant PNECs of components of the mixture**

| Name of substance | CAS No | End-point | Threshold level | Organism | Environmental compartment | Exposure time |
|---|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | PNEC | 4.32 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Tetrahydrofuran | 109-99-9 | PNEC | 0.432 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Tetrahydrofuran | 109-99-9 | PNEC | 4.6 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Tetrahydrofuran | 109-99-9 | PNEC | 23.3 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Tetrahydrofuran | 109-99-9 | PNEC | 2.33 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Tetrahydrofuran | 109-99-9 | PNEC | 2.13 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 0.3 mg/l | aquatic organisms | freshwater | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 0.03 mg/l | aquatic organisms | marine water | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 2 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 3.2 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 0.32 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Pyridine | 110-86-1 | PNEC | 0.46 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Iodine | 7553-56-2 | PNEC | 18.13 µg/l | aquatic organisms | freshwater | short-term (single instance) |
| Iodine | 7553-56-2 | PNEC | 60.01 µg/l | aquatic organisms | marine water | short-term (single instance) |
| Iodine | 7553-56-2 | PNEC | 11 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |

| Relevant PNECs of components of the mixture | | | | | | |
|---|---|---|---|---|---|---|
| **Name of substance** | **CAS No** | **End-point** | **Threshold level** | **Organism** | **Environmental compartment** | **Exposure time** |
| Iodine | 7553-56-2 | PNEC | 3.99 $^{mg}/_{kg}$ | aquatic organisms | freshwater sediment | short-term (single instance) |
| Iodine | 7553-56-2 | PNEC | 20.22 $^{mg}/_{kg}$ | aquatic organisms | marine sediment | short-term (single instance) |
| Iodine | 7553-56-2 | PNEC | 5.95 $^{mg}/_{kg}$ | terrestrial organisms | soil | short-term (single instance) |

## 8.2 Exposure controls

### Individual protection measures (personal protective equipment)

### Eye/face protection

Use safety goggle with side protection.

### Skin protection

**• hand protection**

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

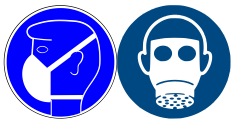
**• Splash protection - Protective gloves**

• type of material: Butyl caoutchouc (butyl rubber)
• material thickness: 0,7mm
• breakthrough times of the glove material: >10 minutes (permeation: level 1)

**• other protection measures**

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.
Flame-retardant protective clothing.

### Respiratory protection



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

**Environmental exposure controls**

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | liquid |
| Colour | brown |
| Odour | disagreeable |
| Melting point/freezing point | not determined |
| Boiling point or initial boiling point and boiling range | 65 °C |
| Flammability | flammable liquid in accordance with GHS criteria |
| Lower and upper explosion limit | 1.5 vol% (LEL) - 12.4 vol% (UEL) |
| Flash point | -21 °C |
| Auto-ignition temperature | 215 °C |
| Decomposition temperature | not relevant |
| pH (value) | 7 – 8 (in aqueous solution: 200 $^{g}/_{l}$, 20 °C) |
| Kinematic viscosity | not determined |
| Solubility(ies) | |
| Water solubility | miscible in any proportion |
| Partition coefficient | |
| Partition coefficient n-octanol/water (log value): | this information is not available |
| Vapour pressure | 170 hPa at 20 °C |
| Density and/or relative density | |
| Density | 0.8 $^{g}/_{cm^3}$ at 20 °C |
| Relative vapour density | information on this property is not available |
| Particle characteristics | not relevant (liquid) |
| Other safety parameters | |
| Oxidising properties | none |

### 9.2 Other information

| | |
|---|---|
| Information with regard to physical hazard classes: | There is no additional information. |
| Other safety characteristics: | |

| | |
|---|---|
| Miscibility | completely miscible with water |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

The mixture contains reactive substance(s). Risk of ignition. Vapours may form explosive mixtures with air. May form explosive peroxides.

**If heated**

Risk of ignition.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

**Violent reaction with:** strong oxidiser, Alkali hydroxide (caustic alkali), Acids

### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. UV-radiation/sunlight.

### 10.5 Incompatible materials

Rubber articles, different plastics, tin

### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5. Peroxides.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Test data are not available for the complete mixture.

**Classification procedure**

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

**Classification acc. to GHS**

**Acute toxicity**

Harmful if swallowed.

**Acute toxicity estimate (ATE) of components of the mixture**

| Name of substance | CAS No | Exposure route | ATE |
|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | oral | 1,650 $^{mg}/_{kg}$ |
| Pyridine | 110-86-1 | oral | >800 $^{mg}/_{kg}$ |
| Pyridine | 110-86-1 | dermal | >1,000 $^{mg}/_{kg}$ |
| Pyridine | 110-86-1 | inhalation: vapour | 11 $^{mg}/_{l}$/4h |
| Iodine | 7553-56-2 | oral | 1,500 $^{mg}/_{kg}$ |
| Iodine | 7553-56-2 | inhalation: dust/mist | >4.588 $^{mg}/_{l}$/4h |

**Acute toxicity of components of the mixture**

| Name of substance | CAS No | Exposure route | Endpoint | Value | Species |
|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | oral | LD50 | 1,650 $^{mg}/_{kg}$ | rat |
| Tetrahydrofuran | 109-99-9 | dermal | LD50 | >2,000 $^{mg}/_{kg}$ | rat |
| Pyridine | 110-86-1 | oral | LD50 | >800 – <1,600 $^{mg}/_{kg}$ | rat |
| Pyridine | 110-86-1 | dermal | LD50 | >1,000 – <2,000 $^{mg}/_{kg}$ | rabbit |
| Iodine | 7553-56-2 | oral | LD50 | 14,000 $^{mg}/_{kg}$ | not specified |
| Iodine | 7553-56-2 | inhalation: dust/mist | LC50 | >4.588 $^{mg}/_{l}$/ 4h | rat |
| Iodine | 7553-56-2 | dermal | LD50 | >2,000 $^{mg}/_{kg}$ | rabbit |

**Skin corrosion/irritation**

Causes skin irritation.

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Respiratory or skin sensitisation**

Shall not be classified as a respiratory or skin sensitiser.

**Germ cell mutagenicity**

Shall not be classified as germ cell mutagenic.

**Carcinogenicity**

Suspected of causing cancer.

**Reproductive toxicity**

Shall not be classified as a reproductive toxicant.

**Specific target organ toxicity - single exposure**

May cause respiratory irritation. May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure**

May cause damage to organs (thyroid gland) through prolonged or repeated exposure (if swallowed).

| Hazard category | Target organ | Exposure route |
|---|---|---|
| 2 | thyroid gland | if swallowed |

**Aspiration hazard**

Shall not be classified as presenting an aspiration hazard.

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

**• If swallowed**

vomiting, nausea

**• If in eyes**

Causes serious eye irritation

**• If inhaled**

Irritation to respiratory tract, cough, Dyspnoea, headache, vertigo, drowsiness, dizziness, narcosis

**• If on skin**

Prolonged or repeated contact with skin or mucous membrane result in irritation symptoms such as redness, blistering, dermatitis, etc, causes skin irritation

**• Other information**

none

### 11.2 Endocrine disrupting properties

None of the ingredients are listed.

## SECTION 12: Ecological information

### 12.1 Toxicity

Harmful to aquatic life.

**Aquatic toxicity (acute) of components of the mixture**

| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | LC50 | 2,160 $^{mg}/_{l}$ | fish | 96 h |
| Tetrahydrofuran | 109-99-9 | EC50 | 1,930 $^{mg}/_{l}$ | fish | 96 h |
| Pyridine | 110-86-1 | EC50 | 320 $^{mg}/_{l}$ | aquatic invertebrates | 48 h |
| Pyridine | 110-86-1 | ErC50 | 320 $^{mg}/_{l}$ | algae | 72 h |
| Iodine | 7553-56-2 | LC50 | 1.67 $^{mg}/_{l}$ | fish | 96 h |
| Iodine | 7553-56-2 | ErC50 | 0.13 $^{mg}/_{l}$ | algae | 72 h |

**Aquatic toxicity (chronic) of components of the mixture**

| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
|---|---|---|---|---|---|
| Iodine | 7553-56-2 | EC50 | 280 $^{mg}/_{l}$ | microorganisms | 3 h |

### 12.2 Persistence and degradability

**Degradability of components of the mixture**

| Name of substance | CAS No | Process | Degradation rate | Time | Method | Source |
|---|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | biotic/abiotic | 39 % | 28 d | | |
| Tetrahydrofuran | 109-99-9 | oxygen depletion | 39 % | 28 d | | ECHA |
| Pyridine | 110-86-1 | DOC removal | 97 % | 19 d | | ECHA |
| Pyridine | 110-86-1 | oxygen depletion | 0 % | 30 d | | ECHA |

### 12.3 Bioaccumulative potential

Data are not available.

**Bioaccumulative potential of components of the mixture**

| Name of substance | CAS No | BCF | Log KOW | BOD5/COD |
|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | | 0.45 (pH value: 7, 25 °C) | |
| Pyridine | 110-86-1 | | 0.64 (pH value: 7, 20 °C) | |
| Iodine | 7553-56-2 | | 2.49 (20 °C) | |

### 12.4 Mobility in soil

Data are not available.

### 12.5 Results of PBT and vPvB assessment

Data are not available.

### 12.6 Endocrine disrupting properties

None of the ingredients are listed.

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

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

**Sewage disposal-relevant information**

Do not empty into drains.

**Waste treatment of containers/packagings**

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

**Relevant provisions relating to waste(Basel Convention)**

**Properties of waste which render it hazardous**

**H3** Flammable liquids
**H11** Toxic (Delayed or chronic)

### 13.3 Remarks

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

## SECTION 14: Transport information

**14.1 UN number**

| | |
|---|---|
| **UN RTDG** | UN 1993 |
| IMDG-Code | UN 1993 |
| ICAO-TI | UN 1993 |

**14.2 UN proper shipping name**

| | |
|---|---|
| **UN RTDG** | FLAMMABLE LIQUID, N.O.S. |
| IMDG-Code | FLAMMABLE LIQUID, N.O.S. |
| ICAO-TI | Flammable liquid, n.o.s. |
| Technical name (hazardous ingredients) | Tetrahydrofuran, Pyridine |

**14.3 Transport hazard class(es)**

| | |
|---|---|
| **UN RTDG** | 3 |
| IMDG-Code | 3 |
| ICAO-TI | 3 |

**14.4 Packing group**

| | |
|---|---|
| **UN RTDG** | II |
| IMDG-Code | II |
| ICAO-TI | II |

**14.5 Environmental hazards** non-environmentally hazardous acc. to the dangerous goods regulations

**14.6 Special precautions for user**

There is no additional information.

**14.7 Transport in bulk according to IMO instruments**

The cargo is not intended to be carried in bulk.

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

**Transport informationNational regulationsAdditional information(UN RTDG)**

| | |
|---|---|
| **UN number** | 1993 |
| **Class** | 3 |
| **Packing group** | II |
| **Danger label(s)** | 3 |


| | |
|---|---|
| **Special provisions (SP)** | 274<br>UN RTDG |
| **Excepted quantities (EQ)** | E2<br>UN RTDG |

| | |
|---|---|
| **Limited quantities (LQ)** | 1 L<br>UN RTDG |
| **Emergency Action Code** | 3YE |

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

| | |
|---|---|
| Proper shipping name | FLAMMABLE LIQUID, N.O.S. |
| Particulars in the shipper's declaration | UN1993, FLAMMABLE LIQUID, N.O.S., (contains: Tetrahydrofuran, Pyridine), 3, II, -21°C c.c. |
| Marine pollutant | - |
| Danger label(s) | 3 |

| | |
|---|---|
| Special provisions (SP) | 274 |
| Excepted quantities (EQ) | E2 |
| Limited quantities (LQ) | 1 L |
| EmS | F-E, S-E |
| Stowage category | B |

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

| | |
|---|---|
| Proper shipping name | Flammable liquid, n.o.s. |
| Particulars in the shipper's declaration | UN1993, Flammable liquid, n.o.s., (contains: Tetrahydrofuran, Pyridine), 3, II |
| Danger label(s) | 3 |

| | |
|---|---|
| Special provisions (SP) | A3 |
| Excepted quantities (EQ) | E2 |
| Limited quantities (LQ) | 1 L |

## SECTION 15: Regulatory information

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

There is no additional information.

**National regulations(Australia)**

**Australian Inventory of Chemical Substances(AICS)**

All ingredients are listed or exempt from listing.

**Other information**

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

### National inventories

| Country | Inventory | Status |
|---|---|---|
| AU | AIIC | all ingredients are listed |
| CA | DSL | all ingredients are listed |
| CN | IECSC | all ingredients are listed |
| EU | ECSI | all ingredients are listed |
| EU | REACH Reg. | all ingredients are listed |
| JP | CSCL-ENCS | not all ingredients are listed |
| KR | KECI | all ingredients are listed |
| MX | INSQ | all ingredients are listed |
| NZ | NZIoC | all ingredients are listed |
| PH | PICCS | all ingredients are listed |
| TR | CICR | not all ingredients are listed |
| TW | TCSI | all ingredients are listed |
| US | TSCA | all ingredients are listed as "ACTIVE" |

**Legend**

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

### 15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

## SECTION 16: Other information

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

| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---|---|---|---|
| 2.1 | | Classification acc. to GHS:<br>change in the listing (table) | yes |
| 2.2 | | Hazard statements:<br>change in the listing (table) | yes |
| 14.8 | | Emergency Action Code:<br>3YE | yes |
| 15.1 | | National inventories:<br>change in the listing (table) | yes |

### Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|---|---|
| Acute Tox. | Acute toxicity |
| ATE | Acute Toxicity Estimate |
| BCF | Bioconcentration factor |
| BOD | Biochemical Oxygen Demand |
| Carc. | Carcinogenicity |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| Ceiling-C | Ceiling value |
| COD | Chemical oxygen demand |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DNEL | Derived No-Effect Level |
| EC50 | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| EINECS | European Inventory of Existing Commercial Chemical Substances |
| ELINCS | European List of Notified Chemical Substances |
| EmS | Emergency Schedule |
| ErC50 | ≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control |
| Eye Dam. | Seriously damaging to the eye |
| Eye Irrit. | Irritant to the eye |
| Flam. Liq. | Flammable liquid |
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |
| ICAO-TI | Technical instructions for the safe transport of dangerous goods by air |
| IMDG | International Maritime Dangerous Goods Code |
| IMDG-Code | International Maritime Dangerous Goods Code |
| LC50 | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval |
| LD50 | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval |
| LEL | Lower explosion limit (LEL) |
| log KOW | n-Octanol/water |
| NLP | No-Longer Polymer |
| PBT | Persistent, Bioaccumulative and Toxic |
| PNEC | Predicted No-Effect Concentration |

| Abbr. | Descriptions of used abbreviations |
|---|---|
| ppm | Parts per million |
| Skin Corr. | Corrosive to skin |
| Skin Irrit. | Irritant to skin |
| STEL | Short-term exposure limit |
| STOT RE | Specific target organ toxicity - repeated exposure |
| STOT SE | Specific target organ toxicity - single exposure |
| TWA | Time-weighted average |
| UEL | Upper explosion limit (UEL) |
| UN RTDG | UN Recommendations on the Transport of Dangerous Good |
| vPvB | Very Persistent and very Bioaccumulative |
| WES | Safe Work Australia: Workplace exposure standards for airborne contaminants |

### Key literature references and sources for data

Safe Work Australia's Code of Practice for Labelling of Workplace Hazardous Chemicals (under WHS Regulations).

UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### Classification procedure

Physical and chemical properties. The classification is based on tested mixture.
Health hazards. Environmental hazards. The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

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

| Code | Text |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H302 | Harmful if swallowed. |
| H312 | Harmful in contact with skin. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H351 | Suspected of causing cancer. |
| H372 | Causes damage to organs (thyroid gland) through prolonged or repeated exposure (if swallowed). |
| H373 | May cause damage to organs (thyroid gland) through prolonged or repeated exposure (if swallowed). |

### Disclaimer

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