# Safety Data Sheet

acc. to MoEL Public Notice 2025-50

# ReduFuse IR

Version number: 1.0 Date of compilation: 03.08.2026

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

### 1.1 Product identifier

Trade name **ReduFuse IR**

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

Relevant identified uses
Shading material for horticultural greenhouses
Industrial use
Professional use

Uses advised against
Do not use for private purposes (household)

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

Lumiforte EMEA B.V.
Geerstraat 8
5111 PS Baarle-Nassau
Netherlands

Telephone: +31 (0)1 35 07 53 99
e-mail: safety@lumiforte.com
Website: www.lumiforte.com

### 1.4 Emergency telephone number

Emergency information service
+31 (0)1 35 07 53 99
This number is only available during the following office hours: Mon-Fri 09:00 - 17:00, CET: Central European Time

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Classification acc. to GHS

This mixture does not meet the criteria for classification.

### 2.2 Label elements

Labelling

Not required.

### 2.3 Other hazards

Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of ≥ 0,1%.

Endocrine disrupting properties

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

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Not relevant (mixture).

### 3.2 Mixtures

The product does not contain (other) ingredients which are classified according to present knowledge of the supplier and contribute to the classification of the product and hence require reporting in this section.

| Name of substance | Identifier | Wt% | Classification acc. to GHS | Pictograms | Notes | Specific Conc. Limits |
|---|---|---|---|---|---|---|
| 3-aminopropyltriethoxysilane | CAS No 919-30-2 | 0,1 – < 1 | Acute Tox. 4 / H302<br>Skin Corr. 1B / H314<br>Eye Dam. 1 / H318<br>Skin Sens. 1B / H317 |  | | |
| reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | CAS No 55965-84-9 | 0,001 – < 0,01 | Acute Tox. 3 / H301<br>Acute Tox. 2 / H310<br>Acute Tox. 2 / H330<br>Skin Corr. 1C / H314<br>Eye Dam. 1 / H318<br>Skin Sens. 1A / H317<br>Aquatic Acute 1 / H400<br>Aquatic Chronic 1 / H410 |  | | Skin Corr. 1C; H314: C ≥ 0,6 %<br>Skin Irrit. 2; H315: 0,06 % ≤ C < 0,6 %<br>Eye Dam. 1; H318: C ≥ 0,6 %<br>Eye Irrit. 2; H319: 0,06 % ≤ C < 0,6 %<br>Skin Sens. 1A; H317: C ≥ 0,0015 % |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General notes

Do not leave affected person unattended. Remove victim out of the danger area. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician.

#### Following skin contact

Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

#### Following eye contact

Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

#### Following ingestion

Rinse mouth with water (only if the person is conscious). Call a doctor if you feel unwell.

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

Symptoms and effects are not known to date.

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

None.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Water spray; Water mist; Foam; Dry extinguishing powder; Carbon dioxide (CO2); Sand;
Co-ordinate firefighting measures to the fire surroundings.

#### Unsuitable extinguishing media

Water jet.

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

#### Hazardous combustion products

During fire hazardous fumes/smoke could be produced.

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

## SECTION 6: Accidental release measures

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

For non-emergency personnel

Follow emergency procedures such as the need to evacuate the danger area or to consult an expert. Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Remove persons to safety. Ventilate affected area.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Use personal protective equipment as required.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

### 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 binder, universal binder, sawdust).

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

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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

Managing of associated risks

- incompatible substances or mixtures

Keep away from alkalis, oxidising substances, acids.

Control of effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight. Frost.

Consideration of other advice

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

- packaging compatibilities

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

## 7.3 Specific end use(s)

See section 1.2.

# 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] | Notation | Source |
|---|---|---|---|---|---|---|---|---|---|
| KR | mixture of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one | 55965-84-9 | OEL | | 0,1 | | | i | KR-OEL |

Notation

| | |
|---|---|
| i | inhalable fraction |
| 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/DMELs/PNECs and other threshold levels

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 |
|---|---|---|---|---|---|---|
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 59 mg/m³ | human, inhalatory | worker (industry) | acute - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 8,3 mg/kg bw/day | human, dermal | worker (industry) | acute - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 17,4 mg/m³ | human, inhalatory | consumer (private households) | acute - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 5 mg/kg bw/day | human, dermal | consumer (private households) | acute - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 14 mg/m³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 2 mg/kg bw/day | human, dermal | worker (industry) | chronic - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 3,5 mg/m³ | human, inhalatory | consumer (private households) | chronic - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 1 mg/kg bw/day | human, dermal | consumer (private households) | chronic - systemic effects |
| 3-aminopropyltriethoxysilane | 919-30-2 | DNEL | 1 mg/kg bw/day | human, oral | consumer (private households) | chronic - systemic effects |

| Relevant PNECs of components | | | | | | |
|---|---|---|---|---|---|---|
| **Name of substance** | **CAS No** | **End-point** | **Threshold level** | **Organism** | **Environmental compartment** | **Exposure time** |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 1,3 $^{mg}/_{l}$ | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 0,5 $^{mg}/_{l}$ | aquatic organisms | freshwater | short-term (single instance) |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 0,05 $^{mg}/_{l}$ | aquatic organisms | marine water | short-term (single instance) |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 1,8 $^{mg}/_{kg}$ | aquatic organisms | freshwater sediment | short-term (single instance) |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 0,18 $^{mg}/_{kg}$ | aquatic organisms | marine sediment | short-term (single instance) |
| 3-aminopropyltrieth-oxysilane | 919-30-2 | PNEC | 0,069 $^{mg}/_{kg}$ | terrestrial organ-isms | soil | short-term (single instance) |

## 8.2 Exposure controls

### Appropriate engineering controls

General ventilation. Provide eyewash stations and safety showers at the workplace.

### Individual protection measures (personal protective equipment)

### Eye/face protection



Use safety goggle with side protection

### Skin protection

### - hand protection



Wear suitable gloves. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. Wash hands thoroughly after handling.

### - breakthrough time of the glove material

Use gloves with a minimum breakthrough time 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. Chemical protective clothing.

### Respiratory protection

In case of inadequate ventilation wear respiratory protection.

### Environmental exposure controls

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

# SECTION 9: Physical and chemical properties

## 9.1 Information on basic physical and chemical properties

### Appearance

| | |
|---|---|
| Physical state | liquid |
| Colour | beige |

| | |
|---|---|
| Particle | not relevant (liquid) |

| | |
|---|---|
| Odour | characteristic |

Other safety parameters

| | |
|---|---|
| pH (value) | 9 |
| Melting point/freezing point | not determined |
| Initial boiling point and boiling range | 100 °C<br>calculated value, referring to a component of the mixture |
| Flash point | not applicable |
| Evaporation rate | not determined |
| Flammability (solid, gas) | not relevant, (fluid) |
| Explosive limits | LEL: UEL: not determined |
| Vapour pressure | 2,3 kPa at 20 °C<br>calculated value, referring to a component of the mixture |
| Density | 1,1 $^{g}/_{cm^3}$ |
| Relative density | information on this property is not available |
| Solubility | dispersible insoluble in water |

| | |
|---|---|
| - n-octanol/water (log KOW) | this information is not available |
| Auto-ignition temperature | not relevant |
| Decomposition temperature | no data available |

Viscosity

| | |
|---|---|
| - kinematic viscosity | 7.273 $^{mm^2}/_{s}$ at 20 °C |
| - dynamic viscosity | 8.000 mPa s at 20 °C (Brookfield RV, spindle 5, 10 rpm) |
| Explosive properties | none |
| Oxidising properties | none |

### 9.2 Other information

There is no additional information.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is not reactive under normal ambient conditions.

### 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

No known hazardous reactions.

### 10.4 Conditions to avoid

UV-radiation/sunlight. Potential ignition sources. Frost.

### 10.5 Incompatible materials

Oxidisers. Strong acids and bases.

### 10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

## 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

This mixture does not meet the criteria for classification.

#### Acute toxicity

Shall not be classified as acutely toxic. Based on available data, the classification criteria are not met.

Acute toxicity estimate (ATE) of components

| Name of substance | CAS No | Exposure route | ATE |
|---|---|---|---|
| 3-aminopropyltriethoxysilane | 919-30-2 | oral | 1.490 $^{mg}/_{kg}$ |
| reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 55965-84-9 | oral | 100 $^{mg}/_{kg}$ |
| reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 55965-84-9 | dermal | 50 $^{mg}/_{kg}$ |
| reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 55965-84-9 | inhalation: vapour | 0,5 $^{mg}/_{l}$/4h |

Acute toxicity of components

| Name of substance | CAS No | Exposure route | Endpoint | Value | Species |
|---|---|---|---|---|---|
| 3-aminopropyltriethoxysilane | 919-30-2 | oral | LD50 | 1.490 $^{mg}/_{kg}$ | rat |
| 3-aminopropyltriethoxysilane | 919-30-2 | dermal | LD50 | 4.075 $^{mg}/_{kg}$ | rat |

#### Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin. Based on available data, the classification criteria are not met.

#### Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant. Based on available data, the classification criteria are not met.

#### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser. Based on available data, the classification criteria are not met.

### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic. Based on available data, the classification criteria are not met.

### Carcinogenicity

Shall not be classified as carcinogenic. Based on available data, the classification criteria are not met.

### Reproductive toxicity

Shall not be classified as a reproductive toxicant. Based on available data, the classification criteria are not met.

### Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure). Based on available data, the classification criteria are not met.

### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure). Based on available data, the classification criteria are not met.

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard. Based on available data, the classification criteria are not met.

## 11.2 Information on other hazards

### Endocrine disrupting properties

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

# SECTION 12: Ecological information

## 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute) of components of the mixture

| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
|---|---|---|---|---|---|
| 3-aminopropyltriethoxysilane | 919-30-2 | ErC50 | >1.000 $^{mg}/_{l}$ | algae | 72 h |
| 3-aminopropyltriethoxysilane | 919-30-2 | LC50 | >934 $^{mg}/_{l}$ | zebra fish (Danio rerio) | 96 h |
| 3-aminopropyltriethoxysilane | 919-30-2 | EC50 | 331 $^{mg}/_{l}$ | daphnia magna | 48 h |
| 3-aminopropyltriethoxysilane | 919-30-2 | NOEC | ≥934 $^{mg}/_{l}$ | zebra fish (Danio rerio) | 96 h |
| 3-aminopropyltriethoxysilane | 919-30-2 | growth (EbCx) 10% | 321 $^{mg}/_{l}$ | green algae (Desmodesmus subspicatus) | 72 h |

Aquatic toxicity (chronic) of components of the mixture

| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
|---|---|---|---|---|---|
| 3-aminopropyltriethoxysilane | 919-30-2 | EC50 | >1.000 $^{mg}/_{l}$ | microorganisms | 3 h |
| 3-aminopropyltriethoxysilane | 919-30-2 | LOEC | >11,9 $^{mg}/_{l}$ | daphnia magna | 21 d |
| 3-aminopropyltriethoxysilane | 919-30-2 | NOEC | ≥11,9 $^{mg}/_{l}$ | daphnia magna | 21 d |
| 3-aminopropyltriethoxysilane | 919-30-2 | growth (EbCx) 10% | >1.000 $^{mg}/_{l}$ | microorganisms | 3 h |

## 12.2 Persistence and degradability

Data are not available.

## 12.3 Bioaccumulative potential

Data are not available.

### 12.4 Mobility in soil

Data are not available.

### 12.5 Results of PBT and vPvB assessment

Does not contain a PBT-/vPvB-substance at a concentration of ≥ 0,1%.

### 12.6 Endocrine disrupting properties

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

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packagings

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

### Remarks

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

## SECTION 14: Transport information

### 14.1 UN number

Not subject to transport regulations.

### 14.2 UN proper shipping name

Not relevant.

### 14.3 Transport hazard class(es)

None.

### 14.4 Packing group

Not assigned.

### 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

No data available.

### Additional information for each of the UN Model Regulations

#### Transport information - national regulations - additional information (UN RTDG)

Not subject to transport regulations: UN RTDG

### International Maritime Dangerous Goods Code (IMDG) - additional information

Not subject to IMDG.

### International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Not subject to ICAO-IATA.

## SECTION 15: Regulatory information

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

There is no additional information.

### 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

## SECTION 16: Other information

### Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|---|---|
| Acute Tox. | Acute toxicity |
| Aquatic Acute | Hazardous to the aquatic environment - acute hazard |
| Aquatic Chronic | Hazardous to the aquatic environment - chronic hazard |
| ATE | Acute Toxicity Estimate |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DMEL | Derived Minimal Effect Level |
| 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 |
| ED | Endocrine disruptor |
| 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 |
| 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 |
| IMDG | International Maritime Dangerous Goods Code |
| KR-OEL | Ministry of Employment and Labor (industrial accident prevention policy): exposure of chemical and physical factors |
| 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) |
| LOEC | Lowest Observed Effect Concentration |

| Abbr. | Descriptions of used abbreviations |
|---|---|
| NOEC | No Observed Effect Concentration |
| OEL | Workplace exposure limit |
| PBT | Persistent, Bioaccumulative and Toxic |
| PNEC | Predicted No-Effect Concentration |
| ppm | Parts per million |
| Skin Corr. | Corrosive to skin |
| Skin Irrit. | Irritant to skin |
| Skin Sens. | Skin sensitisation |
| STEL | Short-term exposure limit |
| 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 |

## Key literature references and sources for data

Standard for Classification and Labeling of Chemical Substance and Material Safety Data Sheet (MoEL Public Notice). Regulations on the Classification and Labeling of Chemical Substances.

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 |
|---|---|
| H301 | Toxic if swallowed. |
| H302 | Harmful if swallowed. |
| H310 | Fatal in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H330 | Fatal if inhaled. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |

## Disclaimer

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