

**GREEN WAVE ICE**

## Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878

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

**1.1. Product identifier**Product name **Green Wave Ice****1.2. Relevant identified uses of the substance or mixture and uses advised against**Intended use **Extinguishing professional agent**

| Identified Uses | Industrial | Professional | Consumer |
|-----------------|------------|--------------|----------|
| Use             | ✓          | ✓            | -        |

**1.3. Details of the supplier of the safety data sheet**

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responsible for the Safety Data Sheet **info@emme-italia.com****1.4. Emergency telephone number**

For urgent inquiries refer to

**For urgent inquiries refer to**

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**Centro Antiveleni Pavia: Tel. 038224444(CAV IRCCS Fondazione Maugeri-Pavia).**  
**Centro Antiveleni Roma: Tel.063054343(CAV Policlinico Gemelli-Roma).**  
**Centro Antiveleni Roma: Tel. 0649978000(CAV Policlinico Umberto I-Roma).**  
**Centro Antiveleni Roma: Tel.0668593726(CAVp.Osp.Pediatrico Bambino Gesù)**  
**Centro Antiveleni Napoli: Tel.0815453333(CAV Ospedale Cardarelli-Napoli).**  
**Centro Antiveleni Bergamo: Tel.800883300(CAV Azienda Ospedaliera Papa Giovanni XXII)**  
**Centro Antiveleni Foggia: Tel.800183459(CAV Azienda Ospedaliera Universitaria Foggia)**  
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**Servizio Medico fornito H24**

### SECTION 2. Hazards identification

**2.1. Classification of the substance or mixture**

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878.  
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

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### Hazard classification and indication:

Specific target organ toxicity - repeated exposure, category 2 H373

Serious eye damage, category 1 H318

Hazardous to the aquatic environment, chronic toxicity, category 3 H412

May cause damage to organs through prolonged or repeated exposure.

Causes serious eye damage.

Harmful to aquatic life with long lasting effects.

## 2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Danger

Hazard statements:

**H373** May cause damage to organs through prolonged or repeated exposure.

**H318** Causes serious eye damage.

**H412** Harmful to aquatic life with long lasting effects.

Precautionary statements:

**P260** Do not breathe dust / fume / gas / mist / vapours / spray.

**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**P280** Wear eye protection / face protection.

**P310** Immediately call a POISON CENTER or doctor.

**P273** Avoid release to the environment.

**Contains:** 1,2- ethandiol  
Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate  
Cocoamidopropyl Hydroxysultaine

## 2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration  $\geq$  0.1%.

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The product does not contain pfas or fluorine.

The product is degreasing and not flammable. The ready -to -use solutions, produced according to the dilution recommendations, must be classified differently.

It can damage aquatic fauna if it ends up in surface waters.

It can damage the bacterial population in waste water treatment plants if it ends up in the sewage system.

It is not possible to breathe while immersed in the foam. Pay attention when spraying on people (danger of suffocation).

**SECTION 3. Composition/information on ingredients****3.2. Mixtures**

Contains:

| Identification | x = Conc. % | Classification (EC) 1272/2008 (CLP) |
|----------------|-------------|-------------------------------------|
|----------------|-------------|-------------------------------------|

**1,2- ethandiol**

|         |                  |                                   |
|---------|------------------|-----------------------------------|
| INDEX - | $19 \leq x < 24$ | Acute Tox. 4 H302, STOT RE 2 H373 |
|---------|------------------|-----------------------------------|

|              |  |                     |
|--------------|--|---------------------|
| EC 203-473-3 |  | ATE Oral: 500 mg/kg |
|--------------|--|---------------------|

CAS 107-21-1

REACH Reg. 01-2119456816-28-xxxx

**Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate**

|         |                    |                                     |
|---------|--------------------|-------------------------------------|
| INDEX - | $0,9 \leq x < 4,5$ | Eye Dam. 1 H318, Skin Irrit. 2 H315 |
|---------|--------------------|-------------------------------------|

EC 239-032-7

CAS 14960-06-6

REACH Reg. 01-2119980040-48-xxxx

**Cocoamidopropyl Hydroxysultaine**

|         |                    |                                         |
|---------|--------------------|-----------------------------------------|
| INDEX - | $0,9 \leq x < 4,5$ | Eye Dam. 1 H318, Aquatic Chronic 2 H411 |
|---------|--------------------|-----------------------------------------|

EC 293-878-1

CAS 91648-19-0

REACH Reg. 01-2120765740-52-xxxx

The full wording of hazard (H) phrases is given in section 16 of the sheet.

**SECTION 4. First aid measures****4.1. Description of first aid measures**

In case of doubt or in the presence of symptoms contact a doctor and show him this document.

In case of more severe symptoms, ask for immediate medical aid.

EYES: Remove, if present, contact lenses if the situation allows you to do so easily. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. Get medical advice/attention.

SKIN: Take off contaminated clothing. Wash immediately and thoroughly with running water (and soap if possible). Get medical advice. Avoid further contact with contaminated clothing.

INGESTION: Do not induce vomiting unless explicitly authorised by a doctor. Do not give anything by mouth to an unconscious person. Get medical advice/attention.

INHALATION: Remove victim to fresh air, away from the accident scene. Get medical advice/attention.

Rescuer protection

It is good practice for rescuers lending support to a person who has been exposed to a chemical substance or to a mixture to wear personal protective

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equipment. The nature of such protection depends on the hazard level of the substance or mixture, on the type of exposure and on the extent of the contamination. In the absence of other more specific indications, use of disposable gloves in the event of possible contact with body fluids is recommended. For the type of PPE suitable for the characteristics of the substance or mixture, see section 8.

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

Specific information on symptoms and effects caused by the product are unknown.

DELAYED EFFECTS: Based on the information currently available, there are no known cases of delayed effects following exposure to this product.

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

Immediately call a POISON CENTER / doctor / . . .

#### Means to have available in the workplace for specific and immediate treatment

Running water for skin and eye wash.

## SECTION 5. Firefighting measures

### 5.1. Extinguishing media

#### SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

#### UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

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

#### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products.

### 5.3. Advice for firefighters

#### GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

## SECTION 6. Accidental release measures

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

Block the leakage if there is no hazard.

Wear 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. These indications apply for both processing staff and those involved in emergency procedures.

### 6.2. Environmental precautions

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The product must not penetrate into the sewer system or come into contact with surface water or ground water.

**6.3. Methods and material for containment and cleaning up**

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

**6.4. Reference to other sections**

Any information on personal protection and disposal is given in sections 8 and 13.

**SECTION 7. Handling and storage****7.1. Precautions for safe handling**

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

**7.2. Conditions for safe storage, including any incompatibilities**

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

Do not reconfect in metal containers. Use only stainless steel containers or PE.

Containers/non -suitable storage means:

- Aluminum
- Light metal
- Copper
- Zinc
- Alloy with copper
- Alloy with light metal
- Iron and steel

**7.3. Specific end use(s)**

Do not use for cleaning purposes.

**SECTION 8. Exposure controls/personal protection****8.1. Control parameters**

Regulatory references:

|    |        |                                                                                                                                                                                                                                                                                            |
|----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EU | OEL EU | Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC. |
|----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**1,2- ethandiol****Threshold Limit Value**

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| Type | Country | TWA/8h | STEL/15min | Remarks / Observations |
|------|---------|--------|------------|------------------------|
|      |         | mg/m3  | ppm        |                        |
| OEL  | EU      | 52     | 20         | 104                    |
|      |         |        |            | 40                     |

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

### 8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

#### HAND PROTECTION

Protect hands with category III work gloves.

The following should be considered when choosing work glove material (see standard EN 374): compatibility, degradation, permeability time.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.

#### SKIN PROTECTION

Wear category II professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

#### EYE PROTECTION

Wear airtight protective goggles (see standard EN ISO 16321).

#### RESPIRATORY PROTECTION

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. Use a mask with a type A filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387).

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

#### ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. Physical and chemical properties

## GREEN WAVE ICE

### 9.1. Information on basic physical and chemical properties

| Properties                             | Value                           | Information                                                                    |
|----------------------------------------|---------------------------------|--------------------------------------------------------------------------------|
| Appearance                             | liquid                          |                                                                                |
| Colour                                 | green                           |                                                                                |
| Odour                                  | ether                           |                                                                                |
| Melting point / freezing point         | -30 °C                          | Method: EN 1568:2018                                                           |
| Initial boiling point                  | > 100 °C                        |                                                                                |
| Flammability                           | not flammable                   |                                                                                |
| Lower explosive limit                  | not applicable                  |                                                                                |
| Upper explosive limit                  | not applicable                  |                                                                                |
| Flash point                            | > 100 °C                        |                                                                                |
| Auto-ignition temperature              | 250 °C                          | Remark: ECHA<br>Substance: Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate |
| Decomposition temperature              | not applicable                  |                                                                                |
| pH                                     | 6,5 - 8,5                       |                                                                                |
| Kinematic viscosity                    | < 10 mm <sup>2</sup> /s         | Temperature: 20 °C                                                             |
| Solubility                             | soluble in water                |                                                                                |
| Partition coefficient: n-octanol/water | not applicable                  | Reason for missing data: mixture                                               |
| Vapour pressure                        | not determined                  |                                                                                |
| Density and/or relative density        | 1,169 - 1,200 g/cm <sup>3</sup> |                                                                                |
| Relative vapour density                | not available                   |                                                                                |
| Particle characteristics               | not applicable                  |                                                                                |

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

Information not available

#### 9.2.2. Other safety characteristics

|                            |              |
|----------------------------|--------------|
| Miscibility                | 100%         |
| Conductivity               | ~ 3500 µS/cm |
| VOC (Directive 2010/75/EU) | 24,00 %      |

## SECTION 10. Stability and reactivity

### 10.1. Reactivity

Alkaline metals  
Concentrated alkali  
Concentrated acids  
Strongly oxidizing and reducing substances  
Acid halogen

**GREEN WAVE ICE****10.2. Chemical stability**

The product is stable in normal conditions of use and storage.

**10.3. Possibility of hazardous reactions**

No hazardous reactions are foreseeable in normal conditions of use and storage.

**10.4. Conditions to avoid**

Do not keep  $t > 50^{\circ}\text{C}$ .

**10.5. Incompatible materials**

Information not available

**10.6. Hazardous decomposition products**

Information not available

**SECTION 11. Toxicological information**

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.

It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

ATE (Inhalation) of the mixture:

Not classified (no significant component)

ATE (Oral) of the mixture:

>2000 mg/kg

ATE (Dermal) of the mixture:

Not classified (no significant component)



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1,2- ethandiol  
LD50 (Dermal): > 3500 mg/kg ECHA  
LD50 (Oral): 7712 mg/kg Rat - ECHA  
ATE (Oral): 500 mg/kg estimate from table 3.1.2 of Annex I of the CLP  
(figure used for calculation of the acute toxicity estimate of the mixture)  
  
LC50 (Inhalation vapours): > 2,5 mg/l/6h ECHA

Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate  
LD50 (Dermal): 5000 mg/kg ECHA  
LD50 (Oral): 2000 mg/kg ECHA

Cocoamidopropyl Hydroxysultaine  
LD50 (Dermal): 2000 mg/kg Rat - ECHA  
LD50 (Oral): 2000 mg/kg Rat - ECHA

**SKIN CORROSION / IRRITATION**

Does not meet the classification criteria for this hazard class

**SERIOUS EYE DAMAGE / IRRITATION**

Causes serious eye damage

**RESPIRATORY OR SKIN SENSITISATION**

Does not meet the classification criteria for this hazard class

**GERM CELL MUTAGENICITY**

Does not meet the classification criteria for this hazard class

**CARCINOGENICITY**

Does not meet the classification criteria for this hazard class

**REPRODUCTIVE TOXICITY**

Does not meet the classification criteria for this hazard class

**STOT - SINGLE EXPOSURE**

Does not meet the classification criteria for this hazard class

**STOT - REPEATED EXPOSURE**

May cause damage to organs

**ASPIRATION HAZARD**

Does not meet the classification criteria for this hazard class

**11.2. Information on other hazards**

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Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

**SECTION 12. Ecological information**

This product is dangerous for the environment and the aquatic organisms. In the long term, it has negative effects on the aquatic environment.

**12.1. Toxicity**

1,2- ethandiol  
LC50 - for Fish > 72860 mg/l/96h ECHA  
EC50 - for Crustacea > 100 mg/l/48h ECHA  
EC50 - for Algae / Aquatic Plants 10,94 mg/l/96h ECHA  
Chronic NOEC for Algae / Aquatic Plants 100 mg/l/96h ECHA

Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate  
LC50 - for Fish > 4,2 mg/l/96h ECHA  
EC50 - for Crustacea > 1,71 mg/l/48h ECHA  
EC50 - for Algae / Aquatic Plants > 8,5 mg/l/72h ECHA  
Chronic NOEC for Algae / Aquatic Plants 6,69 mg/l/72h ECHA

Cocoamidopropyl Hydroxysultaine  
LC50 - for Fish 4,87 mg/l/96h ECHA  
EC50 - for Crustacea 9,3 mg/l/48h ECHA  
EC50 - for Algae / Aquatic Plants 2,26 mg/l/72h ECHA  
Chronic NOEC for Crustacea 3,2 mg/l/21d ECHA  
Chronic NOEC for Algae / Aquatic Plants 760 µg/l/72h ECHA

**12.2. Persistence and degradability**

1,2- ethandiol  
Rapidly degradable  
>90% (10d) OECD 301A

Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate  
Rapidly degradable  
98% (28d) OECD 301E

Cocoamidopropyl Hydroxysultaine  
Rapidly degradable  
71 % (28 d) OECD 301D

Chemical Oxygen Demand (COD)  
<100.000 \* MG \* O2/L  
> 100% concentration  
DIN EN 38409-H41-1 method

Biological Oxygen Demand  
<8000 \* MG \* O2/L  
> 100% concentration

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DIN EN 1899-1 method

Test duration: 5 days

BOD5/COD ratio

80%

\* The data are based on products with a similar structure or composition

**12.3. Bioaccumulative potential**

1,2- ethandiol

Partition coefficient: n-octanol/water

-1,36

Sodium 3-[(2-carboxyethyl)(dodecyl)amino]propanoate

Partition coefficient: n-octanol/water

-2,12 ECHA

Cocoamidopropyl Hydroxysultaine

Partition coefficient: n-octanol/water

-2,34 25°C - ECHA

**12.4. Mobility in soil**

Information not available

**12.5. Results of PBT and vPvB assessment**On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.**12.6. Endocrine disrupting properties**

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

**12.7. Other adverse effects**

Information not available

**SECTION 13. Disposal considerations****13.1. Waste treatment methods**

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

The management of waste arising from the use or dispersal of this product must be organised in accordance with occupational safety regulations. See section 8 for possible need for PPE.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

**SECTION 14. Transport information**

**GREEN WAVE ICE**

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

**14.1. UN number or ID number**

not applicable

**14.2. UN proper shipping name**

not applicable

**14.3. Transport hazard class(es)**

not applicable

**14.4. Packing group**

not applicable

**14.5. Environmental hazards**

not applicable

**14.6. Special precautions for user**

not applicable

**14.7. Maritime transport in bulk according to IMO instruments**

Information not relevant

**SECTION 15. Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Seveso Category - Directive 2012/18/EU: None

**GREEN WAVE ICE**

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

Product

Point 3

Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors

not applicable

Substances in Candidate List (Art. 59 REACH)

On the basis of available data, the product does not contain any SVHC in percentage  $\geq$  than 0,1%.

Substances subject to authorisation (Annex XIV REACH)

None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

## 15.2. Chemical safety assessment

A chemical safety assessment has not been performed for the preparation/for the substances indicated in section 3.

## SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

|                          |                                                                    |
|--------------------------|--------------------------------------------------------------------|
| <b>Acute Tox. 4</b>      | Acute toxicity, category 4                                         |
| <b>STOT RE 2</b>         | Specific target organ toxicity - repeated exposure, category 2     |
| <b>Eye Dam. 1</b>        | Serious eye damage, category 1                                     |
| <b>Skin Irrit. 2</b>     | Skin irritation, category 2                                        |
| <b>Aquatic Chronic 2</b> | Hazardous to the aquatic environment, chronic toxicity, category 2 |
| <b>Aquatic Chronic 3</b> | Hazardous to the aquatic environment, chronic toxicity, category 3 |

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|             |                                                                    |
|-------------|--------------------------------------------------------------------|
| <b>H302</b> | Harmful if swallowed.                                              |
| <b>H373</b> | May cause damage to organs through prolonged or repeated exposure. |
| <b>H318</b> | Causes serious eye damage.                                         |
| <b>H315</b> | Causes skin irritation.                                            |
| <b>H411</b> | Toxic to aquatic life with long lasting effects.                   |
| <b>H412</b> | Harmful to aquatic life with long lasting effects.                 |

**LEGEND:**

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent, bioaccumulative and toxic
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PMT: Persistent, mobile and toxic
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very persistent and very bioaccumulative
- vPvM: Very persistent and very mobile
- WGK: Water hazard classes (German).

**GENERAL BIBLIOGRAPHY**

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148

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- 18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
- 19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)
- 20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
- 21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)
- 22. Delegated Regulation (UE) 2022/692 (XVIII Atp. CLP)
- 23. Delegated Regulation (UE) 2023/707
- 24. Delegated Regulation (UE) 2023/1434 (XIX Atp. CLP)
- 25. Delegated Regulation (UE) 2023/1435 (XX Atp. CLP)
- 26. Delegated Regulation (UE) 2024/197 (XXI Atp. CLP)
- 27. Delegated Regulation (UE) 2024/2564 (XXII Atp. CLP)
- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

**Note for users:**

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

**CALCULATION METHODS FOR CLASSIFICATION**

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.