

SAFETY DATA SHEET SPA FROG® Bromine Cartridge

According to Regulation (EC) No 1907/2006, Annex II, as amended.
Commission Regulation (EU) No 2020/878 of 18 June 2020.

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

1.1. Product identifier

Product name SPA FROG® Bromine Cartridge
UFI No TWSD-60KQ-U00N-4QVP

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

Identified uses For use as a spa and hot tub disinfectant.
Uses advised against Use only for intended applications.

1.3. Details of the supplier of the safety data sheet

Manufacturer King Technology, Inc.
6000 Clearwater Dr.
Minnetonka, MN 55343
USA
001 (952) 933-6118
sdsinfo@kingtechnology.com

1.4. Emergency telephone number

Emergency telephone 001 (800) 424-9300 - Chemtrec (24 hours)

National emergency telephone Irish National Poison Centre: 01 809 2166

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC No 1272/2008)

Physical hazards Ox. Sol. 2 - H272
Health hazards Acute Tox. 4 - H302 Acute Tox. 4 - H332 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317
Environmental hazards Aquatic Acute 1 - H400

2.2. Label elements

Labelling (EC No 1272/2008)

Hazard pictograms



Signal word Danger
Hazard statements H302+H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H400 Very toxic to aquatic life.
H272 May intensify fire; oxidiser.

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Precautionary statements	P101 If medical advice is needed, have product container or label at hand. P102 Keep out of reach of children. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P220 Keep away from combustible materials. P273 Avoid release to the environment. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a doctor. P405 Store locked up. P501 Dispose of contents/ container in accordance with national regulations.
Contains	1-Bromo-3-Chloro-5,5-dimethylhydantoin

2.3. Other hazards

Other	May form combustible dust concentrations in air. This mixture contains no PBT/vPvB substances $\geq 0.1\%$.
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SECTION 3: Composition/information on ingredients

3.1. Substances

The product is a mixture.

3.2. Mixtures

1-Bromo-3-Chloro-5,5-dimethylhydantoin	98%
CAS number: 32718-18-6	
EC number: 251-171-5	
REACH status: the substance is exempt from REACH registration as it is already registered under the biocide regulation No 528/2012.	
Classification	
Ox. Sol. 2 - H272	
Acute Tox. 4 - H302	
Acute Tox. 4 - H332	
Skin Corr. 1B - H314	
Eye Dam. 1 - H318	
Skin Sens. 1 - H317	
Aquatic Acute 1 - H400, M factor (Acute) = 1	

The full text for all hazard statements is displayed in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Call a Poison Centre or doctor if you feel unwell. If medical advice is needed, have product container or label at hand. The granules are packaged in a pre-filled cartridge. Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with the prescribed use.
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Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place.
Ingestion	DO NOT induce vomiting. Spit product out of mouth as much as possible. Get medical attention immediately. Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation.
Skin contact	It is important to remove the substance from the skin immediately. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention. Chemical burns must be treated by a physician.
Eye contact	Rinse immediately with plenty of water. Do not rub eye. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes and get medical attention.
Protection of first aiders	It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.

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

General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure. The granules are packaged in a pre-filled cartridge. Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with the prescribed use.
Inhalation	A single exposure may cause the following adverse effects: Severe irritation of nose and throat. Shortness of breath. Headache. Symptoms following overexposure may include the following: Corrosive to the respiratory tract.
Ingestion	May cause sensitisation or allergic reactions in sensitive individuals. May cause chemical burns in mouth, oesophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.
Skin contact	May cause skin sensitisation or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.
Eye contact	Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

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

Notes for the doctor	Treat symptomatically. May cause sensitisation or allergic reactions in sensitive individuals.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Dust may form explosive mixture with air. May cause or intensify fire; oxidiser. This product is toxic. Severe corrosive hazard. Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapours. Water used for fire extinguishing, which has been in contact with the product, may be corrosive.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapours.

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5.3. Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Ventilate closed spaces before entering them. May cause or intensify fire; oxidiser. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
Special protective equipment for firefighters	Regular protection may not be safe. Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN 469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear protective equipment as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of dust. Use suitable respiratory protection if ventilation is inadequate. Avoid contact with skin and eyes.
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6.2. Environmental precautions

Environmental precautions	Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment other than via the advised use of the product.
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6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Wear protective equipment as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Do not use sawdust or other combustible material. This product is corrosive. Provide adequate ventilation. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dangerous for the environment. Do not empty into drains. For waste disposal, see Section 13.
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6.4. Reference to other sections

Reference to other sections	For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Read and follow manufacturer's recommendations. Wear protective equipment as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. This product is corrosive. Immediate first aid is imperative. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.
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Advice on general occupational hygiene	Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse.
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7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store away from incompatible materials (see Section 10). Store at temperatures not exceeding 30°C. Store locked up. Keep away from flammable and combustible materials. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.
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Storage class	Oxidiser storage.
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7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

Manufacturer's recommendation: 0.1 mg/m³ (8-hour TWA)

There are no known national occupational exposure limits (OEL) in Ireland for the substances contained in this product.

8.2. Exposure controls

The granules are packaged in a pre-filled cartridge. Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with its prescribed use.

Protective equipment

Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Observe any occupational exposure limits for the product or ingredients.
Eye/face protection	Not required under normal use (the granules are packaged in a pre-filled cartridge). Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with its prescribed use). In case of accidental release, wear tight-fitting, chemical splash goggles or face shield EN 166. If inhalation hazards exist, a full-face respirator may be required instead.
Hand protection	Not required under normal use (the granules are packaged in a pre-filled cartridge). Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with its prescribed use). In case of accidental release, wear protective gloves EN 374. Suggested material: any.
Other skin and body protection	Not required under normal use. Wear appropriate clothing to prevent any possibility of skin contact or in case of accidental release (the granules are packaged in a pre-filled cartridge). Therefore, direct exposure to the mixture is not expected to occur if the cartridge is used in accordance with its prescribed use).
Hygiene measures	Handle in accordance with good hygiene and safety practice. Wash hands after handling. Do not eat, drink or smoke when handling this product.
Respiratory protection	Not required under normal use. In case of accidental release, use EN 140 half mask and quarter mask respirators with replaceable filter cartridges.
Environmental exposure controls	Avoid release to the environment other than via the advised use of the product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Tablet. Granules in a disposable cartridge
Colour	White/off-white.
Odour	Faint halogen
Melting point/freezing point	Not applicable.
Boiling/initial point and boiling range	Not applicable.
Flammability	Not applicable.
Lower and upper explosion limit	Not applicable.
Flash point	Not applicable.
Auto-ignition temperature	No information available.
Decomposition Temperature	160°C
pH	Not available. The product reacts with water.
Kinematic viscosity	Not applicable.
Solubility(ies)	0.22 g/100 g water at 25°C 2.5 g/100 g benzene at 25°C
Partition coefficient n-octanol/water	Kow: < 1
Vapour pressure	0.00935 Pa at 25°C

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Density and/or relative density	1.8-2.0
Relative vapour density	Not applicable.
Particle characteristics	MMAD >30 µm

9.2. Other information

Explosive properties	Dust may form explosive mixture with air.
Oxidising properties	Oxidiser

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No dangerous reactions known under normal conditions of use recommended in section 7. See the other subsections of this section for further details.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	May form combustible dust concentrations in air.
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10.4. Conditions to avoid

Conditions to avoid	Moisture. Keep at temperature not exceeding 160°C.
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10.5. Incompatible materials

Materials to avoid	Reducing agents. Flammable/combustible materials. Hydrocarbons. Organic cyanides (nitriles). Esters. Some metals.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Corrosive gases or vapours.
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SECTION 11: Toxicological information

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

Acute toxicity - oral

Notes (oral LD ₅₀)	Acute Tox. 4 - H302 Harmful if swallowed.
ATE oral (mg/kg)	947.96

Acute toxicity - dermal

Notes (dermal LD ₅₀)	Based on available data the classification criteria are not met.
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Acute toxicity - inhalation

Notes (inhalation LC ₅₀)	Acute Tox. 4 - H332 Harmful if inhaled.
ATE inhalation (dusts/mists mg/l)	1.53

Skin corrosion/irritation

Animal data	Skin Corr. 1B - H314 Causes severe burns.
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Serious eye damage/irritation

Serious eye damage/irritation	Eye Dam. 1 - H318 Corrosive to skin. Corrosivity to eyes is assumed.
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Respiratory sensitisation

Respiratory sensitisation	Based on available data the classification criteria are not met.
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Skin sensitisation

Skin sensitisation Skin Sens. 1 - May cause an allergic skin reaction in sensitive individuals.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity Based on available data the classification criteria are not met.

IARC carcinogenicity

None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Reproductive toxicity - development Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard Not relevant. Solid.

General information The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation Corrosive to the respiratory tract. Symptoms following overexposure may include the following: Severe irritation of nose and throat.

Ingestion May cause sensitisation or allergic reactions in sensitive individuals. May cause chemical burns in mouth, oesophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin contact May cause skin sensitisation or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Route of exposure Ingestion Inhalation Skin and/or eye contact

Target organs No specific target organs known.

Medical considerations Skin disorders and allergies.

Toxicological information on ingredients.

1-Bromo-3-Chloro-5,5-dimethylhydantoin

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 929.0

Species Rat

ATE oral (mg/kg) 929.0

Acute toxicity - inhalation

ATE inhalation (dusts/mists mg/l) 1.5

Germ cell mutagenicity

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Genotoxicity - in vitro	Ames test: Positive. Gene mutation: Positive
Genotoxicity - in vivo	Micronucleus assay Negative. DNA damage and/or repair: Negative.
Carcinogenicity	
IARC carcinogenicity	Not listed
NTP carcinogenicity	Not listed

11.2. Information on other hazards

Endocrine disrupting properties	The mixture does not contain substances considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
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SECTION 12: Ecological information

12.1. Toxicity

Toxicity	Aquatic Acute 1 - H400 Very toxic to aquatic life.
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Ecological information on ingredients.

1-Bromo-3-Chloro-5,5-dimethylhydantoin

Acute aquatic toxicity

LE(C) ₅₀	0.1 < L(E)C50 ≤ 1
M factor (Acute)	1
Acute toxicity - fish	LC ₅₀ , 96 hour: 0.4 mg/l, <i>Oncorhynchus mykiss</i> (Rainbow trout) LC ₅₀ , 96 hour: 0.46 mg/l, <i>Lepomis macrochirus</i> (Bluegill) LC ₅₀ , 96 hour: 1.6 mg/l, <i>Cyprinodon variegatus</i> (Sheepshead minnow)
Acute toxicity - aquatic invertebrates	LC ₅₀ , 48 hour: 0.75 mg/l, <i>Daphnia magna</i>

12.2. Persistence and degradability

Persistence and degradability	The degradability of the product is not known.
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Ecological information on ingredients.

1-Bromo-3-Chloro-5,5-dimethylhydantoin

Persistence and degradability	The product is biodegradable.
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12.3. Bioaccumulative potential

Bioaccumulative potential	No data available on bioaccumulation.
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Partition coefficient	Kow: < 1
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Ecological information on ingredients.

1-Bromo-3-Chloro-5,5-dimethylhydantoin

Bioaccumulative potential	The product does not contain any substances expected to be bioaccumulating.
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12.4. Mobility in soil

Mobility	No data available.
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12.5. Results of PBT and vPvB assessment

Ecological information on ingredients.

1-Bromo-3-Chloro-5,5-dimethylhydantoin

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Endocrine disrupting properties

Endocrine disrupting properties: The mixture does not contain substances considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Unused packaging Discard according to the local regulations as hazardous waste. Do not discharge product in sewage and drainage systems which lead to waterways.

Contaminated packaging Dispose of contents/container in accordance with local regulations.

SECTION 14: Transport information

General In small packages, such as most consumer sizes, the products may be eligible for limited quantity exceptions. Details depend on package and mode of transport. If shipped in larger quantities, product is fully regulated as defined below.

14.1. UN number or ID number

UN No. (ADR/RID) 3085

UN No. (IMDG) 3085

UN No. (ICAO) 3085

UN No. (ADN) 3085

14.2. UN proper shipping name

Proper shipping name (ADR/RID) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Proper shipping name (IMDG) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Proper shipping name (ICAO) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Proper shipping name (ADN) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

14.3. Transport hazard class(es)

ADR/RID class 5.1

ADR/RID subsidiary risk 8

ADR/RID classification code OC2

ADR/RID label 5.1

IMDG class 5.1

IMDG subsidiary risk 8

ICAO class/division 5.1

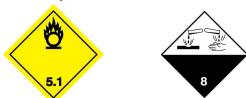
ICAO subsidiary risk 8

ADN class 5.1

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ADN subsidiary risk 8

Transport labels



14.4. Packing group

ADR/RID packing group	II
IMDG packing group	II
ICAO packing group	II
ADN packing group	II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant



14.6. Special precautions for user

EmS	F-A, S-Q
ADR transport category	2
Emergency Action Code	1W
Hazard Identification Number (ADR/RID)	58
Tunnel restriction code	(E)

14.7. Maritime transport in bulk according to IMO instruments

Transport in bulk Not applicable.

SECTION 15: Regulatory information

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

EU legislation	Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.
	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Commission Regulation (EU) No 2020/878 of 18 June 2020.
	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

Notification No in Ireland 95734

15.2. Chemical safety assessment

Not applicable in accordance with Article 15(2) and Article 16 of REACH and Article 57 of Biocidal Product Regulation.

SECTION 16: Other information

Classification abbreviations and acronyms	Ox. Sol. = Oxidising solid Acute Tox. = Acute toxicity Eye Dam. = Serious eye damage Skin Corr. = Skin corrosion Skin Sens. = Skin sensitisation Aquatic Acute = Hazardous to the aquatic environment (acute)
Abbreviations and acronyms used in the safety data sheet	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways. RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail. IATA: International Air Transport Association. ICAO: Technical Instructions for the Safe Transport of Dangerous Goods by Air. IMDG: International Maritime Dangerous Goods. CAS: Chemical Abstracts Service. ATE: Acute Toxicity Estimate. LC ₅₀ : Lethal Concentration to 50 % of a test population. LD ₅₀ : Lethal Dose to 50% of a test population (Median Lethal Dose). EC ₅₀ : 50% of maximal Effective Concentration. PBT: Persistent, Bioaccumulative and Toxic substance. vPvB: Very Persistent and Very Bioaccumulative.
Classification procedures according to Regulation (EC) 1272/2008	Acute Tox. 4 - H332: Acute Tox. 4 - H302: Eye Dam. 1 - H318: Skin Corr. 1B - H314: Skin Sens. 1 - H317: Calculation method. Aquatic Acute 1 - H400: Calculation method. Ox. Sol. 2 - H272: Expert judgement.
Revision date	07/01/2025
SDS number	4809
Hazard statements in full	H272 May intensify fire; oxidiser. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H332 Harmful if inhaled. H400 Very toxic to aquatic life.

Version 11

This safety data sheet replaces any previous version.

Changes in sections 1.1, 1.2, 2.2, 4.1, 8.2 and updates in accordance with Regulation No 2020/878.

The information provided on the SDS is correct to the best of our knowledge, information, and belief at the date of this publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal, and release, and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

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