SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 Revision date 01.07.2019

Version: 2.3, ID-No.: 1020-01_GB-GB

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

1.1. Product identifier: **REINHARTIN®**

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

Relevant identified uses: Brine for Ice Machines and Cooling and Refrigeration Plants

1.3. Details of the supplier of the safety data sheet

Company: **TYFO**ROP Chemie GmbH, Ausschläger Billdeich 77, D-20539 Hamburg
Telephone/Telefax: Tel.: +49 (0)40 20 94 97 0, Fax: +49 (0)40 20 94 97 20
E-Mail: msds@tyfo.de (E-Mail adress of person responsible for SDS)

1.4. Emergency telephone number: Tel.: +49 (0)551-19240 GIZ-Nord Poison Center

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Irrit. 2, H319.

The full text of the abbreviations is listed in section 16.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms	**Signal word**
	Warning
	**Hazard Statements**
	H319 Causes serious eye irritation
	Precautionary Statements (Prevention)
	P280 Wear protective gloves/protective clothing/eye protection/face protection
	P264 Wash skin with plenty of water and soap thoroughly after handling
	Precautionary Statements (Response)
	P305+P351 +P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing
	P337+P313 If eye irritation persists: Get medical advice/medical attention
	Precautionary Statements (Disposal)
	-
	Hazard determinant component for labelling
	Calcium chloride

2.3. Other hazards: The product could cause minor skin irritation and dry skin.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical nature: Aqueous solution of magnesium chloride (CAS no. 7786-30-3) and calcium chloride with inhibitors.

Hazardous components

Substance / REACH registration number	Content	CAS number	CE number	INDEX number	Classification acc. CLP
Calcium chloride 01-2119494219-28	< 12 %	10043-52-4	233-140-8	017-013-00-2	Eye Irrit. 2, H319

The full text of the abbreviations is listed in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice: Remove contaminated clothing.

SECTION 4: First aid measures - Continuation

Protection of first-aiders: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.

If inhaled: If inhaled, remove to fresh air. Get medical attention if symptoms occur.

On skin contact: Immediately wash thoroughly with soap and water. Get medical attention if symptoms occur.

On contact with eyes: Wash affected eyes for at least 15 minutes under running water with eyelids held open and get medical attention.

On ingestion: Immediately rinse mouth thoroughly with water. DO NOT induce vomiting. Get medical attention if symptoms occur.

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

The most important known symptoms and effects are described in sections 2 and/or 11. Further important symptoms and effects are so far not known.

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

Treatment: Symptomatic treatment (decontamination, vital functions).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: The product is not combustible. Water spray. Alcohol-resistant foam. Dry powder. Carbon dioxide (CO_2).

Unsuitable extinguishing media: None known.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Fire may cause evolution of hydrogen chloride gas.

5.3. Advice for fire-fighters

Special protective equipment: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

Specific extinguishing methods: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

6.2. Environmental precautions

Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Soak up with inert absorbent material. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 provide information regarding certain local or national requirements.

6.4. Reference to other sections: See sections 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Technical measures: See Engineering measures in section 8.

Local/total ventilation: Use only with adequate ventilation.

Advice on safe handling: Avoid contact with eyes and skin. Handle in accordance with good indance with good industrial hygiene and safety practice. Take care to prevent spills, waste and minimize release to the environment.

Advice on protection against fire and explosion: Observe the general rules of industrial fire protection.

Hygiene measures: When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Store containers tightly sealed in a cool, dry and well ventilated place. Store in accordance with the particular national regulations.

Advice on common storage: Keep away from food, beverages and animal feedstuffs.

7.3. Specific end uses

For the relevant identified uses listed in section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: Exposure control/personal protection

8.1. Control parameters

Components with occupational exposure limits

Contains no substances with occupational exposure limit values.

DNEL values - information on component Calcium chloride

End use	Exposure routes	Potential health effects	Value
Workers	Inhalation	Long-term local effects	5 mg/m^3
Workers	Inhalation	Short-term local effects	10 mg/m^3
Consumers	Inhalation	Long-term local effects	2.5 mg/m^3
Consumers	Inhalation	Short-term local effects	5 mg/m^3

8.2. Exposure controls

Engineering measures: Ensure adequate ventilation, especially in confined areas. Minimize workplace exposure concentrations.

Personal protective equipment

Eye protection: Safety glasses with side-shields (frame goggles, e.g. EN 166).

Hand protection: Chemical resistant protective gloves (EN 374). Material: butyl rubber. Protective index 6. Break through time: >480 minutes. Glove thickness: 0.6 - 0.8 mm. Remarks: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection: Wash skin thoroughly after contact.

Respiratory protection: not necessary.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: liquid.

Colour: colourless to light yellow.

Odour: odourless.

Odour threshold: No data available.

pH value (20 °C): 6.5 - 7.0. (ASTM D 1287)

SECTION 9: Physical and chemical properties - Continuation

Solidification temperature:	ca. -16.5 °C.	(DIN ISO 3016)
Initial boiling point/boiling range:	>100 °C.	(ASTM D 1120)
Flash point:	not applicable.	(DIN EN 22719, ISO 2719)
Evaporation rate:	No data available.	
Flammability (solid, gas):	not applicable.	
Upper explosion limit:	not applicable.	
Lower explosion limit:	not applicable.	
Vapour pressure (20 °C):	ca. 20 hPa.	(calculated)
Vapour density:	No data available.	
Density (20 °C):	ca. 1.285 g/cm^3.	(DIN 51757)
Solubility:	Water solubility: soluble.	
Partition coefficient n-octanol/H_2O:	not applicable.	
Auto-ignition temperature:	not applicable.	
Decomposition temperature:	not applicable.	
Viscosity (dynamic, 20 °C):	ca. 4.4 mPa·s.	(DIN 51562)
Explosive properties:	not explosive.	
Oxidizing properties:	not oxidizing.	
9.2. Other information:	No other information.	

SECTION 10: Stability and reactivity

10.1. Reactivity:	No hazardous reactions if stored and handled as prescribed/indicated.
10.2. Chemical stability:	The product is stable if stored and handled as prescribed/indicated.
10.3. Possibility of hazardous reactions:	No hazardous reactions if stored and handled as prescribed/indicated.
10.4. Conditions to avoid:	No conditions to avoid anticipated.
10.5. Incompatible materials:	Substances to avoid: strong reducing and oxidizing agents. Stainless steel.
10.6. Hazardous decomposition products:	No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure:	Inhalation. Skin contact. Ingestion. Eye contact.
Acute toxicity:	Not classified based on available information. Information on component Calcium chloride: Acute oral toxicity: LD50 (Rat): 2301 mg/kg, method: OECD test guideline 401. Symptoms: After uptake of large quantities: Stomach/intestinal disorders. Acute inhalation toxicity: No data available. Symptoms: Possible damages: mucosal irritations. Acute dermal toxicity: LD50 (Rat): 2630 mg/kg. Information on component Magnesium chloride: Acute oral toxicity: LD50 (Rat): >2000 mg/kg, method: OECD test guideline 423. Acute Inhalation toxicity: No data available. Symptoms: slight mucosal irritations. Acute dermal toxicity: LD50 (Rat): >2000 mg/kg, method: OECD test guideline 402.
Skin corrosion/ irritation:	Not classified based on available information. Information on component Calcium chloride: No skin irritation (Rabbit), method: OECD test guideline 404. Information on component Magnesium chloride: No skin irritation (Rabbit), method: OECD test guideline 404.
Serious eye damage/ eye irritation:	Causes serious eye irritation. Information on component Calcium chloride: Irritating to eyes, (Rabbit), method: OECD test guideline 405. Information on component Magnesium chloride: Not irritating to eyes (Rabbit), method: OECD test guideline 405.

SECTION 11: Toxicological information - Continuation

Respiratory or skin sensitisation: Skin sensitisation: Not classified based on available information. Respiratory sensitisation: Not classified based on available information. Information on component Calcium chloride: Skin contact: not sensitising (Guinea pig), method: OECD test guideline 406.
Information on component Magnesium chloride: Skin contact: not sensitising (Guinea pig), method: OECD test guideline 406.

Germ cell mutagenicity: Not classified based on available information.

Carcinogenicity: Not classified based on available information.

Reproductive toxicity: Not classified based on available information.

Specific target organ toxicity (single exposure): Not classified based on available information.

Specific target organ toxicity (repeated exposure): Not classified based on available information.

Repeated dose toxicity: Not classified based on available information.

Aspiration toxicity: Not classified based on available information.

SECTION 12: Ecological information

12.1. Toxicity

Information on component Calcium chloride

Toxicity to	Value / exposure time	Species
fish	LC50: 4630 mg/l / 96 h	Pimephales promelas (Fathead minnow)
daphnia and other aquatic invertebrates	LC50: 2400 mg/l / 48 h	Daphnia magna (Water flea) Method: OECD test guideline 202
algae	EC50: 2900 mg/l / 72 h	Pseudokirchneriella subcapitata (Green algae) Method: OECD test guideline 201

Information on component Magnesium chloride

Toxicity to	Value / exposure time	Species
fish	LC50: >2000 mg/l / 96 h	Pimephales promelas (Fathead minnow)
daphnia and other aquatic invertebrates	LC50: 548.4 mg/l / 48 h	Daphnia magna (Water flea)
algae	NOEC: 100 mg/l / 72 h	Desmodesmus subspicatus (Green algae)

12.2. Persistence and degradability: No data available.

12.3. Bioaccumulative potential: No data available.

12.4. Mobility in soil: No data available.

12.5-Results of PBT and vPvB assessment: The product does not contain a substance fulfilling the PBT criteria (persistent/bioaccumulative/toxic) or the vPvB criteria (very persistent/very bioaccumulative).

12.6. Other adverse effects: No data available.

12.7. Further information: No further information.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product: Dispose of in accordance with local regulations.
According to the European Waste Catalogue (EWC), waste codes are not product specific, but application specific. Waste codes should be

SECTION 13: Disposal considerations - Continuation

assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging: Dispose of as the product. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

	ADR/ RID	ADN	IMDG	IATA/ ICAO
	Not classified as a dangerous good under transport regulations			
14.1. UN number	-	-	-	-
14.2. UN proper shipping name	-	-	-	-
14.3. Transport hazard classes	-	-	-	-
14.4. Packing group	-	-	-	-
14.5. Environmental hazards	-	-	-	-
14.6. Special precautions for user	-	-	-	-

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not evaluated.

SECTION 15: Regulatory information

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

Legal basis	Remark / Evaluation
Regulation (EC) No. 649/2012 of the European Parliament and the Council concerning the export and import	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)	Not applicable
Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer	Not applicable
Regulation (EC) No. 850/2004 on persistent organic pollutants	Not applicable
Seveso III - Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances	Not applicable

Other regulations
No further information.

15.2. Chemical Safety Assessment
A Chemical Safety Assessment was not carried out for the product.

SECTION 16: Other information

Full text of the abbreviations of classifications and H-Statements used in sections 2 and 3

Eye Irrit. 2	Eye irritation, Category 2
H319	Causes serious eye irritation

Other abbreviations used in this safety data sheet in alphabetical order

ADN	European agreement concerning the international carriage of dangerous goods by inland waterways
ADR	European agreement concerning the international carriage of dangerous goods by road
ASTM	American Society for Testing and Materials
CAS number	Chemical Abstracts Service number
CLP	Regulation (EC) No. 1272/2008 on classification, labeling and packaging of chemical substances and mixtures
DIN	German Institute for Standardisation/German Industrial Standard

SECTION 16: Other information - Continuation

DNEL	Derived No Effect Level
EC50	Median Effective Concentration
EC number	EINECS number (European Inventory of Existing Substances) or ELINCS number (European List of Notified Chemical Substances)
IATA	International Air Transport Association
I IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
INDEX number	Identification code for hazardous substances, Annex VI of Regulation (EC) No. 1272/2008
ISO	International Organisation for Standardisation/International Standard
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Cooperation and Development
REACH	Regulation (EC) No. 1907/2006 on Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulation concerning the international carriage of dangerous goods by rail

Further information

Sources of key data used to compile the safety data sheet: Internal technical data, data from component SDS, OECD eChem Portal search results and European Chemicals Agency [ECHA].

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Vertical lines in the left hand margin indicate an amendment from the previous version.

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