

SAFETY DATA SHEET

according to Reg. REACH 1907/2006/EC as amended by Reg. UE 878/2020

Ed. 6
7 March 2023

1. Identification of substance/mixture and company/enterprise

1.1 Product Identifier

Trade name: **STARTIN S**

CAS number 1118-46-3 butyl tin trichloride

EEC number 214-263-6

REACH registration number 01-2119484854-24-xxxx

Identification code that can be used in the safety data sheet: MBTC (mono-butyl tin trichloride)

1.2 Relevant identified uses and uses advised against

Protective for hot-end glass coating.

Uses advised against: restriction pursuant to Reg. 1907/2006 (REACH), annex XVII, item n. 20 "organostannic compounds" - see § 16 for the complete description of the restrictions

Not for personal use.

1.3 Details of the supplier of the Safety Data Sheet

Product placed on the market by: **BOHEMI CHEMICALS srl** – via G. Deledda 39 – 20080 Zibido S. Giacomo (MI) – ITALY

Mail bohemi@bohemicchemicals.com

1.4 Emergency telephone numbers

Bohemi Chemicals Office - ph. Mo - Fr h. 9-16 CET +390290005047

Poison Control Center Niguarda Milan - ph. +390266101029

2. Hazard identification

2.1 Substance classification

Classification according to Reg. CE 1272/2008 (Reg. CLP):

Skin Corr. 1C H314 Causes severe skin burns and eye damage.

STOT SE 3 H335 May cause respiratory irritation

Aquatic Chronic 1 H410 Very toxic to the aquatic environment with long lasting effects.

Full text of H and EUH statements: see section 16

2.2 Label elements

Hazard signs:



GHS 05 GHS 07 GHS 09

Warning: **HAZARD**

Hazard statements:

- H314** Causes severe skin burns and severe eye injuries.
- H335** Can irritate the respiratory tract.
- H410** Very toxic to the aquatic environment with long lasting effects.

Additional Hazard Phrases Codes:

EUH071: Corrosive to the respiratory system

Precautionary statements:

- P260** Do not breathe dust or mists
- P273** Do not release to the environment.
- P280** Wear protective gloves/protective clothing. Protect your eyes/face.
- P303+P361+P353** IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338** IF IN EYES: Rinse thoroughly for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
- P310** Immediately call a POISON CENTER or a doctor
- P403 + P233** Store in a well-ventilated place. Keep container tightly closed.
- P501** Dispose of contents/container in accordance with local/regional/national/international regulations

2.3. Other hazards

When used in combination with other products, consider their chemical nature and possible dangerous interactions.

It can react dangerously with strong oxidants, organic peroxides and self-reactive substances.

PBT and VPvB Assessment Results

PBT: non applicable

vPvB: non applicable

3. Composition/Information on ingredients

The product consists almost exclusively of monobutyltin trichloride, with the presence of dibutyltin dichloride as an impurity.

Ingredient	Concentration (%)	N° CAS	N° CE	Classification Reg. CE 1272/2008 (CLP)
Butyl tin trichloride Reg. No. 01- 2119484854-24-xxxx	≈ 100%	1118-46-3	214-263-6	Skin Corr. 1C; Eye Dam. 1; STOT SE 3; Aquatic Chronic 1
Dibutyl tin dichloride Reg. No. 01- 2119496066-31-xxxx	< 0.1%	683-18-1	211-670-0	Skin Corr. 1B; Acute Tox. Inhalation 2; Acute Tox. Oral 3; Acute Tox. Dermal 4; Muta. 2; Repr. 1B; STOT RE 1; Aquatic Chronic 1
Ethanol	< 1%	64/-17-5/4	200-578-6	Flam. Liq. 2
Methanol	< 1%	67-56-1	200-659-6	Flam. Liq. 2; Acute Tox. Inhalation 3; Acute Tox. Oral 3; Acute Tox. Dermal 3; STOT SE 1

4. First aid measures

4.1. Description of the first aid measures

General instructions: Never give anything by mouth to an unconscious person. In the event of an accident or if feeling unwell, seek medical advice (if possible, show the label). Take off immediately all contaminated clothing

- **Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately contact a local Poison Control Center or a doctor.
- **Contact with skin:** Wash immediately with soap and plenty of water. Immediately contact a local Poison Control Center or a doctor. Take off immediately all contaminated clothing
- **Contact with eyes:** Wash with running water for a few minutes holding the eyelids wide open. Remove contact lenses if present and easy to do. Continue rinsing. Protect the unaffected eye. Immediately contact a local Poison Control Center or a doctor.
- **Ingestion:** RINSE MOUTH Do not induce vomiting. Immediately contact a local Poison Control Center or a doctor.

4.2. Main symptoms and effects, both acute and delayed

The liquid is prone to hydrolysis (probably slowly) with the formation of hydrochloric acid and, therefore, can cause severe topical irritation, the latency period of which can vary considerably. Poisoning symptoms may appear after several hours; therefore, the person involved must be monitored by a doctor 48 hours after the accident.

Since the bioavailability is lower and prolonged compared to other di- and tri-butyl derivatives of tin, the systemic action is lower.

Eyes: from strong irritation to chemical burns of mucous membranes (possible even after latency). Possible serious eye damage following eye contact (especially if washing and rinsing after contact was not performed immediately) should be monitored immediately and treated as soon as possible under the supervision of an ophthalmologist.

Skin: strong irritation possible only after long contact of undetected or ignored quantities (e.g. failure to remove contaminated work clothes)

Inhalation: possible severe irritation of the mucous membranes, cough, dyspnoea, inflammation of the respiratory tract, up to pulmonary oedema.

Ingestion: severe irritation of the mucous membranes.

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

Medical intervention is necessary both in case of inhalation, contact with skin or eyes, and ingestion of the product.

5. Fire-Fighting Measures

5.1 Extinguishing means

Suitable means of extinction: CO₂, dust or sprayed water. Fire class B: liquid or melting substances.

Unsuitable extinguishing media, for safety reasons: none in particular.

5.2. Special hazards deriving from mixture

In case of fire, the following can be released:

- Hydrochloric acid (HCl)
- Chlorine (Cl₂)
- Carbon monoxide (CO) and carbon dioxide (CO₂)

5.3 Recommendations for firefighters

Specific protective equipment: Wear self-protected breathing apparatus and protective clothing tightly closed, without openings.

Other indications: Cool containers at risk with a jet of water. Dispose of fire residues and contaminated water used for extinguishing as required by law.

6. Measures in case of accidental release

6.1 Personal precautions, protective equipment and procedures in case of emergency

Wear protective suit or clothing. Move away unprotected persons.

Keep away from sources of ignition.

6.2. Environmental precautions

Prevent infiltrations into sewer/surface/ ground water systems.

If the product enters water or sewer system, inform the competent bodies.

6.3 Methods and materials for containment and remediation

Collect the liquid with absorbent material (sepiolite, universal absorbent powder), then remove by mechanical means.

Do not use sand or sawdust for collection.

Dispose of collected material as required by law.

6.4 Reference to other sections of the safety data sheet

- ⇒ For information on safe handling: see section 7.
- ⇒ For information about personal protective equipment see Section 8.
- ⇒ For disposal-related information see Section 13.

7. Handling and storage

7.1 Precautions for safe handling

Proper ventilation/aspiration in the workplace.

The floor must be free from any dispersed liquids.

There must be an eye wash shower in the workplace, clearly marked.

Wash hands and other skin areas exposed to the substance with mild soap and water before eating, drinking, smoking and when leaving the workplace. Do not breathe dust / fume / gas / mist / vapors / spray. Use only outdoors or in a well-ventilated area.

After handling large quantities of the product, it is necessary to take a shower.

Information in case of fire and explosion: according to current knowledge, there is no precise information regarding the behaviour of the substance upon combustion.

It is advisable to periodically check electrical lines and contacts, given the high risk that they may be corroded by the product.

7.2 Conditions for safe storage, including any incompatibility

Storage: the product belongs to storage class 8 B (non-combustible corrosive substances).

Only materials of the same class should be stored together.

Storage with the following products is prohibited: pharmaceutical products - food - feed - additives for food and feed - infectious materials - radioactive materials - explosive materials - aerosols (bottles and spray cans) - highly oxidizing materials of storage class 5.1 A - materials subject to spontaneous ignition - organic peroxides and self-reactive substances.

Storage with the following products is only permitted under certain conditions and must be carefully evaluated: flammable liquids and solids - substances that release flammable gases in contact with water - explosives of storage class 4.1 A - pyrophoric substances - ammonium nitrate and preparations that contain it.

The product must not be stored with materials that can generate dangerous chemical reactions by interaction.

Requirements for warehouses and containers: at the moment there is no precise information regarding the combustion behaviour of the product; therefore, the normal construction precautions of warehouses apply. Regularly inspect electrical lines and contacts for potential corrosion points.

Indications on mixed storage:

Do not store in contact with food.

Do not store in contact with flammable substances.

Do not store in contact with oxidants.

Store separately from alkali.

The product must be stored separately from other combustible and corrosive substances for the skin, even if combustible ones are not classified as dangerous (wood, paper, etc.).

Further indications on storage conditions:

Keep the containers in a well-ventilated place.

Store in a cool, dry place in well-closed barrels, key locked or with access allowed only to competent or authorized persons.

Protect from heat and direct sunlight.

Protect from contamination.

7.3. Particular end-uses.

There is no further information available.

8. Exposure control/Personal protection

8.1 Control Parameters

We can refer to the occupational limit values in force in the EU:

EU - Occupational exposure limits

Local name

France (Organic compounds of the Etain - Composés organiques de l'ETAIN)

VME (mg/m³) 0.1 mg/m³

VLE (mg/m³) 0.2 mg/m³

United Kingdom - Occupational exposure limits

Local name Organic compounds of the Etain

MBTC is industrially used in closed systems in continuous or batch processes, such as to minimize the potential occupational exposure. Workers can be exposed during cleaning, maintenance, transfer, sampling and analysis. Effective procedures must be in place to limit exposure during normal work.

The product does not contain relevant quantities of substances whose limit values have to be monitored at the workplace.

Other information on limit values: so far no limit values have been established at national level.

8.2. Exposure controls

General safety and health standards at the workplace:

Keep away from food, beverages and forage.
Immediately remove contaminated clothing.
Wash hands before use or after completion.
Preventively protect the skin with special ointments.
Avoid contact with eyes and skin.
At work do not eat, drink, smoke.

Individual protective equipment

Respiratory protection:

In the event of an emergency (i.e. involuntary release of large quantities of substance) a self-protected respirator must be used. There are currently no specific indications on the filters to be applied to the masks, however it is advisable to insert one suitable for the prevention of inhalation of acid inorganic agents.

Safety gloves:

It is necessary to use gloves to protect the hands. Gloves made of the following materials (breakthrough time ≥ 8 h) are suitable: butyl rubber (butyl - 0.5 mm) - fluorocarbon rubber (FKM - 0.4 mm).

Fabric or leather gloves are completely useless. Latex, nitrile rubber, polychloroprene and PVC provide insufficient protection.

Select gloves based on the breakthrough times, rates of diffusion and degradation.

The gloves must be made of water repellent material and resistant against the product/substance/preparation.

Before each use of the gloves, check their impermeability.

Skin protection creams provide insufficient protection.

Material of gloves

Gloves selection depends not only on the material but also on other features that vary from one manufacturer to another. The stability of the glove material cannot be calculated in advance and should be checked prior to use.

Permeation time of glove material

Breakthrough time: ≥ 8 h

The exact breakthrough time has to be obtained from the supplier of the gloves and must be strictly observed.

Protective goggles: Sealed protective goggles. If the face is at risk, wear a full face mask.

Body protection: Wear a long, narrow apron or other chemical protective clothing and work shoes.

9. Physical and chemical properties

9.1 Information on fundamental physical and chemical properties

Appearance: water-soluble yellowish liquid, heavier than water

Smell: no particular smell – olfactory threshold not available

Melting point: - 63°C

Boiling point: 193 °C

Density at 20°C: 1.69 g/cm³

Solubility in water: soluble/miscible

Vapour pressure: 11.1 Pa at 20 °C

Decomposition temperature: > 177 °C

Ignition/self-ignition temperature of gases: 560 °C

Decomposition products: chlorine, hydrochloric acid, carbon oxides

9.2. Other information

Not available.

10. Reactivity and stability

10.1 Reactivity

Reacts strong oxidants decomposing and developing hydrochloric acid and toxic gas (chlorine).

10.2 Chemical stability

The product is heat stable. Do not heat to avoid thermal decomposition.

10.3 Possibility of dangerous reactions

Apart from reactivity with strong oxidants, no other dangerous chemical reactions are known.

10.4 Conditions to avoid

Heat and electrical contact.

10.5 Incompatible materials

Strong oxidants - strong alkalis

10.6 Hazardous decomposition products

- Chlorine (Cl₂)
- Hydrochloric acid (HCl)

11. Toxicological information

11.1 About Toxicological Effects

Relevant toxicological values (LD/LC50)

Oral	LD50	rat	2140 mg/kg
By inhalation	LC50/4h	rat	0.06 mg/l

For the dibutyltin dichloride (DBTC) impurity:

Oral	LD50	rat	219 mg/kg
By inhalation	LC50/4h	rat	0.059 mg/l

GHS classifications:

Skin corrosion, Category 1C; H314

Specific Target Organ Toxicity (single exposure), Category 3; H335

Hazardous to the aquatic environment, Chronic Category 1; H410

12. Ecological Information

12.1 Toxicity

Aquatic toxicity referred to the product as is

CL50	Fish (leuciscus idus)	4.8 mg/l
EC50	Daphnia magna	1.4 mg/l

Aquatic toxicity referred to dibutyltin dichloride

EC50	daphnia magna	1.4 mg/l
LC50/48h	leuciscus idus melanotus orfe	1 mg/l
LC50/96h	leuciscus idus orfe	>4.8 mg/l

12.2 Persistence and biodegradability

Information not available.

12.3 Potential for bioaccumulation

Information not available.

12.4 Mobility in the soil

Information not available.

12.5 PBT and VPvB Assessment Results

The substance is under test for evaluation of Persistence, Bioaccumulation and Toxicity

Other adverse effects

Toxic to fish and plankton. Very toxic to aquatic organisms.

Do not introduce undiluted or non neutralized product into waste water or collection ducts.

13. Disposal considerations

13.1 Waste treatment methods

Tips: Disposal in compliance with administrative provisions.

Waste code: according to local/national regulations.

European waste catalogue: the assignment of the EWC code depends on the analytical characterization of the waste.

Treatment of small quantities of the product: put it in containers for inorganic residues such as those for heavy metal salts and their solutions. Containers must be clearly labeled with a thorough description of the contents. Store in a well-ventilated place. Proceed with the analytical classification for the assignment of the EWC code and the hazard characteristics.

Measures in case of accidental release: evacuate the affected area. Personnel entering the contaminated area must wear respiratory protective equipment and protect their eyes and hands. Carefully clean up the area, collect the debris and remove it. Prevent dust formation. Finally ventilate the area and wash the place where the leak occurred. Containers must be clearly labeled with a thorough description of the contents. Store in a well-ventilated place. Proceed with the analytical classification for the assignment of the EWC code and the hazard characteristics.

14. Transport Information

14.1 UN number (UN) - 14.2 UN proper shipping name - 14.3 Transport hazard class - 14.4 Packing group - 14.5 Environmental hazards - 14.6 Special precautions for user



UN NUMBER: 3265

Proper shipping name: CORROSIVE LIQUID ACIDIC ORGANIC n.o.s. (monobutytin trichloride)

ADR/RID Class: 8 Corrosive materials

Packaging group: II

Tunnel code: (E)

Road and rail transport ADR/RID	Sea transport IMDG	Transport by air IATA-DGR
ADR/RID Class: 8 UN number: 3265 Packaging group: II Classification code: C3 Label: no. 8 Marking: Dangerous to the environment	IMO-IMDG class: 8 UN number: 3265 Packaging group: II Label: no. 8 EMS Code: F-A, S-B Marine pollutant	ICAO-IATA class: 8 UN number: 3265 Packaging group: II Label: no. 8

Technical name: monobutyltin trichloride

Other ADR information:

- ✓ Exempted quantities (EQ): E2
- ✓ Limited quantities (LQ): 1 L
- ✓ Transport category: 3
- ✓ Kemler Number: 80
- ✓ Code of restriction in tunnels: E
- ✓ Packing instructions (ADR): P001, IBC02
- ✓ Provisions concerning common packaging: MP15
- ✓ Orange panel for tanker transport



14.6 Special precautions for users

Various precautions that can be adopted for handling, transport, storage, personal protection and disposal of the product are reported in sections 4, 5, 6, 7, 8, 10 and 13 of the data sheet.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Not applicable

15. Regulatory information

15.1 Laws and regulations on health, safety and the environment specific to the substance or mixture

It contains a substance from the REACH Candidate List in a concentration $\geq 0.1\%$ or with a lower specific limit: dibutyltin dichloride (DBTC) (EC 211-670-0, CAS 683-18-1)

It does not contain any substance listed in Annex XIV to REACH

It does not contain any substance subject to Regulation (EU) No. 649/2012 of the European Parliament and of the Council of 4 July 2012 on the export and import of hazardous chemicals.

It does not contain any substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants (POP)

It contains no substances listed in the list of explosives precursors (Reg. EU 2019/1148 on the marketing and use of explosives precursors).

It contains no substances listed in the list of drug precursors (Reg. EC 273/2004 on the manufacture and placing on the market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances).

National laws and decrees

- Legislative Decree June 26, 2015, no. 105 "Implementation of Directive 2012/18/EU relating to the control of the danger of major accidents connected with dangerous substances"
- Legislative Decree 231/2001, Discipline of the administrative liability of legal persons, companies and associations even without legal personality (administrative liability of legal persons)
- Legislative Decree 152/2006, Framework law on environment protection
- Legislative Decree 81/2008, Occupational safety
- Legislative Decree of January 27, 2010, no. 35 - Implementation of Directive 2008/68/CE
- Ministerial Decree dated May 12, 2017 - Transposition of the Commission Directive 2016/2309 of 16 December 2016 which adapts for the fourth time the annexes of Directive 2008/68/EC of the European Parliament and of the Council on the internal transport of dangerous goods to scientific and technical progress.

Regulations and directives of the European Union

- EC Regulation No. 1907/2006 of the European Parliament and of the Council dated December 18, 2006, concerning the registration, evaluation, authorization and restriction of chemical substances (REACH) and subsequent amendments and additions
- EC Regulation No. 1272/2008 of the European Parliament and of the Council dated December 16, 2008, on the classification, labelling and packaging of substances and mixtures (CLP) and subsequent amendments and additions
- Directive 2008/68/EC of the European Parliament and of the Council dated September 24, 2008, relating to the inland transport of dangerous goods
- EU Regulation No. 453/2010 of the Commission dated May 20, 2010, amending EC regulation no. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- Directive 2012/18/EU of the European Parliament and of the Council dated July 4, 2012, on the control of the danger of major accidents connected with dangerous substances
- EU Regulation No. 2020/878 of 18 June 2020 amending Annex II of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

International agreements for the transport of dangerous goods

- ADR Agreement Ed. 2023

- IATA Dangerous Goods Regulations – 64th edition – 2023
- International Maritime Dangerous Goods Code (2020 edition incorporating amendment 40 - 2020)
- IMDG Code Supplement (2020 Edition)

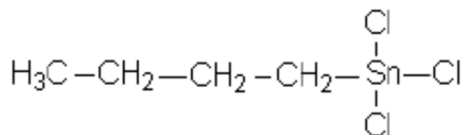
15.2 Assessment of chemical safety

Not performed.

16. Other information

Chemical formula and molecular weight of the substance or main component of the mixture

C₄H₉Cl₃Sn



Molecular weight: 281.17 g/mol

Signs and tags to be displayed in the workplace and in the places where the product is used



No smoking



Caution: corrosive



Mandatory eye protection



Mandatory protective gloves

Water hazard class (WGK - Germany)

WGK 1 – Slightly dangerous for water

Classification in accordance with VwVwS (Verwaltungsvorschrift wassergefährdende Stoffe)
– – Classification in accordance with annex 3 of the Administrative Regulation of substances dangerous for water.

Restrictions on use pursuant to Annex XVII of the Reg. CE 1907/2006 (REACH):

Organostannic compounds:

1. They cannot be placed on the market for use as substances and ingredients of preparations to be used with biocidal functions in free association paints.
2. They may not be placed on the market or used as substances and ingredients of preparations that have the function of biocides to prevent the formation of scaling by microorganisms, plants or animals on:
 - a) all vessels of any length to be used for maritime, coastal, estuary, inland or lake navigation;
 - b) cages, floating cages, nets and any other equipment or installations used in fish and shellfish farming;
 - c) any partially or totally submerged equipment or plant.
3. They cannot be used as substances or ingredients of preparations to be used in industrial water treatment.

Seveso-III Directive

Substance: **monobutyltin trichloride**

Annex I - part 1, section E1 - Hazardous to the aquatic environment, acute toxicity category 1 or chronic toxicity 1

Limit quantity (tonnes) of the dangerous substances referred to in Article 3 (10) for the application

- of the lower threshold requirements: 100 tons
- of the upper threshold requirements: 200 tons

Text of the hazard phrases and precautionary statements listed in section 2

Hazard statements:

- H314** Causes severe skin burns and severe eye injuries.
H335 Can irritate the respiratory tract.
H410 Very toxic to the aquatic environment with long lasting effects.

Additional hazard statements:

EUH071: corrosive to the respiratory tract

Precautionary statements:

- P260** Do not breathe dust or mists
P273 Do not release to the environment.
P280 Wear protective gloves/protective clothing. Protect your eyes/face.

P303+P361+P353 IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower.

P310 Immediately call a POISON CENTER or a doctor

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

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

P501 Dispose of contents/container in accordance with local/regional/national/international regulations

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

ASTM: American Society for Testing and Materials, US standardization body

CAS: Chemical Abstracts Service (division of American Chemical Society)

CE: European Community

CR: Chloroprene Rubber (polychloroprene rubber)

EC(0/50/100): Effective Concentration 0/50/100 (Maximum Effective Concentration for 0/50/100% of Individuals)

CLP: Classification, Labelling and Packaging

CMR: Carcinogenic - Mutagenic - Toxic for reproduction in humans

CSR: Chemical Safety Report

DMEL: Derived Minimum Effect Level

DNEL: Derived No Effect Level

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

EMS: Emergency Schedule Number (quick intervention cards in case of accidental spillage or fire during transport by sea)

FKM: fluorocarbon rubber

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

IATA: International Air Transport Association

IC50: Inhibitor Concentration 50 (Inhibitor Concentration for 50% of Individuals)

ICAO: International Civil Aviation Organization

IMDG: International Maritime Code for Dangerous Goods

IMO: International Maritime Organization

LC50: lethal concentration for 50% of individuals tested

LD50: lethal dose for 50% of individuals tested

LOEC: Lowest Observed Effect Concentration

LQ: Limited Quantity

NBR: Nitrile Butadiene Rubber (nitrile rubber)

NOEC: No Observed Effect Concentration

NOEL: No Observed Effect Level

NR: Natural Rubber

ONU: Organization of the United Nations

PBT: Persistent, bioaccumulative and toxic

PVC: polyvinylchloride

REACH: registration, evaluation, authorisation and restriction of chemicals

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

STEL: Short term exposure limit

STOT SE: Specific Target Organ Toxicity

TLV: Threshold limit value

TWA: Time Weighted Average

UE: European Union

UN: United Nations

vPvB: very Persistent very Bioaccumulative

VwVwS: Verwaltungsvorschrift wassergefährdende Stoffe (German body for the classification of water hazards of substances)

Database used to fill in the data sheet

- NIOSH - Registry of Toxic Effects of Chemical Substances
- NIOSH IDLHs "Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs)" U.S. Department of Health and Human Service, Cincinnati Mai 1994
- Organisation for Economic Cooperation and Development (OECD) "Screening Information Data Set for High Production Volume Chemicals (SIDS)"
- IUCLID-CD-ROM, Year 2000 edition; European Commission, Joint Research Centre, Institute for Health and Consumer Protection, European Chemicals Bureau; Ispra, Italy
- Toxicological Data, compiled by the National Institute of Health (NIH), USA, selected and distributed by Technical Database Services (TDS), New York, 2009
- Ecotoxicological Data, compiled by the US Environmental Protection Agency (EPA), selected and distributed by Technical Database Services (TDS), New York, 2009
- Hazardous Substances Data Bank (HSDB)
- IFA Gestis database on chemical substances
- TRGS : Technische Regeln für Gefahrstoffe -Technical Rules for Hazardous Substances, defined by The Federal Institute for Occupational Safety and Health, Germany
- GHS-Sicherheitsdatenblatt (GHS Material Safety Data Sheet), Merck
- Heath, A.G. 1978. Influence of Chlorine Form and Ambient Temperature on the Toxicity of Intermittent Chlorination to Freshwater Fish. In: R.L.Jolley, H.Gorchev, and D.H.Hamilton,Jr.(Eds.), Water Chlorination Environ.Impact Health Eff., Ann Arbor Sci.Publ., Ann Arbor, MI 2:123-133
- Roberts, M.H.J. 1978. Effects of Chlorinated Sea Water on Decapod Crustaceans. In: R.L.Jolley, H.Gorchev, and D.H.Hamilton,Jr.(Eds.), Proc.Second Conf.Water Chlorination Environ.Impact and Health Effects, Gatlinburg, TN., Ann Arbor Sci.Publ., Ann Arbor, MI 2:329-339
- Office of Pesticide Programs 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)). Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.
- Butyl tin trichloride registration Dossier ECHA <https://echa.europa.eu/it/registration-dossier/-/registered-dossier/14718/9>

Changes made in this edition of the safety data sheet

Replaces Ed. 5 dated July 31, 2021. Changes made:

⇒ Drafting in accordance with EU Reg. 878/2020

⇒ Graphical reset: section header highlighting with green background, elimination of dividing lines between sections

- ⇒ § 4.1 more details of first aid measures
- ⇒ § 7.1 more detail in the description of precautions for safe handling
- ⇒ Sec. 14 added packing instructions, provisions for mixed packing, and orange panel for tanker transport
- ⇒ § 15.1 updating laws and regulations
- ⇒ Updating legislative and regulatory references

The information contained in this Safety Data Sheet is correct to our best knowledge of the product at the time of publication. This information is provided with the sole purpose of allowing the use, storage, transport and disposal of the product in the most correct and safe ways. This information should not be considered a guarantee or a specification of the quality of the product. This information refers only to the material specifically indicated and is not valid for the same when used in combination with other materials or in other processes not specifically indicated in the text of the Material Safety Data Sheet.
