

GPS Safety Summary

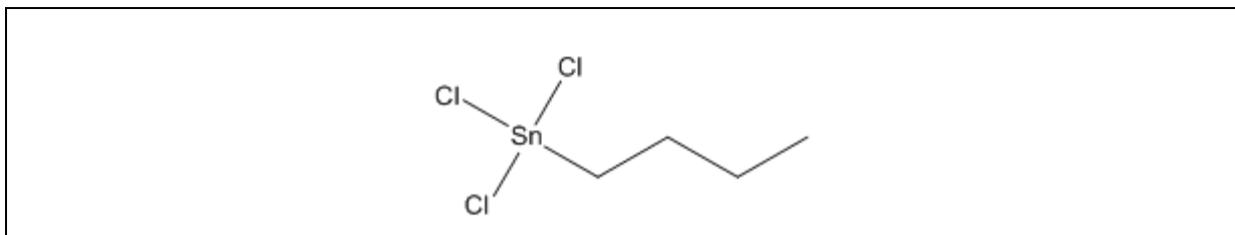
Substance Name:
n-Butyltin trichloride

1. General Statement

n-Butyltin trichloride is a chemical used in the glass manufacturing industry as a glass protective agent against potential damages undergone inside and outside manufacturing plants. It improves scratch resistance and avoids a too quick reduction of the burst pressure strength.

2. Chemical Identity

Name: n-Butyltin trichloride
Brand names: MBTC
Chemical name (IUPAC): butyl(trichloro)stannane
CAS number: 1118-46-3
EC number: 214-263-6
Molecular formula: C₄H₉SnCl₃
Structure:



3. Use and applications

n-Butyltin trichloride is used to get a protective Tin Oxide layer in 2 main markets:

- Flat glass production, where it is mixed with several other agents in an homogeneous formulation;
- Container glass production, where it is hot sprayed before a cold end PE-based wax enables complete glass protection.

4. Physical / Chemical properties

n-Butyltin trichloride is a liquid organometallic substance with the following physicochemical properties:

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Yellow, amber to brown

Odour	Acid, irritating
Molecular weight	282.2 g/mol
Density	1.69 g/cm ³ at 20°C
Vapour pressure	0.111 hPa at 20°C
Freezing / boiling points	-63°C / 196°C, at atmospheric pressure by visual observation
Flash point – flammability	No flash point before boiling – non-flammable
Self-ignition temperature	560°C at 1017 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	Not applicable: hydrolyses rapidly
Octanol-water partition coefficient (Log K _{ow})	Not applicable: hydrolyses rapidly

5. Health Effects

Like any reactive chemical, n-Butyltin trichloride can be hazardous if not handled properly.

Effect Assessment	Results
Acute Toxicity Oral / inhalation / dermal	Based on animal studies, n-Butyltin trichloride is not harmful if swallowed. Due to its corrosivity, it was not tested for acute dermal or inhalative toxicity.
Irritation / corrosion Skin / eye/ respiratory tract	n-Butyltin trichloride is highly corrosive to skin and eyes and irritating to the respiratory tract.
Sensitisation	Due to its corrosivity, n-Butyltin trichloride was not tested for its potential to induce allergic skin reactions.
Toxicity after repeated exposure Oral / inhalation / dermal	Repeated oral exposure of animals to n-Butyltin trichloride induced changes evocative of liver toxicity. Repeated inhalation exposure mainly induced local irritation due to the corrosive properties.
Genotoxicity / Mutagenicity	Based on the available test data: not expected to cause genetic effects.
Carcinogenicity	No data are available.
Reproductive / Developmental Toxicity	In animals, repeated oral exposure to n-Butyltin trichloride did not alter fertility or development.

This information applies to the pure substance. The latter is often manufactured with levels of related organotins as impurities. This may lead to different/additional information on the actual product's Safety Data Sheet.

6. Environmental Effects

n-Butyltin trichloride is not acutely toxic to fish and aquatic invertebrates up to its solubility limit. It is however very toxic to algae on short- and long-term. Due to the rapid hydrolysis in water, these data most probably reflect the effects of the breakdown products.

n-Butyltin trichloride does not biodegrade: this substance should be considered as persistent in the environment. Due to analytical difficulties and impossibility to run QSARs, binding to soil or sediment, photodegradation potential and environmental distribution are unknown. The low vapour pressure suggests a negligible evaporation to the atmosphere. n-Butyltin trichloride did not bioaccumulate significantly in fish, so it is not expected to accumulate in the food chain.

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Effect Assessment	Result
Aquatic Toxicity	Acute and chronic: very toxic

Fate and behaviour	Result
Degradation/Persistence	Not readily biodegradable, persistent
Bioaccumulation potential	Does not bioaccumulate significantly
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)

** : very Persistent and very Bioaccumulative (vPvB)

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7. Exposure

7.1 Human health

Consumers:

Consumers are not directly exposed to n-Butyltin trichloride: uses as intermediate and in glass coatings both involve a chemical transformation into other chemicals.

In view of its uses, its hydrolysis potential and absence of bioaccumulation, indirect exposure to n-Butyltin trichloride via the environment is negligible.

Workers:

n-Butyltin trichloride is industrially manufactured and used in closed systems in a continuous or batch process, minimizing the occupational exposure potential. Workers may be exposed during cleaning, maintenance, transfer, sampling and analysis. The substance is transformed once coated on glass.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure during the manufacture and use of the substance. Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the Extended Safety Data Sheet.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

7.2 Environment

n-Butyltin trichloride is industrially manufactured and used in closed systems in a continuous or batch process, minimizing release to the environment. Potential releases may occur via wastewater, but usually process operates without wastewater, thus limiting the release to the environment.

Procedures, controls and risk management measures are in place, which limit the environmental exposure.

The main expected release compartment is the water compartment due to the non-volatility. Any released amount would rapidly hydrolyse. Partition to soil and sediments is unknown as justified under section 6, but has been modelled using default assumptions.

In Europe, the REACH Regulation (Annex XVII, entry N° 20) forbids the use of organotins as biocides in free-association paint, as anti-fouling biocides on specific submerged articles, and to treat industrial water. This helps preventing the risk of environmental toxicity.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios) and in compliance with the aforementioned restrictions.

8. Risk Management recommendations

Human health measures		
Organizational	Respect the use restrictions detailed under 7.2. Collect the latest available Safety Data Sheet. Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Handle and store according to the indications of the Safety Data Sheet.	
Engineering controls	Provide appropriate local exhaust ventilation at points of emission. Ensure regular monitoring of working atmosphere. Ensure that eye- and handwash stations and safety showers are close to workstation locations. Avoid projections and vapour emissions during manipulation.	
Protection	Eye/Face protection:	Tightly fitting safety goggles
	Skin protection:	Protective suit
	Hand protection:	Gloves (rubber, neoprene) tested to EN 374
	Respiratory protection:	Wear suitable respiratory equipment. In the case of hazardous fumes, wear self contained breathing apparatus. Filter type: A2/P2, conforming to EN140.
Environment protective measures		
Use in dry processes. Do not release into the environment. Do not let product enter drains.		

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9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has notably been registered and assessed under:

- EU Regulation EC 1907/2006 (REACH)

Specific use restrictions for Organotins mentioned by REACH, Annex XVII, entry N° 20, apply to MBTC. They are detailed under section 7.2.

9.2 Classification and labelling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers and emergency responders) can better understand the hazards of the chemicals in use.

Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
<ul style="list-style-type: none"> – Skin corrosion: Category 1C. – Serious eye damage: Category 1. – Specific target organ toxicity - single exposure (inhalation): Category 3. – Acute aquatic toxicity: Category 1. – Chronic aquatic toxicity: Category 1. 	
Signal word	
Danger	
Pictograms	
– GHS07: Exclamation mark	
– GHS05: Corrosion	
– GHS09: Environment	
Hazard statements	
<ul style="list-style-type: none"> – H314: Causes severe skin burns and eye damage. – H318: Causes serious eye damage. – H335: May cause respiratory irritation. – H400: Very toxic to aquatic life. – H410: Very toxic to aquatic life with long-lasting effects. 	

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10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- ICCA portal where the GPS Safety Summary is posted:
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2013/02/10
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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