

**SAFETY DATA SHEET**

According to 1907/2006/EC, Article 31

Revision number: 1

Revision date: 10/24/2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifiers**

Product name: Tin(II) Chloride [for Perovskite precursor]
Product code: T3570

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

Identified uses: Reagents.

1.3 Details of the supplier of the safety data sheet**Supplier:**

TCI EUROPE N.V.
 Boerenveldseweg 6
 Haven 1063
 B-2070 Zwijndrecht
 Telephone: +32(0)3 735 07 00
 E-mail: sales-eu@tcichemicals.com

1.4 Emergency telephone number: +32(0)70 245 245

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Corrosive to metals	Category 1
Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4
Skin corrosion/irritation	Category 1B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Specific target organ toxicity - Single exposure [Category 3]	Respiratory tract irritation
Specific target organ toxicity - Repeated exposure [Category 1]	Liver, Kidney
Specific target organ toxicity - Repeated exposure [Category 2]	Blood system, Cardiovascular system
Acute aquatic hazard	Category 1
Long-term aquatic hazard	Category 1

2.2 Label elements**Pictograms or hazard symbols****Signal word**

Danger

Hazard statements

H290-May be corrosive to metals.
 H302+H332-Harmful if swallowed or if inhaled.
 H314-Causes severe skin burns and eye damage.
 H317-May cause an allergic skin reaction.
 H372-Causes damage to organs through prolonged or repeated exposure : Liver Kidney
 H373-May cause damage to organs through prolonged or repeated exposure : Blood system
 Cardiovascular system
 H335-May cause respiratory irritation.
 H400-Very toxic to aquatic life.

Precautionary statements

H410-Very toxic to aquatic life with long lasting effects.
 P260-Do not breathe dust/fume/gas/mist/vapours/spray.
 P280-Wear protective gloves, protective clothing, face protection.
 P301+P330+P331+P310-IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
 P303+P361+P353+P310+P363-IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse.

P304+P340+P310-IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310-IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable
vPvB: Not applicable

SECTION 3: Composition/information on ingredients

3.1 Substances

Components: Tin(II) Chloride [for Perovskite precursor]
Percent: >97.0%(T)
CAS RN: 7772-99-8
EC-No: 231-868-0
Synonyms: Stannous Chloride
Chemical Formula: SnCl₂

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
Skin contact: Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/physician.
Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Ingestion: Immediately call a POISON CENTER or doctor/physician. Rinse mouth. Do NOT induce vomiting.
Protection of first-aiders: A rescuer should wear personal protective equipment, such as rubber gloves and air-tight goggles.

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Dry chemical, foam, water spray, carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Take care as it may decompose upon combustion or in high temperatures to generate poisonous fume. Hydrogen chloride

5.3 Advice for firefighters

Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Remove movable containers if safe to do so. When extinguishing fire, be sure to wear personal protective equipment

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Keep people away from and upwind of spill/leak. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc

6.2 Environmental precautions

Be careful not to let it flow into rivers, etc., since adverse effects on the environment are concerned

6.3 Methods and materials for containment and cleaning up

Sweep dust to collect it into an airtight container, taking care not to disperse it. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling	Handling is performed in a well ventilated place. Wear suitable protective equipment. Prevent dispersion of dust. Wash hands and face thoroughly after handling. Use a closed system if possible. Use a local exhaust if dust or aerosol will be generated. Avoid contact with skin, eyes and clothing. Use corrosive resistant equipment.
7.2 Conditions for safe storage, including any incompatibilities	Keep container tightly closed. Store in a cool, dark and well-ventilated place. Store under inert gas. Store locked up. Store away from incompatible materials such as oxidizing agents. Air-sensitive
7.3 Specific end use(s)	No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters	
ACGIH TLV(TWA):	2 mg(Sn)/m ³
OSHA PEL(TWA):	2 mg(Sn)/m ³
8.2 Exposure controls	Install a closed system or local exhaust. Also install safety shower and eye bath.
Respiratory protection:	Dust respirator, self-contained breathing apparatus(SCBA), supplied air respirator, etc. Use respirators approved under appropriate government standards and follow local and national regulations.
Hand protection:	Impervious gloves.
Eye protection:	Safety goggles. A face-shield, if the situation requires.
Skin and body protection:	Impervious protective clothing. Protective boots, if the situation requires.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties	
Physical state (20°C):	Solid
Form:	Crystal - Powder
Colour:	White - Almost white
Odour:	No data available
pH:	<1 (50g/L)
Melting point/freezing point:	246°C
Boiling point/range:	652°C
Flash point:	No data available
Evaporation rate(Butyl Acetate=1):	No data available
Flammability(solid, gas):	No data available
Flammability or explosive limits:	
Lower:	No data available
Upper:	No data available
Vapour pressure:	3.3kPa/428°C
Vapour density:	No data available
Relative density:	No data available
Solubility(ies):	
[Water]	Soluble
[Other solvents]	
Very soluble:	Hydrochloric acid
Soluble:	Alcohols, Acetone, Ethanol, Dimethylformamide(DMF), Ethyl acetate, Pyridine, Isopropanol, Methyl acetate
Very slightly soluble:	Diethyl ether
Insoluble:	Xylene
Partition coefficient:	-2.15
n-octanol/water:	
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Dynamic Viscosity:	No data available
Kinematic viscosity:	No data available
9.2 Other safety information	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity	No data available
10.2 Chemical stability	Stable under proper conditions.
10.3 Possibility of hazardous reactions	No special reactivity has been reported.
10.4 Conditions to avoid	No data available
10.5 Incompatible materials	Oxidizing agents, Bases
10.6 Hazardous decomposition products	Hydrogen chloride

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute Toxicity:	orl-rat LD50:700 mg/kg ipr-rat LD50:316 mg/kg ivn-rat LD50:17 mg/kg
Skin corrosion/irritation:	No data available
Serious eye damage/irritation:	No data available
Respiratory or skin sensitization:	No data available
Germ cell mutagenicity:	mno-sat 5000 umol/L/20M cyt-ham-ovr 132 umol/L
Carcinogenicity:	orl-rat TDLo:44100mg/kg/105W-C
IARC =	No data available
NTP =	No data available
Reproductive toxicity:	orl-rat TDLo:300 mg/kg (7-15D preg)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available
RTECS Number:	XP8700000

SECTION 12: Ecological information

12.1 Toxicity	
Fish:	No data available
Crustacea:	No data available
Algae:	No data available
12.2 Persistence and degradability	No data available
12.3 Bioaccumulative potential	No data available
12.4 Mobility in soil	
Log Pow:	-2.15
Soil adsorption (Koc):	No data available
Henry's Law (PaM ³ /mol):	No data available
12.5 Results of PBT and vPvB assessment	
PBT:	Not applicable
vPvB:	Not applicable
12.6 Other adverse effects	No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

SECTION 14: Transport information

14.1 UN number	3260
14.2 UN proper shipping name	
ADR/RID	Corrosive solid, acidic, inorganic, n.o.s
IMDG/IMO	Corrosive solid, acidic, inorganic, n.o.s
ICAO/IATA	Corrosive solid, acidic, inorganic, n.o.s
14.3 Transport hazard class(es)	
ADR/RID	8: Corrosive
IMDG/IMO	8: Corrosive
ICAO/IATA	8: Corrosive
14.4 Packaging group	
ADR/RID	II
IMDG/IMO	II
ICAO/IATA	II
14.5 Environmental hazards	
Marine pollutant	Y
14.6 Special precautions for user	No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No.1907/2006	Not listed
15.2 Chemical safety assessment	A chemical safety assessment has not been carried out.

SECTION 16: Other information

Prepared by:	TCI EUROPE N.V.
Issue date:	10/24/2019

This SDS was prepared sincerely on the basis of the information we could obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. The products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling, sufficient care should be taken, in addition to the safety measures suitable for the situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility.

End of Safety Data Sheet