Material Safety Data Sheet
Zinc Chloride

Section 1 - Product Identification

Synonym	:	Butter of zinc, Zinc dichloride, Zinc (II) chloride.
Chemical Formula	:	$ZnCl_2$
Company Identification	:	Tradeasia International Pte. Limited
Address	:	133 Cecil Street # 12-03 Keck Seng Tower, Singapore Tel: +65-6227 6365 Fax: +65-6225 6286 Email: contact@chemtradeasia.com
Recommended use	:	Catalyst; dehydrating agent and condensing agent in organic synthesis.

Section 2 – Hazards Identification

2.1. Classification
Acute Toxicity: Category 4 (oral)
Skin corrosion/irritation: Category 1
Seriously eye damage/irritation: Category 1
Chronic Aquatic Toxicity: Category 1

2.2. Label elements
Symbols/Pictograms

Signal Word
Danger
Hazard Statements
Harmful if swallowed.
Causes severe skin burns and eye damage.
Causes serious eye damage.
Very toxic to aquatic life with long lasting effects.
Precautionary Statements
In case of contact with eyes, immediately wash with plenty of water and seek medical attention.
In case of an accident or feeling unwell, seek medical advice immediately.
Avoid release to the environment.
Wear appropriate protective clothing, gloves, eye protection/face protection.

2.3. Other hazards
Not available

Section 3 – Composition/Information on Ingredients

3.1 Composition comments

Chemical Name	EC No/CAS No	Purity, %
Zinc Chloride	7646-85-7	min. 98

Section 4 – First-Aid Measures

4.1. Description of first aid measures

Eyes

Immediately and gently remove the excess of the chemical from the eye area.
Immediately hold the eyelids open and rinse the contaminated eye with warm, running water for 20 minutes.
Be careful not to let the contaminated water run into unaffected eye.
Get medical attention immediately.

Skin

Immediately remove the excess of the chemical from the skin surface.
Wash thoroughly but gently with water and non-abrasive soap.
Remove contaminated clothing, shoes, and leather accessories (eg. watch straps, belts) when flushing the skin with water.
If irritation persists after rinsing, seek medical attention immediately.
Contaminated clothing, shoes, and leather accessories should be completely decontaminated before use or disposal.

Ingestion

Do not give anything by mouth if the patient is about to lose consciousness, has lost consciousness, or has convulsions.
If the victim is conscious, rinse their mouth thoroughly with water.
Do not induce vomiting.
Give the patient 240-300ml of water.
If the patient vomits spontaneously, reduce the risk of aspiration by leaning forward. Let gargle and give water repeatedly.

Inhalation

Take precautionary measures to ensure your own safety before rescuing others.
Remove the source of contamination or move the victim to fresh air.
Immediately give artificial respiration in case the breathing stops; perform CPR if the heart stops.
Get medical attention immediately.

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

Not available

4.3. Protection of first responders

First aid should be performed in safe areas while wearing Class C protective equipment.

4.4. Notes to physician

If the patient is able to breathe, consider giving them oxygen. If the patient is able to swallow, consider performing gastric lavage.

Section 5 – Fire Fighting Measures

5.1. Suitable Extinguishing media
Use an extinguishing agent suitable for the surrounding fire.

5.2. Specific hazards arising from the chemical
Development of hydrogen chloride in the event of fire.

5.3. Special protective actions for fire-fighters and fire-fighting procedures
Extinguishing fire with water may not be effective, but can be used to cool exposed fire-exposed containers.
Move the container away from fire if it is safe to do so.
Firefighters must wear full-body chemical protective clothing and air respirators (if necessary, an anti-flash aluminum jacket should be worn).

Section 6 – Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures
Restrict access to the contaminated area until it has been completely cleaned up.
Make sure clean-up is done by trained personnel.
Wear appropriate personal protective equipment.

6.2. Environmental precautions
Ventilate the area.
Extinguish or remove all ignition sources.
Notify government safety, health and environmental protection units.

6.3. Methods and material for containment and cleaning up
Do not touch spills.
Avoid spills entering sewers, gutters or confined spaces.
Find ways to stop or reduce spills under safe conditions.
Contain the spill with sand, earth or other absorbent material that does not react with the spilled material.
Small liquid spills: Absorb with absorbent material that will not react with spillage, place in a properly labeled and sealed container, and flush the spill area with water.
Small solid spills: place into clean, dry and labeled containers with lids, avoid dust generation, and flush the spill area with water.
Large spills: Contact Fire, Emergency Response Units for assistance.

Section 7 – Handling and Storage

7.1. Precautions for safe Handling
Use dust-proof containers to avoid accumulation and generation of dust.
Avoid releasing dust into the air of the work area.
Limit operations to only be done in well-ventilated areas.
Empty containers must be marked and closed when not in use.
Empty containers may still contain hazardous residues.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from direct sunlight.
Use corrosion-resistant building materials, lighting and ventilation systems.
Clean regularly to avoid dust accumulation.
Limited storage.
The operating area must be separated from the storage area.
Periodically inspect storage containers for damage or leaks.

Section 8 – Exposure Controls/Personal Protection

8.1. Appropriate engineering controls

Use process enclosure and local exhaust ventilation.
Use a corrosion-resistant ventilation system.
The exhaust port must lead directly to the outside.

8.2. Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
Use chemical safety goggles; face shield.
Skin protection
Use impermeable gloves.
Body Protection
Wear one-piece protective clothing, work shoes.
Respiratory protection
Below 10 mg/m^3: Use respiratory protective equipment against dust, mist and fumes.
Below 25 mg/m^3: Use power-type air-purifying respiratory protective equipment with anti-dust, fog drop, and fume filter material, etc.
Below 50 mg/m^3: Use comprehensive respiratory protective equipment with high-efficiency filter material, etc.
Unknown concentration: Use positive pressure full self-contained respirator.
Evacuation: Use comprehensive respiratory protection with high-efficiency filter media.
Hygiene measures
Take off the contaminated clothing as soon as possible after work, wash it before reusing or disposing of it, and inform the laundry staff of the danger of contamination.
Smoking or eating and drinking are strictly prohibited in the work area.
Wash hands thoroughly after handling this substance.
Keep the workplace clean.

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:, hygroscopic particles.
Appearance: White to slightly grayish
Odor: Odorless.
pH: 4 (10% aqueous solution).
Vapor Pressure: almost 0 mmHg @25℃
Vapor Density: Not applicable

Evaporation Rate: Not applicable
Flammability: Not available
Boiling Point: 732℃
Melting Point: 290℃
Flash Point: non-flammable
Solubility: Very soluble in water
Density : 2.907 @25℃ (water=1)
Octanol/Water Partition Coefficient : Not available
Auto-ignition temperature : Not applicable
Decomposition temperature : Not applicable

Section 10 – Stability and Reactivity

10.1. Reactivity
Stable under normal temperatures and pressures.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
Potassium: Its mixture reacts violently on impact.
Corrosive to aluminum and stainless steel.

10.4. Conditions to avoid:
Not available.

10.5. Incompatible materials
Aluminum, Potassium, Stainless Steel.

10.6. Hazardous decomposition products
Not available

Section 11 – Toxicological Information

11.1. Health effects associated with ingredients
Acute toxicity
LD50: 350 mg/kg (rat, inhalation)
LC50: 1200-1300 mg/m3/4M (rat, inhalation)

11.2. Symptoms
Headache, fever, rapid breathing, sweating, burns, pain, nausea, vomiting, abdominal pain, diarrhea, cramps, high blood pressure, coma, pulmonary edema.

11.3. Acute toxicity
Inhalation

Its inhalation might cause “metal fumigation fever”, with symptoms that appear within hours of exposure, including headache, fever, rapid breathing, sweating and pain in the legs and chest. Exposure to 4800 mg/m^3 for 30 minutes may cause death. Its dust is irritating to the nose, throat and respiratory tract, and severe exposure may cause pulmonary edema.

Ingestion

Possibly non-toxic if ingested in small doses, but may cause nausea, vomiting and heartburn, abdominal pain, diarrhea, cramps, high blood pressure if ingested in large amounts. May cause stress, coma.

Eye Contact

One drop of 50% aqueous solution can cause immediate severe pain. It will damage the mucous membrane of the eye that can be only partially repaired.

Skin Contact

Causes redness, irritation or ulceration (caused by burns).

11.4. Chronic or long-term toxicity

Prolonged exposure can cause dermatitis.Can cause liver, kidney, lung damage.
During testing, 30 mg/Kg (intraperitoneal injection in female mice at 7-8 days of pregnancy) caused post-implantation or embryonic death.
Can alter endocrine.

Section 12 – Ecological Information

12.1.Ecotoxicity

LC50 (fish): ≦ 0.1mg/l/96h

12.2. Bioaccumulative potential

Not available

12.3. Mobility in soil

Not available

12.4. Persistence and Degradability

Not available

12.5. Other adverse effects

Not available

Section 13 – Disposal Considerations

13.1. Disposal methods

Waste from residues/unused products
Disposal should be in accordance with applicable regional, national and local laws and regulations. Can be disposed of in a sanitary landfill.

Section 14 – Transport Information

14.1. Transport Regulations

UN number	UN2331
UN proper shipping name	Zinc Chloride
Transport hazard class(es)	Class 8; Corrosive Substance
Packing Group	III
Marine Pollutant	No

Section 15 – Regulatory Information

15.1. Safety, health and environmental regulations
This material safety data sheet complies with (Taiwan):
1. The permissible concentration standard of harmful substances in the air of labor work environment
2. Road traffic safety rules
3. Industrial waste storage, removal and disposal methods and facility standards
4. Hazardous substances labelling rules

Section 16 : Additional Information

16.1. List of abbreviation and acronyms used in this MSDS
SDS : Safety Data Sheets
Index N° : atomic number of the element most characteristic of the properties of the substance
CAS No : Chemical Abstracts Service number
EC No : EINECS Number : European Inventory of Existing Commercial Substances
Repr. Cat. 2 : Substance presumed human reproductive toxicant
Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.
GHS : Globally Harmonised System of Classification and Labelling
LD_{50} : Median Lethal Dose
LC_{50} : Lethal Concentration, 50%
N.A. : Not Applicable
OSHA : Occupational Safety & Health Administration
Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)
PEL : Permissible Exposure Limits
ACGIH : American Conference of Governmental Industrial Hygienists
TLV : Threshold Limit Value
Japanese MITI : Japanese Ministry of International Trade and Industry
EC_{50} : Half maximal effective concentration
UN : United Nations
U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the authority of the Environmental Protection Agency
Canadian DSL: Canadian Domestic Substances List

16.2. References
CHEMINFO Database, CCINFO CD, 2006-1
RTECS Database, TOMES PLUS CD, Vol.68, 2006

16.3. Disclaimer of Liability

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