

**1. Identification**

Product name: Solder paste BS-10, BS-15  
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**2. Hazard Identification**

## &lt;GHS Classification&gt;

Flammable liquids:	Not classified
Acute toxicity, oral:	Not classified
Acute toxicity, dermal:	Category 3
Acute toxicity, inhalation (Gas):	Not applicable
Acute toxicity, inhalation (Vapor):	Not classified
Acute toxicity, inhalation (dust/mist):	Classification not possible
Skin corrosion/Irritation:	Category 1
Serious eye damage/eye irritation:	Category 1
Respiratory sensitization:	Classification not possible
Skin sensitization:	Not classified
Germ cell mutagenicity:	Category 2
Carcinogenicity:	Classification not possible
Reproductive toxicity:	Category 2
Specific target organ toxicity (Single exposure):	Category 2 (respiratory system, pancreas, liver)
Specific target organ toxicity (Repeated exposure):	Category 2 (lungs, systemic toxicity, liver)
Hazardous to the aquatic environment	
Acute hazard:	Category 1
Chronic hazard:	Category 2
Hazardous to the ozone layer:	Classification not possible

## &lt;GHS label elements&gt;



## &lt;Signal words&gt;

**Danger**

## &lt;Hazard statement&gt;

- Suspected of causing genetic defects.
- Causes severe skin burns and eye damage.

- Very toxic to aquatic life.
- Suspected of damaging fertility or the unborn child.
- Toxic to aquatic life with long lasting effects.
- Harmful in contact with skin.
- May cause damage to organs (respiratory system, pancreas, liver).
- May cause damage to organs (lungs, systemic toxicity, liver) through prolonged or repeated exposure.

<Precautionary statement>

**【Prevention】**

- Avoid release to the environment if this is not the intended use.
- Do not eat, drink or smoke when using this product.
- Do not handle until all safety precautions have been read and understood.
- Obtain special instructions before use.
- Wash hands thoroughly after handling.
- Use personal protective equipment if needed.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wear protective gloves/eye protection/face protection/protective clothing.

**【Response】**

- |                              |  |
|------------------------------|--|
| • IF SWALLOWED:              | Rinse mouth. Do NOT induce vomiting.   |
| • IF IN EYES:                | Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.                 |
| • IF INHALED:                | Remove person to fresh air and keep comfortable for breathing. Get emergency medical help immediately. Specific treatment is urgent. |
| • IF ON CLOTHING:            | Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.   |
| • IF ON SKIN (or hair):      | Take off immediately all contaminated clothing. Rinse skin with water or shower.   |
| • IF ON SKIN:                | Wash with plenty of water and soap.  |
| • If exposed or feel unwell: | Call a doctor.   |
| • In case of leakage:        | Collect spillage.  |

**【Storage】**

- Store locked up.

**【Disposal】**

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

<Other hazards which are not covered by the GHS>

- |                                   |                                  |
|-----------------------------------|----------------------------------|
| Toxicological information:        | None known                       |
| Ecological information:           | None known                       |
| Physical and chemical properties: | Flammable. Be careful with fire. |
| Important symptoms:               | Nothing in particular            |
| Expected emergency:               | Nothing in particular            |

National or regional information: Not applicable

**3. Composition/Information on Ingredients**

Substance or mixture: Mixture

Chemical name or common name: Solder paste

&lt;Concentration or concentration range&gt;

Chemical name	Percent WT%	Chemical Substances Control Law No.	Industrial Safety and Health Act No.	CAS No.
Zinc Chloride	5	1-264	Not applicable	7646-85-7
Ammonium chloride	1-5	1-218	Not applicable	12125-02-9
Vaseline	80-90	Not applicable	Not applicable	8009-03-8
Paraffine wax	1-10	Not applicable	Not applicable	8002-74-2
Water	1-10	Not applicable	Not applicable	7732-18-5

&lt;Regulated components&gt;

Chemical name	Industrial Safety and Health Act	PRTR
Zinc Chloride	Substances to be notified #94	Class 1 Designated Chemical Substances #1
Ammonium chloride	Substances to be notified #96	Not applicable to Designated Chemical Substances
Vaseline	Not applicable to Substances to be notified	Not applicable to Designated Chemical Substances
Paraffine wax	Substances to be notified #170	Not applicable to Designated Chemical Substances
Water	Not applicable to Substances to be notified	Not applicable to Designated Chemical Substances

Impurities and stabilizing additives which contribute to the classification of GHS: Nothing in particular.

**4. First-aid Measures**

IF INHALED:	Get emergency medical help immediately. Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN:	If appearance changes, or pain persists, get emergency medical help immediately. Wash with plenty of soap and water.
IF IN EYES:	Rinse cautiously with pure water for 15 minutes at least. Get emergency medical help immediately. When rinsing, open eyelids well with fingers, and rinse eyes completely.
IF SWALLOWED:	Get emergency medical help immediately. Do NOT induce vomiting.
Most important symptoms:	Nothing in particular
Protection for first-aid responders:	Use appropriate protective equipment so that the responder doesn't touch/inhale toxic substances.

Special precautions for Nothing in particular  
doctor:

## 5. Fire-fighting Measures

Extinguishing media:	Dry chemical, air foam, carbon dioxide, sand
Unsuitable extinguishing media:	Water spray may be used to cool down, but a straight stream of water should not be used to extinguish.
Specific hazards arising from the chemical:	Black smoke, carbon monoxide, and other toxic gases are generated by pyrolysis and incomplete combustion: there is a possibility of danger of inhalation.
Specific firefighting measures:	Sprinkle water on surrounding facility to cool it down. Fight fire from upwind if possible.
Protective equipment for fire-fighters:	Wear appropriate protective equipment (gloves, glasses, mask, supplied-air respirator).

## 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:	If indoors, ventilate well until disposal is completed. Avoid contact with skin as much as possible. Wear protective gloves (made of rubber or resin), protective glasses (made of glass or resin goggle type), and boots (made of rubber).
Environmental precautions:	Avoid release to the sewer or public water area.
Methods and materials for containment and cleaning up:	Wipe off most of the content with waste cloth etc., then wipe off the residual with alcohol. Sweep up the residue, and collect in a suitable container.
Prevention of secondary hazards:	Use non-sparking tools.

## 7. Handling and Storage

### 【Handling】

Appropriate engineering controls:	Use in a well-ventilated area. Wear appropriate personal protective equipment such as protective glasses and protective gloves.
Local exhaust/total ventilation:	Use local exhaust ventilation when used indoors.
Precautions:	Keep workplace tidy and orderly, and keep product away from fire.
Precautions for safe handling:	See "Prevention" in "2. Hazard Identification".

### 【Storage】

Appropriate engineering controls:	Nothing in particular
Conditions for storage:	No fire. Keep container tightly closed. Do not expose to temperature exceeding

30°C.

Safe containers and Appropriate containers and packaging materials.  
packaging materials:

## 8. Exposure Controls/Personal Protection

Facility measures: Install equipment nearby for washing hands and eyes. Use closed type equipment or local exhaust ventilation.

Theshold Limit Value:

Zinc chloride	1mg/m <sup>3</sup>	TWA	ACGIH
Zinc chloride	2mg/m <sup>3</sup>	STEL	ACGIH
Ammonium chloride	10mg/m <sup>3</sup>	TWA	ACGIH
Ammonium chloride	20mg/m <sup>3</sup>	STEL	ACGIH
Vaseline	(as mineral oil mist)		Japan Society for Occupational Health
Paraffin wax	2mg/m <sup>3</sup>	TWA	ACGIH

### 【Personal protective equipment】

Respiratory: Wear protective mask if needed.

Hands: Wear protective gloves if needed.

Eyes: Wear eye protection if needed.

Skin and body: Wear protective clothing and safety shoes if needed.

Hygiene measure: After work, wash hands well and gargle before smoking, eating, drinking etc.

## 9. Physical and Chemical Properties

Physical state: Highly viscous liquid

Color: Milky white

Odor (odor threshold): No data available

PH: No data available

Melting point/Freezing point: [Zinc chloride] 290°C [Water] 0°C

Boiling point: [Zinc chloride] 732°C [Vaseline] 302°C [Paraffin wax] 322°C [Water] 100°C

Initial boiling point and boiling range: No data available

boiling range:

Flash point: [Product] >199°C [Paraffin wax] 199°C

Auto-ignition temperature: [Paraffin wax] 245°C

Flammability (solid, gas): No data available

Explosion limit (lower): [Vaseline] 0.9Vol% [Paraffin wax] 0.6Vol%

Explosion limit (upper): [Vaseline] 7Vol% [Paraffin wax] 6.5Vol%

Vapor pressure:	No data available
Vapor density:	No data available
Evaporation rate:	No data available
Relative density:	[Product] Approx. 1 (Specific gravity) [Zinc chloride] 2.907 (Specific gravity) [Vaseline] 0.9g/cm <sup>3</sup> [Paraffin wax] 0.9 (Specific gravity)
Solubility:	[Product] Water insoluble [Zinc chloride] 4320g/L
Partition coefficient n-octanol/water (log value):	[Paraffin wax] 6
Decomposition temperature:	No data available
Other data:	No data available

## 10. Stability and Reactivity

Reactivity:	Nothing in particular
Stability:	Stable under storage conditions described in "Storage."
Possibility of hazardous reactions:	Since it is an organic substance, if it comes into contact with oxidizing substance, there is danger of ignition and explosion.
Conditions to avoid:	Avoid contact with sunlight, flame, and hot surface.
Incompatible materials:	Strong oxidizer, strong alkali.
Hazardous decomposition products:	Nothing in particular

## 11. Toxicological Information

Acute toxicity:

Zinc chloride	1100mg/kg	Oral (rat LD50)	EU-RAR
Zinc chloride	173mg/kg	Dermal (guinea pig LD50)	IUCLID
Ammonium chloride	1650mg/kg	Oral (rat LD50)	ACGIH
Paraffin wax	>5000mg/kg	Oral (rat LD50)	IUCLID
Paraffin wax	>3600mg/kg	Dermal (rabbit LD50)	IUCLID

[Zinc chloride]

Harmful if swallowed. Fatal in contact with skin.

[Ammonium chloride]

Toxic if swallowed.

Skin corrosion/irritation:

[Zinc chloride]

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation:

[Ammonium chloride]

Causes serious eye irritation.

Respiratory/Skin sensitization:

No data available

Germ cell mutagenicity:

[Zinc chloride]

Suspected of causing genetic defects.

Carcinogenicity:	No data available	
Reproductive toxicity:	[Zinc chloride]	Suspected of damaging fertility or the unborn child.
	[Ammonium chloride]	Suspected of damaging fertility or the unborn child.
Specific target organ toxicity (Single exposure):	[Zinc chloride]	Causes damage to organs (respiratory system, liver, pancreas).
	[Ammonium chloride]	May cause respiratory irritation.
Specific target organ toxicity (Repeated exposure):	[Zinc chloride]	Causes damage to organs (liver, lungs) through prolonged or repeated exposure.
	[Ammonium chloride]	Causes damage to organs (systemic toxicity) through prolonged or repeated exposure.
Aspiration hazard:	No data available	

## 12. Ecological Information

Ecotoxicity (fish):	[Ammonium chloride] 0.696 Rainbow trout ECETOC	
	[Ammonium chloride] Toxic to aquatic life with long lasting effects.	
	Harmful to aquatic life.	
Ecotoxicity (crustacea):	[Zinc chloride] 0.1mg/l-48hr Daphnia magna CERl Hazard Data Collection	
	[Zinc chloride] Very toxic to aquatic life with long lasting effects.	
	Very toxic to aquatic life.	
Ecotoxicity (algae):	No data available	
Persistence /Degradability:	No data available	
Bioaccumulative potential:	No data available	
Mobility in soil:	No data available	
Hazardous to the ozone layer:	No data available	
Other adverse effects:	Because of unknowns, do not dispose in general environment.	

## 13. Disposal Considerations

Waste residues:	Commit disposal to industrial waste disposal contractor approved by government.
Contaminated packaging:	Remove contents completely, and commit disposal of container to industrial waste disposal contractor approved by government.

## 14. Transport Information

【International Regulation】		
UN classification:	Class 8 (Corrosive substances), <u>Subsidiary risk 6.1 (Toxic substances)</u>	
UN No.:	2922	
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S.	

Packing Group:	III
Marine pollutant:	Environmentally hazardous substance
Local regulations:	Refer to applicable laws and regulations.
Special precautions:	Nothing in particular
Special precautions and conditions for transport:	Cover product with sheet to prevent contamination by foreign objects, water, and direct sunlight. No fire.  Conduct packaging, indication, and transportation in accordance with applicable laws and regulations. Load so that there will be no tumbling, dropping, or damaging. Take secure preventative precautions for load shifting. Prior to transport, verify that there is no damage, corrosion or leakage of the container.
Emergency Response	N/A
Guideline No.:	

### 15. Regulatory Information

Ship Safety Act (Japan):	Corrosive substances (Appended table 1, Regulations for the Carriage and Storage of Dangerous Goods in Ships, Article 2&3)
Civil Aeronautics Act (Japan):	Corrosive substance (Appended table 1, Ordinance for Enforcement Article 194)
Industrial Safety and Health Act (Japan):	Dangerous or Harmful Substances Subject to Be Indicated their Names, etc. (Article 57, Order for Enforcement Article 18) Dangerous Articles and Harmful Substances Whose Names, etc. Should Be Notified (Article 57-2, Appended Table 9, Order for Enforcement Article 18-2)
Fire Service Act (Japan):	Hazardous materials (Article 2) Inflammable Liquids (Appended Table Category IV, Class III petroleum, Water insoluble)
PRTR (Japan):	Applicable
Poisonous and Deleterious Substances Control Act (Japan):	Not applicable
Ordinance on Prevention of Organic Solvent Poisoning (Japan):	Not applicable

### 16. Other Information

Bibliography
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MSDS from material supplier

GHS Model MSDS Information, Japan Industrial Safety and Health Association, Japan

GHS Classification Results, National Institute of Technology and Evaluation

The information herein is given in good faith, but is not a warranty. Final determination of suitability any of material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards, which exist.