

1. Identification

Product name:	Solder paste BS-10, BS-15		
Manufacturer:	TAIYO ELECTRIC IND. CO., LTD.	Section:	Engineering department
Address:	2-16-8 Yamate Fukuyama Hiroshima 720-0092 JAPAN		
TEL:	084-951-1512	FAX:	084-951-9531
		E-mail:	info@goot.co.jp
Restrictions on use:	Use only for hobby, electronic work. (Do not use for PCB)		

2. Hazards Identification

GHS Classification	
Physical Hazards	
Flammable liquids:	Not classified
Health Hazards	
Acute toxicity (Oral):	Category 4 (80-90% of mixture is made of unknown ingredients)
Skin corrosion/irritation:	Category 1 (skin corrosion)
Serious eye damage/eye irritation:	Category 1
Specific target organ toxicity (Single exposure):	Category 2 (respiratory tract)
Specific target organ toxicity (Repeated exposure):	Category 2 (systemic toxicity)
Environmental hazards	
Acute aquatic toxicity:	Category 2
Chronic aquatic toxicity:	Category 2
Hazards not described above are "Not applicable" or "Classification not possible".	
Label elements	
Symbol:	
	
Signal Word:	
Danger	
Hazard statement:	
Harmful if swallowed. (H302)	
Causes severe skin burns and eye damage. (H314)	
May cause damage to organs (respiratory system). (H371)	
May cause damage to organs through prolonged or repeated exposure (systemic toxicity). (H373)	

Toxic to aquatic life with long lasting effects. (H411)	
Precautionary statement	
Prevention	
Do not breathe dust/fumes/gas/mist/vapors/spray. (P260)	
Wash hands thoroughly after handling. (P264)	
Do not eat, drink or smoke when using this product. (P270)	
Avoid release to the environment. (P273)	
Wear protective gloves/protective clothing/eye protection/face protection. (P280)	
Response	
IF SWALLOWED:	Call a doctor if you feel unwell. (P301+P312)
Rinse mouth. (P330)	
IF SWALLOWED:	Rinse mouth. Do NOT induce vomiting. (P301+P330+P331)
IF ON SKIN (or hair):	Take off immediately all contaminated clothing. Rinse affected areas with water or shower. (P303+P361+P353)
Wash contaminated clothing before reuse. (P363)	
IF INHALED:	Remove person to fresh air and keep comfortable for breathing. (P304+P340)
IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
Immediately call a doctor. (P310)	
IF exposed or concerned:	Call a doctor. (P308+P311)
Get medical advice/attention if you feel unwell. (P314)	
Collect spillage. (P391)	
Storage:	
Store in a well-ventilated place. Keep container tightly closed.	
Store locked up. (P405)	
Disposal:	
Dispose of contents/container in accordance with local/regional/national/international regulation. (P501)	

(H, P and numbers)...JIS Z7253 code

3. Composition/Information on Ingredients

Substance or mixture:		Mixture			
Chemical name or common name:		Solder paste			
Component	Concentration or concentration ranges (weight percentage)	Chemical/Structural Formula	CSSL No.	ISHL No.	CAS No.

Vaseline	80-90%	Not specified	---	---	8009-03-8
Paraffin wax	1-10%	Not specified	---	---	8002-74-2
Zinc chloride	5%	ZnCl ₂	1-264	---	7646-85-7
Water	1-10%	H ₂ O	---	---	7732-18-5
Ammonium chloride	1-5%	NH ₄ Cl	1-218	---	12125-02-9

CSCL...Chemical Substances Control Law, ISHL...Industrial Safety and Health Law

4. First-aid Measures

IF INHALED:	Immediately call a doctor. Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.
IF ON SKIN:	Take off immediately all contaminated clothing. Wash with plenty of water and soap. Immediately call a doctor. If skin irritation occurs: Get medical advice/attention. Get medical advice/attention if you feel unwell. Wash contaminated clothing before reuse.
IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for 15 minutes at least. Do not force eyes open if too uncomfortable. Immediately call a doctor.
IF SWALLOWED:	Rinse mouth. Do NOT induce vomiting. Get immediate medical advice/attention.

5. Fire-fighting Measures

Suitable extinguishing media:	Dry chemical, foam extinguisher, 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. Fire may generate irritating/toxic fume or gas.
Specific firefighting measures:	If possible, move container to a safe place immediately. Sprinkle water on surrounding facility to cool it down. Fight fire from upwind if possible.
Special protective equipment and precautions 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. Wear protective gloves (made of rubber or resin), protective glasses (made of glass or resin goggle type), and boots (made of rubber).
Environmental precautions:	Do not release to the environment. Avoid release to sewer, 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. Take facility measures in "8. Exposure controls/Personal Protection". Wear protective equipment.
Precautions for safe handling:	Do not breathe dust/fumes/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area.
Incompatible materials:	Refer to "10. Stability and Reactivity".
Hygiene measures:	Wash hands thoroughly after handling. Before eating, drinking and/or smoking, wash hands and gargle well.
Storage	
Conditions for safe storage:	No fire. Keep container tightly closed. Do not expose to temperature exceeding 30°C. Store locked up. Avoid storage in the same place with incompatible materials mentioned in "10. Stability and Reactivity". Store locked up.
Safe containers and packaging materials:	No information available.

8. Exposure controls/Personal Protection

Administrative level:	Not set
Occupational Exposure Limit	

	Occupational Exposure Limit		
	Japan Society for Occupational Health (OEL):	ACGIH(TLV-TWA)	ACGIH(TLV-STEL)
Vaseline	3mg/m ³ (as mineral oil mist)	Not set	Not set
Paraffin wax	Not set	2mg/m ³ (fume)	Not set
Zinc chloride	Occupational Exposure Limit 4mg/m ³	1mg/m ³ (fume)	2mg/m ³
Ammonium chloride	Not set	10mg/m ³ (fume)	20mg/m ³

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

Personal protective equipment

Respiratory protection: In case of inadequate ventilation, wear respiratory protection.

Hand protection: Wear protective gloves if needed.

Eye/face protection: Wear appropriate protective glasses, face protection.

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

Special precautions: Keep workplace tidy and orderly, and keep product away from fire.

9. Physical and Chemical Properties

Physical state	
Physical state, color:	Milky-white paste
Odor:	No data available
Melting point/freezing point:	[Zinc chloride] 290°C, [Water] 0°C
Boiling point:	[Vaseline] 302°C, [paraffin wax] 322°C, [Zinc chloride] 732°C, [Water] 100°C
Flammability:	No data available
Lower and upper explosion limit/flammability limit:	[Vaseline] Lower limit 0.9 Vol%, Upper limit 7 Vol% [paraffin wax] Lower limit 0.6 Vol%, Upper limit 6.5 Vol%
Flash point:	[Product] >199°C, [paraffin wax] 199°C
Auto-ignition temperature:	[paraffin wax] 245°C
Decomposition temperature:	No data available
pH:	No data available
Kinematic viscosity:	No data available
Solubility:	[Product] Insoluble in water, [Zinc chloride] 4320g/L
Partition coefficient: n-octanol/water (log value):	[paraffin wax] 6
Vapor pressure:	No data available

Density and/or relative density:	[product] approx. 1, (specific gravity) [Vaseline] 0.9g/cm ³ [paraffin Wax] 0.9 (specific gravity) [Zinc chloride] 2.907 (specific gravity)
Relative vapor density	No data available
Particle characteristics:	No data available

10. Stability and Reactivity

Reactivity:	Refer to "Possibility of hazardous reactions".
Chemical stability:	Stable under storage conditions described in "Storage."
Possibility of hazardous reactions:	As product contains organic substances, contact with oxidizing substance may cause ignition/explosion.
Conditions to avoid:	Avoid contact with sunlight, flame, hot surfaces, and incompatible materials.
Incompatible materials:	Strong oxidizers, strong alkali
Hazardous decomposition products:	May generate toxic gas (black smoke, carbon monoxide etc.) from decomposition by combustion or high temperature.

11. Toxicological Information

Acute toxicity			
Paraffin wax	>5000mg/kg	Oral (rat) LD50	IUCLID
Paraffin wax	>3600mg/kg	Dermal (rabbit) LD50	IUCLID
Zinc chloride	1100mg/kg	Oral (rat) LD50	EU-RAR
Ammonium chloride	1650mg/kg	Oral (rat) LD50	ACGIH
Acute toxicity (oral):	Category 4 (80-90% of mixture is made of unknown ingredients) based on the equation for mixture. (Zinc chloride: Category 4, Ammonium chloride: Category 4)		
Acute toxicity (dermal):	Classification not possible		
Acute toxicity (Inhalation: gas):	Not classified (not applicable)		
Acute toxicity (Inhalation: vapor):	Classification not possible		
Acute toxicity (Inhalation: dust/mist):	Classification not possible		
Skin corrosion/irritation:	Category 1 (skin corrosion) (as the total concentration for Category 1 (skin corrosion) is 5% or more) (Zinc chloride)		
Serious eye damage/eye irritation:	Category 1 (as the total concentration for Category 1 is 3% or more) (Zinc chloride)		
Respiratory sensitization:	Classification not possible		
Skin sensitization:	Classification not possible		
Germ cell mutagenicity:	Classification not possible		
Carcinogenicity:	Classification not possible		

Reproductive toxicity:	Classification not possible
Specific target organ toxicity (single exposure):	Category 2 (respiratory tract) (as the total concentration for Category 1 (respiratory tract) is 1% or more, less than 10%) (Zinc chloride)
Specific target organ toxicity (repeated exposure):	Category 2 (systemic toxicity) (as the total concentration for Category 1 (systemic toxicity) is 1% or more, less than 10%) (Ammonium chloride)
Aspiration hazard:	Classification not possible

12. Ecological Information

Ecotoxicity			
Acute aquatic toxicity:		Category 2 (as the total concentration for Category 1 multiplied by a toxicity multiplier 1 is 2.5% or more, less than 25%) (Zinc chloride)	
Zinc chloride	72hr EC50=0.065 mg Zn/L (Converted value of this substance 0.135mg/L)	Diatom (Nitzschia)	EHC221, 2001 NITE Initial Risk Assessment Report, 2008
Ammonium chloride	96hr LC50=40.8 mg/L (pH: 8.29)	Fish (Rainbow trout)	Thurston et al., 1981
Chronic aquatic toxicity:		Category 2 (as the total concentration for Category 1 multiplied by a toxicity multiplier 1 is 2.5% or more, less than 25%) (Zinc chloride)	
Zinc chloride	72hr NOEC=15.6 µg Zn/L (Converted value of this substance 32.5µg/L)	Algae	EU-RAR, 2010
Persistence and degradability:		No data available	
Bioaccumulation potential:		No data available	
Mobility in soil:		No data available	
Hazardous to the ozone layer:		Ingredients in Montreal Protocol are not included. Classification not possible.	
Other adverse effects:		Because of unknown hazards do not discard 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 Regulations	
International Regulations:	Follow IMO regulations for marine transport. Follow ICAO/IATA regulations for air transport.
UN Number:	2923
UN Proper Shipping Name:	CORROSIVE SOLID, TOXIC, N.O.S.
Transport hazard class:	Class 8 (Corrosive substances)
Subsidiary risk:	Class 6.1 (Toxic substances)
Packing group:	III
Marine pollutant:	Applicable
Local regulations	
Land transport regulations:	Follow Fire Service Act, Road Act etc. (Japan).
Marine transport regulations:	Follow Ship Safety Act (Japan).
Air transport regulations:	Follow Civil Aeronautics Act (Japan).
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.

15. Regulatory Information

Industrial Safety and Health Act (Japan):	Dangerous Articles and Harmful Substances Whose Names, etc. Should Be Notified (paraffin wax, Zinc chloride, Ammonium chloride) (Order for Enforcement Article 18, 18-2, Appended Table 9) Chemical substances that harm the skin, etc. (Substances containing 1% or more of zinc chloride are harmful substances that cause skin irritation) (Article 594-2 of the Ordinance)
Poisonous and Deleterious Substances Control Act (Japan):	Not applicable (Zinc chloride is not applicable because only the raw material is a deleterious substance)
PRTR (Japan):	Class I designated chemical substance (Zinc chloride (water-soluble compounds of zinc)) (Article 2-2, Order for Enforcement Article 1, Appended Table 1) (Zinc chloride is a "Class I designated chemical substance" even after April 1st, 2023)

Fire Service Act:	Designated flammable goods, Combustible solids (Article 9-4, Cabinet Order Concerning the Control of Hazardous Materials Article 1-12, Attached table 4)
Air Pollution Control Act (Japan):	Substances which may be hazardous air pollutants (Zinc chloride (Zinc and its compounds)) (Central Environment Council 9th Report)
Water Pollution Prevention Act (Japan):	Harmful Substances (Ammonium chloride (Ammonium compounds)) (Article 2-2-1, Order for Enforcement Article 2, Effluent Standard Order Article 1, Appended table 1)
	Designated Substances (Zinc chloride (zinc and its compounds)) (Article 2-4, Order for Enforcement 3-3)
Ship Safety Act (Japan):	Corrosive substances (Regulations for the Carriage and Storage of Dangerous Goods in Ship: Article 2 and 3)
Civil Aeronautics Act (Japan):	Corrosive substance (Regulation for Enforcement Article 194)

16. Other information

Referred documents:	<p>SDS issued by supplier(s)</p> <p>GHS Classification Results by National Institute of Technology and Evaluation (NITE)</p> <p>JIS Z7252:2019</p> <p>JIS Z7253:2019</p>
For handling the information in this SDS:	<p>This Safety Data Sheet is issued in accordance with JIS Z 7253: 2019.</p> <p>This SDS is based on information currently available for general handling, and may be revised based on new findings.</p> <p>We have no responsibility for the information given here in good faith.</p> <p>Evaluation for danger/toxicity is not necessarily complete. Please take safety precautions at your responsibility.</p>