Material Safety Data Sheet

Section 1. Identification of the chemical and supplier

Product Name: Epoxy Hardener **Synonyms:** Epoxy Hardener
commodity code: TJ 2227B
(M)SDS Number: 2320EN
Relevant identified use(s): Cold mounting sample preparation for metallographic experiments
Emergency telephone number: 13814829868（24h）
Name of the company: Trojan (Suzhou) Material Technology Co., Ltd
Address of the company: Building 26, No. 228 Gongtang Road Luzhi Town,Wuzhong District, Suzhou, China.
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Section 2. Hazards identification

Hazard classification according to GHS:

Acute toxicity - oral	**Category4**	**(H302)**
Acute toxicity - transdermal	**Category 4**	**(H312)**
Acute Toxicity - Inhalation (vapour)	**Category 2**	**(H331)**
Skin corrosion/irritation	**Category 1B**	**(H314)**
Cutaneous sensitization	**Category 1**	**(H317)**
Specific target organ toxicity (one exposure)	**Category 3**	**(H335)**

Hazard pictograms**:**



Signal word: Danger

Hazard statements:
H302 - Harmful to swallow
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause allergic skin reactions
H331 - May be toxic if inhaled
H335 - May cause respiratory irritation
Precautionary statements:
1. **Prevention:**

- Keep away from heat and combustible substances.
- When using the product, do not inhale dust/smoke/gas/smoke/steam/spray. Do not eat, drink or smoke.
- Wash hands thoroughly after work.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Use personal protective equipment as required.

2. **Response:**

- In case of fire: use suitable extinguishing equipment to extinguish the fire.
- If swallowed: Wash mouth, do not induce vomiting, seek medical advice as soon as possible.
- In case of contact with eyes: immediately open eyelids and flush contaminated eyes with mild water, seek medical advice as soon as possible.
- In case of skin contact: Remove clothes and wash contaminated area with soap.
- If skin (or hair) is contaminated: remove all contaminated clothing immediately. Wash skin/shower with water.- If inhaled by accident: Move the person to fresh air and keep comfortable breathing position.
- Call a detoxification center/doctor immediately.

3. **Storage:**

- Store in a well-ventilated place. Keep container airtight.

4. **Disposal:**

- Collect centrally and deal with in accordance with local regulations.

Section 3. Composition/information on ingredients

Name： Liquid epoxy resin and hardener

Substances

Chemical name	EC No.	CAS No.	Weight-%
Modified amine hardener	**220-666-8**	**2855-13-2**	70--80%
Benzyl alcohol	**202-859-9**	**100-51-6**	20-30%
Carbon nanotube	**926-722-4**	**308068-56-6**	0.5-5%

Section 4. First-aid measures

General advice: Immediate medical attention is required. Show this material safety data sheet (MSDS) to the doctor in attendance .

Description of necessary first-aid measures

If inhaled

If breathing stops, give artificial respiration and seek immediate medical attention. Remove to fresh air and avoid direct contact with skin. Use isolation items during mouth-to-mouth resuscitation. If breathing is difficult, provide oxygen and seek medical advice immediately. Delayed pulmonary edema may occur. Do not use the mouth-to-mouth method if the patient ingests or inhales the substance. Use a pocket breathing mask equipped with a one-way valve or other appropriate respiratory medical equipment to give mouth to mouth breathing. If breathing is difficult, oxygen is given (by trained personnel).

Following skin contact

Seek medical attention immediately. Wash immediately with soap and plenty of water, and remove contaminated clothing and shoes. May cause allergic skin reactions.

Following eye contact

Seek medical attention immediately. Immediately rinse with plenty of water, including under eyelids, for at least 15 minutes, keeping eyes open while rinsing, do not rub the affected area, if wearing contact lenses and can be easily removed, remove contact lenses and continue rinsing.

Following ingestion

Do not induce vomiting. Rinse your mouth with water and drink plenty of it. Do not give anything through the mouth to an unconscious patient. Seek medical attention immediately.

Most important symptoms/effects, acute and delayed

These include acute and delayed burning, itching, rashes, and measles.

Advice for protecting the rescuer

First aid should be performed in a safe area wearing class C protective equipment.

Special note to the doctor

This product is a corrosive substance. Do not lavage your stomach or induce vomiting. The stomach or esophagus should be examined for perforation. Do not use chemical antidotes. Suffocation due to glottic edema may occur. Significant lowering of blood pressure may occur with wet gong sounds, foamy sputum, and high pulse pressure. May cause allergies in susceptible people. Symptomatic treatment.

Section 5. Firefighting measures

Suitable extinguishing media: Chemical dry powder, carbon dioxide, water mist, foam.

Specific hazards arising from the substance or mixture

This product may cause burns to eyes, skin and mucous membranes. Thermal decomposition results in the release of irritating gases and vapors. This product is or contains an allergen that may cause irritation to skin contact.

Hazardous combustion products: carbon oxides

Special fire extinguishing procedure:

1. Be located upwind to avoid toxic breakdown.
2. Cooling tanks or containers exposed to the fire with water mist.
3. To extinguish the fire with water column is ineffective.

Special protective actions for fire-fighters: Firefighters should wear self-contained breathing apparatus and full fire fighting clothing and use personal protective equipment.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

1. Restricting personnel entry until the spill area is completely cleaned up.
2. Trained personnel shall be responsible for the cleaning work.
3. Avoid contact with skin, eyes or clothing.Ensure adequate ventilation.Use personal protective equipment as required.
4. Evacuate personnel to safe areas, personnel must be away from the spill/leak area, or in the upper air outlet.

Environmental precautions:

1. Ventilate the leakage area.

2. Remove all ignition sources.

3. Inform relevant units of occupational safety, health and environmental protection of the government.

4. To prevent further leakage or spillage as far as is safe and practicable. Do not discharge into the environment and do not allow it to enter the soil/subsoil to prevent the product from entering the drains.

Methods and materials for containment and cleaning up

1. Do not touch leaks.

2. Avoid leakage into sewers or narrow Spaces.

3. Where safety permits, try to prevent or reduce spills, do not contact or pass through the leaking material, and build embankments in the distance of the leaking liquid for subsequent disposal.

4. Contain the release with soil, sand or similar stable and non-flammable substances that will not react with the release.

5. When a small amount of spills and leaks, take preventive measures of electrostatic discharge, dam them, absorb them with inert absorption materials, collect them and transfer them to appropriately labeled containers.

6. In case of large spills, contact the fire department, emergency treatment unit and suppliers for assistance.

Section 7. Handling and storage

Precautions for handling

1. Keep away from sparks, open fires and other ignition sources when using, and post a no-smoking sign in the working area.

2. Emergency response devices for fire fighting and leakage treatment shall be provided.

3. Avoid contact with skin, eyes or clothing.If ventilation is poor, wear appropriate protective breathing equipment.Only handle the product in a closed system or provide suitable exhaust equipment.

4. Do not eat, drink or smoke when using this product.Remove all contaminated clothing and wash before reuse..

Precautions for storage

1. Store in a cool, dry, well-ventilated place with no direct sunlight, away from heat sources, ignition sources and incompatibilities.

2. Keep container airtight and in a dry, cool and well ventilated place. Moisture proof, storage place must be locked.

3. Store out of reach of children. Keep away from other materials.

Operation cautions:

1. Avoid contact with skin, eyes or clothing. Wear appropriate gloves and eye/face protective equipment.

2. Rinse thoroughly after operation. Avoid contact with skin and eyes.

3. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside. Contaminated work clothes must not be taken out of the workplace until they

are reused. 4. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before rest and immediately after handling the product. 5. Suitable for industrial applications only.

Section 8. Exposure controls/personal protection

Engineering control: 1. Use a non-sparking, grounded ventilation system separate from the general exhaust system. 2. The waste gas is discharged directly to the outdoors and appropriate measures should be taken to protect the environment. 3. Provide sufficient fresh air to supplement the air discharged from the exhaust system.
Control parameters - 8 hours daily average admissible concentration/short time average admissible concentration/maximum admissible concentration：N.A. - biological indicator：N.A.
Personal protection equipment - Respiratory protection: self-exposing respirator, no special treatment is required under normal ventilation conditions. If exposure is unknown, or exceeds TLV/PEL, or adverse consequences have occurred, use an NIOSH approved vacuum mask in accordance with the actual health and safety regulations and manufacturing instructions. - Hand protection: Acrylic rubber impermeable gloves, polyethylene alcohol, oxidized elastomer. - Eye protection: wear safety goggles. Chemical protective goggles. - Skin and body protection: rubber, oxidized elastomer, polyethylene alcohol, acrylonitrile and other impermeable gloves, protective clothing, work shoes.
Hygiene measures: 1. Take off contaminated clothes as soon as possible after work. Wash them before wearing them. 2. Smoking and eating are strictly prohibited in the workplace. 3. Wash hands thoroughly after handling. 4. Keep the workplace clean.

Section 9. Physical and chemical properties

Appearance: Liquid State	**Odor**: With a slight amine smell
Odor threshold: 0	**Melting point :** < -25 °C
Flashpoint: 116 °C. Atm. press.:1 019 mBar.	**Initial boiling point and boiling range**: 240 °C. Atm. press.:1 013 Bar.
pH: /	**Ignition point:** 316 °C. Atm. press.:> 1 008 - < 1 012 mBar.
Vapor pressure: 34 Pa. Temperature:25 °C.	**Vapor density :** N.A.
Relative density: 0.943. Temperature:20 °C	**Solubility:** In water: > 1 000 g/L.

Section 10. Stability and reactivity

Stability and reactivity	
Stable under normal conditions	
The explosion of data	N.A.
Sensitive to mechanical impact	N.A.
Sensitive to electrostatic discharge	N.A.

Possible hazardous reactions under special circumstances:

Possible dangerous reaction: Does not occur during normal handling.

Dangerous polymerization: Dangerous polymerization does not occur.

Conditions to avoid: Prolonged exposure to air or moisture.

Prohibited content: Acids, bases, oxidants

Hazardous decomposition products: Carbon oxides such as CO and CO_2 are produced by thermal decomposition

Section 11. Toxicological information

exposure pathways: inhalation, skin, eyes, ingestion

Symptom:

Inhalation: Specific test data for this substance or mixture are not available. May cause respiratory irritation.

Eye contact: Specific test data for this substance or mixture are not available. Cause burns. Erodes the eye and can cause serious damage, including blindness, causing severe eye damage that may cause irreversible damage to the eye.

Skin contact: Specific test data for this substance or mixture are not available. Corrosive, causing burns. Harmful amounts may be inhaled through skin. Harmful by skin contact.

Ingestion: Specific test data for this substance or mixture are not available. Cause burns (according to composition).Ingestion can cause burns to the upper digestive tract and respiratory tract and may cause severe burns to the mouth and stomach, accompanied by vomiting or diarrhoea and black blood clots. Blood pressure may drop. Brown or yellow spots may appear around the mouth. Swelling of the throat can cause shortness of breath and suffocation. If swallowing can cause lung damage, swallowing and entering the respiratory tract can be fatal.

Information on toxicological effects:

Symptoms: Red, burning, may lead to blindness. Coughing and/or wheezing, itching, rashes, measles.

Chronic or chronic toxicity: LD50(test animals, absorption pathway) : 10000~11400mg/kg(rats, swallowed)

Skin corrosion/irritation: Classification based on available data of components. Irritating skin.

Severe eye injury/eye irritation: Classification based on available data of components. Causes burns and is at risk of serious eye damage.

Respiratory or skin sensitization: May cause irritation by skin contact.

Germ cell mutagenesis: No information available.

Carcinogenicity: No information available.

Reproductive Toxicity: No information available.

STOT - One Touch: No information available.

STOT - Repeated Contact: No information available.

Inhalation Hazard: No information available.

Section 12. Ecological information

Ecotoxicity: Harmful to aquatic organisms and has long lasting effects.
Persistence and Degradability: Degradable.
Bioaccumulation: No information available.
Mobility in soil: No information available.
Other adverse effects: No information available.

Section 13. Disposal considerations

Waste treatment methods:	
Residues/waste from unused products	1. Refer to relevant laws and regulations. 2. Store the waste to be treated according to the storage conditions. 3. Specific incineration or sanitary landfill methods may be used for treatment.
Contaminated Packaging	No information available.

Section 14. Transport information

Special Name for Transport: Container bottles are not specified for <110 Gal.

International Transport Regulations: 1. Road Traffic Safety Code Article 84. 2. Rules for the Loading of Dangerous Goods. 3. Implementation Rules of Taiwan Railway Administration for Dangerous Goods Handling and Transportation.
UN Name: UN2735.
Transport hazard class： ／
Packing group: General solid transport.
Marine pollutant：/
Special transportation method and matters needing attention: No special requirements.

Others:

IMDG/IMO	
UN number	UN2735
Proper Shipping Name	POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Descriptions	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENE TRIAMINE), 8, III
Hazard Class	8
Packing Group	8
Marine Pollutant	N

Special provisions	N.A.
EmS-No.	F-A, S-B
Bulk transportation basis MARPOL 73/78	N.A.
RID	
UN number	UN2735
Proper Shipping Name	POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Descriptions	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class	8
Packing Group	8
Environment Hazards	N
Special provisions	N.A.
Classification code	C7
ADR	
UN number	UN2735
Proper Shipping Name	POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Descriptions	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class	8
Packing Group	8
Environment Hazards	N
Special provisions	N.A. 274
Classification code	C7
Tunnel limit code	(E)
IATA	
UN number	UN2735
Proper Shipping Name	AMINES, LIQUID, CORROSIVE, N.O.S.
Descriptions	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class	8
Packing Group	8
Environment Hazards	N
Special provisions	N.A.
ERG code	8L

Section 15. Regulatory information

Applicable regulations: China

Section 16. Others

Reference		
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