

MATERIAL SAFETY DATA SHEET

I CHEMICAL PRODUCT & COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME: EPINAL, EN-4900G*
 NAME OF MANUFACTURER : Hitachi Chemical Company Ltd. Yamazaki Works
 ADDRESS : 4-13-1 Higashi-cho, Hitachi-shi, Ibaraki, Japan
 NAME OF SECTION : Semiconductor Materials Div. R&D Group Mr. Kato
 TELEPHONE NUMBER : +81-294-23-8917 (Japan)
 FACSIMILE NUMBER : +81-294-21-3328 (Japan)
 EMERGENCY CALL : Hitachi Chemical Co., Ltd. +81-294-23-8907 (Japan) (24hours)
 FOR OTHER INFORMATION Call +81-294-23-8917 (Japan)

II COMPOSITION/INFORMATION ON INGREDIENTS

GENERAL PRODUCT DESCRIPTION : Silver color paste (Mixture)

INGREDIENTS AND COMPOSITION

CHEMICAL NAME	COMPOSITION (%)	CHEMICAL FORMULA	CAS NO.
Acrylic resin	6~11	-	Trade Secret
Polybutadiene derivative	2~9	-	Trade Secret
Butadiene copolymer	< 2.0	-	Trade Secret
Epoxy resin	1~4	-	Trade Secret
Acrylate	3~8	Trade Secret	Trade Secret
Peroxide	< 1.0	Trade Secret	Trade Secret
Additive	< 2.0	Trade Secret	Trade Secret
Silver (Metal powder)	72~82	Ag	7440-22-4

UN CLASS : Not applicable

UN NUMBER : Not applicable

III HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW : Silver color paste

PHYSICAL AND CHEMICAL HAZARDS : Combustible paste. May form explosive mixture of vapor/air exceeding 114°C.

ADVERSE HUMAN HEALTH EFFECTS : May cause irritation to eyes and skin. May cause damage to health by prolonged exposure. Repeated/prolonged contact may cause dermatitis.

ENVIRONMENTAL EFFECTS : No data available

HAZARD CODES : (Butadiene copolymer) ³:

Health:2, Flammability:1, Reactivity:0 (NFPA 704)

Health:1, Flammability:1, Reactivity:0 (HMIS)

Key:0=Insignificant; 1=Slight; 2=Moderate; 3=High; 4=Extreme

IV FIRST-AID MEASURE

INHALATION : Remove the victim from the contamination immediately to fresh air. If breathing is weak, irregular or has stopped, open his airway, loosen his collar and belt and administer artificial respiration. And refer for medical attention.

SKIN CONTACT : Wash the affected areas under tepid running water using a mild soap. If irritation persists, arrange for transport to the nearest medical

facility for examination and treatment by a physician as soon as possible.
EYE CONTACT :Gently rinse the affected eyes with clean water for at least 15 minutes. Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.
INGESTION :Rinse mouth with plenty of water and arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

V FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES :Flash point >114°C
EXTINGUISHING MEDIA :Dry chemical powder, carbon dioxide, foam, dry sand.
SPECIFIC HAZARDS WITH REGARD TO FIRE-FIGHTING MEASURE :
·Dry chemical powder ,carbon dioxide or dry sand should be used for small fires.
·Apply water from a safe distance to cool and protect surrounding area. Move container from fire areas if it can be done without risk.
·Firefighters should wear proper protective equipment and self-breathing apparatus
·Evacuate non-essential personnel into surrounding area of fires.
HAZARDOUS COMBUSTION PRODUCTS: Carbon oxide, smoke and fumes.

VI ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION :
·Evacuate personnel to safe area.
·Ventilate area after picking up material completely and shut off all sources of ignition.
·Prevent product reaching to sewage and drainage.
·Wear proper protective equipment.
METHOD FOR CLEANING UP :
·Place spill in a chemical waste containers using non-sparkling tools.
·Wipe off residual spill using paper absorbed with methanol or acetone.
ENVIRONMENTAL PRECAUTION :
·Consult an expert on the disposal of recovered material.
·Don't wash away into water courses and river.

VII HANDLING AND STORAGE

HANDLING :
·Shut off all gas pilot ,electrical(spark or hot wire)ignites and electrical charges during use.
·Wear proper protective equipment to avoid contact and inhalation.
·Use with local exhaust ventilation.
STORAGE:
·Keep containers tightly closed at temperature not exceeding 5 °C.

VIII EXPOSURE CONTROL/PERSONAL PROTECTION

EXPOSURE CONTROL :Handle this product only in a totally enclosed systems or local exhaust ventilation. Make available in the work area emergency shower and eye wash.
CONTROL PARAMETERS:OSHA PEL:TWA 0.01mg/m³ (Silver metal)
ACGIH TLV(2004):TWA 0.1mg/m³ (Silver metal)
ENGINEERING MEASURE :Do not use in areas without adequate ventilation and local exhaust ventilation.
PERSONAL PROTECTIVE EQUIPMENTS :
RESPIRATORY PROTECTION :Industrial canister gas mask
EYE PROTECTION :Safety goggles or face shield
HAND,SKIN AND BODY PROTECTION :Chemical-resistant gloves and apron

X PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, PHYSICAL STATE, FORM, COLOR, ODOR :

Silver color paste with faint irritating odor.

DENSITY : approx. 3.4

BOILING POINT : No data

VAPOUR PRESSURE : No data

RELATIVE VAPOUR DENSITY : No data

SOLUBILITY IN WATER : Slightly soluble (Polybutadiene derivative ²)
 <0.01g/100g (Acrylate ¹)

SOLUBILITY IN ORGANIC SOLVENT : Soluble

X PHYSICAL HAZARD (STABILITY AND REACTIVITY)

This product is considered a stable material under normal and anticipated storage and handling condition.

MATERIALS TO AVOID Strong oxidizing agents, strong alkalis, etc.

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO₂, Oxides nitrogen, etc.

PHYSICAL HAZARD	Product	Acrylic resin	Polybutadiene derivative ²	Butadiene copolymer ³
FLASH POINT (°C)	>114	No data	310(open)	250
AUTOIGNITION TEMP. (°C)	No data	No data	No data	No data
EXPLOSION LIMIT (IN AIR)	UPPER (%)	No data	No data	No data
	LOWER (%)	No data	No data	No data

PHYSICAL HAZARD	Epoxy resin ⁴	Acrylate ¹	Peroxide ⁶	Additive ⁷
FLASH POINT (°C)	No data	166	114(open)	149(open)
AUTOIGNITION TEMP. (°C)	No data	No data	>360	>200
EXPLOSION LIMIT (IN AIR)	UPPER (%)	No data	No data	No data
	LOWER (%)	No data	No data	No data

XI TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE : eye/skin contact, ingestion, inhalation.

SAFETY PROFILE :

Polybutadiene derivative : Contact in Liquid and Vaporous form with the eyes may cause irritation, may cause corrosion of the mucous membrane. Prolonged contact with the skin may cause dermatitis. ²

Butadiene copolymer : Liquid contact with the eyes or skin may cause irritation. Processing Vapors may cause lung irritation if inhaled.

Repeated/prolonged contact may cause dermatitis. ³

Epoxy resin: Repeated/prolonged contact with the skin may cause irritation. ⁴

Peroxide : Contact with the skin may cause dermatitis. In the case of misleading emergency treatment, Contact with the eyes may cause the loss of vision. May cause an allergy. ⁶

Acrylate : Contact may cause eye and skin irritation. PII : 4.5 (rabbit, skin) ¹

ACUTE TOXICITY

Epoxy resin ⁴	Silver ^{7,8}	Peroxide ⁶	Additive ⁵	Acrylate ¹
Oral LD ₅₀ : >10000mg/kg (rat)	Inhalation TCL ₀ : 1mg/m ³ (human) Intraperitoneal TCL ₀ : 2400mg/kg (rat) Oral LD : >10g/kg (mouse) LD : >5g/kg (rat)	Oral LD ₅₀ : 5000mg/kg (rat, 65% diluted solution) Inhalation LC ₅₀ : >207.2mg/l (rat, 4h, 65% diluted solution)	Oral LD ₅₀ : 23g/kg (rat)	Oral LD ₅₀ : >5000mg/kg (rat) Dermal LD ₅₀ : >5000mg/kg (rabbit)

CARCINOGENIC EFFECTS :Acrylic resin, Polybutadiene derivative,
Butadiene copolymer, Epoxy resin, Acrylate, Peroxide, Additive and Silver are
not classified in IARC and NTP.
MUTAGENIC EFFECTS : No data available

XII ECOLOGICAL INFORMATION

No data available

XIII DISPOSAL CONSIDERATION

APPROPRIATE METHOD OF DISPOSAL :

- Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in general careful matter as highly flammable liquids.

INFORMATION ON THEIR SAFE HANDLING OF DISPOSAL :

- Do not dump into sewers on the ground or into any body of water.
- Please be advised that your country and your region requirements for waste disposal may be more restrictive or otherwise difficult from regulation.

XIV TRANSPORT INFORMATION

- UN CLASS :Not applicable UN NUMBER :Not applicable
- Keep this material with enough dry ice.
- Follow all regulations in your country.

XV REGULATORY INFORMATION

- According to the OSHA HCS, this product is considered a hazardous chemical (Silver metal).
- Regulatory information with regard to this product in your country or in your region should be examined by your own responsibility.

XVI OTHER INFORMATION

REFERENCES :

- 1.Acrylate's Material Safety Data Sheet (2000).
- 2.Polybutadiene derivative's Material Safety Data Sheet (2002).
- 3.Butadiene copolymer's Material Safety Data Sheet (1999).
- 4.Epoxy resin's Material Safety Data Sheet (2004).
- 5.Additive's Material Safety Data Sheet (1994).
- 6.Peroxide's Material Safety Data Sheet (2001).
- 7.TLVs and BEIs (ACGIH 2004).
- 8.Registry of Toxic Effects of Chemical Substance (2005, CD-ROM DB).

INQUIRY OF THE INFORMATION CONTAINED HEREIN :

Hitachi Chemical Company Ltd., Semiconductor Materials Div.
R&D Group Mr.Kato Tel. No. +81-294-23-8917 (Japan)

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