

## Safety Data Sheet

### 1. Product and company identification

Product Name Epoxy Molding Compound CEL-8240(9240)HF, ZHF series  
Manufacturer Information  
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Recommended use of the chemical and restrictions on use: Package of the semiconductor

### 2. Hazards identification

[GHS CLASSIFICATION]

PHYSICAL HAZARDS: Flammable solids; Classification not possible  
HEALTH HAZARDS: Acute toxicity Oral ; Classification not possible  
Dermal ; Classification not possible  
Inhalation; Classification not possible  
Skin corrosion/irritation ; Classification not possible  
Serious eye damage/eye irritation ; Classification not possible  
Respiratory sensitization ; Classification not possible  
Skin sensitization ; Category 1  
Germ cell mutagenicity ; Classification not possible  
Carcinogenicity ; Classification not possible  
Reproductive toxicity ; Classification not possible  
Specific target organ toxicity—Single exposure; Classification not possible  
Specific target organ toxicity—Repeated exposure; Classification not possible  
Aspiration hazard ; Classification not possible  
ENVIRONMENTAL HAZARDS:  
Hazardous to the aquatic environment:  
Acute; Category 3  
Chronic; Category 3  
Hazardous to the ozone layer: Classification not possible

[GHS LABEL ELEMENTS]

Symbols:



Signal Word

Warning

Hazard Statement:

H317 May cause an allergic skin reaction.

H402 Harmful to aquatic life

H412 Harmful to aquatic life with long lasting effects

Precautionary statements:

Prevention precautionary statements

P201 Read this SDS carefully before use.

P202 Do not handle until all safety precautions have been read and understood.

P261 Avoid breathing dust/fumes/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response precautionary statements

P302+P352 If on skin: Wash with plenty of soap and water.

P333+P313 If skin irritation or a rash occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

Disposal precautionary statements

P501 Dispose of contents follow your country and your region requirements for waste disposal.

### 3. Composition/Information on ingredients

Single substance / Mixture : Mixture

Chemical name	Content (%)	Chemical formula	CAS number
Epoxy resin	<10	-	Trade secret
Epoxy resin 2	<5	-	Trade secret
2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane	≤10	-	85954-11-6
Hardener 1	<10	-	Trade secret
Hardener 2	≤5	-	Trade secret
Carbon black	≤0.5	C	1333-86-4
Amorphous silica 1	70~90	SiO <sub>2</sub>	60676-86-0
Amorphous silica 2	0.1~15	SiO <sub>2</sub>	7631-86-9

\*Amorphous silica contains a very slight Crystalline silica as impurities.

UN Class: Not applicable      UN No.: Not applicable

#### 4. First aid measures

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. Get medical attention.

Skin contact: Wash away the affected area with plenty of water with mild soap. If skin irritation or rash occurs, get medical advice/attention.

Eye contact: Wash eyes with plenty of clean water for at least 15 minutes and refer for ophthalmologist attention. During eyewash, open the eyelids well with fingers and move the eyes around to reach water to every corner of the eyes.

Ingestion Rinse out mouth with water, but do not make the victim to vomit forcibly.

When the victim vomits naturally, incline the body not to enter into the trachea

Get medical advice/attention immediately.

#### 5. Fire-Fighting measures

Suitable extinguishing media: Dry chemical powder, carbon dioxide, foam, water spray and dry sand.

Unsuitable extinguishing media: Nothing special

Specific methods regarding fire-fighting measure:

Use powder, carbon dioxide or dry sand for an early stage of fire.

Large fires are best controlled by foam.

Apply water from a safe distance to cool containers and surrounding area.

Be careful not to cause environmental pollution by an outflow of fire extinguishing water and the dilution water.

Specific hazards regarding fire-fighting measures:

Hazardous combustion products (carbon monoxide, nitrogen oxides, smoke and fumes) may be generated on combustion

Protective equipment for firefighter: Wear full protective clothing and self-contained breathing apparatus.

#### 6. Accidental release measures

Personal precautions:

Evacuate personnel to safe area. Evacuate non-essential personnel.

Do not breathe dusts/vapors. Avoid contact with the skin and eyes.

Wear proper protective equipment.

Do not work on collection at the leeward.

Environmental precautions:

Prevent dust from scattering into the atmosphere, impregnating into soil, outflowing to sewers, rivers or watercourses etc..

Methods and materials for containment and cleaning up:

Avoid dust formation.

Collect the leakage by explosion-proof cleaners or brooms so that it may not disperse.

Then place into a chemical waste container.

The waste should be disposed according to "13.DISPOSAL CONSIDERATIONS".

## 7. Handling and storage

### Handling:

Avoid dust formation. Use local exhaust ventilation, when open a container.

Avoid breathing dusts/vapors. Avoid contact with skin.

In case of handling, wear proper protective equipment to avoid contact and inhalation.

Gargle and wash hands after handling.

Use this product after opening containers as soon as possible.

If you feel abnormality in the body or abnormality on the body, make sure to get medical advice/attention after taking the emergency measures referred to section 4.

### Storage:

Store in dark, cool (<5°C) and well-ventilated location. Thaw this products to room temperature before use.

Store locked up.

This product is hygroscopic. So, for storage, use the container which is coated with aluminum film or the polyethylene bag, and store with an absorbent.

Keep containers tightly closed, because the product absorbs moisture.

Keep away from strong oxidizing agents, strong acids, strong bases and hydrofluoric acid.

## 8. Exposure controls & personal protection

### Engineering controls:

Use this product only in a totally enclosed systems or local exhaust ventilation.

Make available emergency shower and eyes washer in the work area.

### Occupational control limit:

ACGIH-TLV <sup>2)</sup>: TWA 3 mg/m<sup>3</sup> <sup>(I)</sup> (Carbon black)

(TWA): Time-Weighted Average (8 hours), (I): Inhalable fraction

### Personal protective equipment:

Respiratory protection	Dust protective mask
Hands protection	Impervious protective gloves
Eye protection	Protective glasses with the side shield or face protection.
Skin and body protection	Impermeable protective clothing, protective boots, aprons

## 9. Physical and chemical properties <sup>3)</sup>

Appearance	Gray tablet or powder (product)
Odor	No stimulating odor (product)
Melting point	1710°C(Silica), 70~80°C(product)
Initial boiling point/boiling range	2230°C/ No data available (Silica)
Flashing point	No data available (product :UL-94 V-0)
Vapor pressure	No data available
Relative density	1.94~2.10(product)
Auto-ignition temperature	Approx. 600°C(product)
Decomposition temperature	Approx. 300°C(product)

## 10. Stability and reactivity

Stability: Stable under normal condition (ordinary temperature/normal pressure)

Possibility of hazardous reactions: None known

Conditions to avoid: Long-time leaving at high temperature/high humidity

Incompatible materials: Strong acids/alkali

Hazardous decomposition products: No data available

## 11. Toxicological information

Acute toxicity: Carbon black ORAL LD50 >8000 mg/kg (rat) <sup>4)</sup>  
Skin corrosion/irritation: No relevant information found.  
Serious eye damage/eye irritation: No relevant information found.  
Irritation to eyes : No relevant information found.  
Respiratory sensitization: No relevant information found.  
Skin sensitization: 2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane ; May cause an allergic skin reaction. <sup>5)</sup>  
Germ cell mutagenicity: No relevant information found.  
Carcinogenicity:  
Carbon black IARC Group 2B (The agent is possibly carcinogenic to humans)  
ACGIH A3  
(Confirmed animal carcinogen with unknown relevance to humans)  
Amorphous silica IARC Group 3  
(The agent is not classifiable as to its carcinogenicity to humans.)  
Reproductive toxicity: No relevant information found.  
Specific target organ toxicity—Single exposure:  
No relevant information found.  
Specific target organ toxicity—Repeated exposure:  
Carbon black Damage to respiratory organ was reported. <sup>4)</sup>  
Aspiration hazard: No relevant information found.

## 12. Ecological information

Eco-toxicity:  
2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane  
Toxic to aquatic life. <sup>5)</sup>  
Toxic to aquatic life with long lasting effect. <sup>5)</sup>  
Carbon black Low harmful to aquatic life. <sup>4)</sup>  
[Toxicity data]  
Carbon black Daphnia magna  
EC<sub>50</sub> (24h) 5600 mg/l <sup>4)</sup>  
EC<sub>50</sub>: Effective concentration, 50% immobilized aquatic life  
Persistence and Biodegradability  
2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane  
Evaluated non-degradable in Biodegradation and Bioconcentration Data of Existing Chemicals based on the CSCL Japan. <sup>5)</sup>  
CSCL (Chemical Substances Control Law).  
Bioaccumulation potential  
2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane  
Estimated to be low bio-accumulable. <sup>5)</sup>  
Mobility in soil No data available  
Hazardous to the ozone layer: No relevant information found.

## 13. Disposal considerations

Information on the safe handling of disposal:  
Do not dump the product into sewers, on the ground or into any body of water.

Appropriate methods of disposal:

- Entrust disposal of wastes to special authority or certificated processing supplier.
- Dispose the contaminated containers (polyethylene bags) as industrial waste.
- Entrust recyclers with the corrugated cardboards which are packing containers.
- Follow all regulations in your countries or regions.

#### 14. Transport information

Any especial precaution on the transport or conveyance:

- Keep away from strong oxidizing agents, strong acids, strong bases and epoxy resins.
- United Nation's recommendation and other international agreements on the transport and packaging.:

UN Class	UN Number	Packing Group	Marine Pollutant
Not applicable	Not applicable	Not applicable	Not applicable

- Avoid dropping and damaging the containers. Prevent collapse of cargo surely.
- Follow all regulations on the transport in your country or region.

#### 15. Regulatory information

Regulatory information with regard to this product in your country or region should be examined by your own responsibility.

#### 16. Other information

References:

- 1) Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (2011)
- 2) 2016 Guide to Occupational Exposure Values (ACGIH)
- 3) International Chemical Safety Cards (ICSC) Japanese version (National Institute of Health Sciences (NIHS))
- 4) GHS Classification Data Base (National Institute of Technology and Evaluation, Japan)
- 5) SDS published by the manufacturer of 2,2'-((3,3',5,5'-tetramethyl-(1,1'-biphenyl)-4,4'-diyl)-bis(oxymethylene))-bis-oxirane (2017)

For further information or inquiries, please consult

Encapsulation Materials R&D Dept.  
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The information herein is given in good faith, but no warranty.

Please consult Showa Denko Materials Co.,Ltd. for further information.

The information contained herein is, to the best of Showa Denko Materials Company's knowledge and belief, accurate and reliable as of the data issued.

It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions.

We reserve the rights to revise SDS periodically as new information becomes available.