

# Material Safety Data Sheet

## 1. Product and company identification

- a) Product Name Epoxy Molding Compound CEL-9220HF 13 series
- b) Manufacturer Information
- Name of Manufacturer Hitachi Chemical Co.,Ltd. Shimodate Works (Minamiyuki)
  - Address of Manufacturer 1772-1 Kanakubo, Yuki, Ibaraki 307-0015 Japan
  - Responsible department Semiconductor Material Div. Encapsulation Materials R&D Dept.
  - Telephone No. +81-296-32-8111
  - FAX No. +81-296-32-8381
  - Mail address hc\_emc\_rd@ml.hitachi-chem.co.jp
- c) Recommended use of the chemical and restrictions on use  
Encapsulation materials for semiconductor

## 2. Hazards identification

- a) Hazard/Risk Classification (GHS)
- Physico-chemical Risk Unclassifiable
  - Human health Hazard
    - Acute toxicity (Oral) Unclassifiable
    - Acute toxicity (Dermal) Unclassifiable
    - Acute toxicity (Inhalation (Gas)) Unclassifiable
    - Acute toxicity (Inhalation (Vapor)) Unclassifiable
    - Acute toxicity (Inhalation (dust/mist)) Unclassifiable
    - Skin corrosion/irritation Unclassifiable
    - Serious eye damage/eye irritation Unclassifiable
    - Respiratory or skin sensitization Unclassifiable
    - Germ cell mutagenicity Unclassifiable
    - Carcinogenicity Classification 2
    - Reproductive toxicity Unclassifiable
    - Specific target organ/systemic toxicity (Single exposure) Unclassifiable
    - Specific target organ/systemic toxicity (Repeated exposure) Unclassifiable
    - Aspiration hazard Unclassifiable
  - Environmental Hazard Unclassifiable

b) Label elements including precautionary statements

- Pictogram or symbol



- Signal Word Warning
- Hazard/Risk Statement May cause cancer

- Precautionary Statement

Read this MSDS carefully before use.  
Wear protective equipment for handling, and do not directly contact with product.  
Rinse thoroughly with soap or water in case of skin contact.  
Wash thoroughly after handling.  
Store in a sealed status.

### 3. Composition/Information on ingredients

| Chemical name   | Content (%) | Chemical formula | CAS number   |
|-----------------|-------------|------------------|--------------|
| Epoxy resin 1   | 2~5         | -                | Trade secret |
| Epoxy resin 2   | 1~3         |                  | Trade secret |
| Hardener 1      | 2~5         | -                | Trade secret |
| Carbon black    | Approx. 0.2 | C                | 1333-86-4    |
| Metal hydroxide | 1~10        |                  | Trade Secret |
| Silica          | 77~92       | SiO <sub>2</sub> | 60676-86-0   |

### 4. First aid measures

- a) Eye contact  
Rinse the affected eyes with clean water for at least 15 minutes. Immediately call for an ophthalmologist.
- b) Skin contact  
Immediately wash affected area with soap and water. If signs/symptoms occur, consult a physician
- c) Inhalation  
Promptly move individual to fresh air. If breathing has stopped or breathing is difficult, loosen clothes, maintain patient airway and give artificial respiration.  
Cover the body with blankets, keep person warm and calm. Seek immediate medical attention.
- d) Ingestion  
Induce vomiting with plenty of water. Seek immediate medical attention. It is also effective to rinse mouth with water.
- e) Possible acute and delayed symptoms/effects  
In case of skin contact, it may cause dermatitis depending on individual constitution.

### 5. Fire-Fighting measures

- a) Extinguishing media  
Extinguishing agents for Usual Fire (e.g. water spray, powder, carbon dioxide)
- b) Specific extinguishing method  
Water spray, powder, carbon dioxide or dry sand should be used for small fires.  
In case of large-scale fires, it is effective to shut off air with using foam extinguisher.  
In case of fire in the surroundings, apply water to surrounding facilities to cool down.  
Immediately move containers from fire areas if it can be done without risk.
- c) Protection for fire-fighters  
Firefighters should wear proper protective equipments during extinguishing operation.  
Evacuate personnel from area of fires except the people concerned.

### 6. Accidental release measures

- a) Personal precautions, protective equipment and emergency procedures  
Wear proper protective equipments during the operation.
- b) Environmental precautions and protective procedures  
Take care not to wash spilled product away into public waters such as rivers.
- c) Methods and materials for containment and cleaning up  
In case of small amount, vacuum spilled material with the vacuum machine and wipe off residual spill using waste cloth absorbed with alcohols.  
In case of large amount, collect as much spill as possible into an empty container using riskless shovel, Vacuum with the vacuum machine and wipe off residual spill using waste cloth absorbed with alcohols.  
For disposal method, read and follow precautions on product disposal stated in Section 13.

### 7. Handling and storage

- a) Precautions for safe handling  
Wear proper protective equipments stated in Section 8 to avoid direct contact during handling.  
In case of skin contact, thoroughly wash the effected area with soap or water.  
After handling, thoroughly wash hands.
- b) Conditions for safe storage  
Avoid direct sunlight and be kept under 5<sup>0</sup>C, and do thawing before unsealing.  
In case product is unsealed and left, it absorbs moisture, so keep product sealed before storage.  
Use product as soon as possible after it is unsealed.

## 8. Exposure controls & personal protection

### a) Control parameters

ACGIH TLV (2007) TWA 0.1mg/m<sup>3</sup>(Silica)

ACGIH TLV (2007) TWA 3.5mg/m<sup>3</sup>(Carbon black)

### b) Appropriate engineering controls

Install local ventilation system at sealed equipment, or for dust, vapor sources.

Set up the shower and the washing eyes equipment near the working place.

### c) Personal protective equipment

Wear dustproof mask, safety goggles, protective gloves and long-sleeved working clothes.

## 9. Physical and chemical properties

|                                        |                                                            |
|----------------------------------------|------------------------------------------------------------|
| a) Appearance                          | Gray tablet or powder (product)                            |
| b) Odor                                | No stimulating odor (product)                              |
| c) Melting point                       | 1710 <sup>0</sup> C(Silica), 70~80 <sup>0</sup> C(product) |
| d) Initial boiling point/boiling range | 2230 <sup>0</sup> C/ No data available (Silica)            |
| e) Flashing point                      | No data available (product :UL-94 V-0)                     |
| f) Vapor pressure                      | No data available                                          |
| g) Relative density                    | 1.98~2.08(product)                                         |
| h) Auto-ignition temperature           | Approx. 600 <sup>0</sup> C(product)                        |
| i) Decomposition temperature           | Approx. 300 <sup>0</sup> C(product)                        |

## 10. Stability and reactivity

|                                       |                                                                      |
|---------------------------------------|----------------------------------------------------------------------|
| a) Stability                          | Stable under normal condition (ordinary temperature/normal pressure) |
| b) Possibility of hazardous reactions | None known                                                           |
| c) Conditions to avoid                | Long-time leaving at high temperature/high humidity                  |
| d) Incompatible materials             | Strong acids/alkali                                                  |
| e) Hazardous decomposition products   | No data available                                                    |

## 11. Toxicological information

|                                        |                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) Carbon Black                        |                                                                                                                                                          |
| - Acute toxicity                       | Oral LD50(rat) >8,000 mg/kg<br>Eye contact (Rabbit) Non-irritative<br>Skin contact (Rabbit) Non-irritative                                               |
| - Carcinogenic effects                 | IARC:Group 2B(The agent is possibly carcinogenic to humans)<br>ACGIH:Group A4(The agent is not classifiable as a human carcinogen)<br>NTP: Not specified |
| - Irritating, sensitizing effects      | No data available                                                                                                                                        |
| b) Amorphous silica                    |                                                                                                                                                          |
| - Route of entry                       | It may cause absorption in the body by inhalation dermal and oral.                                                                                       |
| - Irritant property                    | It is irritating to eyes skin mucous membrane and respiratory tract.<br>Repeated or prolonged contact may cause dermatitis.                              |
| - Carcinogenic effects IARC            | Group 3                                                                                                                                                  |
| - Acute toxicity, isensitizing effects | No data                                                                                                                                                  |

## 12. Ecological information

Ecotoxicity, persistence, degradability, and other adverse effects      No data available

## 13. Disposal considerations

Please follow your country and your region requirements for waste disposal.

## 14. Transport information

|                      |                                                                                                                                                                                                                                                                                 |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transport precaution | Comply with the general precaution on other fragile products stated in Section 7 Handling and storage precautions<br>Check no container damage and no leakage. Prevent products from shock, tumbling, falling and damage during loading, and assuredly prevent cargo loosening. |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 15. Regulatory information

It is your responsibility to obtain the regulatory information with regard to this substances from the authority in your country/state/district, etc.

## 16. Other information

a) Information source and references

- 1) JIS MSDS of chemical substance, etc. JIS Z 7250:2005
- 2) JIS MSDS of chemical substance based on GHS. JIS Z 7251:2006
- 3) NITE Classified substance of GHS of National Institute of Technology and Evaluation. Substance List of GHS Classification (04.Apr.2007)
- 4) 2007 Threshold Limit Values for Chemical Substances and Physical Agents ACGIH(2007)
- 5) Handbook of Danger & Harm of Chemicals (Japan Industrial Safety &Health Association 1992.8)
- 6) International Chemical Safety Cards (The Chemical Daily 1992.8)
- 7) Data-book of Hazardous Chemical Materials 2nd edition (Tokyo Fire Department 1992.4)
- 8) RTECS(Registry of Toxic Effects Chemical Substances 1986-87)
- 9) Sax's Dangerous Properties of Industrial Materials 8th Edition
- 10) Classification and carcinogen and its criteria (JETOC 1992.10)
- 11) Information on carcinogenicity of silica (JETOC Information B Vol.19 No.10)
- 12) Regulations on Chemical Products Application (The Chemical Daily 1992.8)

For further information or inquiries, please consult Semiconductor Materials Div.,  
Encapsulation Materials R&D Dept.

|                 |                                 |
|-----------------|---------------------------------|
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The information herein is based on currently available information from various engineering publications including our company data.

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

The information herein is based on currently available information from various engineering publications according to our investigation at the time of preparation.

However, please understand that we reserved the right to revise MSDS periodically releases of according to revision of laws and regulations, or new toxicity test results.