

Material Safety Data Sheet

EPON™ Resin SU-8

1. Product and company identification

Product name EPON™ Resin SU-8

MSDS Number 1431

Internal code K9359

Product Type Epoxy Resin

Manufacturer, Importer, Supplier Hexion Specialty Chemicals, Inc.
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Telephone **For Emergency Medical Assistance**
Call Health & Safety Information Services, 1-866-303-6949

For Emergency Transportation Information

CHEMTREC US Domestic (800) 424-9300
CHEMTREC International (703) 527-3887
CANUTEC CA Domestic (613) 996-6666

For additional health and safety or regulatory information, call 1 888-4-Hexion.

2. Hazards identification

Form Flakes.

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview DANGER !
COMBUSTIBLE DUST WHEN FINELY DIVIDED AND SUSPENDED IN AIR. FINE DUST CLOUDS MAY FORM EXPLOSIVE MIXTURES. PRODUCT CAN EXPLODE IF DUST CLOUD IS FORMED AND IGNITED. MINIMIZE AIRBORNE DUST. PREVENT DUST ACCUMULATION. ELIMINATE ALL FIRE/IGNITION SOURCES INCLUDING STATIC DISCHARGES NEAR PRODUCT/PACKAGE. REFER TO HANDLING SECTION 7 OF THE MSDS FOR MORE INFORMATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Potential acute health effects

Inhalation Slightly irritating to the respiratory system.

Ingestion Not expected to be harmful under normal conditions of use.

Skin Slightly irritating to the skin. May cause sensitization by skin contact.

Eyes Slightly irritating to the eyes.

Potential chronic health effects

Chronic effects	Contains material that may cause target organ damage, based on animal data.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.
Target organs	Review Section 2 and 11 for any additional assessments.

Over-exposure signs/symptoms

Inhalation	Adverse symptoms may include the following: respiratory tract irritation, coughing,
Ingestion	No specific data.
Skin	Adverse symptoms may include the following: irritation, redness,
Eyes	Adverse symptoms may include the following: irritation, watering, redness,
Medical conditions aggravated by over-exposure	Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See section 11 for more detailed information on health effects and symptoms.

3. Composition/Information on ingredients

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>
Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]	28906-96-9	70.0 - 100.0

*** Any applicable Canadian trade secret numbers will be listed in Section 15.*

4. First aid measures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Inhalation	Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if

adverse health effects persist or are severe.

Ingestion	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Protection of first aid personnel	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
Notes to physician	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

See section 11 for more detailed information on health effects and symptoms.

5. Fire-fighting measures

Flammability of the product	Fine dust clouds may form explosive mixtures with air. Combustible solid that burns. Eliminate all fire/ignition sources including static discharges near product/package. Keep away from heat, hot surfaces, sparks, and flame.
Extinguishing media	
Suitable	Use water spray or mist, dry chemical, foam or CO ₂ .
Not suitable	Do not use water jet.
Special exposure hazards	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Hazardous combustion products	No specific data.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Special Remarks on Explosion Hazards	Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions). The ATEX Directive defines combustible powders as less than 500 microns in diameter. When processed with flammable liquids/vapors/mists, ignitable (hybrid) mixtures may be formed with combustible dusts. Ignitable mixtures will increase the rate of explosion pressure rise and the MIE will be lower than the pure dust in air mixture. The Lower Explosive Limit (LEL) of the vapor/dust mixture will be lower than the individual LELs for the vapors/mists or dusts. See NFPA 77 for additional guidance.

6. Accidental release measures

Minimize airborne dust and eliminate all fire/ignition sources. Do not use air hoses for cleaning. Minimize dry sweeping to avoid generation of dust clouds. Vacuum dust-accumulating surfaces and remove to a chemical disposal area. Vacuums with explosion-proof motors should be used.

Personal precautions	No action shall be taken involving any personal risk or without suitable
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training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Large spill

Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum material and place in a designated, labelled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill

Move containers from spill area. Vacuum material and place in a designated, labelled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

COMBUSTIBLE DUST HANDLING PROCEDURES:

Combustible dusts at sufficient concentrations can form explosive mixtures with air. High dust concentrations should be avoided. Follow US NFPA Standard 654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids," UK HSE Guidance HSG 103, approved Codes of Practice (ACOPS) established for Explosive Atmospheres under the ATEX Directive 1999/92/EC for worker protection and ATEX Directive 94/9/EC that regulates equipment and protection systems used in potentially explosive atmospheres or other national guidance on safe handling of combustible dusts. Train workers in the recognition and prevention of hazards associated with combustible dust in the plant.

Minimize airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame. Establish good housekeeping practices. Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds. Use continuous suction at points of dust generation to capture and minimize the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimize the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 1/32 in.(0.8 mm) thick can be sufficient to warrant

immediate cleaning of the area.

Control sources of static electricity. This product or the package itself can accumulate static charges, and static discharge can be a source of ignition. Solids handling systems must be designed in accordance with applicable NFPA standards (including 654 and 77) and other national guidance. Do not empty directly into flammable solvents or in the presence of flammable vapors. The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges.

Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep away from heat, hot surfaces, sparks and flame. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Material of gloves for long term application (BTT>480min):

- butyl rubber
- ethyl vinyl alcohol laminate (EVAL)
- nitrile rubber
- neoprene
- polyvinyl chloride (PVC)
- gauntlet type

Material of gloves for short term/splash application (10min<BTT<480min):

- butyl rubber
- ethyl vinyl alcohol laminate (EVAL)
- nitrile rubber
- neoprene
- polyvinyl chloride (PVC)
- gauntlet type

Eyes Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

In work areas meeting the criteria in 29 CFR 1910.132, it is recommended that employees wear flame resistant, non-static-generating clothing including safety shoes that are static dissipating. For PPE selection see National Fire Protection Association (NFPA) 2113, Standard on Selection, Care, Use and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Form	Flakes.
Flash point	Greater than 200 °C(392 °F)
Color	Reddish-brown
Melting point	Estimated. 83 °C(181 °F)
Relative density	1.2
Vapor pressure	Less than 0.13 mbar @ 20 °C(68 °F)
Solubility	Negligible
Density	Estimated. 1,200 kg/m ³ @ 20 °C(68 °F)

10. Stability and reactivity

Stability Hazardous polymerization may occur under certain conditions of storage or use.

Conditions to avoid Extremes of temperature and direct sunlight. Caustic soda (sodium hydroxide) can induce vigorous polymerisation at temperatures around 200 °C. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust

accumulation. SEE Section 7 Handling.

Materials to avoid Reactive or incompatible with the following materials: oxidizing materials, acids,

Other hazards Polymerises exothermically with amines, mercaptans and Lewis acids at ambient temperature and above.

Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Acute toxicity Ingredient name

Other Toxicological Information

Carcinogenicity

Classification

Ingredient name

Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]

ACGIH	Not classified
IARC	Not classified
NTP	Not listed
OSHA	Not regulated

12. Ecological information

Environmental effects

No known significant effects or critical hazards.

Other adverse effects

No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal

The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transportation

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International transport regulations

Regulatory information	UN number	Proper shipping name	Classes*PG	Reportable Quantity (RQ)
CFR		Non-regulated		
TDG		Non-regulated		

IMO/IMDG Non-regulated

IATA (Cargo) Non-regulated

*PG : Packing group

15. Regulatory information

US regulations

HCS Classification Sensitizing material, Target organ effects

U.S. Federal regulations

SARA 311/312 Classification Immediate (acute) health hazard, Delayed (chronic) health hazard, reactive

SARA 313 - Supplier Notification

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

None required.

SARA 302 Extremely Hazardous Substances None required.

State regulations

Massachusetts RTK Substances None required.

New Jersey RTK Hazardous Substances None required.

Pennsylvania RTK Hazardous Substances None required.

California Prop. 65: WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Epichlorohydrin - 106-89-8, Oxiranemethanol - 556-52-5,

Canada

WHMIS (Canada)

Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists

Canadian NPRI: None required.

International regulations

Chemical inventories

Europe inventory All components are listed or exempted.

Japan inventory (ENCS) Not determined.

China inventory (IECSC) All components are listed or exempted.

Australia inventory (AICS) All components are listed or exempted.

Japan inventory (ISHL) Not determined.

New Zealand Inventory of Chemicals (NZIoC) Not determined.

Philippines inventory (PICCS) All components are listed or exempted.

Korea inventory (KECI) All components are listed or exempted.

Canada inventory All components are listed or exempted.

United States inventory (TSCA 8b) All components are listed or exempted.

16. Other information

Hazardous Material Information System III (U.S.A.)

Health : 1

Flammability: 1

Physical hazards : 0

Chronic : *

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR

1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

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