

SECTION 1: Identification

Product identifiers:

Product trade name: ERISYS* RDGE-H
Company product number: RDGEH
Other means of identification: Resorcinol diglycidyl ether; Diglycidyl resorcinol ether

Recommended use of the chemical and restrictions on use:

Uses: Epoxy resin
Restrictions on use: None identified

Details of the supplier:

Manufacturer/Supplier: CVC Thermoset Specialties
844 N. Lenola Road
Moorestown, New Jersey 08057
United States
Telephone: +1-856-533-3000
FAX: +1-856-533-3003
Email: CTS.info@emeraldmaterials.com

For further information about this SDS:

Emergency telephone number:

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA);
1-300-954-583 (Australia); 000-800-100-4086 (India).

SECTION 2: Hazard(s) identification

Classification of the substance or mixture:

Acute Toxicity, Oral, category 4 , H302
Acute Toxicity, Dermal, category 4 , H312
Skin Irritation, category 2, H315
Skin Sensitizer, category 1, H317
Eye Irritation, category 2, H319
Germ Cell Mutagenicity, category 2, H341
Carcinogenicity, category 2, H351
STOT, repeated exposure, category 1, H372
STOT, repeated exposure, category 2, H373
Hazardous to the aquatic environment, Acute, category 2, H401
Hazardous to the aquatic environment, Chronic, category 2, H411

Label elements:

Hazard pictogram(s):



Signal word:

Danger

Hazard statements:

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.

SDS Name: ERISYS* RDGE-H

H319 Causes serious eye irritation.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H372 Causes damage to organs (blood) through prolonged or repeated exposure (dermal).
H373 May cause damage to organs (forestomach) through prolonged or repeated exposure (oral).
H401 Toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
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.
P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P330 Rinse mouth.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local, regional and international regulations.

Supplemental information: No Additional Information

Classification and hazards statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Regulations in individual countries/regions may determine which classifications and hazard statements are applicable based on adopted hazard classes and categories. Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

Other hazards: No Additional Information

See Section 11 for toxicological information.

SECTION 3: Composition/information on ingredients

Substance:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Weight%</u>
0000101-90-6	Resorcinol diglycidyl ether	99-100

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

SECTION 4: First-aid measures

Description of first aid measures:

General: If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

Eye contact: Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If eye irritation persists: Get medical advice/attention.

Skin contact: Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. If skin irritation occurs: Get medical advice/attention.

SDS Name: ERISYS* RDGE-H

Inhalation: If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

Protection of first aid responders: Wear proper personal protective clothing and equipment.

Most important symptoms and effects, both acute and delayed: Dizziness, Drowsiness, Headache, Irritation, Nausea. Preexisting sensitization, skin and/or respiratory disorders or diseases may be aggravated. See section 11 for additional information.

Indication of any immediate medical attention and special treatment needed, if necessary: Treat symptomatically.

SECTION 5: Fire-fighting measures

Extinguishing media:

Suitable: Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unsuitable: None known.

Special hazards arising From the chemical:

Unusual fire/explosion hazards: Product is not considered a fire hazard, but will burn if ignited. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

Hazardous combustion products: Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See section 10 (Hazardous decomposition products) for additional information.

Special protective equipment and precautions for fire-fighters: Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Eliminate ignition sources. Personal Protective Equipment must be worn.

Environmental precautions: Do not flush liquid into public sewer, water systems or surface waters.

Methods and materials for containment and cleaning up: Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse.

SECTION 7: Handling and storage

Precautions for safe handling: As with any chemical product, use good laboratory/workplace procedures. Do not cut, puncture, or weld on or near the container. Do not get in eyes, on skin or clothing. Do not ingest, taste, or swallow. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid inhalation of aerosol, mist, spray, fume or vapor. Wash contaminated clothing before reuse. Discard shoes contaminated with this product. Provide eyewash fountains and safety showers in the work area.

Conditions for safe storage, including any incompatibilities: Store cool and dry, under well-ventilated conditions. Keep away from heat, sparks and open flames. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Empty container contains residual product which may exhibit hazards of product.

SECTION 8: Exposure controls / personal protection

Control parameters:**Occupational exposure limits (OEL):**

<u>Chemical Name</u>	<u>ACGIH - TWA/Ceiling</u>	<u>ACGIH - STEL</u>		
Resorcinol diglycidyl ether	N/E	N/E		
<u>Chemical Name</u>	<u>Australia</u>	<u>New Zealand</u>	<u>Korea</u>	<u>Taiwan</u>
Resorcinol diglycidyl ether	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Japan ISHL</u>	<u>Japan JSOH</u>	<u>Indonesia</u>	<u>Malaysia</u>
Resorcinol diglycidyl ether	N/E	N/E	N/E	N/E
<u>Chemical Name</u>	<u>Philippines</u>	<u>Singapore</u>		
Resorcinol diglycidyl ether	N/E	N/E		

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

Exposure controls:

Appropriate engineering controls: Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Safety glasses or goggles required.

Skin and body protection: Wear chemical resistant (impervious) gloves. Wear chemical resistant protective clothing. Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

Respiratory protection: Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the applicable exposure limit(s) of any chemical substance listed in this SDS.

Further information: Eyewash fountains and safety showers are recommended in the work area.

SECTION 9: Physical and chemical properties

Form:	Liquid	pH:	Not Available
Appearance:	Clear to light yellow	Relative density:	1.21
Odor:	Very slight	Partition coefficient (n-octanol/water):	1.23 (calculated)
Odor threshold:	Not Available	% Volatile by weight:	Not Available
Solubility in water:	Negligible	VOC:	Not Available
Evaporation rate:	Not Available	Boiling point °C:	172 °C
Vapor pressure:	0.0059 Pa at 25 °C	Boiling point °F:	342 °F
Vapor density:	Heavier than air	Flash point:	199 °C (390 °F) Setaflash (Closed Tester)
Viscosity:	200-325 cps @ 25°C	Auto-ignition temperature:	438 °C (820 °F)
Melting point/Freezing point:	Not Available	Flammability (solid, gas):	Not Applicable (liquid)
Oxidizing properties:	Not oxidizing	Flammability or explosive limits:	LFL/LEL: Not Available
Explosive properties:	Not explosive		UFL/UEL: Not Available
Decomposition temperature:	Not Available		

Other information: Amounts specified are typical and do not represent a specification.

SECTION 10: Stability and reactivity

Reactivity: Exothermic reactions including polymerization may occur in contact with amines.

Chemical stability: This product is stable.

Possibility of hazardous reactions: Hazardous polymerization will not occur. This product will autopolymerize at very high temperatures.

SDS Name: ERISYS* RDGE-H

Conditions to avoid: Excessive heat and ignition sources.

Incompatible materials: Avoid strong acids, bases, and oxidizing agents. Avoid contact with amines.

Hazardous decomposition products: Thermal decomposition may produce smoke, carbon monoxide, carbon dioxide, aldehydes and other products of incomplete combustion.

SECTION 11: Toxicological information

Information on likely routes of exposure:

General: Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure. Possible risk of irreversible effects. Overexposure may cause central nervous system depression. RESORCINOL DIGLYCIDYL ETHER: Possible cancer hazard - may cause cancer based on animal data.

Eyes: Causes serious eye irritation.

Skin: Harmful in contact with skin. May cause allergic skin reaction. Causes skin irritation.

Inhalation: May be harmful by inhalation. Inhalation of high vapor concentration may cause headache, drowsiness and irritation of the eyes and respiratory tract.

Ingestion: Harmful if swallowed. Ingestion may cause irritation.

Acute toxicity information: Harmful in contact with skin - Category 4. Harmful if swallowed - Category 4.

<u>Chemical Name</u>	<u>Inhalation LC50</u>	<u>Species</u>	<u>Oral LD50</u>	<u>Species</u>	<u>Dermal LD50</u>	<u>Species</u>
Resorcinol diglycidyl ether	N/E	N/E	980 mg/kg	Mouse	N/E	N/E

Skin corrosion/irritation: Causes skin irritation - Category 2.

<u>Chemical Name</u>	<u>Skin irritation</u>	<u>Species</u>
Resorcinol diglycidyl ether	Moderate irritant	Rabbit/500 mg

Serious eye damage/irritation: Causes serious eye irritation - Category 2 (2A).

<u>Chemical Name</u>	<u>Eye irritation</u>	<u>Species</u>
Resorcinol diglycidyl ether	Irritant	Rabbit/ adult

Respiratory or skin sensitization: Skin sensitization - Category 1.

<u>Chemical Name</u>	<u>Skin sensitisation</u>	<u>Species</u>
Resorcinol diglycidyl ether	Sensitizer	N/E

Carcinogenicity: Suspected of causing cancer - Category 2. RESORCINOL DIGLYCIDYL ETHER: During 2-year gavage studies, resorcinol diglycidyl ether caused hyperkeratosis and hyperplasia of the forestomach in rats and mice. Resorcinol diglycidyl ether was carcinogenic for rats and mice causing both benign and malignant neoplasms of the forestomach.

Germ cell mutagenicity: Suspected of causing genetic defects - Category 2. RESORCINOL DIGLYCIDYL ETHER: Mutagenicity was positive in in-vitro and some in-vivo genotoxicity assays.

Reproductive toxicity: Not classified (no relevant information found).

Specific target organ toxicity (STOT) - single exposure: Not classified (based on available data, the classification criteria are not met).

Specific target organ toxicity (STOT) - repeated exposure: Causes damage to organs through prolonged or repeated exposure - Category 1. RESORCINOL DIGLYCIDYL ETHER: Repeated dose toxicity study: LOAEL (Lowest-Observed-Adverse-Effect-Level), oral, rat, 2 years - 12 mg/kg bw/day (hyperkeratosis and hyperplasia of the forestomach); LOAEL, dermal, mouse, 2 years - 4.8 mg/kg bw/day (blood).

Aspiration hazard: Not classified (based on available data, the classification criteria are not met).

Other toxicity information: No additional information available.

SECTION 12: Ecological information

Ecotoxicity: No ecological testing has been conducted on this product.

<u>Chemical Name</u>	<u>Species</u>	<u>Acute</u>	<u>Acute</u>	<u>Chronic</u>
Resorcinol diglycidyl ether	Fish	LC50 5.8 mg/L (96 hours)	N/E	N/E
Resorcinol diglycidyl ether	Invertebrates	EC50 6.0 mg/L (48 hours)	N/E	N/E
Resorcinol diglycidyl ether	Algae	EC50 4.5 mg/L (72 hours)	N/E	N/E
Resorcinol diglycidyl ether	Micro-organisms	EC50 640 mg/L (3 hours)		NOEC 0.28 mg/L(72 hours)

Persistence and degradability:

<u>Chemical Name</u>	<u>Biodegradation</u>
Resorcinol diglycidyl ether	Not readily biodegradable (OECD 301B)

Bioaccumulative potential:

<u>Chemical Name</u>	<u>Bioconcentration Factor (BCF)</u>	<u>Log Kow</u>
Resorcinol diglycidyl ether	N/E	1.46 (OECD 117)

Mobility in soil:

<u>Chemical Name</u>	<u>Mobility in soil (Koc/Kow)</u>
Resorcinol diglycidyl ether	45.1 L/kg (OECD 121)

Other adverse effects: No additional information available.

SECTION 13: Disposal considerations

Dispose of unused contents (incineration) in accordance with national and local regulations. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate.

See Section 8 for recommendations on the use of personal protective equipment.

SECTION 14: Transport information

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

UN number: UN3082

UN proper shipping name:

Environmentally hazardous substance, liquid, n.o.s. (Resorcinol diglycidyl ether)

Transport hazard class(es):

U.S. DOT hazard class: N/A

Canada TDG hazard class: N/A

Europe ADR/RID hazard class: 9

IMDG Code (ocean) hazard class: 9

ICAO/IATA (air) hazard class: 9

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

Packing group: III

Environmental hazards:

Marine pollutant: Marine Pollutant (IMDG code 2.9.3).

Hazardous substance (USA): Not Applicable

Special precautions for user: Not Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:

Not Applicable

Notes: For surface shipments within the United States: Not regulated.

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question:

Japan regulations:**Japan Industrial Safety and Health Law:**

<u>Chemical name</u> Resorcinol diglycidyl ether	<u>Category</u> Notifiable substance, Harmful substance
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Japan Fire Service Law:

<u>Chemical name</u> Resorcinol diglycidyl ether	<u>Category</u> Group 4 - Flammable liquids
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Japan Poisonous and Deleterious Substances:

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Threshold</u>
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Japan Prevention of Marine Pollution and Disaster:

<u>Chemical name</u> No subject chemicals	<u>Category</u>
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Japan Chemical Substances Control Law:

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Notes</u>
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Korean regulations:**Korea Industrial Safety and Health Act:**

<u>Chemical name</u> No subject chemicals	<u>Category</u>	<u>Threshold</u>
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Korea Act on Registration and Evaluation of Chemical Substances (K-REACH) - Substances subject to registration:

No subject chemicals

Korea Chemical Control Act (CCA):

<u>Chemical name</u> Resorcinol diglycidyl ether	<u>Category</u> Toxic substance	<u>Code</u> 2011-1-619	<u>Threshold</u> N/E
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Korea Safety Control of Dangerous Substances Act (MPSS):

<u>Chemical name</u> No subject chemicals	<u>Class</u>	<u>Threshold</u>
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Korea Waste Control Act: Waste disposal methods must comply with local and national laws.

<u>Chemical name</u> No subject chemicals	<u>Notes</u>
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Other regulations: Note: Korea National Institute of Environmental Research in Hazard Review No. 2011-1-619 did not assign the following hazard classes to resorcinol diglycidyl ether: Acute toxicity, Dermal - Category 4 and Hazardous to the aquatic environment - Chronic Category 3.

Chemical inventories:

<u>Regulation</u>	<u>Status</u>
Australian Inventory of Chemical Substances (AICS):	Y
Canadian Domestic Substances List (DSL):	Y
Canadian Non-Domestic Substances List (NDSL):	N
China Inventory of Existing Chemical Substances (IECSC):	Y
European EC Inventory (EINECS, ELINCS, NLP):	Y
Japan Existing and New Chemical Substances (ENCS):	Y
Japan Industrial Safety and Health Law (ISHL):	Y
Korean Existing and Evaluated Chemical Substances (KECL):	Y
New Zealand Inventory of Chemicals (NZIoC):	Y
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Y
Taiwan Inventory of Existing Chemicals:	Y
U.S. Toxic Substances Control Act (TSCA) (Active):	Y

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

Europe REACH (EC) 1907/2006: Applicable components are registered, exempt or otherwise compliant. REACH is only relevant to substances either manufactured or imported into the EU. Emerald Performance Materials has met its obligations under the REACH regulation. REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACH obligations, depending on their place in the supply chain. For material manufactured

SDS Name: ERISYS* RDGE-H

outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

SECTION 16: Other information

Legend:

* : Trademark owned by Emerald Performance Materials, LLC.

ACGIH: American Conference of Governmental Industrial Hygienists

N/A: Not Applicable

N/E: None Established

STEL: Short Term Exposure Limit

TWA: Time Weighted Average (exposure for 8-hour workday)

Users Responsibility/Disclaimer of Liability:

The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.

Safety Data Sheet Preparer:

Product Compliance Department

Emerald Performance Materials, LLC

1499 SE Tech Center Place, Suite 300

Vancouver, WA 98683

United States