

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME:** Raychem S-1255-04**MANUFACTURER:** Tyco Electronics Corporation**DIVISION:****ADDRESS:** 300 Constitution Drive
Menlo Park, CA 94025-1164 USA**SUPPLIERS****EMERGENCY TELEPHONE NUMBERS:** US: CHEMTREC 1-800-424-9300
CN: CHEMTREC 1-800-424-9300
Outside North America: 1-703-527-3887
(Collect calls accepted)**NON-EMERGENCY HEALTH/SAFETY INFORMATION:** North America: 1- 650-361-4907**CHEMICAL FAMILY:** Epoxy Adhesive**PRODUCT USE:** Epoxy resin based adhesive tape

This product may contain a hazardous substance or preparation that is regulated under US-OSHA; CAN-WHMIS; IOSH; ISO; UK-CHIP; or EU Directives (67/548/EEC-Dangerous Substance Labelling, 98/24/EC-Chemical Agents at Work, 99/45/EC-Preparation Labeling, 2001/58/EC-MSDS Content, and 1907/2006/EC-REACH). A MSDS/SDS is required for this product because when used as recommended or intended under ordinary conditions, it may present a health and safety exposure or other hazard.

SECTION 2: HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:** Degradation and combustion byproducts may be toxic and should not be inhaled. Thermal degradation is not significant at temperatures achieved during proper application, as directed by product instructions. At temperatures above 150°C (302°F), or most significantly if the product is burned, the thermal degradation products may include, but are not limited to, carbon monoxide, carbon dioxide, oxides of nitrogen, aldehydes (including formaldehyde), acids, and ammonia.

A minor component of this product can generate formaldehyde which is listed by OSHA, NTP, and IARC as a suspect carcinogen. Formaldehyde is a skin and respiratory sensitizer, eye, skin and respiratory tract irritant, acute toxicant and potential cancer hazard.

POTENTIAL HEALTH EFFECTS:**ACUTE HEALTH HAZARDS:****EYES:** This product is an eye irritant. Direct contact or exposure to vapors or mists may cause stinging, tearing, redness and swelling. Persons with pre-existing eye disorders may be more susceptible to the effects of this product. Contact with the molten material may cause thermal burns.**SKIN:** This product is a skin irritant. Direct contact may cause redness and burning and skin damage. Repeated contact may cause an allergic skin reaction in sensitized individuals. There is insufficient information available on this material to predict the effects from skin absorption. Contact with the molten material may cause thermal burns.

INGESTION: Ingestion of this material is highly unlikely. There is insufficient information available on this material to predict the effects from ingestion.

INHALATION: Heated material may produce inhalable vapors. Breathing such vapors may cause irritation of the respiratory tract, nausea and headache. Repeated exposure may cause an allergic respiratory reaction (asthma) in sensitized individuals.

CHRONIC HEALTH HAZARDS:

The ingredients of this product, present at equal to or greater than 0.1% of this product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Prolonged or repeated exposure may cause skin rash/inflammation. Persons with preexisting skin disorders may be more susceptible to the effects of this product. Repeated exposure may cause an allergic respiratory reaction (asthma) in sensitized individuals. Persons with pre-existing lung disorders (e.g., asthma condition) may be more aggravated by exposure to heated material.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:	EC No.:
Epoxy Resin 1	25058-38-6	44 – 48	NE
Epoxy Resin 2	26142-30-3	31 – 33	NE
Epoxy Resin 3	28064-14-4	12 – 14	NE
Dicyandiamide	461-58-5	<5	207-312-8
Amorphous silica, surface treated	67762-90-7	<5	NE
Carbon black	1333-86-4	<1	215-609-9

NA – Not applicable/NE – Not Established/ND – Not determined

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Holding eyelids apart, flush affected eye(s) immediately with clean water for at least 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Immediately wash affected area(s) with plenty of soap and water. If molten material contacts the skin, immediately flush with cool water for 15 minutes and treat as a burn. Remove contaminated clothing and shoes. Do not remove clothing if it sticks to the skin. Seek immediate medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

INGESTION: Not a likely route of exposure. However, if swallowed and symptoms develop, seek medical attention.

INHALATION: If respiratory symptoms or other symptoms of exposure develop, move victim to fresh air. If symptoms persist, seek medical attention. If breathing difficulties develop, oxygen should be administered by qualified personnel. If victim is not breathing, immediately begin artificial respiration. Keep victim warm and quiet. Seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES**FLAMMABLE PROPERTIES****FLASHPOINT:** Not determined**METHOD USED:** Not applicable**FLAMMABLE LIMITS****UPPER FLAMMABILITY LIMIT (% BY VOLUME):** Not applicable**LOWER FLAMMABILITY LIMIT (% BY VOLUME):** Not applicable**AUTOIGNITION TEMPERATURE:** Not determined**SUITABLE EXTINGUISHING MEDIA:**

Water spray, foam, Dry chemical or Carbon dioxide

Selection of extinguishing media should be based upon the size of the fire, the firefighting training/experience of the individual attempting to extinguish or control the fire, and the packaging materials exposed to the fire.

SPECIAL FIRE FIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:

Firefighters should wear self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode when fighting fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Toxic fumes may be given off in a fire. See sections on Thermal Degradation and Combustion Byproducts and Other Precautions.

SPECIFIC HAZARDS IN CASE OF FIRE:

Hazardous decomposition products may evolve in a fire. See sections on Thermal Degradation and Combustion Byproducts and Other Precautions.

Avoid run-off water entering drains (e.g. use barriers)

HAZARDOUS COMBUSTION PRODUCTS:

Degradation and combustion byproducts may be toxic and should not be inhaled. Thermal degradation is not significant at temperatures achieved during proper application, as directed by product instructions. At temperatures above 150°C (302°F), or most significantly if the product is burned, the thermal degradation products may include, but are not limited to, carbon monoxide, carbon dioxide, oxides of nitrogen, aldehydes (including formaldehyde), acids, and ammonia.

SECTION 6: ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS:**

Wear appropriate personal protection when responding, as specified under Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENVIRONMENTAL PRECAUTIONS:

Prevent spilled material from entering sewers and waterways.

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:

Allow molten material to cool. Scrape up and place in a suitable container for disposal

SECTION 7: HANDLING AND STORAGE**PRECAUTIONS FOR SAFE HANDLING AND STORAGE:****Handling:** Refer to Raychem installation instructions. Avoid contact with eyes, skin and clothing. Wash clothing before reuse. Avoid breathing vapors from heated material. Installation of product should be done in a well ventilated area. Wash hands thoroughly after handling.**Storage:** Keep away from heat and flame. Store in a cool, dry, well-ventilated area. Keep only in the original container. Keep container closed.

OTHER PRECAUTIONS (e.g.; Incompatibilities):

Prevent skin and eye contact and avoid unnecessary inhalation of vapors from heated material. Handle in accordance with the precautions outlined in the Handling Section above.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Provide general or local exhaust ventilation systems.

VENTILATION:

Ensure adequate ventilation during application.

RESPIRATORY PROTECTION:

At normal application temperatures, respiratory protection is not needed. If product is heated to degradation or combustion, assume fumes are toxic and use self-contained breathing apparatus.

EYE PROTECTION:

Safety glasses or goggles

SKIN PROTECTION:

Gloves

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

None

EXPOSURE GUIDELINES & LIMITS:

OSHA	Permissible Exposure Limit (PEL/TWA)	Silica, amorphous	0.1 mg/m3
ACGIH	Threshold Limit Value (TLV)	Silica, amorphous	NE
Ontario	Occupational Exposure Level (OEL)	Silica, amorphous	NE
United Kingdom	Occupational Exposure Standard (OES)	Silica, amorphous	6 mg/m3 (total inhalable dust) 2.4 mg/m3 (respirable dust)

TWA – 8-Hour Time Weighted Average/ NE – Not Established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Black tape
ODOR:	Slight odor
ODOR THRESHOLD:	Not Established
PHYSICAL STATE:	Solid
pH:	Not Applicable
BOILING POINT:	Not Applicable
MELTING POINT:	Not Applicable
FREEZING POINT:	Not Established
VAPOR PRESSURE (mmHg @ 20°C):	Not Applicable
VAPOR DENSITY (AIR = 1):	Not Applicable
VOLATILITY (% by Volume)	Not Applicable
SPECIFIC GRAVITY (H2O = 1):	1.14 g/cc
EVAPORATION RATE (Butyl acetate=1):	Negligible

SOLUBILITY IN WATER:	Insoluble
FLASH POINT:	Not Established
AUTO-IGNITION TEMPERATURE:	Not Applicable
LOWER EXPLOSIVE LIMIT (LEL):	Not Applicable
UPPER EXPLOSIVE LIMIT (UEL):	Not Applicable
PARTITION COEFFICIENT:	Not Applicable
VISCOSITY (centipoise @ 25° C):	Not Applicable
DECOMPOSITION TEMPERATURE:	Above 150°C (302°F)

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU):

HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable for one year at 23°C (74°F). [Storage is recommended at <15°C (<58°F) in a sealed container]
INCOMPATIBILITY (MATERIAL TO AVOID):	Avoid contact with strong oxidizers, acids and bases.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:	See Section 5: FIRE FIGHTING MEASURES (Hazardous Combustion Products).
HAZARDOUS POLYMERIZATION:	Will not occur. Normal curing reaction will occur at temperatures above 100°C (212°F).
CONDITIONS TO AVOID:	Avoid temperatures above 40°C (104°F), except when initiating curing.

SECTION 11: TOXICOLOGICAL INFORMATION**ACUTE TOXICITY (Test Results Basis and Comments):**

The information presented below corresponds to the individual components of this product. Toxicity studies have not been performed on the mixture as a whole

<u>Epoxy Resins:</u>	LD50 oral rat : 11400 mg/kg ()
	LD50 dermal rat : N.D. mg/kg
	LD50 dermal rabbit : > 20000 mg/kg (epoxy resins)
	LC50 inhalation rat : N.D. mg/l/4 h

ROUTES OF ENTRY/EFFECTS OF ACUTE OVEREXPOSURE:

Skin and eye contact and if swallowed. Inhalation of thermal decomposition products

- EYE CONTACT:** This product is an eye irritant. Direct contact or exposure to vapors or mists may cause stinging, tearing, redness and swelling. Persons with pre-existing eye disorders may be more susceptible to the effects of this product. Contact with the molten material may cause thermal burns.
- SKIN CONTACT:** This product is a skin irritant. Direct contact may cause redness and burning and skin damage. Repeated contact may cause an allergic skin reaction in sensitized individuals. Persons with preexisting skin disorders may be more susceptible to the effects of this product. There is insufficient information available on this material to predict the effects from skin absorption. Contact with the molten material may cause thermal burns.
- INGESTION:** Ingestion of this material is highly unlikely. Ingestion may cause irritation of the gastric/intestinal mucosa, vomiting, nausea, abdominal pain, diarrhoea and methaemoglobinaemia
- INHALATION:** Heated material may produce inhalable vapors. Breathing such vapors may cause irritation of the respiratory tract, nausea and headache. Vapours evolved during heat curing processes can cause irritation of the respiratory tract, coughing, nausea and headache

SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):

None known

IRRITANCY OF PRODUCT: Vapours from the heated product may cause irritation of the eyes, skin, nose, and throat.

SENSITIZATION TO MATERIAL: Prolonged or repeated exposure may cause skin rash/inflammation. Repeated exposure may cause an allergic respiratory reaction (asthma) in sensitized individuals. Persons with pre-existing lung disorders (e.g., asthma condition) may be more aggravated by exposure to heated material.

CARCINOGENICITY: None of the ingredients to which users may be exposed and which are present at equal to or greater than 0.1% of the product, are listed by OSHA, NTP, or IARC as carcinogens.

REPRODUCTIVE TOXICITY: None known.

TERATOGENICITY: None known.

MUTAGENICITY: None known.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:

No data available on biodegradation.

BIO-ACCUMULATIVE POTENTIAL (Including Mobility):

No data available on bioaccumulation.

AQUATIC TOXICITY (Test Results & Comments):

No data available on aquatic toxicity.

Additional Information

- No known effects on stratospheric ozone depletion.
- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

Treatment, storage, and disposal must be in accordance with applicable, federal, state, provincial, and local regulations.

HAZARDOUS WASTE

This material is not considered a hazardous waste according to Federal EPA standards. Additional classification according to state and local standards is required before disposal.

CLASS/CODE:

US - Not applicable to material as manufactured for distribution into commerce.
 CN – Not applicable to material as manufactured for distribution into commerce.
 EWC – Not applicable to material as manufactured for distribution into commerce.

Additional Information

Not Included – Dispose/Recycle as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

SECTION 14: TRANSPORT INFORMATION

GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Not Subject to HMR		
Hazard Class	NA	ID Number	NA
Packing Group	NA	Labels	NA

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	Not Subject to DGR		
Hazard Class	NA	ID Number	NA
Packing Group	NA	Labels	NA

VESSEL – IMO-IMDG:

Proper Shipping Name	Not Subject to IMDG		
Hazard Class	NA	ID Number	NA
Packing Group	NA	Labels	NA

Additional Information

- Transportation must be in accordance with applicable, federal, state, provincial, and local regulations.
- Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped. Statement of Jurisdictional/Modal Special Provision(s) required.
- Not restricted for any mode of international transport as finished goods.
- Not a Marine Pollutant as-shipped per IMO/IMDG.

SECTION 15: REGULATORY INFORMATION

INVENTORY STATUS:

All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

U.S. FEDERAL REGULATIONS:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – Export Notification: If the product contains chemicals subject to TSCA Section 12b export notification they are listed below:

<u>Chemical</u>	<u>CAS #</u>
None	NA

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)

Chemicals present in the product which could require reporting under the statute:

<u>Chemical</u>	<u>CAS #</u>
None	NA

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

If the product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III, they are listed below.

<u>Chemical</u>	<u>CAS #</u>	<u>% wt</u>
None	NA	NA

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that this product is exempt from these regulations.

Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No
Immediate Hazard	No
Delayed Hazard	No

STATE REGULATIONS (US):

California Proposition 65

The following chemicals identified to exist in the product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

<u>Chemical</u>	<u>CAS #</u>	<u>% Wt</u>
Epoxy Resin 3	28064-14-4	12 – 14

INTERNATIONAL REGULATIONS (Non-US):**Canadian Domestic Substance List (DSL)**

All ingredients remaining in the product as distributed into commerce are included on the Domestic Substances List.

WHMIS Classifications

Carbon Black D2A Very Toxic Material Causing Other Toxic Effects
carcinogenicity: IARC group 2B

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all of the information required by the *Controlled Products Regulations*."

NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI and/or Ont. Reg. 127/01:

<u>Chemical</u>	<u>CAS #</u>	<u>% Wt</u>
Carbon black	1333-86-4	<1

European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the product as distributed into commerce are exempt from, or included on, the European Inventory of Existing Commercial Chemical Substances.

European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.

<u>R-Phrases</u>	<u>S-Phrases</u>
None	None

Additional Information

This product may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as-intended by the manufacturer, or for distribution into specific domestic destinations.

SECTION 16: OTHER INFORMATION**OTHER INFORMATION:**

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2).

Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

MSDS/SDS PREPARATION INFORMATION:

Department Issuing MSDS: Tyco Electronics, Menlo Park

Contact: Robin Adair, EHS Programs Manager

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The information presented herein was prepared at Tyco Electronics by qualified technical personnel, and to our knowledge it is true and accurate. The information and recommendations are furnished for this product with the understanding that the purchaser/user will independently determine the suitability of the product for this purpose. The data do not constitute a warranty, expressed or implied, statutory or otherwise, nor are they a representation for which Tyco Electronics assumes legal responsibility. The data are submitted for the user's information and consideration only. Any use of this product must be determined by the user to be in accordance with the applicable federal, State/Provincial, and local laws and regulations.

Users are advised that they may have additional disclosure obligations under other national and local laws. Users are advised



MATERIAL SAFETY DATA SHEET

RAY3133

(US, CN Version for International Trade)

to ensure that this information is brought to the attention of all employees, agents, and contractors handling this product. Users of Tyco Electronics products should make their own evaluation to determine the suitability of each such product for the specific application and to establish safe handling and installation procedures. Distributors of this product are advised to forward this document, or the information contained herein, to every purchaser of this product.

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