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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE or ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska or Virgin Islands. For calls originating elsewhere: (703) 527-3887 (collect calls accepted)

For non-emergency health and safety information, call: (650) 361-4907

EFFECTIVE DATE: October, 1998 **PRINT DATE:** October 26, 1998 **MSDS #**: RAY3123
REVISION NUMBER: 4

PRODUCT NAME: **Thermofit S-1264 Adhesive, Parts A and B**

PRODUCT USE: This product is a two-part epoxy resin. This adhesive is intended for use in conjunction with other Raychem products.

MSDS PREPARED BY: Donna A. Seid, Corporate Toxicologist (650) 361-3880

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL INGREDIENTS (% BY WEIGHT):

Part A:	Amine Terminated Polymer	HMIRC Registry Number: 1015-002	55 - 70 %
Part B:	Bisphenol A/Epichlorohydrin Epoxy Resin	CAS # 25068-38-6	67 - 77 %
	Amorphous Silica*	CAS # 60842-32-2	3 %
	Carbon Black*	CAS # 1333-86-4	1 %

* The carbon black and amorphous silica are physically bound within the resin matrix and are, therefore, unavailable for exposure.

TRANSPORT CANADA PRODUCT IDENTIFICATION NUMBER: Not Regulated

See **Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION** for Exposure Guidelines.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Avoid all personal contact. Causes skin irritation and severe eye burns. In case of eye contact flush well with water and seek immediate medical attention. In case of skin contact, wash well with mild soap and water and seek medical attention if irritation persists. If ingested, DO NOT induce vomiting. If vomiting occurs spontaneously, keep airway clear. If victim is conscious and alert, give at least one glass of water to drink and seek immediate medical attention. In case of inhalation where symptoms of exposure develop, move victim to fresh air. If symptoms persist, seek medical attention.

POTENTIAL HEALTH EFFECTS:

The health effects described below refer to the uncured resin, Parts A & B. The information presented below corresponds to the individual components of this product. Toxicity studies have not been performed on the mixture as a whole.

EYE:

Part A: This material is corrosive. Direct contact with the product, or exposure to vapours or mists, can cause severe burns to the eyes. Symptoms may include cloudy appearance of the cornea, chemical burns, pain, tearing, ulcers, impaired vision, or loss of vision. Direct contact or exposure to vapours or mists may cause stinging, tearing, redness, swelling, corneal damage, and irreversible eye damage. Persons with pre-existing eye disorders may be more susceptible to the effects of this material.

Part B: This material is an eye irritant. Direct contact or exposure to vapours or mists may cause stinging, tearing, redness, swelling, and hazy vision. Persons with pre-existing eye disorders may be more susceptible to the effects of this material.

SKIN CONTACT:

Part A: This material may cause mild skin irritation. Symptoms of exposure may include redness, swelling, and itching. Prolonged contact may cause redness and burning of the skin. Repeated contact may cause an allergic skin reaction in sensitized individuals. Persons with pre-existing skin disorders may be more susceptible to the effects of this material.

Part B: This material may cause mild skin irritation. Symptoms of exposure may include redness, swelling, and itching. Prolonged contact may cause redness and burning of the skin. Repeated contact may cause an allergic skin reaction in sensitized individuals. Persons with pre-existing skin disorders may be more susceptible to the effects of this material.

SKIN ABSORPTION:

Part A: There is insufficient information available to predict the effects from skin absorption.

Part B: There is insufficient information available to predict the effects from skin absorption.

INGESTION:

Part A: Ingestion of this product is highly unlikely. However, if swallowed in excessive quantities, this material may cause pain, abdominal tenderness, nausea, diarrhoea, blood in vomitus, blood in faeces, and gastrointestinal irritation.

Part B: Ingestion of this product is highly unlikely. However, if swallowed in excessive quantities, this material may cause pain, abdominal tenderness, nausea, diarrhoea, blood in vomitus, blood in faeces, and gastrointestinal irritation.

INHALATION:

Part A: Vapours produced during heat curing may cause irritation of the upper respiratory tract. Symptoms may include soreness of the nose and throat, coughing, and sneezing. Pre-existing lung disorders (e.g., asthma-like conditions) may be aggravated by exposure to this material.

Part B: Vapours produced during heat curing may cause irritation of the upper respiratory tract. Symptoms may include soreness of the nose and throat, coughing, and sneezing. Pre-existing lung disorders (e.g., asthma-like conditions) may be aggravated by exposure to this material.

OTHER: Overheating the material to temperatures above 149°C (300°F) may produce vapours that may cause eye, skin, nose, and throat irritation. Respiratory symptoms associated with pre-existing lung disorders (e.g., asthma-like conditions) may be aggravated by exposure to overheated material.

A component of Part B of this product (Bisphenol A/Epichlorohydrin Epoxy Resin) is positive in *in vitro* microbial mutagenicity screening tests, and has produced chromosomal aberrations in cultured rat liver cells. It has, however, proven to be inactive when tested in *in vivo* mutagenicity assays. (Note: Mutagenicity assays are a means to identify if a chemical may cause changes in the genetic material (DNA) of a cell.) What these findings mean to humans is uncertain.

4. FIRST AID MEASURES

This product is a two-part epoxy resin. The first aid instructions below refer to exposure to Part A or Part B of the uncured resin.

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

SKIN: Flush skin with plenty of water and wash affected area(s) with mild soap and water. Remove contaminated clothing and wash before reuse. Thoroughly clean shoes before reuse. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed to prevent reuse.If irritation persists or allergic symptoms develop, seek medical attention.

INGESTION: Not a normal route of exposure. DO NOT induce vomiting. If victim is conscious and alert, immediately rinse mouth with water and dilute the ingested material by giving one glass of water to drink. Seek immediate medical attention.

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

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASHPOINT:	Part A: > 240°C (>464°F)	Part B: >240°C (>464°F)
METHOD USED:	Part A: Not available.	Part B: Not available.

FLAMMABLE LIMITS

UPPER FLAMMABILITY LIMIT (% BY VOLUME): Not established.
LOWER FLAMMABILITY LIMIT (% BY VOLUME): Not established.

AUTOIGNITION TEMPERATURE: Not determined.

EXTINGUISHING MEDIA: Carbon dioxide, water, dry chemical, foam.

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. If the products are exposed to excessive heat or most significantly if the products are burned, the thermal degradation products may include, but are not limited to, carbon monoxide, carbon dioxide, nitrogen compounds, amine compounds, acids, aldehydes, and toxic vapours, gases, or particulates.

FIRE FIGHTING EQUIPMENT: Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires. Use water spray to cool nearby containers and structures exposed to fire.

SENSITIVITY TO STATIC DISCHARGE: None known.

SENSITIVITY TO MECHANICAL IMPACT: None known.

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate personal protection when responding, as specified under **Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION** below. Contain spill with inert absorbent. Take measures to stop spillage at the source. Transfer contaminated absorbent into a container for disposal in accordance with local regulations.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Application of adhesive (Parts A and B) should be done in a well-ventilated area in accordance with good industrial hygiene practice. Parts A and B release heat when combined.

STORAGE: Store in a cool, dry area. Keep away from open flames and high temperatures. Keep containers closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: If ventilation is inadequate to keep airborne concentrations below the established exposure limits (see Exposure Guidelines below), the use of respiratory protection is recommended. Depending on the airborne concentration of material, a NIOSH/MSHA-approved air purifying respirator with a combination organic vapour/HEPA cartridge is recommended. Thermal degradation is possible at excessive temperatures; therefore, NIOSH/MSHA-approved air-supplied respirators are recommended.

SKIN PROTECTION: Avoid prolonged or repeated contact with skin. Wear rubber gloves to prevent or minimize contact.

EYE PROTECTION: Avoid contact with eyes. Use safety glasses with side shields or goggles to prevent contact.

EXPOSURE GUIDELINES:

Part A: **AMINE TERMINATED POLYMER (POLYAMIDE/AMINE BLEND)**

Ontario:	Time-weighted Average Exposure Value:	Not established
OSHA:	Permissible Exposure Limit (TWA):	Not established
ACGIH:	Threshold Limit Value (TWA):	Not established

Part B: **BISPHENOL A/EPICHLOROHYDRIN EPOXY RESIN**

Ontario:	Time-weighted Average Exposure Value:	Not established
OSHA:	Permissible Exposure Limit (TWA):	Not established
ACGIH:	Threshold Limit Value (TWA):	Not established

AMORPHOUS SILICA

Ontario:	Time-weighted Average Exposure Value:	Not established
OSHA:	Permissible Exposure Limit (TWA):	Not available
ACGIH:	Threshold Limit Value (TWA):	10 mg/m^3 (ref. to total dust [nuisance dust])

CARBON BLACK

Ontario:	Time-weighted Average Exposure Value:	3.5 mg/m^3
OSHA:	Permissible Exposure Limit (TWA):	3.5 mg/m^3
ACGIH:	Threshold Limit Value (TWA):	3.5 mg/m^3

Note: While the occupational exposure limits above have been established for amorphous silica and carbon black, these materials are bound within the resin matrix of the product and are not available for exposure.

ENGINEERING CONTROLS: Use with adequate ventilation.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Part A: Viscous grey paste.
Part B: Viscous black paste.

ODOUR: Part A: Slight ammonia odour.
Part B: None to slight odour.

PHYSICAL STATE: Parts A and B: Viscous liquid.

BOILING POINT: Part A: >150°C (>302°F).
Part B: >150°C (>302°F).

VAPOUR PRESSURE: Part A: Not determined.
Part B: Not determined.

VAPOUR DENSITY: Part A: Not determined.
Part B: Not determined.

SOLUBILITY IN WATER: Part A: Insoluble.
Part B: Insoluble.

VISCOSITY: Part A: 40000 - 80000 centipoise.
Part B: 75000 - 150000 centipoise.

SPECIFIC GRAVITY (water=1): Part A: 1.26
Part B: 1.33

EVAPORATION RATE: Part A: Not determined.
Part B: Not determined.

WATER/OIL PARTITION COEFFICIENT:
Part A: Not determined.
Part B: Not determined.

FREEZING POINT: Part A: Not determined.
Part B: Not determined.

pH: Part A: Not determined.
Part B: Not determined.

VOLATILITY (Volume %): Part A: 0.0
Part B: 0.0

ODOUR THRESHOLD: Part A: Not determined.
Part B: Not determined.

10. STABILITY AND REACTIVITY

STABILITY: This product is stable under normal conditions at ambient temperature

CONDITIONS TO AVOID: . Avoid excessive heat for prolonged periods of time.

INCOMPATIBILITY (Specific Materials to Avoid): Uncured resins may react exothermically (release heat) with acids, bases, and strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: See **Section 5: FIRE FIGHTING MEASURES (Hazardous Combustion Products)**.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

LD_{50} / LC_{50}:

Part A: **Amine Terminated Polymer:** Not available.

Part B: **Bisphenol A/Epichlorohydrin Epoxy Resin:** LD_{50} (rat, acute oral): 11.4 g/kg.
LD_{50} (mouse, acute oral): 15.6 g/kg.
LD_{50} (rabbit, acute dermal): >20 mL/kg.

Amorphous Silica: LD_{50} (rat, oral): >5 g/kg.

Carbon Black: See Part A above.

Note: While the toxicological data provided above have been obtained for amorphous silica and carbon black, these materials are bound within the resin matrix of the product and are not available for exposure.

ROUTES OF ENTRY: Skin absorption may occur, but there is insufficient evidence to predict the effects resulting from this route of exposure. Eye contact may also occur. Inhalation of vapours may occur during heat curing of the product. Ingestion is unlikely to occur in normal use.

EFFECTS OF ACUTE OVEREXPOSURE: Part A causes severe eye burns and mild skin irritation. Part B causes skin and eye irritation. Inhalation of heated product (Part A or Part B) may cause irritation of the upper respiratory tract.

EFFECTS OF CHRONIC OVEREXPOSURE: Both Part A and Part B are potential sensitizers.

IRRITANCY OF PRODUCT: Both Part A and Part B cause skin and eye irritation.

SENSITIZATION TO MATERIAL: Both Part A and Part B have the potential to cause sensitization in susceptible individuals.

CARCINOGENICITY:

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

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

REPRODUCTIVE TOXICITY: None known.

TERATOGENICITY: None known.

MUTAGENICITY:

Part A: None known.

Part B: A component of Part B of this product (Bisphenol A/Epichlorohydrin Epoxy Resin) is positive in *in vitro* microbial mutagenicity screening tests, and has produced chromosomal aberrations in cultured rat liver cells. It has, however, proven to be inactive when tested in *in vivo* mutagenicity assays. (Note: Mutagenicity assays are a means to identify if a chemical may cause changes in the genetic material (DNA) of a cell.) What these findings mean to humans is uncertain.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

12. ECOLOGICAL INFORMATION

No present requirements.

13. DISPOSAL CONSIDERATIONS

Use appropriate methods based on federal and provincial statutes and regulations and local by-laws. Contact local environmental agency for specific rules and instructions.

14. TRANSPORT INFORMATION

Part A: Not regulated
Part B: Not regulated

15. REGULATORY INFORMATION

CANADIAN DSL LISTING:

All the compontents of this product are listed on the Domestic Substances List (DSL) or the Non-Domestic Substance List (NDSL).

WHMIS CLASSIFICATION FOR PRODUCT:

Part A: Class D, Division 2 -- Poisonous and Infectious Material (Material Causing Other Toxic Effects);
Class E -- Corrosive Material

Part B: Class D, Division 2 -- Poisonous and Infectious Material (Material Causing Other Toxic Effects)

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

Sources of Information:

RTECS -- Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health.

HSDB -- Hazardous Substances Data Bank, National Library of Medicine.

TOMES® -- Toxicology, Occupational Medicine and Environmental Series, Meditext®, Medical Management.

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