



Electronics

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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Ltd.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE or ACCIDENT

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EFFECTIVE DATE: Sept, 2004 **PRINT DATE:** September 3, 2004 **MSDS #:** Ray3006
REVISION NUMBER: 2

PRODUCT NAME: Thermofit S-1125 Adhesive, Parts A and B

SYNONYMS:

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: Bill Dvorak, EHS Manager (919) 557-8685

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL INGREDIENTS (% BY WEIGHT):

<u>Part A:</u>	Amine Terminated Polymer	CAS # 26376-58-9	70 %
<u>Part B:</u>	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 inhalation exposure if used as intended.

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.

EFFECTS OF ACUTE OVEREXPOSURE:

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 CONTACT:

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 if used as intended. However, if swallowed in excessive quantities, this material may cause pain, abdominal tenderness, nausea, diarrhea, blood in vomitus, blood in faeces, and gastrointestinal irritation.

Part B: Ingestion of this product is highly unlikely if used as intended. However, if swallowed in excessive quantities, this material may cause pain, abdominal tenderness, nausea, diarrhea, 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.

One 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. Another component of Part B (carbon black) has been classified by IARC as a possible carcinogen in humans (Group 2B) based on sufficient evidence in experimental animal studies.

EFFECTS OF CHRONIC (Long-Term) EXPOSURE: Not known.

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:	<u>Part A:</u> >240°C (>464°F)	<u>Part B:</u> >240°C (>464°F)
METHOD USED:	<u>Part A:</u> Not Available	<u>Part B:</u> Not Available

FLAMMABLE LIMITS

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

AUTOIGNITION TEMPERATURE: Not available.

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

HAZARDOUS COMBUSTION PRODUCTS: Degradation and combustion by products 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 AND PROCEDURES: Firefighters should wear self-contained breathing apparatus 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. This material may be swept up and collected in a suitable container for disposal or reuse.

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, well-ventilated area.

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: There are no exposure limits applicable to this product as supplied or used.

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: 10 mg/m³ (inhalable)
3 mg/m³ (resperable)

OSHA: Permissible Exposure Limit (TWA): 15 mg/m³ (total dust)
3 mg/m³ (resperable fraction)

ACGIH: Threshold Limit Value (TWA): 10 mg/m³ (inhalable fraction)
3 mg/m³ (resperable fraction)

CARBON BLACK

Ontario: Time-weighted Average Exposure Value: 3.5 mg/m³

OSHA: Permissible Exposure Limit (TWA): 3.5 mg/m³

ACGIH: Threshold Limit Value (TWA): 3.5 mg/m³

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.

ONTARIO: Not established

OSHA: Not established

ACGIH: Not established

ENGINEERING CONTROLS: In accordance with good industrial hygiene practice, ensure adequate ventilation during installation.

Other Precautions: See installation instructions for proper installation procedures. If product chars or burns, immediately stop heating. Avoid inhaling any vapors/fumes, which may be given off under such circumstances. Allow any vapors/fumes to disperse and ventilate before continuing work in the area

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	<u>Part A:</u> Viscous grey paste <u>Part B:</u> Viscous black paste	SPECIFIC GRAVITY:	<u>Part A:</u> 1.26 <u>Part B:</u> 1.33
ODOUR:	<u>Part A:</u> Slight ammonia <u>Part B:</u> Viscous black paste	EVAPORATION RATE:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined
PHYSICAL STATE:	<u>Part A:</u> Viscous liquid <u>Part B:</u> Viscous liquid	WATER/OIL PARTITION COEFFICIENT:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined
BOILING POINT:	<u>Part A:</u> >150°C (>302°F) <u>Part B:</u> >150°C (>302°F)	FREEZING POINT:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined
VAPOUR PRESSURE:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined	Ph:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined
VAPOUR DENSITY:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined	VOLATILITY:	<u>Part A:</u> 0.0 <u>Part B:</u> 0.0
SOLUBILITY IN WATER:	<u>Part A:</u> Insoluble <u>Part B:</u> Insoluble	ODOUR THRESHOLD:	<u>Part A:</u> Not determined <u>Part B:</u> Not determined
VISCOSITY:	<u>Part A:</u> 40000 - 80000 <u>Part B:</u> 75000 - 150000		

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

LD₅₀/ LC₅₀:	<u>Part A:</u> Amine Terminated Polymer:	Not Available
	<u>Part B:</u> 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:	LD ₅₀ (rat, oral): >15400 mg/kg LD ₅₀ (rabbit, dermal): >3 g/kg

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

SENSITIZATION TO MATERIAL: Not known.

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: Carbon Black is classified by IARC as possibly carcinogenic to humans (Group 2B).

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 known requirements.

13. DISPOSAL CONSIDERATION

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 components of this product are listed on the Domestic Substances List (DSL).

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:

Tyco makes no warranties as to the accuracy or completeness of this information and disclaims any liability in connection with its use. Tyco's obligations shall be only as set forth in Tyco's standard terms and conditions of sale for this product. In no case will Tyco be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product.

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