MATERIAL DATA SAFETY SHEET – Open Cell Spray Foam

Tiger Foam®
"B" COMPONENT

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Brand: Tiger Foam™ Insulation. This sheet covers the "B" Component of a self-contained, low pressure, portable two-component spray foam insulation kit comprised of an "A" and "B" side tank.

Product Description: Product is a urethane foam component that contains liquefied compressed gas blowing agent (Non-Flammable Compressed Gas). Containers should not be heated 120°F (49°C) to avoid excessive pressure build-up.

Item Numbers Covered: TF1350 and TF450
Note identical packaging with sticker on front to designate contents as being either "A" component or "B" component.

Manufacturer:

COMMERCIAL THERMAL SOLUTIONS, INC.
6 Worthington Avenue
Spring Lake, New Jersey 07762

Emergency Overview and Contacts
Product Information: 1-800-664-0063
International Phone: (001) 1+732.927.2090

IN CASE OF EMERGENCY CALL:
Transportation Emergency:
CHEMTREC (Domestic): 1-800-424-9300
CHEMTREC (Int'l): (703)527-3887
Reference: CHEMTREC ACCOUNT # 201586

2. HAZARDS IDENTIFICATION

Emergency Overview

WARNING! EYE, SKIN, LUNG IRRITANT. May be harmful if inhaled. Vapor reduces oxygen available for breathing. May cause lung injury. Respiratory sensitizer. May cause central nervous system effects. May cause liver damage. Toxic gases/fumes may be given off during burning. Pressurized Containers: storage temperature should not exceed 120°F (49°C) in order to avoid excessive pressure build-up and possible release of contents. May cause a temporary fogging of the eyes.

Potential Health Effects

The primary adverse health effects of this product are related to the individual components that make-up the mixture, and the Fluorocarbon (134a) component. Therefore, use in a well ventilated area and with certified respiratory protection to avoid exceeding exposure limits listed in Section 8 of this MSDS.

Effects of Overexposure

Entry Route:

Inhalation: **Tris (1-chloro-2-propyl) phosphate**: Existing medical conditions such as asthma and pulmonary diseases may be aggravated by prolonged exposure. This material is a weak cholinesterase inhibitor. Excessive exposure may result in these symptoms: salivation, sweating, headache, nausea, muscle twitching, incoordination, diarrhea, blurred vision, abdominal cramps, tears, tremor, and chest discomfort.

Tertiary Amine: Can cause severe eye, skin, and respiratory tract burns. May cause nose, throat, and lung irritation. Inhalation of vapors in high concentration may cause irritation of respiratory system.

1,1,1,2- Tetrafluoroethane: Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. May cause central nervous system effects. May cause cardiac arrhythmia. Vapors may cause drowsiness and dizziness.

Alkanolamine: May cause nose, throat, and lung irritation. Inhalation of vapors in high concentration may cause irritation of respiratory system.

Eyes: **Tris (1-chloro-2-propyl) phosphate**: May cause eye irritation.

Tertiary Amine: Can cause severe eye, skin, and respiratory tract burns.

1,1,1,2- Tetrafluoroethane: Can cause severe irritation, redness, tearing, and blurred vision.

Alkanolamine: Severe eye irritation. Product vapor in low concentrations can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Corneal edema can cause the perception of "blue haze" or "fog" around lights, although this is a temporary effect and has no know residual effect.

Skin: **Tris (1-chloro-2-propyl) phosphate**: Prolonged exposure is unlikely to result in absorption of harmful amounts.

Tertiary Amine: Can cause severe eye, skin, and respiratory tract burns. May cause nose, throat, and lung irritation. Inhalation of vapors in high concentration may cause irritation of respiratory system.

1,1,1,2- Tetrafluoroethane: Irritating to skin, may cause redness, may cause frostbite.

Alkanolamine: Prolonged contact may result in chemical burns and permanent damage

Ingestion: **Tris (1-chloro-2-propyl) phosphate**: Existing medical conditions such as asthma and pulmonary diseases may be aggravated by prolonged exposure. This material is a weak cholinesterase inhibitor. Excessive exposure may result in these symptoms: salivation, sweating, headache, nausea, muscle twitching, incoordination, diarrhea, blurred vision, abdominal cramps, tears, tremor, and chest discomfort.

Tertiary Amine: Can cause severe eye, skin, and respiratory tract burns. Harmful if swallowed.

Alkanolamine: Harmful if swallowed.

1,1,1,2- Tetrafluoroethane: Unlikely route of exposure. May cause gastrointestinal discomfort.

If accidental contact occurs, follow the appropriate first aid procedure described in Section 4 of this MSDS.

3. COMPOSITION

Chemical Name (common names)	CAS Number	Percentage
Non-Hazardous Polyol Blend	Not Available	30 - 60%
Tris (1-chloro-2-propyl)phosphate	13674-84-5	10 - 30%
1,1,1,2 – Tetrafluoroethane	811-97-2	10 - 30%
Tertiary Amine	3030-47-5	0.5 - 1.5%
Alkanolamine	2212-32-0	1-5%
Surfactants	Not Available	1 - 5%

(NOTE: See Section 8 of this MSDS for Exposure Guidelines)
(NOTE: See Section 11 of this MSDS for Toxicological Information-LC_{50} and LD_{50})

4. FIRST AID

Inhalation: If breathing difficulty is experienced, move to area free of exposure. Provide fresh air. If necessary, provide oxygen or artificial respiration by trained personnel and obtain medical attention.

Eye Contact: Flush with clean water for at least 15 minutes and obtain medical attention.

Skin Contact: Use a rag to remove liquid from skin and remove contaminated clothing. Contact may cause mild irritation or temporary darkening of skin. Persistent washing with soap and water will eventually remove all residues. If irritation persists, obtain medical attention.

Ingestion: Drink 1 to 3 glasses of water and seek immediate medical attention. Do not induce vomiting. Never give anything orally to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical, carbon dioxide, Halon 1211, chemical foams, or water spray (if used in large quantities).

Firefighting Procedures: Isolate area. Stay upwind. Water is not recommended unless used in large quantities as a fine spray when other extinguishing agents are not available. The product is equipped with a pressure relief valve which can activate in a high temperature situation. Remove all personnel from the area at the first sound of releasing pressure.
Protective equipment: Wear self-contained breathing apparatus to protect against toxic decomposition by-products, including Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen fluoride and traces of Hydrogen cyanide. Wear all turn out gear (boots, trousers, helmet, gloves, and hood).

Unusual Fire/Explosion Hazards: High temperatures will raise the pressure in the containers, which may lead to rupturing. Cured foam is organic and, therefore, will burn in the presence of sufficient heat, oxygen and an ignition source. Main hazards associated with burning foam are similar to burning of other organic materials (wood, paper, cotton, etc.) and precautions against exposure should be taken accordingly. Avoid welding or other "hot work" in the vicinity of exposed cured foam.

6. ACCIDENTAL RELEASE MEASURES / DISPOSAL CONSIDERATIONS

Personal Precautions: Evacuate all unnecessary personnel; contain the area if possible. Wear skin, eye, and respiratory protection and equipment (See Section 8). Ventilate the area.
Environmental Precautions: Containment should include preventing the spill from entering drains, sewers, waterways, groundwater, or soil.

Clean Up Procedures/Neutralization: Soak up material with sawdust or vermiculite and dispose of in accordance with all applicable federal, state and local regulations. Wash spill area thoroughly with soap and water. Avoid uncontrolled reactions with isocyanates.

7. HANDLING AND STORAGE INFORMATION

Handling: Use only in a well ventilated area with certified respiratory protection or with a power air purifying respirator (PAPR). Wear protective glasses or goggles, Nitrile gloves, and clothing that protects from dermal exposure. Contents are under pressure. Do not puncture or incinerate.

Storage: Store in a cool, dry place. Ideal storage temperature for disposable kits is 60°F to 80°F (15.5°C to 26.6°C). Storage at less than ideal temperatures can cause delays in production until the product is warmed/cooled to temperature. Do not expose the tanks/kits to open flame or temperatures above 120°F (49°C). Excessive heat can cause premature aging of components resulting in a shorter shelf life. Protect unused product from freezing.

Storage below 55°F (12.7°C) may affect foam quality if chemicals are not warmed to room temperature before using. Protect containers from physical abuse. Always store containers upright. KEEP OUT OF REACH OF CHILDREN.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Read all product instructions before using.

Personal Protective Equipment

Respiratory Protection: Use products only in a well ventilated area. If atmospheric levels are expected to exceed the exposure levels, use a NIOSH approved air purifying respirator equipped with an organic vapor cartridge and a particulate filter (N95). If atmospheric levels exceed 10 times the TLV or PEL level for which an air-purifying respirator is effective, use a powered air purifying respirator (PAPR). The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134). Use local and general exhaust ventilation to control levels of exposure.

Hand Protection: Use chemically resistant gloves (i.e. Nitrile gloves). Nitrile/butadiene rubber, Butyl Rubber, polyethylene, PVC (vinyl), or neoprene gloves are also effective. Glove selection should take into account potential body reactions to certain materials and manufacturer's instructions for use.

Eye Protection: Use safety glasses with side shields or goggles. An eye wash station or portable eye wash bottle should be in the area.

Skin Protection: Avoid contact with skin. Use clothing that protects against dermal exposure. To ensure proper skin protection, wear PPE in such a manner that no skin is exposed.

General Hygiene: Do not eat, drink, or smoke while handling this product. Always use in well ventilated area. Wash after handling. Do not breathe vapors. Avoid contact with skin and hands.

Exposure Guidelines

1,1,1,2 - Tetrafluoroethane	WEEL	1,000 ppm	4,240 mg/m³

9. PHYSICAL AND CHEMCIAL PROPERTIES

Appearance:	Light yellow to amber colored liquid. Froths to an off white to yellowish color when released from the container. (Note: Appearance may differ with the introduction of a dye/colorant.)
Odor:	Slight fluorocarbon and amine odor
pH:	Not available
Melting/Freezing Point:	Not available
Boiling Point:	1,1,1,2 – Tetrafluoroethane (Non-Flammable Compressed Gas, HFC Fluorocarbon 134a) boils at -15°F (-26°C). Other components boil at temperatures greater than 200°F (93.3°C).
Flash Point:	1,1,1,2 - Tetrafluoroethane (HFC 134a); none. Other components – not determined.
Specific Gravity:	Approximately 1.2 (H_2O = 1) at 25°C
Solubility:	Water: Partly soluble, does not react.
Partition Coefficient N-octanol/water:	Not available
Auto-ignition Temperature:	Not available
Decomposition Temperature:	Not available
Odor Threshold:	Not available
Evaporation Rate:	Not available
Flammability:	Non flammable propellant
Flammability Limits:	Not available
Vapor Pressure:	Contents under pressure have vapor pressure greater than 50 psig/345 kPa. .
Vapor Density:	Not available

10. STABILITY AND REACTIVITY

Stability: This product is considered stable under normal and anticipated storage and handling conditions. Do not store above 120°F (49°C). For longest shelf life, avoid storage above 90°F (32.2°C).
Materials to Avoid: Alcohols, strong bases or amines, metal compounds, ammonia, strong oxidizers.

Conditions to Avoid: High temperatures will raise the pressure in the containers, which may lead to rupturing. Product use is temperature sensitive. Avoid temperatures below 40°F (5°C) or temperatures above 95°F (35°C).

Thermal Decomposition: Toxic decomposition by-products, including Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen fluoride and traces of Hydrogen cyanide can be released in instances of fire.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity for Tris (1-chloro-2-propyl) phosphate:
Ingestion: LD50: 2,800 mg/kg (rat, male/female)
Skin: LD50: >5,000 mg/kg, rat
Inhalation: LC50: >4.6 mg/l, rat

Acute Toxicity for Tertiary amine:
Ingestion: LD50: 1630 mg/kg, rat
Skin: LD50: 280 mg/kg, rabbit
Inhalation: LC50: 290ppm, rat, 6h

Acute Toxicity for 1,1,1,2-Tetrafluoroethane:
Inhalation: LC50 >500,000 ppm, rat, 4h

Acute Toxicity for Alkanolamine:
Ingestion: LD50: >1,580 mg/kg, rat
Skin: LD50: >2,000 mg/kg, rabbit
Inhalation: LC50: >20 mg/l, rat, 1h

Repeated Dose Toxicity:
Tris (1-chloro-2-propyl) phosphate which is reported to be a weak organophosphate-type cholinesterase inhibitor. Excessive exposure may produce organophosphate type cholinesterase inhibition. Symptoms may include salivation, sweating, headache, nausea, muscle twitching, incoordination, diarrhea, blurred vision, abdominal cramps, tears, tremors, and chest discomfort. Target organs: kidney, liver, and or sternal bone marrow.
1,1,1,2-Tetrafluoroethane: NOEL 40000ppm, rat
Tertiary Amine: 12ppm, rat, 2 week inhalation, observed corneal opacities. 48ppm, rat, 2week inhalation, cloudy corneas, skin and respiratory tract irritation.
Mixture contains components which have been reported to cause effects on the following animal organs: liver, central nervous system, and bladder.

Chronic Toxicity/ Carcinogenicity: Components did not cause cancer in laboratory animals.

Developmental Toxicity: Diethylene glycol has caused toxicity to the fetus and some birth defects at maternally toxic, high doses in animals.

Genetic Toxicity In vitro: In vitro studies were negative.

12. ECOLOGICAL INFORMATION

Ecological Data for Tris (1-chloro-2-propyl) phosphate:
Acute Toxicity to Fish: LC50: 84mg/l Lepomis macrochirus (bluegill), 96 hour exposure
Acute Toxicity to Aquatic Invertebrates: EC50 63 mg/l Daphnia magna (water flea), 48h
Toxicity to Microorganisms: EC50: 784 mg/l, activated sludge, 3h

Ecological Data for Tertiary amine:
Acute Toxicity to Fish: LC50: 220mg/l Leuciscus idus (golden orfe), 96h

Ecological Data for Alkanolamine:
No data available

Ecological Data for 1,1,1,2-Tetrafluoroethane
Accumulation in aquatic organisms is unlikely.

13. DISPOSAL CONSIDERATIONS

Disposable Cylinders:
1. DO NOT INCINERATE TANKS
2. After tanks are empty, the hose must be removed and the tanks must be vented. CAUTION: Tanks will still be under pressure. Turn valves to the off position before removing the hoses. Safety glasses with side shields or goggles, Nitrile gloves, clothing that protects against dermal exposure, and a certified respirator must be worn during this procedure. With tank inverted, slowly open tank valve, point tank away from face and allow pressure to completely vent. CAUTION: Empty tank could contain potential vapor toxicity hazard. Dispose Cylinders in a well ventilated area with certified respiratory protection.
3. DISPOSE OF EMPTY CYLINDERS ACCORDING TO APPLICABLE FEDERAL, STATE, PROVINCIAL, AND LOCAL REGULATIONS. CHECK WITH YOUR LOCAL WASTE DISPOSAL SERVICE FOR GUIDANCE.

14. TRANSPORTATION

Shipping Information

	Containers Greater Than 1000 cu. cm. (1 liter)
Ground DOT	UN1956 Compressed Gas n.o.s. (Fluorocarbon) 2.2 (Non-Flammable Gas Label)
Air *IATA*	UN1956 Compressed Gas n.o.s. (Fluorocarbon) 2.2 (Non-flammable Gas Label) Packing Instruction (Cargo & Passenger) 200
Water *IMDG*	UN1956 Compressed Gas n.o.s. (Fluorocarbon) 2.2 (Non-flammable Gas Label)

15. REGULATORY

OSHA Hazcom Standard Rating:
Hazardous
WHMIS Classification:
A
D2B

Toxic Substances Control Act (TSCA)/Domestic Substances List (DSL):
All ingredients are listed on the TSCA inventory, as well as the Canadian Domestic Substances List.

SARA Title III: Section 311/312:
Acute Health Hazard, Chronic Health Hazard, Sudden Release of Pressure Hazard

SARA Title III: Section 313:
Does not contain chemicals which require reporting requirements of SARATitle III. Applicability must be determined by end user.

16. OTHER

NFPA: Health Hazard 2; Flammability 1; Reactivity 1
HMIS: Health Hazard 2; Flammability 1; Physical Hazard 1

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