

RHH FOAM SYSTEMS INC.  
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(262) 754-8088

FOR EMERGENCY, CALL CHEMTREC:  
OUTSIDE U.S.A., CALL COLLECT:

1-800-424-9300  
001-(703) 527-3887

DATE OF PREPARATION:  
PREPARED BY:

March 1, 2010  
Debra M. Buss

## MATERIAL SAFETY DATA SHEET

### SECTION 1 - PRODUCT IDENTIFICATION

Name of product:

**VERSI-FOAM Systems 28, 88 and 1.0 pcf Refillable  
Component A**

### SECTION 2 - CHEMICAL COMPOSITION

<u>CHEMICAL</u>	<u>CAS #</u>	<u>CONCENTRATION</u>
Polymethylene polyphenyl isocyanate Containing 4,4 Methylene bisphenylisocyanate (MDI) (Approximately 40% - 50% MDI)	9016-87-9 101-68-8	80% to 100%
Tetrafluoroethane (134a)	811-97-2	<15%

### SECTION 3 - HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Brown liquid. Slightly Musty. Sprayed or heated material harmful if inhaled. May cause allergic skin reaction. May cause allergic respiratory reaction and lung injury. Avoid temperatures above 105°F (41°C). Toxic flammable gases and heat are released under decomposition conditions. Toxic fumes may be released in fire situations. Reacts slowly with water, releasing carbon dioxide, which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this process.

#### POTENTIAL HEALTH EFFECTS (See section 11 for toxicological data)

<b>Eyes:</b>	May cause moderate eye irritation. May cause very slight transient (temporary) corneal injury.
<b>Skin:</b>	Prolonged or repeated exposure may cause slight irritation. May cause allergic skin reaction in susceptible individuals. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization. May stain skin. A single prolonged exposure is not likely to result in the material being absorbed in harmful amounts.
<b>Ingestion:</b>	Single dose oral toxicity is considered to be low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.
<b>Inhalation:</b>	At room temperature, vapors are minimal due to low vapor pressure. Excessive exposure may cause irritation of the eyes, upper respiratory tract, and pulmonary edema (fluid in lungs). May cause respiratory sensitization to susceptible individuals. MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized. Symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates.
<b>Systemic (other target organ) Effects:</b>	Tissue injury in the upper respiratory tract and lung has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.
<b>Cancer Information:</b>	Lung tumors have been observed in laboratory animals exposed to aerosol droplets of MDI/Polymeric MDI (6 mg/m <sup>3</sup> ) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported by MDI.
<b>Teratology (Birth Defects):</b>	In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fetal effects occurred only at high doses which were toxic to the mother.

### SECTION 4 - FIRST AID PROCEDURES

<b>Eye Contact:</b>	Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.
<b>Skin Contact:</b>	Remove material from skin immediately by washing with soap and plenty of water (warm water is preferable if readily available). Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water.

- Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.
- Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
- NOTE TO PHYSICIAN:** No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants, and antitussives may be of help. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed for 24-48 hours for signs of respiratory distress.

## **SECTION 5 - FIRE FIGHTING MEASURES**

- Flash Point** >400°F (204°C)(estimated) via PMCC, ASTM D93
- Autoignition Temperature** >1100°F (600°C)
- Flammability Limits** LFL: Not Applicable; UFL: Not Applicable
- Hazardous Combustion Products** During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating toxic and/or irritating compounds. Hazardous combustion products may include but are not limited to: nitrogen oxides, isocyanates, hydrogen cyanide, carbon monoxide and carbon dioxide.
- Other Flammability Information:** Product reacts with water. Reaction may produce heat and/or gases. Reaction may be violent. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.
- Extinguishing Media:** Carbon Dioxide, Dry Chemical, Foam, Water Fog or Fine Spray. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but less effectively. Do not use direct water stream. May spread fire.
- Fire Fighting Instructions:** Keep people away. Isolate fire area and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water is not recommended but may be applied in very large quantities as a fine spray when other extinguishing agents are not available. Contain fire water run-off if possible. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard.
- Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant clothing with SCBA. This will not provide sufficient fire protection, consider fighting fire from a remote location. For protective equipment in post-fire or non-fire cleanup situations, refer to relevant sections.

## **SECTION 6 – ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)**

- Protect People:** Avoid any contact. Barricade area. Clear non-emergency personnel from area. Keep upwind of spill. Ventilate area of leak or spill. The area must be evacuated and reentered by persons equipped for decontamination. Use appropriate safety equipment. If available, use foam to suppress vapors. For additional information, refer to "Exposure Controls/Personal Protection", MSDS Section 8. See "Stability and Reactivity" MSDS Section 10.
- Protect the Environment:** Contain liquid to prevent contamination of soil, surface water or ground water. Keep out of ditches, sewers and water supplies. Should the product enter sewers or drains, it should be pumped into an open vessel. Emergency services may need to be called to assist in the cleanup operation.
- Clean Up:** Supplies of suitable decontaminant should always be kept available. Absorb with material such as: sawdust, vermiculite, dirt, sand, clay, cob grit, Milsorb. Avoid materials such as cement powder. Collect material in suitable and properly labeled open containers. Do not place in sealed container. Prolonged contact with water results in a chemical reaction which may result in rupture of the container. Place in: polylined fiber pacs, plastic drums or properly labeled metal containers. Remove to a well ventilated area. Clean up floor areas. Attempt to neutralize by decontaminant solution: Formulation No. 1: Sodium Carbonate (5%-10%), Liquid Detergent (0.2%) and water to make up 100%. Or, Formulation No. 2: Concentrated Ammonia Solution (3% - 8%), Liquid Detergent (0.2%) and water to make up 100%. If ammonia is used, use good ventilation to prevent vapor exposure. If you have any questions on how to neutralize, call RHH Foam Systems Inc. Refer to "Disposal Information" MSDS Section 13. See Sections 7 and 15 for more specific information.

## **SECTION 7 – HANDLING AND STORAGE**

- Handling:** Avoid contact of this product with water at all times during handling and storage. Use only with adequate ventilation. Keep equipment clean. Use disposable containers and tools where possible. Do not eat, drink or smoke in working area. Refer to "Exposure Controls/Personal Protection" MSDS Section 8.

**Storage:** Store in a dry place. Store between 75°F – 105°F (24°C – 41°C). Keep containers tightly closed when not in use. Protect from atmospheric moisture. Do not store product contaminated with water to prevent potentially hazardous reaction. See “Stability and Reactivity”, MSDS Section 10.

## **SECTION 8 – EXPOSURE CONTROL/PERSONAL PROTECTION**

**Engineering Controls:** Use only with adequate ventilation. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and the people working at this point. Odor is inadequate warning of excessive exposure.

**Personal Protective Equipment:** **EYE/FACE PROTECTION: USE CHEMICAL GOGGLES.**

**SKIN PROTECTION: USE PROTECTIVE CLOTHING IMPERVIOUS TO THIS MATERIAL. SELECTION OF SPECIFIC ITEMS SUCH AS FACESHIELD, GLOVES, BOOTS, APRON OR FULL-BODY SUIT WILL DEPEND ON THE OPERATION. REMOVE CONTAMINATED CLOTHING IMMEDIATELY, WASH SKIN WITH SOAP AND WATER (WARM WATER IF AVAILABLE) AND LAUNDRY CLOTHING BEFORE REUSE. ITEMS WHICH CANNOT BE CONTAMINATED SUCH AS SHOES, BELTS AND WATCHBANDS, SHOULD BE REMOVED AND DESTROYED.**

**RESPIRATORY PROTECTION: ATMOSPHERIC LEVELS SHOULD BE MAINTAINED BELOW THE EXPOSURE GUIDELINE. WHEN ATMOSPHERIC LEVELS MAY EXCEED THE EXPOSURE GUIDELINE, USE AN APPROVED AIR-PURIFYING RESPIRATOR EQUIPPED WITH AN ORGANIC VAPOR SORBENT AND A FILTER FOR PARTICULATES. FOR SITUATIONS WHERE THE ATMOSPHERIC LEVELS MAY EXCEED THE LEVEL FOR WHICH AN AIR-PURIFYING RESPIRATOR IS EFFECTIVE, USE A POSITIVE-PRESSURE AIR-SUPPLYING RESPIRATOR (AIRLINE OR SELF-CONTAINED BREATHING APPARATUS). FOR EMERGENCY RESPONSE OR FOR SITUATIONS WHERE THE ATMOSPHERIC LEVEL IS UNKNOWN, USE AN APPROVED POSITIVE-PRESSURE SELF-CONTAINED BREATHING APPARATUS.**

**EXPOSURE GUIDELINES:**

Methylene Bisphenyl Isocyanate (MDI)

ACGIH TLV is 0.05 ppm

TWA and OSHA PEL is 0.02 ppm ceiling

Tetrafluoroethane (134a)

TWA is 1000 ppm

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

## **SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance/Physical State:** Dark brown liquid  
**Odor:** Ethereal odor  
**Vapor Pressure:** < 25 psi @ 25°C  
**Vapor Density:** Heavier than air  
**Boiling Point:** Not available  
**Solubility in Water:** Reacts  
**Specific Gravity:** 1.24 @ 25°C  
**pH:** Not applicable

## **SECTION 10 – STABILITY AND REACTIVITY**

**Chemical Stability:** Stable under recommended storage conditions. See “Handling and Storage”, MSDS Section 7.

**Conditions to Avoid:** Avoid temperatures above 105°F (41°C). Avoid temperatures below 30°F (-1°C). Can react with itself at temperatures above 320°F (160°C). Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide, which can cause pressure buildup and rupture of closed containers. Elevated temperatures can accelerate this reaction.

**Incompatibility with Other Materials:** Avoid contact with acids, water, alcohols, amines, ammonia, bases, moist air and strong oxidizers. Avoid contact with moist organic absorbents. Reaction with water will generate carbon dioxide and heat. Generation of gas can cause pressure buildup in closed systems. Avoid unintended contact with polyols. The reaction of polyols and isocyanates generates heat. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact. These reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and are denser than air and sink to the bottom, but react slowly at the interface. The reaction forms Carbon Dioxide gas and a layer of solid polyurea. See “Hazardous Polymerization” below in this section.

**Hazardous Decomposition Products:** Hazard decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

**Hazardous Polymerization:** Can occur. Polymerization can be catalyzed by: strong bases and water. Can react with itself at temperatures above 320°F (160°C).

**SECTION 11 – TOXICOLOGICAL INFORMATION** (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

**Acute:** SKIN: The LD50 for skin absorption in rabbits is >2000 mg/kg  
INGESTION: The oral LD50 for rats is >10,000 mg/kg  
MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Mutagenicity data on MDI is inconclusive.  
  
MDI was weakly positive in some in-vitro (test tube) studies; other in-vitro studies were negative. A mutagenicity study in animals was negative.

**SECTION 12 – ECOLOGICAL INFORMATION** (For detailed Ecological Data, write or call the address or non-emergency number shown in Section 1)

**Environmental Fate:** **Movement and Partitioning:** Based on information for MDI and polymeric MDI. In the aquatic or terrestrial environment, movement is expected to be limited by its reactivity with water forming predominantly insoluble polymers.  
**Degradation and Persistence:** Based on information for MDI and polymeric MDI. In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polymers which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.  
**Ecotoxicity:** Based on information for MDI and polymeric MDI. The measure of ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species. Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 > 100 mg/L in most sensitive species). The LC50 in earthworm *eisenia foetida* is >1000 mg/kg.

**SECTION 13 – DISPOSAL CONSIDERATIONS**

**Disposal:** DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

RHH FOAM SYSTEMS INC. HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN SECTION 2 (Composition/Information on Ingredients).

For additional information, refer to:  
“Handling and Storage Information” MSDS Section 7  
“Stability and Reactivity Information” MSDS Section 10  
“Regulatory Information” MSDS Section 15

**SECTION 14 – TRANSPORTATION INFORMATION**

**Note:** The U.S. Department of Transportation requires that any person preparing a hazardous material for shipping, including packing, marking, labeling and preparation of documents must be trained in accordance with 49 CFR Parts 100 – 185. Contact the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration at <http://hazmat.dot.gov> at 1-800-467-4922 or email: [training@dot.gov](mailto:training@dot.gov) for information on their CD ROM Training Module for Hazardous Materials Transportation.

**Description:** UN 1956 Compressed Gas n.o.s. (Fluorinated Hydrocarbon, Nitrogen), Class 2.2, Pkg Group N/A

Shipping Class 60 (for over the road transportation)  
EMS Number: F-C, S-V (IMDG (Ocean) transportation)  
Packing Instructions 200 (IATA (Air) transportation)

NOTE: Additional certifications are required to ship hazardous material by ocean (IMDG) and air (IATA).

**SECTION 15 – REGULATORY INFORMATION** (Not meant to be all-inclusive – selected regulations represented)

**Notice:** The information herein is presented in good faith and believed to be accurate as of the effective date shown. However, no warranty, expressed or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, state, or provincial, and local laws. The following specific information is made for purpose of complying

with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

**U. S. Regulations:**

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
METHYLENE BISPHENYL ISOCYANATE	000101-68-8	37% - 42%
POLYMERIC DIPHENYLMETHANE DIISOCYANATE	009016-87-9	90% - 100%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories

An immediate health hazard  
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory and are not required to be listed on the TSCA inventory.

The CAS number(s) for TSCA are:

CAS# 009016-87-9  
CAS# 000101-68-8

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
METHYLENE BISPHENYL ISOCYANATE	000101-68-8	NJ3, PA1, PA3
POLYMERIC DIPHENYLMETHANE DIISOCYANATE	009016-87-9	NJ2
NJ2 = New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%)		
NJ3 = New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%)		
PA1 = Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%)		
PA3 = Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%)		

OSHA HAZARD COMMUNICATION STANDARD: The product is a "HAZARDOUS CHEMICAL" as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA OR SUPERFUND): The product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>RQ</u>	<u>% IN PRODUCT</u>
METHYLENE BISPHENYL ISOCYANATE	000101-68-8	5000	37% - 42%

**Canadian Regulations:**

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

D2A Respiratory Tract Sensitizer  
D2B Eye or Skin Irritant  
D2B Skin Sensitizer

Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employers workplace education program.

CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and MSDS contains all the information required by the CPR.

HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA Section 13 and 14):

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>AMOUNT(%w/w)</u>
METHYLENE BISPHENYL ISOCYANATE	000101-68-8	37% - 42%
POLYMERIC DIPHENYLMETHANE DIISOCYANATE	009016-87-9	90% - 100%

**SECTION 16 – OTHER INFORMATION****NFPA Ratings:**

Health 3  
Flammability 1  
Reactivity 1  
SPECIAL HAZARD: Avoid Water

**Other Information:**

The reaction of polyols and isocyanates generate heat. Contact of the reacting materials with skin or eyes can cause severe burns and may be difficult to remove from the affected areas. In addition, such contact increases the risk of isocyanate vapors.

**THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE. CONSULT RHH FOAM SYSTEMS INC. FOR FURTHER INFORMATION.**

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## MATERIAL SAFETY DATA SHEET

### SECTION 1 - PRODUCT IDENTIFICATION

Name of product:

**VERSI-FOAM Systems 28, 88 and 1.0 pcf Refillable  
Component B**

### SECTION 2 – HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>CAS #</u>	<u>CONCENTRATION</u>
Tetrafluoroethane	811-97-2	10% - 20%
Amine Catalyst	Proprietary	0% - 2%
Oxyethylated Aliphatic Amine	62476-52-2	0% - 15%

### SECTION 3 – HAZARDS IDENTIFICATION

#### POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data)

<b>Eyes:</b>	Liquid contact may cause eye irritation. Vapors may be mildly irritating to eyes.
<b>Skin:</b>	Repeated or prolonged skin contact may cause irritation and drying.
<b>Ingestion:</b>	Swallowing small amounts not likely to cause injury. Larger amounts may cause injury.
<b>Inhalation:</b>	Excessive inhalation of Tetrafluoromethane vapors can cause respiratory irritation, dizziness, etc. and even unconsciousness or asphyxiation. Overexposure to tetrafluoroethane can cause cardiac sensitization to epinephrine.
<b>Cancer Information:</b>	This product does not contain ingredients listed by NPT, IARC or OSHA.

### SECTION 4 – FIRST AID PROCEDURES

<b>Eyes:</b>	Flush eyes with large amounts of water for at least 15 minutes. Get medical attention.
<b>Skin:</b>	Wash skin thoroughly with large amounts of soap and water. Consult a physician if irritation develops or persists. Remove contaminated clothing and wash before re-use.
<b>Ingestion:</b>	If swallowed, do not induce vomiting. Get medical attention immediately. The hazard of aspirating material into the lungs is greater than the hazard associated with allowing material to progress through the intestinal tract.
<b>Inhalation:</b>	If affected by vapors, remove patient to fresh air and get medical attention. Give oxygen or artificial respiration if necessary. Do not give stimulants. Epinephrine and similar drugs may adversely affect the heart due to a possible risk of eliciting cardiac dysrhythmias.

### SECTION 5 – FIRE FIGHTING MEASURES

<b>Flash Point:</b>	>300°F (149°C) (Pensky-Martens)
<b>Flammability Limits:</b>	LFL: Not applicable UEL: Not applicable
<b>Flammability Classification:</b>	OSHA: Combustible Liquid – Class IIIB DOT: Not regulated for flammability
<b>Extinguishing Media:</b>	Foam, Alcohol Foam, Carbon Dioxide, Dry Chemical, Water Fog
<b>Fire Fighting Instructions:</b>	Fire fighters should wear a self-contained breathing apparatus with full facepiece operated in a positive pressure mode. Fire fighters should wear full protective clothing to guard against exposure to toxic and irritating fumes. Spray containers exposed to fire and heat with water to keep cool.
<b>Unusual Fire and Explosion Hazards:</b>	Do not weld or use a cutting torch on or near containers, even if empty. Empty containers contain residual material which may decompose to emit toxic or irritating fumes if burned.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)**

**Steps for Material Spillage:** Properly protected personnel should contain the spill and soak it up with absorbent material. Shovel the absorbed material into containers for disposal.

**Waste Disposal Method:** Dispose of according to federal, state and local regulations. Empty containers retain residue and are subject to all of the handling instructions on this sheet.

**SECTION 7 – HANDLING AND STORAGE**

**Handling:** Avoid unnecessary skin contact with this product. Avoid breathing vapors. Provide adequate ventilation during use. Wear an appropriate respirator during and after use unless airborne concentrations are known to be below the TLV.

**Storage:** Store in cool, dry location. Keep containers tightly sealed and upright when not in use.

**SECTION 8 – EXPOSURE CONTROL/PERSONAL PROTECTION**

**Engineering Controls:** Mechanical or local exhaust is required to keep concentrations below the TLV and/or to prevent any accumulation of vapors. Vapors are heavier than air and will collect in low areas such as pits or tanks, reducing oxygen available for breathing. NEVER ENTER AN AREA OF UNKNOWN CONCENTRATION WITHOUT FULL RESPIRATORY PROTECTION.

**Personal Protective Equipment:** **EYE/FACE PROTECTION: CHEMICAL SAFETY GLASSES OR SPLASH GOGGLES TO PREVENT EYE CONTACT. DO NOT WEAR CONTACT LENSES.**

**SKIN PROTECTION: USE PROTECTIVE CLOTHING IMPERVIOUS TO THIS MATERIAL. USE CHEMICAL RESISTANT (NITRILE) GLOVES.**

**RESPIRATORY PROTECTION: ATMOSPHERIC LEVELS SHOULD BE MAINTAINED BELOW THE EXPOSURE GUIDELINE. WHEN ATMOSPHERIC LEVELS MAY EXCEED THE EXPOSURE GUIDELINE, USE AN APPROVED AIR-PURIFYING RESPIRATOR EQUIPPED WITH AN ORGANIC VAPOR SORBENT AND A FILTER FOR PARTICULATES. FOR SITUATIONS WHERE THE ATMOSPHERIC LEVELS MAY EXCEED THE LEVEL FOR WHICH AN AIR-PURIFYING RESPIRATOR IS EFFECTIVE, USE A POSITIVE PRESSURE AIR-SUPPLYING RESPIRATOR (AIRLINE OR SELF-CONTAINED BREATHING APPARATUS). FOR EMERGENCY RESPONSE OR FOR SITUATIONS WHERE THE ATMOSPHERIC LEVEL IS UNKNOWN, USE AN APPROVED POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS.**

**EXPOSURE GUIDELINES:**

Tetrafluoroethane (134a)  
Amine Catalyst

TWA is 1000 ppm  
PEL is 1-3 ppm

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance/Physical State:** Clear to dark amber liquid

**Odor:** Faint ethereal odor

**Vapor Pressure:** < 25 psia @ 25°C

**Vapor Density:** Heavier than air

**Boiling Point:** Not available

**Solubility in Water:** Negligible (<0.1%)

**Specific Gravity:** 1.16 @ 25°C

**pH:** Not available

**Evaporation Rate:** Faster (relative to n-butyl acetate)

**% Volatile by Volume:** <15%

**SECTION 10 – STABILITY AND REACTIVITY**

**Chemical Stability:** Stable

**Conditions to Avoid:** Open flames, welding arcs, or other high temperature sources can induce thermal decomposition.

**Incompatibility with Other Materials:** Avoid prolonged contact with, or storage in, aluminum, other alkali or alkaline earth metals such as powdered Zn, Mg, Na, K, Ca, Be or their alloys.

**Hazardous Decomposition Products:** CO, CO<sub>2</sub>, Hydrogen chloride and/or hydrogen fluoride. Traces of phosphorus oxides. Traces of carbonyl halides such as phosgene.

**Hazardous Polymerization:** Will not occur.

**SECTION 11 – TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects)**

<u>CHEMICAL</u>	LD50(mg/kg)Rat <u>ORAL</u>	Rat <u>DERMAL</u>	LC50(ppm) Rat <u>INHAL</u>
Oxyethylated Aliphatic Amine Amine Catalyst	>5g/kg 425 mg/kg	>2g/kg	>200 mg/l

**SECTION 12 – ECOLOGICAL INFORMATION**

Not Available

**SECTION 13 – DISPOSAL CONSIDERATIONS****Disposal:**

This product contains a substance that may be toxic to fish and aquatic organisms. Do not release to water. DO NOT PUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Water characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

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**SECTION 14 – TRANSPORTATION INFORMATION**

**Note:** The U. S. Department of Transportation requires that any person preparing a hazardous material for shipping, including packing, marking, labeling and preparation of documents must be trained in accordance with 49 CFR Parts 100 – 185. Contact the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration at <http://hazmat.dot.gov> at 1-800-467-4922 or email: [training@dot.gov](mailto:training@dot.gov) for information on their CD ROM Training Module for Hazardous Materials Transportation.

**Description:**

UN1956, Compressed Gas n.o.s. (Fluorinated Hydrocarbon, Nitrogen), Class 2.2, Pkg Group N/A

Shipping Class 60 (for over the road transportation)  
EMS Number: F-C, S-V (IMDG (Ocean) transportation)  
Packing Instructions 200 (IATA (Air) transportation)

NOTE: Additional certifications are required to ship hazardous material by ocean (IMDG) and air (IATA).

**SECTION 15 – REGULATORY INFORMATION (Not meant to be all inclusive – select regulations represented)****Notice:**

The information herein is presented in good faith and believed to be accurate as of the effective date shown. However, no warranty, expressed or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, state, or provincial, and local laws. The following specific information is made for purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

**U. S. Regulations:**

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
None		

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories

An immediate health hazard  
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory. Ingredients subject to TSCA 12(b):

CHEMICAL NAME

Brominated Aromatic Ester

RELEVANT SECTION

Section 5

ALSO REGULATED BY

40 CFR 721.2925

**Canadian Regulations:**

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS)  
Classification for this product is:

D1B  
D2A  
D2B

**SECTION 16 – OTHER INFORMATION**

**HMIS Hazard Codes:**

Health 1 Slight  
Flammability 1 Slight  
Reactivity: 0 Minimal  
Personal Protective Equipment Required

**Other Information:**

The reaction of polyols and isocyanates generate heat. Contact of the reaction materials with skin or eyes can cause severe burns and may be difficult to remove from the affected areas. Immediately wash the affected areas with plenty of water and seek medical assistance.

**WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF, RHH FOAM SYSTEMS INC. MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ANY LIABILITY FROM RELIANCE THEREON.**