MATERIAL SAFETY DATA SHEET

Version: 2.1
01/14/14

12a (Part # 303) (20 lb cylinder)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer Name:	**Thermofluid Technologies, Inc.** **3031 Topside Business Park Drive** **Louisville, TN 37777 USA**
Revised:	01/14/2014
Prepared by	**Missy Simpson**
CHEMTREC	1-800-424-9300 or 1-703-527-3887
MSDS Contact	1-865-983-1633
Information	info@redtek.com
USES:	Refrigeration Systems
Formula:	**12a**

HMIS

Health:	2	Flammability:	4	Physical Hazards:	2	Personal Protection:	K

NFPA

Health:	2	Flammability:	4	Instability:	0

2. HAZARDS IDENTIFICATION

PHYSICAL STATE

Gas at room temperature; liquid when stored under pressure.

ODOR

Hydrocarbon gases are odorless.

WHMIS (Canada)

Class A: Compressed gas.

Class B-1: Flammable gas.

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

EMERGENCY OVERVIEW

CAUTION! EXTREMELEY FLAMMABLE GAS. MAY CAUSE FLASH FIRE. HIGH PRESSURE GAS. Contains gas under pressure. Extremely flammable gas. Do not puncture or incinerate container. Avoid breathing gas. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. At high concentrations, this product can displace oxygen and cause asphyxiation; therefore, a minimum requirement of 19.5% oxygen at sea level is recommended.

ROUTES OF ENTRY

Dermal contact. Eye contact. Inhalation.

POTENTIAL ACUTE HEALTH EFFECTS

INHALATION

Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in severe overexposure; coma and death.

INGESTION

As this product is a gas, refer to the inhalation section.

SKIN

Contact with rapidly expanding gas may cause burns or frostbite.

EYES

Contact with rapidly expanding gas may cause burns or frostbite.

POTENTIAL CRONIC HEALTH EFFECTS

CHRONIC EFFECTS

No known significant effects or critical hazards.

CARCINOGENICITY

Not listed as carcinogenic by OSHA, NTP or IARC.

MUTAGENICITY

No known significant effects or critical hazards.

TERATOGENICITY

No known significant effects or critical hazards.

DEVELOPMENTAL EFFECTS

No known significant effects or critical hazards.

MEDICAL CONDITIONS AGGRAVATED BY OVER- EXPOSURE

Overexposure may lead to cardiac sensitization

3. COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT COMPOSITION	%	CAS NUMBER	LC50	P.E.L.	ACGIH TLV
Alkanes	100%			800 ppm	800 ppm

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. FIRST AID MEASURES

EYE CONTACT

Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

SKIN CONTACT

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Get medical attention immediately.

INHALATION

Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

INGESTION

As this product is a gas, refer to the inhalation section.

PROTECTION OF FIRST-AIDERS

No action shall be taken involving any personal risk or without suitable training. It may be dangerous to person providing aid to give mouth-to-mouth resuscitation.

NOTES TO PHYSICIAN

No specific treatment. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT

Class I – flammable gas (NFPA).

EXTINGUISHING MEDIA

SUITABLE

Use of extinguishing agent suitable for the surrounding fire.

NOT SUITABLE

None known.

SPECIAL EXPOSURE HAZARDS

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance.

PRODUCTS OF COMBUSTION

Carbon oxides (CO, CO2), smoke and irritating vapors as products of incomplete combustion.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full

face-piece operated in positive pressure mode.

SPECIAL REMARKS ON FIRE HAZARDS

Extremely flammable in presence of open flames, sparks, and heat. Vapors are heavier than air.

SPECIAL REMARKS ON EXPLOSION HAZARDS

Do not cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapor explosion hazard indoors, outdoors, or in sewers. Propane may form explosive mixtures with air.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Accidental releases pose a serious fire or explosion hazard. Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

ENVIRONMENTAL PRECAUTIONS

Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

METHODS FOR CLEANING UP

SMALL SPILL

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

LARGE SPILL

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

HANDLING

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Ensure all equipment is grounded/bonded.

STORAGE

Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Ensure the storage containers are grounded/bonded.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

INGREDIANT	EXPOSURE LIMITS
Alkanes	**ACGIH TLV (UNITED STATES)** TWA: 1000 ppm 8 hour(s)

CONSULT LOCAL AUTHORITIES FOR ACCEPTABLE EXPOSURE LIMITS.

RECOMMENDED MONITORING PROCEDURES

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

ENGINEERING MEASURES

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor, or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

HYGIENE MEASURES

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

RESPIRATORY

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: NIOSH-approved self-contained breathing apparatus.

HANDS

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: Wear insulated gloves to prevent frostbite.

EYES

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

SKIN

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

ENVIRONMENTAL EXPOSURE CONTROLS

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	: Gas at room temperature; liquid when stored under pressure.
FLASH POINT	: Closed cup: -34°C (-29°F)
AUTO-IGNITION TEMPERATURE	: 862°C (1585°F) (NFPA)
FLAMMABLE LIMITS	: Lower: 1.9% (NFPA) Upper: 8.5% (NFPA)
COLOR	: Colorless
ODOUR THRESHOLD	: Not available.
pH	: Not available.
BOILING/CONDENSATION POINT	: -34.7°C (-30.4°F)
MELTING/FREEZING POINT	: Not available.
VAPOUR DENSITY	: 1.76 [Air = 1]
VOLATILITY	: Volatile.
EVAPORATION RATE	: Not available.
VISCOSITY	: Not available.
SOLUBILITY	: Not available.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

The product is stable.

HAZARDOUS POLYMERIZATION

Under normal conditions of storage and use, hazardous polymerization will not occur.

MATERIALS TO AVOID

Reactive with oxidizing agents and halogenated compounds.

HAZARDOUS DECOMPOSITION PRODUCTS

May release smoke and irritating vapors when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

PRODUCT/INGREDIENT NAME	RESULT	SPECIES	DOSE	EXPOSURE
Butane	LC50 Inhalation Gas	Rat	658000 mg/m³	4 hours

CONCLUSION/SUMMARY

Not available.

CHRONIC TOXICITY

CONCLUSION/SUMMARY

Not available.

IRRITATION/CORROSION

CONCLUSION/SUMMARY

Not available.

SENSITISER

CONCLUSION/SUMMARY

Not available.

CARCINOGENICITY

CONCLUSION/SUMMARY

Not available.

CLASSIFICATION

PRODUCT/INGREDIENT NAME	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Propene	A4	3	-	-	-	-

MUTAGENICITY

CONCLUSION/SUMMARY

Not available.

TERATOGENICITY

CONCLUSION/SUMMARY

Not available.

REPRODUCTIVE TOXICITY

CONCLUSION/SUMMARY

Not available.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL EFFECTS

No known significant effects or critical hazards

AQUATIC ECOTOXICITY

CONCLUSION/SUMMARY

Not available.

BIODEGRADABILITY

CONCLUSION/SUMMARY

Not available.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Do not puncture or incinerate container.

Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	PROPER SHIPPING NAME	CLASSES	PG*	LABEL	ADDITIONAL INFORMATION
				-		-
DOT Classification	UN 1075	Petroleum Gases, Liquefied	2.1	-		-

PG* - Packing group

15. REGULATORY INFORMATION

UNITED STATES

HCS Classification

Compressed gas

Flammable gas

CANADA

WHMIS (Canada)

Class A: Compressed gas

Class B-1 Flammable gas

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

INTERNATIONAL REGULATIONS

Canada inventory

All components are listed or exempted

United States inventory (TSCA 8b)

All components are listed or exempted

Europe inventory

All components are listed or exempted

16. OTHER INFORMATION

LABEL REQUIREMENTS

EXTREMELY FLAMMABLE GAS. MAY CAUSE FLASH FIRE. HIGH PRESSURE GAS.

HAZARDOUS MATERIAL INFORMATION SYSTEM (U.S.A.)

Health: 2 Flammability: 4 Physical Hazards: 2 Personal Protection: K

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.)

Health: 2 Flammability: 4 Instability: 0

REFERENCES:

RESPONSIBLE NAME: **PRODUCT SAFETY – Missy Simpson**

FOR COPY OF (M)SDS: **Internet:** www.redtek.com **Phone:** 1-865-983-1633

NOTICE TO READER

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.