BLUON TdX 20 SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product Name:	Bluon TdX® 20 (R-458A)
Product Use:	Refrigerant
Restrictions on Use:	For professional use only
Manufacturer/Supplier:	Bluon Energy 4601 Lang Ave., A1 McClellan, CA 95652 855-425-8686
In Case of Emergency:	CHEMTREC 1-800-424-9300 or 1-703-527-3887 ID Number – CCN 71063

SECTION 2: HAZARDS IDENTIFICATION

Product Hazard Category:	Gases under pressure. Liquefied Gas
Label Elements:	GHS US Labeling
Hazard Pictograms:	
Signal Word (GHS-US):	WARNING
Hazard Statement (GHS-US):	Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.
Precautionary Statements (GHS-US):	Protect from sunlight. Store in a well ventilated place.
Other Hazards:	May cause frostbite-like effects to occur if the liquid or escaping vapors contact eyes or skin. Inhalation may cause dizziness, confusion, incoordination, drowsiness or unconsciousness.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances:

1,1,1,2-Tetrafluoroethane	CAS# 811-97-2
Difluoromethane	CAS# 75-10-5
Pentafluoroethane	CAS# 354-33-6
1,1,1,2,3,3,3-Heptafluoropropane	CAS# 431-89-0
1,1,1,3,3,3-Hexafluoropropane	CAS# 690-39-1
Proprietary lubricant	< 2% wt.

The percentages of the Bluon TdX 20 composition have been withheld as a trade secret.

SECTION 4: FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses if present. Get medical attention immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes. Treat for frostbite by gently warming affected area. Take off all affected clothing immediately. Wash clothing before reuse. Wash or clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation: Move to fresh air, away from exposure. Lie down. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.

Ingestion: Do not induce vomiting. Rinse mouth. Get medical attention immediately.

Most Important Symptoms and Effects both Acute and Delayed

Eye Contact: May cause eye irritation.

Skin Contact: May cause skin irritation. Liquid contact may cause frostbite.

Inhalation: May cause respiratory irritation.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Indication of Any Immediate Medical Attention and Special Treatment Needed

General: If you feel unwell, seek medical attention.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media:	Use extinguishing measures that are appropriate to local circumstances and suitable for the surrounding environment. Apply water from a safe distance to cool container and protect surrounding area. Attempt to contain water runoff. Contains gas under pressure. In a fire or if heated, pressure increase will occur and the container may explode.
Unsuitable Extinguishing Media:	None known.
Specific Hazards:	Flammable in presence of extreme heat. Exposure to fire may cause containers to explode. If involved in a fire, toxic or corrosive fumes may be produced by thermal decomposition. Hazardous thermal decomposition products: Carbon oxides, Hydrogen fluoride, Carbonyl fluoride. Fluorocarbons Exposure to decomposition products may be a hazard to health.
Special Protective Equipment:	Firefighters should wear appropriate protective equipment, including self-contained breathing apparatus. Wear neoprene gloves for clean-up work after a fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Avoid all contact with skin, eyes, and clothing. Avoid breathing vapors.
Emergency Procedures:	Evacuate personnel to safe areas and provide ventilation, especially in low or enclosed areas where heavy vapors might collect.
Protective Equipment:	Always wear recommended personal protective equipment.
Environmental Precautions:	Avoid release into the environment.
Cleanup:	Water runoff should be contained and neutralized prior to release. Wear protective gloves and goggles.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:	Keep away from heat and from sources of ignition. Do not ingest. Do not breathe gas, fumes or vapor. Wear suitable protective clothing and avoid contact with skin and eyes.
Storage:	Storage temperature should not exceed 50˚C (<120˚F). Do not store near combustibles. Keep away from incompatibles such as oxidizing agents. Cylinders should be stored upright.
Handling:	Keep container tightly closed, in a cool, well ventilated area. Protect from physical damage; do not drag, roll, slide or drop. Do not lift cylinder by its cap.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Normal exhaust ventilation or other engineering controls for standard manufacturing procedures is generally adequate. Ensure that eyewash stations are proximal to workstation locations.

Personal Protective Equipment:

For normal conditions, wear safety glasses and impervious gloves.

Respiratory Equipment:

None generally required for adequately ventilated work situations.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit (Cotton suit with hood to protect skin from frostbite). Impervious gloves and boots.

Exposure Guidelines:

Ingredient Name	AIHA WEEL (U.S.)
1,1,1,2-Tetrafluoroethane	1000 ppm 8 hr.
Difluoromethane	1000 ppm 8 hr.
Pentafluoroethane	1000 ppm 8 hr.
1,1,1,2,3,3,3-Heptafluoropropane	1000 ppm 8 hr.
1,1,1,3,3,3-Hexafluoropropane	1000 ppm 8 hr.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Gas

Appearance: Color: colorless to light yellow

Odor: Slight, ether-like

Odor Threshold: Not available

Specific Gravity: 1.18 @ (20˚C)

pH: Not applicable

Boiling Point: -39.9˚C (-39.8˚F)

Melting Point/Freezing Point: -103˚C (-153˚F) / Not applicable

Vapor Pressure: 93.1 psig @ 20˚C (68˚F)

Vapor Density: 3.11 (Air = 1.0) @ 27˚C (80˚F)

Volatility: Not Available

Dispersion Properties: Solubility in water, ethanol, diethyl ether, and acetone

Flammability (solid, gas): Not applicable

Upper Flammability Limit
Lower Flammability Limit Solubility(ies): Not applicable

SECTION 9 CONTINUED

Flash Point:	None per ASTM E681-09
Evaporation Rate:	TdX 20 evaporates immediately when exposed to normal temperatures and atmospheric pressure.
Partition Coefficient: n-octanol/water	Not available
Auto-ignition Temperature:	Not available
Decomposition Temperature: Viscosity:	Not available @20˚C 0.1744 cP

SECTION 10: STABILITY AND RADIOACTIVITY

Reactivity:	Stable under recommended storage conditions and temperatures (See Section 7).
Chemical Stability:	Stable under recommended storage conditions and temperatures (See Section 7).
Possibility of Hazardous Reactions:	Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to Avoid:	Avoid open flames and high temperatures/excess heat.
Incompatible Materials:	Reactive with oxidizing agents.
Hazardous Decomposition Products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous Thermal Decomposition:	Carbon oxides Hydrogen fluoride Carbonyl fluoride Fluorocarbons

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Exposure:	Inhaled, skin or eye contact, or ingested
Delayed, Immediate or Chronic Effects:	Contains material which can cause damage to the central nervous system.

SECTION 11 CONTINUED

Toxicity Measurements:

1,1,1,2-Tetrafluoroethane:	ALC>359,300 ppm, Exposure time: 4 h, Species: Rat
Difluoromethane:	ALC>760,000 ppm, Exposure time: 4 h, Species: Rat
Pentafluoroethane:	ACL>359,300 ppm, Exposure time: 4 h, Species: Rat
1,1,1,2,3,3,3-Heptafluoropropane:	ACL>788,696 ppm, Exposure time: 4 h, Species: Rat
1,1,1,3,3,3-Hexafluoropropane:	ACL>457,000 ppm, Exposure time: 4 h, Species: Rat

Description of Symptoms:	It is expected to be a low hazard for unusual industrial handling.
Inhalation:	May cause respiratory tract irritation.
Skin:	May cause skin irritation.
Eyes:	May cause eye irritation.
Ingestion:	May cause digestive tract irritation.
Carcinogens:	None of the components are designated as carcinogens by IARC, NTP, OSHA, or ACGIH.

SECTION 12: ECOLOGICAL INFORMATION

Biodegradation:	This product can persist in the air. Atmospheric lifetime of each components is as follows:
1,1,1,2-Tetrafluoroethane:	14 Years
Difluoromethane:	4.9 Years
Pentafluoroethane:	29 Years
1,1,1,2,3,3,3-Heptafluoropropane:	34.2 Years
1,1,1,3,3,3-Hexafluoropropane:	Biodegradation: 16% Exposure time: 28d
Other Adverse Effects:	Avoid release into the environment.

SECTION 13: DISPOSAL CONSIDERATION

Waste Disposal:	Do not discharge into the atmosphere. Must be recovered in accordance with Federal, State and Local regulations.

SECTION 14: TRANSPORT INFORMATION

DOT:

UN Number:	3163
Proper Shipping Name:	Liquefied Gas N.O.S. (1,1,1,2-Tetrafluoroethane, Difluoromethane, Pentafluoroethane, 1,1,1,2,3,3,3-Heptafluoropropane, 1,1,1,3,3,3-Hexafluoropropane, Proprietary Lubricant Mixture)
Hazard Class:	2.2

IATA:

UN Number:	3163
Description of the Goods:	Liquefied Gas N.O.S. (1,1,1,2-Tetrafluoroethane, Difluoromethane, Pentafluoroethane, 1,1,1,2,3,3,3-Heptafluoropropane, 1,1,1,3,3,3-Hexafluoropropane, Proprietary Lubricant Mixture)
Hazard Class:	2.2
Packing Instructions (cargo):	200
Packing Instructions (passenger):	200

IMDG:

UN Number:	3163
Description of the Goods:	Liquefied Gas N.O.S. (1,1,1,2-Tetrafluoroethane, Difluoromethane, Pentafluoroethane, 1,1,1,2,3,3,3-Heptafluoropropane, 1,1,1,3,3,3-Hexafluoropropane, Proprietary Lubricant Mixture)
Hazard Class:	2.2
EmS Number:	F-C, S-V
Marine Pollutant:	No

SECTION 15: REGULATORY INFORMATION

TSCA:	All components are listed on the TSCA Inventory.
EPA Clean Air Act:	This product is subject to U.S. EPA Clean Air Act Regulations Section 608 of 40 CFR Part 82. In accordance with EPA Clean Air Act Regulations, do not vent into the atmosphere.
CERCLA/SARA:	Section 311/312 for sudden release of pressurized hazard.

SECTION 16: OTHER INFORMATION

Other Information:	This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.
HMIS Classification:	Health-1, Flammability-1, Reactivity-0
NFPA Classification:	Health-2, Flammability-1, Reactivity-0 ANSI / ASHRAE 34 Safety Group - A1
Party Responsible for Preparation Of this Document:	Bluon Energy, LLC 4601 Lang Ave., A1 McClellan, CA 95652 855-425-8686
Revision Date:	8/4/2016
Prior Revision Date:	12/23/2015

This SDS adheres to the standard and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

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