

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Printing date 02/06/2015

Reviewed on 02/06/2015

* 1 Identification

- **Product identifier**
- **Trade name: HFC Non-Flammable Refrigerant Charge (Proprietary) Heptaf**
- **Relevant identified uses of the substance or mixture and uses advised against**
- **Product description** Refrigerant Gas
- **Application of the substance / the mixture**
Chemical Classification: Mixture of Halocarbons, Hydrocarbon and Inert Gases
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Mullen & Toland Systems, Inc.
1845 Piner Road
Santa Rosa, CA. 95403
Phone: (707) 569-7380
Fax: (707) 569-7451
- **Emergency telephone number:** (707) 569-7380

* 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

STOT SE 2 H371 May cause damage to organs.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

- **Label elements**
- **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS07 GHS08

- **Signal word** Warning
- **Hazard-determining components of labeling:**
Propane, 1,1,1,2,3,3,3-heptafluoro-argon
- **Hazard statements**
Harmful if inhaled.
May cause damage to organs.
- **Precautionary statements**
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.

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Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Call a poison center/doctor if you feel unwell.

IF exposed or concerned: Call a poison center/doctor.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Unknown acute toxicity:**

100 percent of the mixture consists of ingredient(s) of unknown toxicity.

· **Classification system:** NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



· **Other hazards** None known

* 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous Components:**

CAS: 431-89-0	Propane, 1,1,1,2,3,3,3-heptafluoro- ⚠ Press. Gas, H280; ⚠ Acute Tox. 4, H332	25-50%
CAS: 75-73-0 RTECS: FG4920000	carbon tetrafluoride ⚠ Press. Gas, H280	15-35%
CAS: 75-46-7 RTECS: PB6900000	trifluoromethane ⚠ Press. Gas, H280	15-35%
CAS: 7440-37-1 RTECS: CF 2300000	argon ⚠ Press. Gas, H280; ⚠ STOT SE 2, H371; Simple Asphyxiant	5-10%

* 4 First-aid measures

· **Description of first aid measures**

· **General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

In case of unconsciousness, place patient securely on side position for transportation.

· **After skin contact:** Generally the product does not irritate the skin.

· **After eye contact:** Rinse opened eye for several minutes under running water.

· **After swallowing:** If swallowed and symptoms occur, consult a doctor.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

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- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

* **5 Fire-fighting measures**

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture**
CAUTION: Cylinders that are exposed to heat from a fire may rupture or burst and release contents. When involved in a fire, this material may decompose and produce hydrochloric and hydrofluoric acids, and toxic hydrogen fluoride and carbonyl halide gases.
- **Advice for firefighters**
- **Protective equipment:**
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

* **6 Accidental release measures**

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** No special measures required.
- **Methods and material for containment and cleaning up:**
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* **7 Handling and storage**

- **Handling:**
- **Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)** No further relevant information available.

* **8 Exposure controls/personal protection**

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters**

· Components with occupational exposure limits:	
7440-37-1 argon	
TLV	NIC-withdraw TLV, see App. F, (simple asphyxiant)

- **Additional information:** The lists that were valid during the creation were used as basis.

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- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure, use respiratory protective device that is independent of circulating air.
- **Protection of hands:** Not required.

* 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Compressed gas

Color: Colorless

· **Odor:** Mild

· **Odor threshold:** Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range: Not determined.

Boiling point/Boiling range: <140 °C (<284 °F) (<284°F)

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not determined.

· **Ignition temperature:** 632 °C (1170 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Explosion limits:**

Lower: 3.0 Vol %

Upper: 15.5 Vol %

· **Vapor pressure @ 20 °C (68 °F):** 453.3 hPa (340 mm Hg)

· **Density @ 20 °C (68 °F):** 1.2 g/cm³ (10.014 lbs/gal)

· **Relative density** Not determined.

· **Vapour density** Not determined.

· **Evaporation rate** Not applicable.

· **Solubility in / Miscibility with**

Water: Fully miscible.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

Dynamic: Not determined.

Kinematic: Not determined.

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- **Solvent content:**
- **Organic solvents:**
- **Other information**

0.0 %

How to Detect This Substance (Warning Properties): The gas is not visible, however, rapidly released gases may cause the formation of a vapor cloud. The gas may be odorless or have a faintly sweet or slight ether-like odor.

* 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:**
 POWDERED ALUMINUM AND ACTIVE METALS are not compatible with this gas product and may produce violent reactions.
 POLYSTYRENE is not compatible with this gas product and may produce violent reactions.
 ALKALINE EARTH METALS like calcium, magnesium, sodium, potassium, lithium, and barium are not compatible with this gas and may produce violent reactions.
 EARTH METALS like silver, brass, bronze and copper may enhance the decomposition of this gas at elevated temperatures.
 OXIDIZERS may produce fire and explosion hazards.
- **Hazardous decomposition products:** No dangerous decomposition products known.

* 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritating effect.
- **on the eye:** No irritating effect.
- **Additional toxicological information:**
 The product shows the following dangers according to internally approved calculation methods for preparations:
 Harmful
- **Carcinogenic categories**
- **IARC (International Agency for Research on Cancer)**
 None of the ingredients are listed.

Group 1 - Carcinogenic to humans Group 2A - Probably carcinogenic to humans Group 2B - Possibly carcinogenic to humans Group 3 - Not classifiable as to its carcinogenicity to humans Group 4 - Probably not carcinogenic to humans

- **NTP (National Toxicology Program)**
 None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**
 None of the ingredients are listed.

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*** 12 Ecological information**

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Not known to be hazardous to water.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

*** 14 Transport information**

- **UN-Number**
- **DOT, ADR, IMDG, IATA** UN1078
- **UN proper shipping name**
- **DOT** Refrigerant gases, n.o.s.
- **ADR** UN1078 Refrigerant gases, n.o.s.
- **IMDG, IATA** REFRIGERANT GAS, N.O.S.
- **Transport hazard class(es)**
- **DOT**



- **Class** 2.2
- **Label** 2.2

· **ADR, IMDG, IATA**



- **Class** 2.2
- **Label** 2.2
- **Packing group** Not applicable
- **ADR, IMDG, IATA** III

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- **Environmental hazards:**
- **Marine pollutant:** No
- **Special precautions for user:** Not applicable.
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.
- **Transport/Additional information:**
- **DOT**
- **Quantity limitations:** On passenger aircraft/rail: 75 kg
On cargo aircraft only: 150 kg

- **ADR**
- **Excepted quantities (EQ):** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml
- **Remarks:** UN 3161 for shipments of cylinders

- **IMDG**
- **Limited quantities (LQ):** 120 ml
- **Excepted quantities (EQ):** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml
- **Remarks:** UN 3161 for shipments of cylinders

- **IATA**
- **Remarks:** UN 3161 for shipments of cylinders
- **UN "Model Regulation":** UN1078, Refrigerant gases, n.o.s., 2.2, III

* 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

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· **Carcinogenic categories**

· EPA (Environmental Protection Agency)	None of the ingredients are listed.
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· TLV (Threshold Limit Value established by ACGIH)	None of the ingredients are listed.
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· NIOSH-Ca (National Institute for Occupational Safety and Health)	None of the ingredients are listed.
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· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS07 GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**

Propane, 1,1,1,2,3,3,3-heptafluoro-argon

· **Hazard statements**

Harmful if inhaled.
May cause damage to organs.

· **Precautionary statements**

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a poison center/doctor if you feel unwell.
IF exposed or concerned: Call a poison center/doctor.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**

The product is subject to be labeled according with the prevailing version of the regulations on hazardous substances.

· **State Right to Know**

CAS: 431-89-0	Propane, 1,1,1,2,3,3,3-heptafluoro- ⚠ Press. Gas, H280; ⚠ Acute Tox. 4, H332	25-50%
CAS: 75-73-0 RTECS: FG4920000	carbon tetrafluoride ⚠ Press. Gas, H280	15-35%
CAS: 75-46-7 RTECS: PB6900000	trifluoromethane ⚠ Press. Gas, H280	15-35%
CAS: 7440-37-1 RTECS: CF 2300000	argon ⚠ Press. Gas, H280; ⚠ STOT SE 2, H371; Simple Asphyxiant	5-10%

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All ingredients are listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

* 16 Other information

#Product Safety Label Requirements:

Refrigeration Units

CAUTION: THIS UNIT HAS INTERNAL SYSTEMS WITH LIQUID OR GAS UNDER PRESSURE. Store and use in a well-ventilated area where temperatures will not exceed 52 °C (125°F). Contact the manufacturer or a certified technician for the repair and maintenance of internal refrigeration systems.

Cylinders

CAUTION: LIQUID AND GAS UNDER PRESSURE. CAN CAUSE RAPID SUFFOCATION. MAY CAUSE FROSTBITE. Store and use with adequate ventilation. Do not get liquid in eyes, on skin or clothing. Cylinder temperature should not exceed 52 °C (125°F). Use in accordance with the material safety data sheet.

FIRST AID: If inhaled, administer fresh air immediately. Administer oxygen if breathing is difficult. Contact a physician. In case of frostbite, obtain immediate medical attention. DO NOT REMOVE THIS LABEL.

· **Date of preparation / last revision** 02/06/2015 / 7**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

Press. Gas: Gases under pressure: Compressed gas

Press. Gas: Gases under pressure: Dissolved gas

Press. Gas: Gases under pressure: Liquefied gas

Acute Tox. 4: Acute toxicity, Hazard Category 4

STOT SE 2: Specific target organ toxicity - Single exposure, Hazard Category 2

· *** Data compared to the previous version altered.**SDS created by MSDS Authoring Services www.msdsauthoring.com (877) 204-9106