

SAFETY DATA SHEET**HOT SHOT 2™ (R-417C)**

Version 2.0 Revision Date: 10/25/2018 SDS Number: 2770442-00002 Date of last issue: 05/07/2018
Date of first issue: 05/07/2018

SECTION 1. IDENTIFICATION

Product name : HOT SHOT 2™ (R-417C)

SDS-Identcode : 130000144655

Manufacturer or supplier's details

Company name of supplier : The Chemours Company FC, LLC

Address : 1007 Market Street
Wilmington, DE 19899 United States of America (USA)

Telephone : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)

Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-773-2000) ; Transport emergency: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

Recommended use of the chemical and restrictions on use

Recommended use : Refrigerant

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200**

Gases under pressure : Liquefied gas

Simple Asphyxiant

GHS label elements

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H280 Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary Statements : **Storage:**
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Other hazards

Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.
Rapid evaporation of the product may cause frostbite.

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
1,1,1,2-Tetrafluoroethane*	811-97-2	78.8
Pentafluoroethane*	354-33-6	19.5
Butane	106-97-8	1.7

* Voluntarily-disclosed non-hazardous substance

SECTION 4. FIRST AID MEASURES

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Thaw frosted parts with lukewarm water. Do not rub affected area.
Get medical attention immediately.
- In case of eye contact : Get medical attention immediately.
- If swallowed : Ingestion is not considered a potential route of exposure.
- Most important symptoms and effects, both acute and delayed : Other symptoms potentially related to misuse or inhalation abuse are
Cardiac sensitization
Anaesthetic effects
Light-headedness
Dizziness
confusion
Lack of coordination
Drowsiness
Unconsciousness
Contact with liquid or refrigerated gas can cause cold burns and frostbite.
- Protection of first-aiders : No special precautions are necessary for first aid responders.
- Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

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- Unsuitable extinguishing media : None known.
- Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.
- Hazardous combustion products : Hydrogen fluoride
carbonyl fluoride
Carbon oxides
Fluorine compounds
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Fight fire remotely due to the risk of explosion. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
-

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas. Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area. Follow safe handling advice and personal protective equipment recommendations.
- Environmental precautions : Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water.
- Methods and materials for containment and cleaning up : Ventilate the area. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.
-

SECTION 7. HANDLING AND STORAGE

- Technical measures : Use equipment rated for cylinder pressure. Use a backflow preventative device in piping. Close valve after each use and when empty.
- Local/Total ventilation : Use only with adequate ventilation.
- Advice on safe handling : Do not breathe gas.
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Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment

Wear cold insulating gloves/ face shield/ eye protection.
Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point.

Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Prevent backflow into the gas tank.

Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems.

Close valve after each use and when empty. Do NOT change or force fit connections.

Prevent the intrusion of water into the gas tank.

Never attempt to lift cylinder by its cap.

Do not drag, slide or roll cylinders.

Use a suitable hand truck for cylinder movement.

Keep away from heat and sources of ignition.

Take precautionary measures against static discharges.

Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Cylinders should be stored upright and firmly secured to prevent falling or being knocked over.
Separate full containers from empty containers.
Do not store near combustible materials.
Avoid area where salt or other corrosive materials are present.
Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the drums.
Material should not be dispensed by pouring from pail/drum shipping containers containing 5 gallons or more. The use of a drum pump is recommended for dispensing from pail/drum shipping containers with 5 gallons or more, except for smaller containers where adequate ventilation can be used to manage the exposure.
Keep in properly labeled containers.
Keep in a cool, well-ventilated place.
Keep away from direct sunlight.
Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types:
Self-reactive substances and mixtures
Organic peroxides
Oxidizing agents
Flammable liquids
Flammable solids
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Substances and mixtures which in contact with water emit flammable gases
Explosives
Acutely toxic substances and mixtures

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Substances and mixtures with chronic toxicity

Further information on storage stability : Keep container tightly closed in a dry and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
1,1,1,2-Tetrafluoroethane	811-97-2	TWA	1,000 ppm	US WEEL
Pentafluoroethane	354-33-6	TWA	1,000 ppm	US WEEL
Butane	106-97-8	TWA	800 ppm 1,900 mg/m ³	NIOSH REL
		STEL	1,000 ppm	ACGIH

Engineering measures : Ensure adequate ventilation, especially in confined areas. Minimize workplace exposure concentrations.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Remarks : Take note that the product is extremely cold, which may impact the selection of hand protection. Wash hands before breaks and at the end of workday.

Eye protection : Wear the following personal protective equipment: Chemical resistant goggles must be worn. Face-shield

Skin and body protection : Skin should be washed after contact.

Protective measures : Wear cold insulating gloves/ face shield/ eye protection.

Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke.

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Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquefied gas
Color	:	colorless
Odor	:	slight, ether-like
Odor Threshold	:	No data available
pH	:	7
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	-26.7 °F / -32.6 °C
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No data available
Upper explosion limit / Upper flammability limit	:	Upper flammability limit No data available
Lower explosion limit / Lower flammability limit	:	Lower flammability limit No data available
Vapor pressure	:	6,667 hPa (70.0 °F / 21.1 °C) 16,403 hPa (129.9 °F / 54.4 °C)
Relative vapor density	:	No data available
Density	:	1.38 g/cm ³ (as liquid)
Solubility(ies) Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive

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Oxidizing properties : The substance or mixture is not classified as oxidizing.
Particle size : Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.
Chemical stability : Stable if used as directed. Follow precautionary advice and avoid incompatible materials and conditions.
Possibility of hazardous reactions : Can react with strong oxidizing agents.
Conditions to avoid : Heat, flames and sparks.
Incompatible materials : Oxidizing agents
Hazardous decomposition products : No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Skin contact
Eye contact

Acute toxicity

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Acute inhalation toxicity : LC50 (Rat): > 567000 ppm
Exposure time: 4 h
Test atmosphere: gas

No observed adverse effect concentration (Dog): 40000 ppm
Test atmosphere: gas
Symptoms: Cardiac sensitization

Lowest observed adverse effect concentration (Dog): 80000 ppm
Test atmosphere: gas
Symptoms: Cardiac sensitization

Cardiac sensitisation threshold limit (Dog): 334,000 mg/m³
Test atmosphere: gas
Symptoms: Cardiac sensitization

Pentafluoroethane:

Acute inhalation toxicity : LC0 (Rat): > 800000 ppm

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Exposure time: 4 h
Test atmosphere: gas
Method: OECD Test Guideline 403

Butane:

Acute inhalation toxicity : LC50 (Rat): 570000 ppm
Exposure time: 15 min
Test atmosphere: gas
Remarks: Based on data from similar materials

Skin corrosion/irritation

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Routes of exposure : Skin contact
Species : Guinea pig
Result : negative

Species : Rat
Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Germ cell mutagenicity - : Weight of evidence does not support classification as a germ

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Assessment cell mutagen.

Pentafluoroethane:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo
cytogenetic assay)
Species: Mouse
Application Route: inhalation (gas)
Method: OECD Test Guideline 474
Result: negative

Butane:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo
cytogenetic assay)
Species: Rat
Application Route: inhalation (gas)
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

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Components:

1,1,1,2-Tetrafluoroethane:

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

Pentafluoroethane:

Effects on fertility : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Result: negative
Remarks: Based on data from similar materials

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: inhalation (gas)
Method: OECD Test Guideline 414
Result: negative

Butane:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: inhalation (gas)
Method: OECD Test Guideline 422
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: inhalation (gas)
Method: OECD Test Guideline 422
Result: negative

STOT-single exposure

Not classified based on available information.

Components:

Butane:

Assessment : May cause drowsiness or dizziness.
Remarks : Based on data from similar materials

STOT-repeated exposure

Not classified based on available information.

Components:

1,1,1,2-Tetrafluoroethane:

Assessment : No significant health effects observed in animals at concentrations of 250 ppmV/6h/d or less.

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Repeated dose toxicity

Components:

1,1,1,2-Tetrafluoroethane:

Species : Rat
NOAEL : 50000 ppm
LOAEL : > 50000 ppm
Application Route : inhalation (gas)
Exposure time : 90 d
Method : OECD Test Guideline 413
Remarks : No significant adverse effects were reported

Pentafluoroethane:

Species : Rat
NOAEL : >= 50000 ppm
Application Route : inhalation (gas)
Exposure time : 13 Weeks
Method : OECD Test Guideline 413

Butane:

Species : Rat
NOAEL : >= 9000 ppm
Application Route : inhalation (gas)
Exposure time : 6 Weeks
Method : OECD Test Guideline 422

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

1,1,1,2-Tetrafluoroethane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 450 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 980 mg/l
Exposure time: 48 h

Toxicity to algae : ErC50 (algae): 142 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

NOEC (Pseudokirchneriella subcapitata (green algae)): 13.2 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

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Pentafluoroethane:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 450 mg/l
Exposure time: 96 h
Method: Directive 67/548/EEC, Annex V, C.1.
Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 980 mg/l
Exposure time: 48 h
Method: Directive 67/548/EEC, Annex V, C.2.
Remarks: Based on data from similar materials
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): > 114 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials
- NOEC (Pseudokirchneriella subcapitata (green algae)): 13.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Persistence and degradability

Components:

1,1,1,2-Tetrafluoroethane:

- Biodegradability : Result: Not readily biodegradable.

Pentafluoroethane:

- Biodegradability : Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Butane:

- Biodegradability : Result: Readily biodegradable.
Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

1,1,1,2-Tetrafluoroethane:

- Partition coefficient: n-octanol/water : log Pow: 1.06

Pentafluoroethane:

- Partition coefficient: n-octanol/water : Pow: 1.48 (77 °F / 25 °C)

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Butane:

Partition coefficient: n-octanol/water : log Pow: 2.89

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Empty pressure vessels should be returned to the supplier.
If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 1078
Proper shipping name : REFRIGERANT GAS, N.O.S.
(1,1,1,2-Tetrafluoroethane, Butane)

Class : 2.2
Packing group : Not assigned by regulation

Labels : 2.2

IATA-DGR

UN/ID No. : UN 1078
Proper shipping name : Refrigerant gas, n.o.s.
(1,1,1,2-Tetrafluoroethane, Butane)

Class : 2.2
Packing group : Not assigned by regulation

Labels : Non-flammable, non-toxic Gas

Packing instruction (cargo aircraft) : 200
Packing instruction (passenger aircraft) : 200

IMDG-Code

UN number : UN 1078
Proper shipping name : REFRIGERANT GAS, N.O.S.
(1,1,1,2-Tetrafluoroethane, Butane)

Class : 2.2
Packing group : Not assigned by regulation

Labels : 2.2
EmS Code : F-C, S-V
Marine pollutant : no

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 1078
Proper shipping name : Refrigerant gases, n.o.s.
 (1,1,1,2-Tetrafluoroethane, Butane)
|| Class : 2.2
Packing group : Not assigned by regulation
|| Labels : NON-FLAMMABLE GAS
|| ERG Code : 126
Marine pollutant : no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Gases under pressure
 Simple Asphyxiant

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

1,1,1,2-Tetrafluoroethane	811-97-2
Pentafluoroethane	354-33-6
Butane	106-97-8

California List of Hazardous Substances

Butane	106-97-8
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California Permissible Exposure Limits for Chemical Contaminants

Butane	106-97-8
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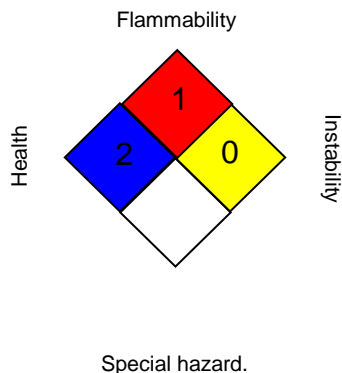
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	/	0
FLAMMABILITY		1
PHYSICAL HAZARD		3

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Before use read Chemours safety information.
For further information contact the local Chemours office or nominated distributors.
All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / STEL : Short-term exposure limit
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECl - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse)

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Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 10/25/2018

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8

Safety Data Sheet
ONE SHOT® (R-422A)

1 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Product Name: ONE SHOT® (R-422A)
Product Use: Refrigerant
Chemical Names: Blend of pentafluoroethane, tetrafluoroethane and isobutane
Manufacturer: ICOR International, Inc.
10640 E. 59th St.
Indianapolis, IN 46236
In Case Of Emergency Call: (24 Hours/Day, 7 Days/Week) CHEMTREC: 1-800-424-9300
Product Information Call: (Monday-Friday, 8:00 am-4:30 pm) ICOR: 1-800-497-6805

2 HAZARDS IDENTIFICATION

Emergency Overview

Overexposure may cause dizziness and loss of concentration. At higher levels, central nervous system depression and cardiac arrhythmia may result. Vapors displace air and may cause asphyxiation in confined spaces. Volatile liquid with faint sweetish odor.

Potential Health Effects:

EYE: Liquid may cause frostbite. Mist may irritate.

SKIN: Irritation can result from a defatting action on tissue. Liquid contact may cause frostbite.

INGESTION: Unlikely route of exposure. Should it result, discomfort in the gastrointestinal tract would occur.

INHALATION: Overexposure may cause dizziness and loss of concentration. At higher levels, central nervous system depression and cardiac arrhythmia may result.

CHRONIC (CANCER) INFORMATION: None of the components are designated as carcinogens by IARC, NTP, OSHA, or ACGIH.

TERATOLOGY (BIRTH DEFECT) INFORMATION: Not expected to be teratogenic.

REPRODUCTIVE INFORMATION: No hazard expected.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Material:	CAS Number	Typical Wt. %
1,1,1,2,2-pentafluoroethane (HFC-125)	354-33-6	85.1%
1,1,1,2-tetrafluoroethane (HFC-134a)	811-97-2	11.5%
isobutane (HC-600a)	75-28-5	3.4%

4 FIRST AID MEASURES

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, administer oxygen and call a physician. DO NOT give epinephrine or similar drugs.

SKIN CONTACT: Warm the area gradually by flushing with plenty of water. Get medical attention if there is evidence of tissue damage.

EYE CONTACT: Irrigate eyes with running water for at least 15 minutes. Get medical attention.

INGESTION: Do not induce vomiting. Get medical attention.

Flammable Properties:

Flash Point:	No flash point	Flammable Limits in Air (% by volume)
Flammable Limits in Air (% by volume)		LEL: NONE (per ASTM E681)
Autoignition:	Not determined	UEL: NONE (per ASTM E681)

Fire and Explosion Hazards:

Cylinders may rupture under elevated temperatures and/or fire conditions. In concentrations above the recommended exposure limit, open flame will vary in size and color. Eliminate the flame or ignition source and ventilate to disperse the refrigerant vapors.

One Shot is not flammable at atmospheric pressure and temperatures below 100°C (212°F). One Shot should not exist with air/excess oxygen at elevated pressures and high temperatures. One Shot can become combustible with combinations of elevated temperatures, pressures, and oxygen, and an ignition source.

For example: Do not mix One Shot with air under pressure for leak detection purposes.

Extinguishing Media:

The choice of media depends on surrounding materials.

Fire Fighting Instructions:

Keep personnel removed and upwind of fire. Wear self contained breathing apparatus. Wear full protective equipment. Cool tank/container with water spray. Heat may rupture containers. Fight fire from distance. Contain and neutralize runoff prior to disposal.

Safeguards (Personnel):

Note: Review FIRE FIGHTING MEASURES and HANDLING sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Accidental Release Measures:

Remove or extinguish combustion sources. Evacuate enclosed spaces until gas is dispersed. Stop the release if possible. Ventilate area including low or enclosed spaces. Exhaust outdoors. Contain spill and collect remainder using absorbent material and place in drum approved for waste disposal or recovery.

Handling (Personnel):

Avoid breathing vapors. Avoid contact with skin or eyes. Use insulated or lined butyl gloves, face shield or goggles, and impervious clothing. Do not smoke.

Handling (Physical Aspects):

Insure adequate ventilation to keep exposure below recommended limits. Avoid contact with chlorine or other oxidizing. See Fire and Explosion Data section.

Storage:

Do not store cylinders in direct sun or expose to heat above 120°F (52°C).

Engineering Controls:

Avoid contact with skin or eyes. Avoid breathing vapors. Use with sufficient ventilation to keep exposure below recommended exposure limit. Utilize mechanical ventilation in case of low or enclosed spaces, or release of large quantity.

Personal Protective Equipment:

EYE/FACE PROTECTION: Goggles or face shield.
 RESPIRATORS: Use if exposure level is above PEL.
 PROTECTIVE CLOTHING: Impervious.
 HYGIENE MEASURES: Do not drink, eat, or smoke in work place.

Exposure Guidelines:

Long Term Exposure Limit**:
 1000 ppm
 (8 hr. TWA reference period)

Individual Component Applicable Exposure Limits:

Pentafluoroethane (HFC-125)
 AEL* (ICOR): 1000 ppm - 8 & 12 hr. TWA
 WEEL (AIHA): 1000 ppm - 4900 mg/m³, 8 hr. TWA
 PEL (OSHA): none established
 TLV (ACGIH): none established

1,1,1,2-Tetrafluoroethane (HFC-134a):
 AEL* (ICOR): 1000 ppm - 8 & 12 hr. TWA
 WEEL (AIHA): 1000 ppm - 4900 mg/m³, 8 hr. TWA
 PEL (OSHA): none established
 TLV (ACGIH): none established

Isobutane (HC-600a):
 TLV : none established
 DFG MAK : 1000 ppm; 2350 mg/m³
 Peak limitation category
 TWA (NIOSH): 800 ppm; 1900 mg/m³
 Recommended TWA 10 hrs.

** As blended (ICOR Acceptable Exposure Limit)
 * ICOR reviews industry standards and recommendations in consideration of acceptable exposure limitations. Where regulated exposure limits are lower than ICOR's recommended AEL, those limits shall supersede.

Physical Data:

Physical state:	Gas at ambient temperature	Density:	
Color:	Colorless	Liquid @ 1 atm.	88.91 lb/ft ³
Odor:	Slightly ethereal	Vapor @ 1 atm.	.3941 lb/ft ³
Solubility in Water:	Not determined	Vapor Pressure:	
Boiling Point:	Dew @ 1 atm. -47.3°F	@ 70°F	160.5 psia
	Bubble @ 1 atm. -51.7°F	@ 130°F	368.9 psia
Freezing Point:	Not determined	pH	neutral
Molecular Weight:	133.49 g/mol	% Volatiles:	100

Chemical stability: Material is stable. However, avoid high temperatures and open flames.

Decomposition: Decompositions are hazardous. High temperatures or flames will cause decomposition by products forming halogens, halogen acids and possible carbonyl halides.

Polymerization: Will not occur

Other Hazards: Cylinders of used product may contain oil as well as refrigerant. A leak or venting during a fire will produce a cloud of oil mist that is flammable.

Immediate (Acute) Effects

HFC-134A:
 LC₅₀: 4 hr. (rat) >500,000 ppm
 Cardiac Sensitivity Threshold 80,000 ppm
 NOEL 50,000 ppm

As blended: untested

HFC-125:
 LC₅₀: 4 hr. (rat) >800,000 ppm
 Cardiac Sensitivity Threshold 75,000 ppm
 HC-600a:
 LC₅₀: 2 hr. (mouse) 520,000 ppm

Degradability (BOD): One Shot is a gas at room temperature. It is unlikely to remain in water.

Octanol Water Partition Coefficient: As blended N/A

Components: R-134a - Log P_{ow} = 1.06

R-125 - Log P_{ow} = 1.48

R-600a - Log P_{ow} = 2.8

Disposal must comply with federal, state, and local regulations. One Shot is subject to Clean Air Act Regulations Section 608 in 40 CFR Part 82 concerning refrigerant recycling.

RCRA: Not a hazardous waste

Alteration to the product such as mixing with other material may change the characteristics of the material and alter the RCRA classification and the proper disposal method.

DOT/IMO/IATA

Proper shipping Name:	Liquefied Gas N.O.S. (Pentafluoroethane, Tetrafluoroethane)	Labeling:	2-NonFlammable Gas
Hazard Class:	2.2	Cargo Aircraft:	Packing instructions – 200 quantity: 150 kg
UN Number:	3163	Passenger Aircraft:	Packing instructions – 200 quantity: 75kg

Toxic Substance Control Act (TSCA)

Components: Listed on Inventory

SARA Title III/CERCLA: Components:

Reportable Quantities (RQs) No components listed

Threshold Planning Quantities (TPQs) No components listed

Section 311 Hazard Class: IMMEDIATE PRESSURE

Section 313 Toxic Chemicals: No components listed

Additional Regulatory Information:

U. S. Clean Air Act - 40 CFR Part 82

Foreign Inventory Status: Components:

EU-EINECS #2065578 – HFC-125

#223770 – HFC-134a

#2008572 – HC -600a

WHMIS Classification (Canada): This product has been evaluated with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

Other Information:

HMIS Classification: Health – 1, Flammability – 1,
Reactivity – 0

NFPA Classification: Health – 2, Flammability – 1,
Reactivity – 0

OSHA Regulations for compressed gases:
29CFR 1910.11

DOT Classification per 49 CFR 172.101

ANSI/ASHRAE: Standard 34 Safety Designation – A1

DISCLAIMER

The information contained in this MSDS pertains only to the specific material designated herein and does not relate to use in combination with other materials. This information is offered in good faith. No warranty, either expressed or implied, as to suitability to application is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be reliable. Each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate. These recommendations are not intended to supersede state or local safety codes and procedures. The information contained herein is subject to revision without notification as additional knowledge and experience is gained.

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: HOT SHOT 2™ (R-417C)

Intended Use of the Product

Refrigerant

Name, Address, and Telephone of the Responsible Party

Company

ICOR International

10640 E 59th St.

Indianapolis, IN 46236

800-497-6805 (Monday-Friday, 7:30 am-4:30 pm ET)

Emergency Telephone Number

Emergency number : CHEMTREC 800-424-9300 (24 Hours/Day, 7 Days/Week)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Simple Asphyxiant

Liquefied gas H280

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :



GHS04

Signal Word (GHS-US) :

Warning

Hazard Statements (GHS-US) :

H280 - Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation

Precautionary Statements (GHS-US) :

P410+P403 - Protect from sunlight. Store in a well-ventilated place

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Liquid contact with eyes or skin may cause frostbite.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Name	Product identifier	% (w/w)	Classification (GHS-US)
1,1,1,2-Tetrafluoroethane (HFC-134a)	(CAS No) 811-97-2	78.8	Simple Asphyxiant Liquefied gas, H280
Pentafluoroethane (HFC125)	(CAS No) 354-33-6	19.5	Simple Asphyxiant Liquefied gas, H280
n-Butane (HC-600)	(CAS No) 106-97-8	1.7	Simple Asphyxiant Flam. Gas 1, H220 Liquefied gas, H280

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

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Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

Ingestion: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Vapors are heavier than air and may cause Asphyxiantia by reduction of the oxygen content.

Inhalation: May cause respiratory irritation.

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

Eye Contact: May cause eye irritation.

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

Chronic Symptoms: None expected under normal conditions of use.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: None known.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Hot Shot 2 is not flammable at atmospheric pressure and in air at temperatures up to 100 °C (212 °F). Hot Shot 2 should not exist with air/excess oxygen at elevated pressures and high temperatures. Hot Shot 2 can become combustible with high concentrations of air at elevated pressure and/or temperature and in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). For example, do not mix Hot Shot 2 with air under pressure for leak detection purposes.

Explosion Hazard: Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Carbon oxides (CO, CO₂). Halogenated hydrocarbons. Hydrogen Fluoride (HF).

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing vapors.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Ventilate area.

Environmental Precautions

Avoid release to the environment.

Methods and Material for Containment and Cleaning Up

For Containment: Ventilate area.

Methods for Cleaning Up: Isolate area until gas has dispersed.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

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SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Ruptured cylinders may rocket.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Chlorine.

Storage Area: Store in a well-ventilated place.

Specific End Use(s)

Refrigerant.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

n-Butane (HC-600) (106-97-8)		
USA ACGIH	ACGIH STEL (ppm)	1000 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	1900 mg/m ³
USA NIOSH	NIOSH REL (TWA) (ppm)	800 ppm
Manitoba	OEL STEL (ppm)	1000 ppm
Newfoundland & Labrador	OEL STEL (ppm)	1000 ppm
Nova Scotia	OEL STEL (ppm)	1000 ppm
Ontario	OEL TWA (ppm)	800 ppm
Prince Edward Island	OEL STEL (ppm)	1000 ppm
Saskatchewan	OEL STEL (ppm)	1250 ppm
Saskatchewan	OEL TWA (ppm)	1000 ppm
Pentafluoroethane (HFC125) (354-33-6)		
ICOR AEL*	OEL 8 & 12 hr TWA (ppm)	1000 ppm
AIHA WEEL	OEL 8 hr TWA	1000 ppm, 4900 mg/m ³
1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)		
ICOR AEL*	OEL 8 & 12 hr TWA (ppm)	1000 ppm
AIHA WEEL	OEL 8 hr TWA	1000 ppm, 4900 mg/m ³

* ICOR acceptable Exposure Limit. ICOR reviews industry standards and recommendations in consideration of acceptable exposure limitations. Where regulated exposure limits are lower than ICOR's recommended AEL, those limits shall supersede.

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing.



Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Impervious butyl rubber gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

Consumer Exposure Controls: Do not eat, drink or smoke during use

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Liquefied Gas
Appearance	: Colorless
Odor	: Slightly ethereal
Odor Threshold	: Not available
pH	: Neutral
Relative Evaporation Rate (butylacetate=1)	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Dew @ 1 atm. -29.1 °C (-20.4 °F) Bubble @ 1 atm. -32.6 °C (-26.7°F)
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: @ 21.1 °C (70 °F) 96.7 psia @ 54.4 °C (130 °F) 237.9 psia
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Density	: Liquid @ 1 atm. 85.91 lb/ft ³ Vapor @ 1 atm. .3377 lb/ft ³
Specific Gravity	: Not available
Solubility	: Not available
Partition coefficient: n-octanol/water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Hazardous reactions will not occur under normal conditions.
Chemical Stability:	Stable under recommended handling and storage conditions (see section 7).
Possibility of Hazardous Reactions:	Hazardous polymerization will not occur.
Conditions to Avoid:	Direct sunlight. Extremely high or low temperatures. Ignition sources. Incompatible materials.
Incompatible Materials:	Strong acids. Strong bases. Strong oxidizers.
Hazardous Decomposition Products:	Carbon oxides (CO, CO ₂). Halogenated hydrocarbons. Hydrogen Fluoride (HF).

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity:	Not classified
LD50 and LC50 Data:	Not available
Skin Corrosion/Irritation:	Not classified
Serious Eye Damage/Irritation:	Not classified
Respiratory or Skin Sensitization:	Not classified
Germ Cell Mutagenicity:	Not classified
Teratogenicity:	Not available
Carcinogenicity:	Not classified
Specific Target Organ Toxicity (Repeated Exposure):	Not classified
Reproductive Toxicity:	Not classified

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Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: May cause skin irritation. Liquid contact may cause frostbite.

Symptoms/Injuries After Eye Contact: May cause eye irritation.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Pentafluoroethane (HFC125) (354-33-6)	
LC50 Inhalation Rat	2910 g/m ³ (Exposure time: 4 h)
ATE US (vapors)	2,910.00 mg/l/4h
ATE US (dust, mist)	2,910.00 mg/l/4h
n-Butane (HC-600) (106-97-8)	
LC50 Inhalation Rat	658 mg/l/4h
ATE US (vapors)	658.00 mg/l/4h
ATE US (dust, mist)	658.00 mg/l/4h
1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)	
LC50 Inhalation Rat	1500 g/m ³ (Exposure time: 4 h)
ATE US (vapors)	1,500.00 mg/l/4h
ATE US (dust, mist)	1,500.00 mg/l/4h

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Persistence and Degradability Not available

Bioaccumulative Potential

n-Butane (HC-600) (106-97-8)	
BCF fish 1	1.57 - 1.97
Log Pow	2.88 (at 20 °C)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Recover, reclaim or recycle when practical. Dispose of waste material in accordance with all local, regional, national, and international regulations. This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling. Contact a certified reclaimer for recovery/reclamation of this product.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2- Tetrafluoroethane)
Hazard Class : 2.2
Identification Number : UN3163
Label Codes : 2.2
ERG Number : 126



14.2 In Accordance with IMDG

Proper Shipping Name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2- Tetrafluoroethane)
Hazard Class : 2.2
Identification Number : UN3163

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Label Codes : 2.2
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V



14.3 In Accordance with IATA

Proper Shipping Name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2- Tetrafluoroethane)
Identification Number : UN3163
Hazard Class : 2.2
Label Codes : 2.2
ERG Code (IATA) : 2L



14.4 In Accordance with TDG

Proper Shipping Name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2- Tetrafluoroethane)
Hazard Class : 2.2
Identification Number : UN3163
Label Codes : 2.2



SECTION 15: REGULATORY INFORMATION

US Federal Regulations


US Federal Regulations

HOT SHOT 2™	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard
HOT SHOT 2™	
EPA Clean Air Act	This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82
Pentafluoroethane (HFC125) (354-33-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
n-Butane (HC-600) (106-97-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

US State Regulations

n-Butane (HC-600) (106-97-8)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

HOT SHOT 2™	
WHMIS Classification	Class A - Compressed Gas
	
Pentafluoroethane (HFC125) (354-33-6)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
n-Butane (HC-600) (106-97-8)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas

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1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification Class A - Compressed Gas

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

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 12/05/2014

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
Liquefied gas	Gases under pressure Liquefied gas
Simple Asphyxiant	Simple Asphyxiant
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated

Party Responsible for the Preparation of This Document

ICOR International
10640 E 59th St.
Indianapolis, IN 46236
800-497-6805

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

North America GHS US 2012 & WHMIS