

# SAFETY DATA SHEET

Flammable Liquid Mixture: 1-Chloro-1-Fluoroethane-(R151A) / 1-Chloro-2-Fluoroethane / 1,1,3-Trichloro-1-Propene / 1,1,3,3,3-Pentafluoropropene / 3-Chloro-1,1,1-Trifluoropropane / 3,3,3-Trifluoropropene / Propane / R143A-Trifluoroethane / R152A-1,1-Difluoroethane / R161-Fluoroethane / R263Fb-1,1,1-Trifluoropropane / Trans-1,3,3,3-Tetrafluoropropene / Vinyl-Chloride

## Section 1. Identification

<b>GHS product identifier</b>	: Flammable Liquid Mixture: 1-Chloro-1-Fluoroethane-(R151A) / 1-Chloro-2-Fluoroethane / 1,1,3-Trichloro-1-Propene / 1,1,3,3,3-Pentafluoropropene / 3-Chloro-1,1,1-Trifluoropropane / 3,3,3-Trifluoropropene / Propane / R143A-Trifluoroethane / R152A-1,1-Difluoroethane / R161-Fluoroethane / R263Fb-1,1,1-Trifluoropropane / Trans-1,3,3,3-Tetrafluoropropene / Vinyl-Chloride
<b>Other means of identification</b>	: Not available.
<b>Product type</b>	: Liquid.
<b>Product use</b>	: Synthetic/Analytical chemistry.
<b>SDS #</b>	: 022952
<b>Supplier's details</b>	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
<b>24-hour telephone</b>	: 1-866-734-3438

## Section 2. Hazards identification

<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Classification of the substance or mixture</b>	: FLAMMABLE LIQUIDS - Category 2
<b>GHS label elements</b>	
<b>Hazard pictograms</b>	:
<b>Signal word</b>	: Danger
<b>Hazard statements</b>	: May form explosive mixtures with air. Highly flammable liquid and vapor.
<b>Precautionary statements</b>	
<b>General</b>	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
<b>Prevention</b>	: Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed.
<b>Response</b>	: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
<b>Storage</b>	: Store in a well-ventilated place. Keep cool.
<b>Disposal</b>	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazards not otherwise classified</b>	: None known.

## Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of identification	: Not available.
Product code	: 022952

Ingredient name	%	CAS number
3,3,3-trifluoropropene	99	677-21-4
Propane	0.0001 - 0.05	74-98-6
1-Chloro-1-fluoroethane	0.0001 - 0.05	1615-75-4
1,1,3,3,3-pentafluoropropene	0.0001 - 0.05	690-27-7
3-chloro-1,1,1-trifluoropropane	0.0001 - 0.05	460-35-5
1,1,1 - trifluoroethane	0.0001 - 0.05	420-46-2
1,1 - difluoroethane	0.0001 - 0.05	75-37-6
Fluoroethane	0.0001 - 0.05	353-36-6
HFO-1234ZE	0.0001 - 0.05	29118-24-9
vinyl chloride	0.0001 - 0.05	75-01-4
1-chloro-2-fluoroethane	0.0001 - 0.05	762-50-5
1,1,3-trichloropropene	0.0001 - 0.05	2567-14-8
1,1,1-trifluoropropane	0.0001 - 0.05	421-07-8

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**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.**

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

<b>Eye contact</b>	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
<b>Inhalation</b>	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Skin contact</b>	: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
<b>Ingestion</b>	: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	: No known significant effects or critical hazards.
<b>Inhalation</b>	: No known significant effects or critical hazards.
<b>Skin contact</b>	: No known significant effects or critical hazards.

## Section 4. First aid measures

**Frostbite** : Try to warm up the frozen tissues and seek medical attention.  
**Ingestion** : No known significant effects or critical hazards.

### Over-exposure signs/symptoms

**Eye contact** : No specific data.  
**Inhalation** : No specific data.  
**Skin contact** : No specific data.  
**Ingestion** : No specific data.

### Indication of immediate medical attention and special treatment needed, if necessary

**Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.  
**Specific treatments** : No specific treatment.  
**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

**Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.  
**Unsuitable extinguishing media** : Do not use water jet.

**Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
halogenated compounds

**Special protective actions for fire-fighters** : 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

**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.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**For non-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. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

## Section 6. Accidental release measures

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

**Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

**Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

**Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Avoid contact with eyes, skin and clothing. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

**Advice on general occupational hygiene** : 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. See also Section 8 for additional information on hygiene measures.

**Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

## Section 8. Exposure controls/personal protection

### Control parameters

### Occupational exposure limits

## Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
3,3,3-trifluoropropene	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Propane	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1-Chloro-1-fluoroethane	<b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust
1,1,3,3,3-pentafluoropropene	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
3-chloro-1,1,1-trifluoropropane	<b>NIOSH REL (United States, 10/2016).</b> TWA: 1800 mg/m <sup>3</sup> 10 hours.
1,1,1 - trifluoroethane	<b>OSHA PEL (United States, 6/2016).</b> TWA: 1000 ppm 10 hours.
1,1 - difluoroethane	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 1800 mg/m <sup>3</sup> 8 hours.
Fluoroethane	<b>ACGIH TLV (United States, 3/2017). Oxygen Depletion [Asphyxiant].</b> TWA: 1000 ppm 8 hours.
HFO-1234ZE	None.
1,1,3,3,3-pentafluoropropene	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
3-chloro-1,1,1-trifluoropropane	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1,1 - trifluoroethane	<b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust
1,1 - difluoroethane	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Fluoroethane	None.
HFO-1234ZE	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1 - difluoroethane	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 1000 ppm 8 hours.
Fluoroethane	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
HFO-1234ZE	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1 - difluoroethane	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Fluoroethane	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 1000 ppm 8 hours.
HFO-1234ZE	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1 - difluoroethane	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Fluoroethane	<b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust
HFO-1234ZE	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1 - difluoroethane	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 1000 ppm 8 hours.
Fluoroethane	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
HFO-1234ZE	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1,1 - difluoroethane	<b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust
Fluoroethane	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
HFO-1234ZE	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 1000 ppm 8 hours.
1,1 - difluoroethane	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Fluoroethane	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
HFO-1234ZE	<b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust
1,1 - difluoroethane	<b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
Fluoroethane	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 1000 ppm 8 hours.
HFO-1234ZE	<b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.

## Section 8. Exposure controls/personal protection

vinyl chloride	TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. <b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. <b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. <b>ACGIH TLV (United States, 3/2017).</b> TWA: 1 ppm 8 hours. <b>OSHA PEL (United States, 6/2016).</b> STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. <b>OSHA PEL 1989 (United States, 3/1989).</b> STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. None. None. <b>ACGIH TLV (United States, 3/2017).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. <b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.
1-chloro-2-fluoroethane 1,1,3-trichloropropene 1,1,1-trifluoropropane	

**Appropriate engineering controls** : 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.

**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.

### Individual protection measures

**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.

**Eye/face protection** : 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

### Skin protection

**Hand protection** : 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

## Section 8. Exposure controls/personal protection

**Body protection** : 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### Appearance

**Physical state** : Liquid.

**Color** : Not available.

**Odor** : Not available.

**Odor threshold** : Not available.

**pH** : Not available.

**Melting point** : Not available.

**Boiling point** : Not available.

**Critical temperature** : Not available.

**Flash point** : Closed cup: -90°C (-130°F)

**Evaporation rate** : Not available.

**Flammability (solid, gas)** : Not available.

**Lower and upper explosive (flammable) limits** : Not available.

**Vapor pressure** : Not available.

**Vapor density** : Not available.

**Gas Density (lb/ft<sup>3</sup>)** : Not available.

**Relative density** : Not available.

**Solubility** : Not available.

**Solubility in water** : Not available.

**Partition coefficient: n-octanol/water** : Not available.

**Auto-ignition temperature** : Not available.

**Decomposition temperature** : Not available.

**Viscosity** : Not available.

**Flow time (ISO 2431)** : Not available.

## Section 10. Stability and reactivity

**Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability** : The product is stable.

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

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## Section 10. Stability and reactivity

**Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
3-chloro-1,1,1-trifluoropropane	LC50 Inhalation Vapor	Rat	1800 mg/m <sup>3</sup>	4 hours
1,1,1 - trifluoroethane	LD50 Oral LC50 Inhalation Gas. LC50 Inhalation Vapor	Rat Rat Rat	62 mg/kg >54 pph 1080000 ppm	- 4 hours 1 hours

#### Irritation/Corrosion

Not available.

#### Sensitization

Not available.

#### Mutagenicity

Not available.

#### Carcinogenicity

Not available.

#### Classification

Product/ingredient name	OSHA	IARC	NTP
Fluoroethane vinyl chloride	- +	3 1	- Known to be a human carcinogen.

#### Reproductive toxicity

Not available.

#### Teratogenicity

Not available.

#### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
1-Chloro-1-fluoroethane	Category 3	Not applicable.	Respiratory tract irritation
1,1,3,3,3-pentafluoropropene	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
3-chloro-1,1,1-trifluoropropane	Category 3	Not applicable.	Respiratory tract irritation
1-chloro-2-fluoroethane	Category 3	Not applicable.	Respiratory tract irritation
1,1,1-trifluoropropane	Category 3	Not applicable.	Respiratory tract irritation and

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## Section 11. Toxicological information

			Narcotic effects
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### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
vinyl chloride	Category 2	Not determined	liver

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Not available.

### Potential acute health effects

<b>Eye contact</b>	: No known significant effects or critical hazards.
<b>Inhalation</b>	: No known significant effects or critical hazards.
<b>Skin contact</b>	: No known significant effects or critical hazards.
<b>Ingestion</b>	: No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	: No specific data.
<b>Inhalation</b>	: No specific data.
<b>Skin contact</b>	: No specific data.
<b>Ingestion</b>	: No specific data.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Long term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Potential chronic health effects

Not available.

<b>General</b>	: No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: No known significant effects or critical hazards.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

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## Section 12. Ecological information

### Toxicity

Not available.

### Persistence and degradability

Not available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Propane	1.09	-	low
1,1,1 - trifluoroethane	1.73 to 1.74	-	low
1,1 - difluoroethane	1.13	-	low
HFO-1234ZE	1.6	-	low
vinyl chloride	1.38	-	low

### Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : Not available.

Other adverse effects : No known significant effects or critical hazards.

## Section 13. Disposal considerations

### Disposal methods

: The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. 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. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN3161	UN3161	UN3161	UN3161	UN3161
UN proper shipping name	Liquefied gas, flammable n.o.s. (3,3, 3-Trifluoropropene, Propane)				
Transport hazard class(es)	2.1	2.1	2.1	2.1	2.1
Packing group	-	-	-	-	-

Flammable Liquid Mixture: 1-Chloro-1-Fluoroethane-(R151A) / 1-Chloro-2-Fluoroethane / 1,1,3-Trichloro-1-Propene / 1,1,3,3,3-Pentafluoropropene / 3-Chloro-1,1,1-Trifluoropropane / 3,3,3-Trifluoropropene / Propane / R143A-Trifluoroethane / R152A-1,1-Difluoroethane / R161-Fluoroethane / R263Fb-1, 1,1-Trifluoropropane / Trans-1,3,3,3-Tetrafluoropropene / Vinyl-Chloride

## Section 14. Transport information

<b>Environmental hazards</b>	No.	No.	No.	No.	No.
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"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

### Additional information

**DOT Classification** : **Reportable quantity** 2000 lbs / 908 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

**TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).  
**Explosive Limit and Limited Quantity Index** 0.125  
**ERAP Index** 3000  
**Passenger Carrying Ship Index** Forbidden  
**Passenger Carrying Road or Rail Index** Forbidden

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

## Section 15. Regulatory information

**U.S. Federal regulations** : **TSCA 5(a)2 final significant new use rules:** 1,1,3,3,3-pentafluoropropene  
**TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**Clean Water Act (CWA) 307:** vinyl chloride

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

### State regulations

**Massachusetts** : None of the components are listed.

**New York** : None of the components are listed.

**New Jersey** : The following components are listed: FLUORIDES

Flammable Liquid Mixture: 1-Chloro-1-Fluoroethane-(R151A) / 1-Chloro-2-Fluoroethane / 1,1,3-Trichloro-1-Propene / 1,1,3,3-Pentafluoropropene / 3-Chloro-1,1,1-Trifluoropropane / 3,3,3-Trifluoropropene / Propane / R143A-Trifluoroethane / R152A-1,1-Difluoroethane / R161-Fluoroethane / R263Fb-1, 1,1-Trifluoropropane / Trans-1,3,3,3-Tetrafluoropropene / Vinyl-Chloride

## Section 15. Regulatory information

**Pennsylvania** : None of the components are listed.

**California Prop. 65**

**⚠ WARNING:** This product can expose you to Vinyl chloride, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Ingredient name	No significant risk level	Maximum acceptable dosage level
Vinyl chloride	Yes.	-

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

<b>Australia</b>	: Not determined.
<b>Canada</b>	: Not determined.
<b>China</b>	: Not determined.
<b>Europe</b>	: Not determined.
<b>Japan</b>	: <b>Japan inventory (ENCS):</b> Not determined. <b>Japan inventory (ISHL):</b> Not determined.
<b>Malaysia</b>	: Not determined.
<b>New Zealand</b>	: Not determined.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: Not determined.
<b>Taiwan</b>	: Not determined.
<b>Thailand</b>	: Not determined.
<b>Turkey</b>	: Not determined.
<b>United States</b>	: Not determined.
<b>Viet Nam</b>	: Not determined.

## Section 16. Other information

### Hazardous Material Information System (U.S.A.)

Health	/	1
Flammability		4
Physical hazards		3

Flammable Liquid Mixture: 1-Chloro-1-Fluoroethane-(R151A) / 1-Chloro-2-Fluoroethane / 1,1,3-Trichloro-1-Propene / 1,1,3,3-Pentafluoropropene / 3-Chloro-1,1,1-Trifluoropropane / 3,3,3-Trifluoropropene / Propane / R143A-Trifluoroethane / R152A-1,1-Difluoroethane / R161-Fluoroethane / R263Fb-1, 1,1-Trifluoropropane / Trans-1,3,3,3-Tetrafluoropropene / Vinyl-Chloride

## Section 16. Other information

**Caution:** HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

### [National Fire Protection Association \(U.S.A.\)](#)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### [Procedure used to derive the classification](#)

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	On basis of test data

### [History](#)

<b>Date of printing</b>	:	5/29/2018
<b>Date of issue/Date of revision</b>	:	5/29/2018
<b>Date of previous issue</b>	:	5/8/2018
<b>Version</b>	:	1
<b>Key to abbreviations</b>	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations
<b>References</b>	:	Not available.
<b>Other special considerations</b>	:	WARNING: Contains HCFC 253FB, a substance which harms public health and environment by destroying ozone in the upper atmosphere.

### [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.