Safety Data Sheet

Material Name: PERFLUOROPROPANE

* * *Section 1 - IDENTIFICATION* * *

Manufacturer Information
Electronic Fluorocarbons, LLC
3266 Bergey Road
Hatfield PA 19440

Emergency #: 1-800-535-5053 (Infotrac)
Outside the US: 1-352-323-3500

Product Identifier: PERFLUOROPROPANE

Trade Names/Synonyms
OCTAFLUOROPROPANE; HALOCARBON 218; R 218; PFC 218; C3F8; UN 2424

Chemical Family
halogenated, aliphatic

Product Use
industrial

Restrictions on Use
None known.

* * *Section 2 - HAZARDS IDENTIFICATION* * *

GHS Classification
Gas under pressure, Liquefied gas

GHS LABEL ELEMENTS

Symbol(s)

Signal Word
WARNING

Hazard Statement(s)
Contains gas under pressure; may explode if heated

Precautionary Statement(s)
Protect from sunlight and store in well-ventilated place.

* * *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-19-7</td>
<td>PERFLUOROPROPANE</td>
<td>100</td>
</tr>
</tbody>
</table>

* * *Section 4 - FIRST AID MEASURES* * *

Inhalation
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
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Skin
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes
Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion
If a large amount is swallowed, get medical attention.

Note to Physicians
For inhalation, consider oxygen.

Symptoms: Immediate
difficulty breathing, suffocation, irregular heartbeat, frostbite

Symptoms: Delayed
No information on significant adverse effects.

**Section 5 - FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

Specific Hazards Arising from the Chemical
Negligible fire hazard.

Extinguishing Media
- carbon dioxide, regular dry chemical
- Large fires: Use regular foam or flood with fine water spray.

Unsuitable Extinguishing Media
None known.

Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures
Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Do not get water directly on material. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

**Section 6 - ACCIDENTAL RELEASE MEASURES**

Personal Precautions
Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions
Avoid release to the environment.

Methods for Containment
Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry.

Cleanup Methods
Do not enter confined spaces unless adequately ventilated. Damaged cylinders should be handled only by specialists.
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**Section 7 - HANDLING AND STORAGE**

**Handling Procedures**
Use only with adequate ventilation. Do not puncture container.

**Storage Procedures**

**Incompatibilities** oxidizing materials

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**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Exposure Limits**
ACGIH, EU, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

**Component Biological Limit Values**
There are no biological limit values for any of this product's components.

**Engineering Controls**
Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eyes/Face**
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Protective Clothing**
For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

**Glove Recommendations**
Wear insulated gloves.

**Respiratory Protection**
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**
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Material Name: PERFLUOROPROPANE

Physical State: Gas
Color: colorless
Odor: Not available
pH: Not available
Boiling Point: -37 °C
Decomposition: Not available
Vapor Pressure: Not available
Specific Gravity (water=1): 1.29
Log KOW: Not available
Viscosity: Not available

Appearance: Not available
Physical Form: liquefied gas
Odor Threshold: Not available
Melting/Freezing Point: -160 °C
Flash Point: not flammable
Evaporation Rate: Not available
Vapor Density (air = 1): Not available
Water Solubility: Not available
Auto Ignition: Not available
Molecular Formula: C3-F8

** *Section 10 - STABILITY AND REACTIVITY* **

Chemical Stability
Stable at normal temperatures and pressure.

Conditions to Avoid
Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Possibility of Hazardous Reactions
Will not polymerize.

Incompatible Materials
oxidizing materials

Decomposition Products
acid halides

** *Section 11 - TOXICOLOGICAL INFORMATION* **

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and no selected endpoints have been identified.

RTECS Acute Toxicity (selected)
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Immediate Effects
difficulty breathing, suffocation, irregular heartbeat, frostbite

Delayed Effects
No information on significant adverse effects.

RTECS Irritation
The components of this material have been reviewed, and RTECS publishes the following endpoints:
PERFLUOROPROPANE (76-19-7)
500 uL Skin Rabbit mild

Respiratory Sensitizer
No data available.

Dermal Sensitizer
No data available.

Carcinogenicity
Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.
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Mutagenic Data
   No data available.

Reproductive Effects Data
   No data available.

Tumorigenic Data
   No data available.

Specific Target Organ Toxicity - Single Exposure
   respiratory system

Specific Target Organ Toxicity - Repeated Exposure
   No data available.

Aspiration Hazard
   Not applicable.

Medical Conditions Aggravated by Exposure
   respiratory disorders

"""Section 12 - ECOLOGICAL INFORMATION"""

Component Analysis - Aquatic Toxicity
   No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability
   No data available.

Bioaccumulative Potential
   No data available.

Mobility in Environmental Media
   No data available.

"""Section 13 - DISPOSAL CONSIDERATIONS"""

Disposal Methods
   Dispose in accordance with all applicable regulations.

Component Waste Numbers
   The U.S. EPA has not published waste numbers for this product's components.

"""Section 14 - TRANSPORT INFORMATION"""

US DOT Information
   Shipping Name: Octafluoropropane
   UN/NA #: UN2424  Hazard Class: 2.2
   Required Label(s): 2.2

IMDG Information
   Shipping Name: Octafluoropropane
   UN #: UN2424  Hazard Class: 2.2

"""Section 15 - REGULATORY INFORMATION"""

Component Analysis

U.S. Federal Regulations
   None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.
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SARA 311/312 Hazardous Categories

Acute Health: Yes  Chronic Health: No  Fire: No  Pressure: Yes  Reactive: No

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

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<th>CA</th>
<th>MA</th>
<th>MN</th>
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Not regulated under California Proposition 65

Component Analysis - Inventory

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<th>CA</th>
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<tr>
<td>PERFLUOROPROPANE</td>
<td>76-19-7</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
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</table>

** **Section 16 - OTHER INFORMATION** **

NFPA Ratings: Health: 1  Fire: 0  Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States