

ACCORDING TO US CFR 1910.1200

## 1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

Product Name	R-116
Trade Name	CC0913
Synonym(s)	HEXAFLUOROETHANE (R-116), Perfluoroethane
CAS No.	76-16-4
EC No.	200-939-8

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)	Refrigerant.
Uses Advised Against	Not known.

### 1.3 Details of the supplier of the safety data sheet

Company Identification	Hudson Technologies Company
Address	PO Box 1541 One Blue Hill Plaza Pearl River, New York USA
Postal code	10965
Telephone	+1 (800) 953 2244
Fax	+1 (845) 512 6070
E-mail	<a href="mailto:information@hudsontech.com">information@hudsontech.com</a>

### 1.4 Emergency telephone number

Company	+1 (800) 501 4376
CHEMTREC (U.S.)	+1 (800) 424 9300
INTERNATIONAL	+1 (703) 527 3887

## 2. SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

US CFR 1910.1200	Gases under pressure; Press. Gas; Liquefied gas.
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2.2 Label elements

Product Name                        HEXAFLUOROETHANE (R-116)

Hazard Pictogram(s)



GHS04

Signal Word(s)                      Warning.

Hazard Statement(s)                H280: CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED.  
 OSHA-H01: MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.  
 CGA-HG01: MAY CAUSE FROSTBITE.

Precautionary Statement(s)      P202: Do not handle until all safety precautions have been read and understood.  
 P262: Do not get in eyes, on skin, or on clothing.  
 P271+P403: Use and store only outdoors or in a well-ventilated place.  
 P304, P340, P313: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention.  
 P302, P336, P315: IF ON SKIN: Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

2.3 Other hazards

May cause asphyxiation when concentrations are sufficient to reduce oxygen below safe breathing levels.  
 May cause frost-bite.

2.4 Additional Information

CGA-PG05: Use a back flow preventive device in the piping.  
 CGA-PG06: Close valve after each use and when empty.  
 CGA-PG02: Protect from sunlight when ambient temperature

exceeds 52 °C (125 °F).

CGA-PG27: Read and follow the Safety Data Sheet (SDS) before use.

This SDS is available in languages other than English.

**3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

HAZARDOUS INGREDIENT(S)	Common Names	CAS No.	%W/W	Hazard Statement(s)	Hazard Pictogram(s)
Perfluoroethane	HEXAFLUOROETHANE (R-116)	76-16-4	100	Press. Gas, Liquefied gas; H280	GHS04

**4. SECTION 4: FIRST AID MEASURES**

4.1 Description of first aid measures

Inhalation	If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, apply artificial respiration. Get medical attention.
Skin Contact	Flush skin with large amounts of water. Thaw frosted parts with lukewarm water. Do no rub affected area. If symptoms persist, obtain medical attention.
Eye Contact	Flush eyes with water for at least 15 minutes while holding eyelids open. If symptoms persist, obtain medical attention.
Ingestion	Unlikely route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: High concentrations: Headache, Dizziness, Confusion, Loss of coordination, Nausea, Drowsiness, Irregular heartbeats, Unconsciousness.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to a physician: Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

**5. SECTION 5: FIREFIGHTING MEASURES**

Non-flammable.

### 5.1 Extinguishing media

Suitable Extinguishing media As appropriate for surrounding fire.

Unsuitable extinguishing media None.

### 5.2 Special hazards arising from the substance or mixture

Contains gas under pressure; may explode if heated. Decomposes in a fire giving off toxic fumes: Hydrofluoric acid, carbonyl fluoride.

### 5.3 Advice for fire-fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. If it is safe to do so, containers should be removed from fire area because they are likely to rupture under fire conditions. Keep containers cool by spraying with water if exposed to fire.

## 6. SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Evacuate area. Shut off leaks if without risk. Ensure adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact.

### 6.2 Environmental precautions

Do not allow to enter drains, sewers or watercourses.

### 6.3 Methods and material for containment and cleaning up

Allow small spillages to evaporate provided there is adequate ventilation.

### 6.4 Reference to other sections

See Also Section 8, 13.

## 7. SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Provide sufficient ventilation. Avoid breathing gas. Avoid contact with skin and eyes. Wear protective gloves/protective clothing/eye protection/face protection. Do not drag, roll, slide or drop cylinders. Use a suitable hand truck design for cylinder movement. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object into valve cap openings. Doing so may damage valve causing a leak to occur. Secure

cylinders in an upright position at all times, close all valves when not in use. Keep closed even when empty. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Protect from sunlight. Store in a well-ventilated place.

Storage temperature

<125°F (52°C)

Storage life

Stable under normal conditions.

Incompatible materials

Alkalis, Alkali earth metals.

**8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

8.1 Control parameters

Occupational Exposure Limits None assigned.

8.2 Exposure controls

Appropriate engineering controls Ensure adequate ventilation.

Personal protection equipment



Eye Protection

Wear suitable eye/face protection.



Skin protection

Wear suitable gloves.



Respiratory protection

Wear suitable respiratory protective equipment if exposure to high levels of material is likely.

Thermal hazards

Not applicable.

**9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

9.1 Information on basic physical and chemical properties

Appearance

Gas.

Color: Colorless.

Odor

Slight ethereal.

Odor threshold

Not established.

pH

Not applicable.

Melting point/freezing point

Not applicable.

Initial boiling point and boiling

-108.9°F (-78.3°C)



range	
Flash Point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Non-flammable.
Upper/lower flammability or explosive limits	Not applicable.
Vapor pressure	439 psia @ 67.5°F (19.7°C)
Vapor density	4.8 (Air = 1)
Density (g/ml)	1.57g/cm <sup>3</sup> @ -108°F (-78°C)
Relative density	Not available.
Solubility(ies)	Solubility (Water): Not available Solubility (Other): Not available.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	>1598°F (870°C)
Decomposition Temperature (°C)	Not available.
Viscosity	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
9.2 Other information	
Percent Volatile (%)	100%

## 10. SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

Stable under normal conditions.

### 10.2 Chemical Stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

No hazardous reactions known if used for its intended purpose.

### 10.4 Conditions to avoid

Keep away from heat and direct sunlight.

### 10.5 Incompatible materials

Alkalis, Alkali earth metals.

### 10.6 Hazardous decomposition product(s)

Halogens, halogen acids and possibly carbonyl halides.

**11. SECTION 11: TOXICOLOGICAL INFORMATION**

11.1 Information on toxicological effects

Acute toxicity - Ingestion	Low acute toxicity.
Acute toxicity - Skin Contact	Low acute toxicity.
Acute toxicity - Inhalation	Low acute toxicity. LC50 (4h): 500000 ppm
Skin corrosion/irritation	Non-irritant.
Serious eye damage/irritation	Non-irritant.
Skin sensitization data	Not classified.
Respiratory sensitization data	Not classified.
Germ cell mutagenicity	There is no evidence of mutagenic potential.
Carcinogenicity	No evidence of carcinogenicity.
Reproductive toxicity	Not classified.
Lactation	Not classified.
STOT - single exposure	None anticipated.
STOT - repeated exposure	None anticipated.
Aspiration hazard	Not classified.

11.2 Other information

Not known.

**12. SECTION 12: ECOLOGICAL INFORMATION**

12.1 Toxicity

Toxicity - Aquatic invertebrates	Low toxicity to invertebrates.
Toxicity - Fish	Low toxicity to fish.
Toxicity - Algae	Low toxicity to algae.
Toxicity - Sediment	Not classified.
Compartment	
Toxicity - Terrestrial	Not classified.
Compartment	

12.2. Persistence and Degradation

None anticipated.

12.3. Bioaccumulative potential

None anticipated.

12.4. Mobility in soil

Not applicable.

12.5 Other adverse effects

None anticipated.

**13. SECTION 13: DISPOSAL CONSIDERATIONS**

13.1 Waste treatment methods

Containers must not be punctured or destroyed by burning, even when empty. Refer to manufacturer/supplier for information on recovery/recycling.

13.2 Additional Information

Disposal should be in accordance with local, state or national legislation.

**14. SECTION 14: TRANSPORT INFORMATION**

14.1 UN number

UN No. 2193

14.2 UN proper shipping name

UN proper shipping name HEXAFLUOROETHANE, COMPRESSED

14.3 Transport hazard class(es)

ADR/RID Class 2.2  
 IMDG Class 2.2  
 IMDG EMS Not available

ICAO/IATA

Excepted Quantities E1  
 Passenger and Cargo Aircraft Forbidden for transport by air.

Limited Quantities Packing

Instructions

Passenger and Cargo Aircraft Forbidden for transport by air.

Limited Quantities Max net Qty

Special Provisions Not applicable

Emergency Response 2 L

Guidebook (ERG) Code

ADR Classification Code 2A

ADR HIN 20

ADR Transport Category 3

Tunnel Restriction Code C/E

Emergency Action Code 2TE

Advice on Additional Personal Protection (APP) Not applicable

Protection (APP)



14.4 Packing group

Packing group Not applicable  
 Labels 2.2



Special Provisions Not applicable  
 Limited Quantities 120 m  
 Excepted Quantities E1  
 Mixed Packing Instructions for Packages P200

Special Packing Provisions for Packages Not applicable  
 Mixed Packing Instructions for Packages MP9

14.5 Environmental hazards

Environmental hazards Not classified as a Marine Pollutant.

14.6 Special precautions for user

Special precautions for user Not known.

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

Packing Instructions for Portable (M)

Tanks

Special Provisions for Portable Tanks Not applicable

Tanks

Tank Code for Tanks PxBN(M)

Special Provisions for Tanks TA4 TT9

Vehicle for Tank Carriage AT

Special Provisions for Carriage - Packages Not applicable

Special Provisions for Carriage - Bulk Not applicable

Bulk

Special Provisions for Carriage - CV9 CV10 CV36

Loading, Unloading and Handling

Special Provisions for Carriage - Not applicable



Operation

**15. SECTION 15: REGULATORY INFORMATION**

15.1 Federal

Toxic and hazardous substances Not listed.

(29 CFR 1910; Subpart Z )

National emission standards for Not listed.

hazardous air pollutants (40 CFR

61.01)

Title III Consolidated List of Lists Not listed.

TSCA (Toxic Substance Control Perfluoroethane (CAS No. : 76-16-4)

Act)

CAA 602 - Ozone Depleting Not listed.

Substances (ODS)

15.2 State

State Right to Know Lists Listed in: New Jersey.

Proposition 65 (California) Not listed.

15.3 Other

OSPAR List of Chemicals for Not listed.

Priority Action

NTP (National Toxicology Not listed.

Program)

OSHA Not listed.

(List of Highly Hazardous

Chemicals, Toxics and

Reactives)

IARC (International Agency for Not listed.

Research on Cancer)

**16. SECTION 16: OTHER INFORMATION**

The following sections contain 1-16

revisions or new statements:

NFPA		HMIS	
Health	2	Health	1
Fire	0	Flammability	0
Instability	0	Physical hazards	0

LEGEND:

Hazard Pictogram(s)



GHS04

Hazard Statement(s)

H280: Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

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

Additional Information required by Federal Standard 313 Rev. E:

Contract or Solicitation Number: SPE4A6-16-D-0226

Prime Contractor: Hudson Technologies, Inc.

Prime Contractor CAGE: 7DSQ0

National Stock Number (NSN): 6830001866665

Specification Reference:

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SAFETY DATA SHEET

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