

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	R236fa
Trade Name	R- 236fa, Refrigerant 236fa, HFC 236fa, 1,1,1,3,3,3-hexafluoropropane, Bistrifluoromethylmethane, 2,2-Dihydroperfluoropropane-
Synonym(s)	HEXAFLUOROPROPANE
CAS No.	690-39-1
EC No.	425-320-1

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	information@hudsontech.com

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 LIQUEFIED GAS, N.O.S. (1,1,1,3,3,3-HEXAFLUOROPROPANE)
R-236fa

Hazard Pictogram(s)



GHS04

Signal Word(s) Warning.

Hazard Statement(s) H280: Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.

Precautionary Statement(s) P410+P403: Protect from sunlight. Store in a well-ventilated place.
Use a back flow preventive device in the piping. CGA-PG05
Close valve after each use and when empty. CGA-PG06
Protect from sunlight when ambient temperature exceeds 52 °C (125 °F). CGA-PG02
Read and follow the Safety Data Sheet (SDS) before use. CGA-PG27
May cause drowsiness or dizziness.
May cause asphyxiation when concentrations are sufficient to reduce oxygen below safe breathing levels.
May cause frost-bite.

2.4 Additional Information

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)
FE-36 BLUSMIDDEL	R- 236fa, Refrigerant 236fa, HFC 236fa,	690-39-1	100	Press. Gas, Liquefied	GHS04

	1,1,1,3,3,3-hexafluoropropane, Bistrifluoromethylmethane, 2,2-Dihydroperfluoropropane			gas; H280	
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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 not 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: Do not give epinephrine (adrenaline).

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: Halogens, halogen acids and possibly carbonyl halides.

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. Avoid breathing gas. 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

Potassium, Calcium, Powdered Aluminium, Magnesium and Zinc.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
FE-36 BLUSMIDDEL	690-39-1	1000				

Remark Workplace Environmental Exposure Level (AIHA)

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 range	-29.5°F (-1.4°C) @ 736 mm Hg

Flash Point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Non-flammable.
Upper/lower flammability or explosive limits	Not applicable.
Vapor pressure	272.4kPa @ 77°F (25°C)
Vapor density	5.2 @ 77°F (25°C) (Air = 1)
Density (g/ml)	1.37gm/cc (H ₂ O = 1)
Relative density	Not available.
Solubility(ies)	Solubility (Water): Soluble in water. (725mg/l @ 14.7psia) Solubility (Other): Not available.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not applicable.
Decomposition Temperature (°C)	Not available.
Viscosity	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
9.2 Other information	
Percent Volatile (%)	100%
Volatile Organic Compound Content (%)	Gas.

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

Potassium, Calcium, Powdered Aluminium, Magnesium and Zinc.

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): >457000 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. EC50 (48 hour): 299mg/l
Toxicity - Fish	Low toxicity to fish. LC50 (96 hour): 292mg/l
Toxicity - Algae	Low toxicity to algae. EC50 (72 hour): >186mg/l
Toxicity - Sediment	Not classified.
Compartment	
Toxicity - Terrestrial	Not classified.
Compartment	

12.2. Persistence and Degradation

This substance is not readily biodegradable.

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.
R- 236FA is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

14. SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN No. 3163

14.2 UN proper shipping name

UN proper shipping name LIQUEFIED GAS, N.O.S. (1,1,1,3,3,3-HEXAFLUOROPROPANE)

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

Limited Quantities Packing

Instructions

Cargo Aircraft Limited Quantities

Max net Qty

Special Provisions Not applicable

Emergency Response 2L

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

14.4 Packing group

Packing group Not applicable
 Labels 2.2



Special Provisions 274
 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 T50
 Special Provisions for Portable Tanks Not applicable
 Tank Code for Tanks PxBN(M)
 Special Provisions for Tanks TA4 TT9



Vehicle for Tank Carriage AT
Special Provisions for Carriage - Not applicable
Packages
Special Provisions for Carriage - 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 FE-36 BLUSMIDDEL (CAS No.: 690-39-1)

Act)

CAA 602 - Ozone Depleting Not listed.

Substances (ODS)

15.2 State

State Right to Know Lists Not listed.

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
Research on Cancer) Not listed.

16. SECTION 16: OTHER INFORMATION

The following sections contain 1-16
revisions or new statements:

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

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



SAFETY DATA SHEET

25-Jan-2017

National Stock Number (NSN): 6830015259381

Specification Reference:

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