

**DuPont™ FE-227® fire extinguishing agent**

Version 2.0

Revision Date 05/09/2015

Ref. 13000000215

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : DuPont™ FE-227® fire extinguishing agent  
Tradename/Synonym : FM-200  
2-Hydroperfluoropropane  
Propane, 1,1,1,2,3,3,3-Heptafluoro-  
HFC-227eaHP  
2-Hydroheptafluoropropane  
Heptafluoropropane  
2-H-heptafluoropropane  
1,1,1,2,3,3,3-Heptafluoropropane  
R-227  
R227  
HFC-227ea

Product Use : Fire extinguishing agent, For professional users only.

Restrictions on use : Do not use product for anything outside of the above specified uses  
Manufacturer/Supplier : DuPont  
1007 Market Street  
Wilmington, DE 19898  
United States of America

Product Information : +1-800-441-7515 (outside the U.S. +1-302-774-1000)  
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)  
Transport Emergency : CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

**SECTION 2. HAZARDS IDENTIFICATION**

**Product hazard category**  
Gases under pressure                      Liquefied gas

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**Label content**

Pictogram

:



Signal word

: Warning

Hazardous warnings

: Contains gas under pressure; may explode if heated.

Hazardous prevention  
measures

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

**Other hazards**

Misuse or intentional inhalation abuse may lead to death without warning.

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Rapid evaporation of the liquid may cause frostbite.

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

Component	CAS-No.	Concentration
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0	100 %

**SECTION 4. FIRST AID MEASURES**

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General advice	: Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.
Inhalation	: Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.
Eye contact	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.
Ingestion	: Is not considered a potential route of exposure.
Most important symptoms/effects, acute and delayed	: No applicable data available.
Protection of first-aiders	: If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to 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.

**SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media	: This material is a fire extinguishing agent.
Unsuitable extinguishing media	: No applicable data available.
Specific hazards	: The product is not flammable.
Special protective equipment for firefighters	: No applicable data available.
Further information	: No applicable data available.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

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

- Safeguards (Personnel) : Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Keep upwind of leak - evacuate until gas has dispersed.
- Environmental precautions : Should not be released into the environment.  
In accordance with local and national regulations.
- Spill Cleanup : Evaporates.  
Ventilate area using forced ventilation, especially low or enclosed places where heavy vapors might collect.
- Accidental Release Measures : No applicable data available.

**SECTION 7. HANDLING AND STORAGE**

- Handling (Personnel) : Do not breathe gas. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. Wash hands thoroughly after handling. Wash clothing after use. Decomposition will occur when product comes in contact with open flame or electrical heating elements.  
Handle in accordance with good industrial hygiene and safety practice.
- Handling (Physical Aspects) : No applicable data available.
- Dust explosion class : No applicable data available.
- Storage : Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point.  
Do not drag, slide or roll cylinders.  
Never attempt to lift cylinder by its cap.  
Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.  
Cylinders should be stored upright and firmly secured to prevent falling or being knocked over.
- Separate full containers from empty containers.  
Keep at temperature not exceeding 52°C.  
Do not store near combustible materials.  
Keep container tightly closed in a dry and well-ventilated place.

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Store in original container.  
Protect from contamination.  
Avoid area where salt or other corrosive materials are present.  
The product has an indefinite shelf life when stored properly.

Storage period : &gt; 10 yr

Storage temperature : &lt; 52 °C (&lt; 126 °F)

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

Engineering controls : Use only with adequate ventilation. Keep container tightly closed.

Personal protective equipment

Respiratory protection : Wear NIOSH approved respiratory protection as appropriate.

Hand protection : Additional protection: Impervious gloves

Eye protection : Safety glasses with side-shields Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Skin and body protection : Where there is potential for skin contact, have available and wear as appropriate, impervious gloves, apron, pants, jacket, hood and boots.

Protective measures : Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values

1,1,1,2,3,3,3-Heptafluoropropane  
AEL \* (DUPONT) 1,000 ppm 8 & 12 hr. TWA

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

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Appearance	
Physical state	: gaseous
Form	: Liquefied gas
Color	: No applicable data available.
Odor	: none
Odor threshold	: No applicable data available.
pH	: No applicable data available.
Melting point/freezing point	: Melting point/range -131 °C (-204 °F)
Boiling point/boiling range	: Boiling point -16.3 °C (2.7 °F)
Flash point	: No applicable data available.
Evaporation rate	: No applicable data available.
Flammability (solid, gas)	: No applicable data available.
Upper explosion limit	: No applicable data available.
Lower explosion limit	: No applicable data available.
Vapor pressure	: 4,547 hPa at 25 °C (77 °F)
Vapour density	: No applicable data available.
Density	: 1.388 g/cm <sup>3</sup> at 25 °C (77 °F) (as liquid)
Specific gravity (Relative density)	: No applicable data available.
Water solubility	: No applicable data available.
Solubility(ies)	: No applicable data available.
Partition coefficient: n-octanol/water	: No applicable data available.

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Auto-ignition temperature	:	No applicable data available.
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	No applicable data available.
Viscosity, dynamic	:	No applicable data available.

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	:	Decomposes on heating.
Chemical stability	:	Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	:	Polymerization will not occur.
Conditions to avoid	:	The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen, the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions. To avoid thermal decomposition, do not overheat.
Incompatible materials	:	Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts
Hazardous decomposition products	:	Hazardous decomposition products formed under fire conditions.: Hazardous thermal decomposition products may include: Hydrogen halides, Carbon oxides, Fluorocarbons, Carbonyl halides

**SECTION 11. TOXICOLOGICAL INFORMATION**

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Inhalation 4 h LC50	:	> 788698 ppm , Rat
Inhalation	:	Dog Cardiac sensitization
Dermal	:	Not applicable
Oral	:	Not applicable
Skin irritation	:	No skin irritation, Not tested on animals Not expected to cause skin irritation based on expert review of the



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properties of the substance.

Eye irritation : No eye irritation, Not tested on animals  
Not expected to cause eye irritation based on expert review of the properties of the substance.

Sensitisation : Does not cause skin sensitisation., Not tested on animals  
Not expected to cause sensitization based on expert review of the properties of the substance.

Did not cause sensitisation on laboratory animals. There are no reports of human respiratory sensitization.

Repeated dose toxicity : Inhalation  
Rat  
-  
No toxicologically significant effects were found.

Further information : Cardiac sensitisation threshold limit : 730190 mg/m3

1,1,1,2,3,3,3-Heptafluoropropane  
Carcinogenicity : Not classifiable as a human carcinogen.  
Animal testing did not show any carcinogenic effects.

Mutagenicity : Animal testing did not show any mutagenic effects.  
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Reproductive toxicity : No toxicity to reproduction  
Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.

### Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

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**SECTION 12. ECOLOGICAL INFORMATION**

## Aquatic Toxicity

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- 96 h LC50 : Danio rerio (zebra fish) > 200 mg/l  
Information given is based on data obtained from similar substances.
- 96 h LC50 : Oncorhynchus mykiss (rainbow trout) > 81.8 mg/l  
Information given is based on data obtained from similar substances.
- 72 h EC50 : Pseudokirchneriella subcapitata (microalgae) > 114 mg/l  
Information given is based on data obtained from similar substances.
- 72 h EC50 : Pseudokirchneriella subcapitata (microalgae) > 118 mg/l  
Information given is based on data obtained from similar substances.
- 48 h EC50 : Daphnia magna (Water flea) > 200 mg/l  
Information given is based on data obtained from similar substances.
- 48 h EC50 : Daphnia magna (Water flea) > 97.9 mg/l  
Information given is based on data obtained from similar substances.

## Environmental Fate

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- Biodegradability aerobic : 1 % OECD Test Guideline 301  
Not readily biodegradable.
- Biodegradability aerobic : 5 % OECD Test Guideline 301  
Not readily biodegradable.

**SECTION 13. DISPOSAL CONSIDERATIONS**

- Waste disposal methods - Product : Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.
- Contaminated packaging : Empty pressure vessels should be returned to the supplier.

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**SECTION 14. TRANSPORT INFORMATION**

DOT	UN number	: 3296
	Proper shipping name	: Heptafluoropropane
	Class	: 2.2
	Labelling No.	: 2.2
IATA_C	UN number	: 3296
	Proper shipping name	: Heptafluoropropane
	Class	: 2.2
	Labelling No.	: 2.2
IMDG	UN number	: 3296
	Proper shipping name	: HEPTAFLUOROPROPANE
	Class	: 2.2
	Labelling No.	: 2.2

**SECTION 15. REGULATORY INFORMATION**

TSCA	: On the inventory, or in compliance with the inventory
SARA 313 Regulated Chemical(s)	: 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.
California Prop. 65	: Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

**SECTION 16. OTHER INFORMATION**

® DuPont's registered trademark  
Before use read DuPont's safety information.  
For further information contact the local DuPont office or DuPont's nominated distributors.



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