


DuPont™ VERTREL® XF specialty fluid

Version 4.1

Revision Date 02/06/2014

Ref. 13000000559

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™ VERTREL® XF specialty fluid
Tradename/Synonym	:	Vertrel® 4310 HFC-43-10mee HFC-4310
MSDS Number	:	13000000559
Product Use	:	Cleaning agent
Manufacturer	:	DuPont 1007 Market Street Wilmington, DE 19898
Product Information	:	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
Emergency Overview

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Prolonged skin contact may defat the skin and produce dermatitis. Effects of breathing high concentrations of vapour may include: May cause cardiac arrhythmia.

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

Potential Health Effects
Inhalation

1,1,1,2,2,3,4,5,5,5-
Decafluoropentane

: Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.
Other symptoms potentially related to misuse or inhalation abuse are: Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness, Convulsions.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.


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Repeated exposure
1,1,1,2,2,3,4,5,5,5-
Decafluoropentane : Adverse effects from repeated inhalation may include: Central nervous system effects

Carcinogenicity
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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	100 %

SECTION 4. FIRST AID MEASURES

Skin contact : Take off all contaminated clothing immediately. Wash off with warm water.

Eye contact : In case of eye contact
Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes.
Get medical attention.

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.

Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Drink 1 or 2 glasses of water. If vomiting occurs, have victim lean forward to reduce the risk of aspiration. Consult a physician.

General advice : Never give anything by mouth to an unconscious person. Victim to lie down in the recovery position, cover and keep him warm. Give oxygen or artificial respiration if needed. When symptoms persist or in all cases of doubt seek medical advice.



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Notes to physician : Do not give adrenaline or similar drugs.

SECTION 5. FIREFIGHTING MEASURES

Flammable Properties

Flash point : Tag closed cup
Method : ASTM D 56
does not flash

Lower explosion limit/ lower flammability limit : Method : None per ASTM E681

Upper explosion limit/ upper flammability limit : Method : None per ASTM E681

Fire and Explosion Hazard : Pressure build-up. Fire or intense heat may cause violent rupture of packages.

Hazardous combustion products: Hydrogen fluoride Fluorinated hydrocarbons
Carbonyl fluoride Carbon oxides

The product is not flammable.

Suitable extinguishing media : Water spray, Water mist, Dry chemical, Carbon dioxide (CO2)

Firefighting Instructions : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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 to safe areas. Ventilate area, especially low or enclosed


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places where heavy vapours might collect. In case of insufficient ventilation, wear suitable respiratory equipment. Refer to protective measures listed in sections 7 and 8.

- Spill Cleanup : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- Accidental Release Measures : Prevent further leakage or spillage. Prevent spreading over a wide area (e.g. by containment or oil barriers). Should not be released into the environment.

SECTION 7. HANDLING AND STORAGE

- Handling (Personnel) : Avoid contact with skin, eyes and clothing. Avoid breathing vapours or mist. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.
Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday.
- Handling (Physical Aspects) : Material should not be dispensed from its container by pouring, except for small sample containers where fume hoods or where other ventilation is used to manage the exposure limits. The use of a drum pump is recommended for dispensing from shipping containers.
- Storage : Protect from contamination. Keep container tightly closed in a dry and well-ventilated place. Store in original container. Avoid freezing temperatures. If stored below -10 °C (14 °F), mix prior to use.
- Storage temperature : < 52 °C (< 126 °F)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls : Use sufficient ventilation to keep employee exposure below recommended limits.
- Personal protective equipment
Respiratory protection : For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.


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SECTION 10. STABILITY AND REACTIVITY

- Stability : No decomposition if stored and applied as directed.
- Hazardous decomposition products : Hazardous decomposition products formed under fire conditions.: Fluorinated hydrocarbons, Hydrogen fluoride, Carbon dioxide (CO₂), Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

- DuPont™ VERTREL® XF specialty fluid
- Further information : Inhalation of vapours in high concentration may cause shortness of breath (lung oedema).
- 1,1,1,2,2,3,4,5,5,5-Decafluoropentane
- Dermal LD50 : > 5,000 mg/kg , rabbit
- Oral LD50 : > 5,000 mg/kg , rat
- Inhalation 4 h LC50 : 114 mg/l , rat
Central nervous system effects
Convulsions
- Skin irritation : No skin irritation, rabbit
- Eye irritation : No eye irritation, rabbit
- Skin sensitization : Did not cause sensitisation on laboratory animals., guinea pig
- Repeated dose toxicity : Inhalation
rat
- No toxicologically significant effects were found.

SECTION 12. ECOLOGICAL INFORMATION

- Aquatic Toxicity
- 1,1,1,2,2,3,4,5,5,5-Decafluoropentane
- 96 h LC50 : Oncorhynchus mykiss (rainbow trout) 13.9 mg/l

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96 h LC50	:	Pimephales promelas (fathead minnow) 27.2 mg/l
96 h LC50	:	Danio rerio (zebra fish) 13 mg/l
72 h EC50	:	Pseudokirchneriella subcapitata (green algae) > 120 mg/l
48 h LC50	:	Daphnia magna (Water flea) 11.7 mg/l
21 d	:	NOEC Daphnia magna (Water flea) 1.72 mg/l

Environmental Fate

1,1,1,2,2,3,4,5,5,5-Decafluoropentane

Biodegradability : Not readily biodegradable.

Bioaccumulation : Bioaccumulation is unlikely.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : Can be used after re-conditioning. If recycling is not practicable, dispose of in compliance with local regulations. The product should not be allowed to enter drains, water courses or the soil.

Environmental Hazards : If recycling is not practicable, dispose of in compliance with local regulations.

SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA : Listed

1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE (CAS# 138495-42-8) is

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controlled by TSCA Section 5, Significant New Use Rule (SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal and film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.

SARA 313 Regulated Chemical(s) : SARA 313: 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

Vertrel®

Before use read DuPont's safety information.

For further information contact the local DuPont office or DuPont's nominated distributors.

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Contact person : MSDS Coordinator, DuPont Chemicals and Fluoroproducts, Wilmington, DE
19898, (800) 441-7515

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