

# SAFETY DATA SHEET



## Vertrel™ SDG specialty fluid

Version 11.0      Revision Date: 09/07/2021      SDS Number: 1333485-00041      Date of last issue: 09/16/2020  
Date of first issue: 02/27/2017

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### SECTION 1. IDENTIFICATION

Product name : Vertrel™ SDG specialty fluid

SDS-Identcode : 130000033958

#### Manufacturer or supplier's details

Company name of supplier : The Chemours Company FC, LLC

Address : 1007 Market Street  
Wilmington, DE 19801 United States of America (USA)

Telephone : 1-844-773-CHEM (outside the U.S. 1-302-773-1000)

Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-773-2000) ; Transport emergency: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

#### Recommended use of the chemical and restrictions on use

Recommended use : Cleaning agent

Restrictions on use : For professional and industrial installation and use only.

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Eye irritation : Category 2B

Specific target organ toxicity : Category 3  
- single exposure

#### GHS label elements

Hazard pictograms : 

Signal Word : Warning

Hazard Statements : H320 Causes eye irritation.  
H336 May cause drowsiness or dizziness.

Precautionary Statements : **Prevention:**  
P261 Avoid breathing mist or vapors.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.

**Response:**

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P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical attention.

### Storage:

P405 Store locked up.

### Disposal:

P501 Dispose of contents and container to an approved waste disposal plant.

### Other hazards

In use, may form flammable/explosive vapor-air mixture.

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

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.

Rapid evaporation of the product may cause frostbite.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
Trans-Dichloroethylene	156-60-5	>= 70 - < 90
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	>= 10 - < 20

Actual concentration is withheld as a trade secret

## SECTION 4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.  
Get medical attention if symptoms occur.

In case of skin contact : In case of contact, immediately flush skin with plenty of water.  
Remove contaminated clothing and shoes.  
Get medical attention.  
Wash clothing before reuse.  
Thoroughly clean shoes before reuse.

In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.  
If easy to do, remove contact lens, if worn.  
Get medical attention.

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- If swallowed : If swallowed, DO NOT induce vomiting.  
Get medical attention if symptoms occur.  
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : May cause cardiac arrhythmia.  
Skin contact may provoke the following symptoms:  
Dermatitis  
Irritation  
Pain  
superficial burning sensation  
Itching  
Redness  
Swelling of tissue  
Rash  
Discomfort  
Eye contact may provoke the following symptoms  
Irritation  
tearing  
Discomfort  
Redness  
Effects of breathing high concentrations of vapor may include:  
Tiredness  
Drowsiness  
central nervous system effects  
Convulsions  
Dizziness  
confusion  
Adverse effects from repeated inhalation may include  
central nervous system effects  
Aspiration may cause pulmonary edema and pneumonitis.  
Causes eye irritation.  
May cause drowsiness or dizziness.
- Protection of first-aiders : First Aid responders should pay attention to self-protection,  
and use the recommended personal protective equipment  
when the potential for exposure exists (see section 8).
- Notes to physician : Because of possible disturbances of cardiac rhythm, ca-  
techolamine drugs, such as epinephrine, that may be used in  
situations of emergency life support should be used with spe-  
cial caution.
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### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : None known.
- Specific hazards during fire fighting : Vapors may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.
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- Hazardous combustion products : Carbon oxides  
Chlorine compounds  
Hydrogen fluoride  
carbonyl fluoride  
Fluorine compounds
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use water spray to cool unopened containers.  
Remove undamaged containers from fire area if it is safe to do so.  
Evacuate area.
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.
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### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
- Environmental precautions : Avoid release to the environment.  
Prevent further leakage or spillage if safe to do so.  
Prevent spreading over a wide area (e.g., by containment or oil barriers).  
Retain and dispose of contaminated wash water.  
Local authorities should be advised if significant spillages cannot be contained.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material.  
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.  
Clean up remaining materials from spill with suitable absorbent.  
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.  
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.
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### SECTION 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.  
If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventila-
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- tion.
- Advice on safe handling : Do not get on skin or clothing.  
Avoid breathing mist or vapors.  
Do not swallow.  
Do not get in eyes.  
Wash skin thoroughly after handling.  
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment  
Keep away from heat and sources of ignition.  
Take precautionary measures against static discharges.  
Take care to prevent spills, waste and minimize release to the environment.
- Conditions for safe storage : Do not expose drums to direct heat or temperature above 46°C (115°F) to avoid pressurizing and possibly distorting the drums.  
Material should not be dispensed by pouring from pail/drum shipping containers containing 5 gallons or more. The use of a drum pump is recommended for dispensing from pail/drum shipping containers with 5 gallons or more, except for smaller containers where adequate ventilation can be used to manage the exposure.  
Keep in properly labeled containers.  
Store locked up.  
Keep in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.
- Materials to avoid : No special restrictions on storage with other products.
- Recommended storage temperature : < 115 °F / < 46 °C
- Storage period : > 10 y
- Further information on storage stability : The product has an indefinite shelf life when stored properly.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Trans-Dichloroethylene	156-60-5	TWA	200 ppm	ACGIH
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	TWA	225 ppm 2,320 mg/m <sup>3</sup>	US WEEL
		STEL	700 ppm 7,217 mg/m <sup>3</sup>	US WEEL

- Engineering measures : Minimize workplace exposure concentrations.  
If sufficient ventilation is unavailable, use with local exhaust

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ventilation.  
If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

### Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection  
Material : Viton®  
Glove thickness : 0.7 mm  
Wearing time : 120 min

Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often!

Eye protection : Wear the following personal protective equipment:  
Safety goggles

Skin and body protection : Wear the following personal protective equipment:  
If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic protective clothing.

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.  
When using do not eat, drink or smoke.  
Wash contaminated clothing before re-use.

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid  
Color : clear, colorless

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Odor	:	slight, ether-like
Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	< -58 °F / < -50 °C
Initial boiling point and boiling range	:	109 °F / 43 °C
Flash point	:	Method: Pensky-Martens closed cup does not flash
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	No data available
Upper explosion limit / Upper flammability limit	:	Upper flammability limit 14 %(V) Method: ASTM E681
Lower explosion limit / Lower flammability limit	:	Lower flammability limit 7 %(V) Method: ASTM E681
Vapor pressure	:	517 hPa (77 °F / 25 °C)
Relative vapor density	:	2.1
Density	:	1.29 g/cm <sup>3</sup> (77 °F / 25 °C)
Solubility(ies)		
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	0.59 mPa.s (77 °F / 25 °C)
Viscosity, kinematic	:	No data available
Explosive properties	:	In use may form flammable/explosive vapor-air mixture.

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Oxidizing properties : The substance or mixture is not classified as oxidizing.  
Particle size : Not applicable

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.  
Chemical stability : Stable under normal conditions.  
Possibility of hazardous reactions : Vapors may form flammable mixture with air  
In use may form flammable/explosive vapor-air mixture.  
Conditions to avoid : None known.  
Incompatible materials : None.  
Hazardous decomposition products : No hazardous decomposition products are known.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Inhalation  
Skin contact  
Ingestion  
Eye contact

#### Acute toxicity

Not classified based on available information.

#### Components:

##### **Trans-Dichloroethylene:**

Acute oral toxicity : LD50 (Rat): 7,902 mg/kg  
Method: OECD Test Guideline 420  
Acute inhalation toxicity : LC50 (Rat): 95.5 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: OECD Test Guideline 403  
Lowest observed adverse effect concentration (Dog): 250000 ppm  
Test atmosphere: gas  
Cardiac sensitisation threshold limit (Dog): 991,309 mg/m<sup>3</sup>  
Test atmosphere: gas  
Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Method: OECD Test Guideline 402

##### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**



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Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Acute inhalation toxicity : LC50 (Rat): 114 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### **Skin corrosion/irritation**

Not classified based on available information.

### **Components:**

#### **Trans-Dichloroethylene:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : Mild skin irritation

#### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**

Species : Rabbit  
Result : No skin irritation

### **Serious eye damage/eye irritation**

Causes eye irritation.

### **Components:**

#### **Trans-Dichloroethylene:**

Species : Rabbit  
Result : Irritation to eyes, reversing within 7 days  
Method : OECD Test Guideline 405

#### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**

Species : Rabbit  
Result : No eye irritation

### **Respiratory or skin sensitization**

#### **Skin sensitization**

Not classified based on available information.

#### **Respiratory sensitization**

Not classified based on available information.

### **Components:**

#### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**

Routes of exposure : Skin contact  
Species : Guinea pig  
Result : negative

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**Germ cell mutagenicity**

Not classified based on available information.

**Components:****Trans-Dichloroethylene:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
 Method: OECD Test Guideline 471  
 Result: negative

Test Type: In vitro mammalian cell gene mutation test  
 Method: OECD Test Guideline 476  
 Result: negative

Test Type: Chromosome aberration test in vitro  
 Method: OECD Test Guideline 473  
 Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
 cytogenetic assay)  
 Species: Mouse  
 Application Route: Ingestion  
 Method: OECD Test Guideline 474  
 Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ  
 cell mutagen.

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

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ  
 cell mutagen.

**Carcinogenicity**

Not classified based on available information.

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**Reproductive toxicity**

Not classified based on available information.

**Components:****Trans-Dichloroethylene:**

Effects on fetal development : Test Type: Embryo-fetal development  
 Species: Rat  
 Application Route: Inhalation  
 Method: OECD Test Guideline 414

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Result: negative

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

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

**STOT-single exposure**

May cause drowsiness or dizziness.

**Components:**

**Trans-Dichloroethylene:**

Assessment : May cause drowsiness or dizziness.

**STOT-repeated exposure**

Not classified based on available information.

**Components:**

**Trans-Dichloroethylene:**

Routes of exposure : Inhalation  
 Assessment : No significant health effects observed in animals at concentrations of 250 ppmV/6h/d or less.

Routes of exposure : Ingestion  
 Assessment : No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

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

Assessment : No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

**Repeated dose toxicity**

**Components:**

**Trans-Dichloroethylene:**

Species : Rat, male and female  
 NOAEL : 4000 ppm  
 LOAEL : > 4000 ppm  
 Application Route : Inhalation  
 Exposure time : 90 Days  
 Method : OECD Test Guideline 413

Species : Rat, male and female  
 NOAEL : 3,210 mg/kg  
 LOAEL : > 3,210 mg/kg  
 Application Route : Ingestion  
 Exposure time : 98 Days  
 Method : OECD Test Guideline 408

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

Species : Rat  
NOAEL : 15.463 mg/l  
LOAEL : 3.6081 mg/l  
Application Route : inhalation (vapor)  
Exposure time : 90 d  
Method : OECD Test Guideline 413  
Remarks : No significant adverse effects were reported

### Aspiration toxicity

Not classified based on available information.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

#### Trans-Dichloroethylene:

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 135 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 220 mg/l  
Exposure time: 48 h  
Method: EPA-660/3-75-009

Toxicity to algae/aquatic plants : EbC50 (Pseudokirchneriella subcapitata (green algae)): 36.36 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 201

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

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 13.9 mg/l  
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 27.2 mg/l  
Exposure time: 96 h

LC50 (Danio rerio (zebra fish)): 13 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 11.7 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 120 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1.72 mg/l  
Exposure time: 21 d

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### Persistence and degradability

#### Components:

##### **Trans-Dichloroethylene:**

Biodegradability : Result: not rapidly degradable  
Method: OECD Test Guideline 301D

##### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**

Biodegradability : Result: Not readily biodegradable.

### Bioaccumulative potential

#### Components:

##### **Trans-Dichloroethylene:**

Partition coefficient: n-octanol/water : log Pow: 2.06

##### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane:**

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

### Mobility in soil

No data available

### Other adverse effects

No data available

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
If not otherwise specified: Dispose of as unused product.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### **UNRTDG**

Not regulated as a dangerous good

#### **IATA-DGR**

Not regulated as a dangerous good

#### **IMDG-Code**

Not regulated as a dangerous good

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

Not applicable for product as supplied.

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### Domestic regulation

#### 49 CFR

UN/ID/NA number : UN 3082  
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.  
(Trans-Dichloroethylene)  
Class : 9  
Packing group : III  
Labels : CLASS 9  
ERG Code : 171  
Marine pollutant : no  
Remarks : THE ABOVE INFORMATION ONLY APPLIES TO PACKAGE SIZES WHERE THE HAZARDOUS SUBSTANCE MEETS THE REPORTABLE QUANTITY.

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Trans-Dichloroethylene	156-60-5	1000	1209
1,2-Butylene oxide	106-88-7	100	133868

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Serious eye damage or eye irritation  
Specific target organ toxicity (single or repeated exposure)

**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.

### US State Regulations

#### Pennsylvania Right To Know

Trans-Dichloroethylene 156-60-5  
1,1,1,2,2,3,3,4,4,5,5,5-Decafluoropentane 138495-42-8  
1,1,2,2,3,3,4-Heptafluorocyclopentane 15290-77-4  
1,2-Butylene oxide 106-88-7

#### California List of Hazardous Substances

Trans-Dichloroethylene 156-60-5

### Additional regulatory information

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1,1,1,2,2,3,4,5,5,5-      138495-42-8  
Decafluoropentane

The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.

See 40 CFR § 721.5645

This material contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D:

1,1,2,2,3,3,4-      15290-77-4  
Heptafluorocyclopentane

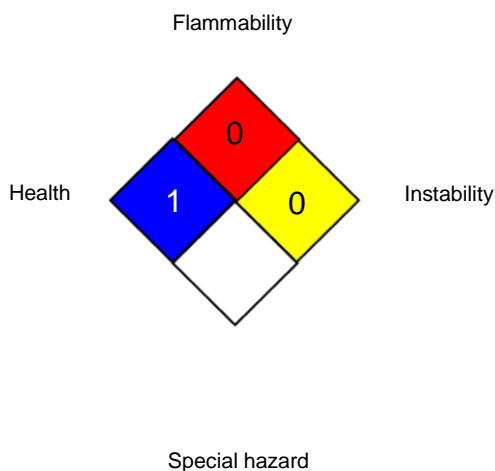
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.

See 40 CFR § 721.10434

### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA 704:



##### HMIS® IV:

HEALTH	/	1
FLAMMABILITY		0
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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Before use read Chemours safety information.

For further information contact the local Chemours office or nominated distributors.

#### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)  
ACGIH / TWA : 8-hour, time-weighted average  
US WEEL / TWA : 8-hr TWA  
US WEEL / STEL : Short-Term TWA

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation,

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and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

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Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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