

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

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### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Trade name : Vertrel™ X-DF specialty fluid

SDS-Identcode : 130000000179

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

Use of the Sub-  
stance/Mixture : Drying agent

Recommended restrictions : For professional and industrial installation and use only.  
on use

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

Company : Chemours Netherlands B.V.  
Baanhoekweg 22  
3313 LA Dordrecht Netherlands

Telephone : +31-(0)-78-630-1011

Telefax : +31-78-6163737

E-mail address of person  
responsible for the SDS : sds-support@chemours.com

#### 1.4 Emergency telephone number

+(44)-870-8200418 (CHEMTREC - Recommended)

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### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2 H319: Causes serious eye irritation.

Specific target organ toxicity - single ex-  
posure, Category 3 H336: May cause drowsiness or dizziness.

Long-term (chronic) aquatic hazard, Cat-  
egory 3 H412: Harmful to aquatic life with long lasting ef-  
fects.

#### 2.2 Label elements

##### Labelling (REGULATION (EC) No 1272/2008)

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

Version 8.0      Revision Date: 21.04.2023      SDS Number: 1325035-00045      Date of last issue: 19.01.2023  
Date of first issue: 27.02.2017

Hazard pictograms :



Signal word : Warning

Hazard statements :  
H319 Causes serious eye irritation.  
H336 May cause drowsiness or dizziness.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements :  
**Prevention:**  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment.  
P280 Wear eye protection/ face protection.  
**Response:**  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.

Hazardous components which must be listed on the label:

Trans-Dichloroethylene

### Additional Labelling

EUH205 Contains epoxy constituents. May produce an allergic reaction.  
EUH209 Can become highly flammable in use.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Vapours 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

### 3.2 Mixtures

#### Components

| Chemical name                                 | CAS-No.<br>EC-No.<br>Index-No.<br>Registration number | Classification             | Concentration<br>(% w/w) |
|-----------------------------------------------|-------------------------------------------------------|----------------------------|--------------------------|
| Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5- | 138495-42-8<br>420-640-8                              | Aquatic Chronic 3;<br>H412 | >= 50 - < 70             |

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

Version 8.0      Revision Date: 21.04.2023      SDS Number: 1325035-00045      Date of last issue: 19.01.2023  
Date of first issue: 27.02.2017

|                                                                     |                                                           |                                                                                                              |              |
|---------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------|
| decafluoropentane and (3S,4S)-1,1,1,2,2,3,4,5,5,5-decafluoropentane | 602-100-00-5<br>01-2119446695-28-0000                     |                                                                                                              |              |
| Trans-Dichloroethylene                                              | 156-60-5<br>205-860-2<br>602-026-00-3<br>01-2120093504-55 | Flam. Liq. 2; H225<br>Acute Tox. 4; H332<br>Eye Irrit. 2; H319<br>STOT SE 3; H336<br>Aquatic Chronic 3; H412 | >= 30 - < 50 |

For explanation of abbreviations see section 16.

### SECTION 4: First aid measures

#### 4.1 Description of 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.
- 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).
- 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.
- If swallowed : If swallowed, DO NOT induce vomiting.  
Get medical attention if symptoms occur.  
Rinse mouth thoroughly with water.

#### 4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : May cause cardiac arrhythmia.

Skin contact may provoke the following symptoms:  
Dermatitis  
Irritation  
Pain  
superficial burning sensation  
Itching  
Redness

**Vertrel™ X-DF specialty fluid**

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

---

Swelling of tissue  
Rash  
Discomfort

Eye contact may provoke the following symptoms  
Irritation  
tearing  
Discomfort  
Redness

Effects of breathing high concentrations of vapour 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 oedema and pneumonitis.

Risks : Causes serious eye irritation.  
May cause drowsiness or dizziness.

**4.3 Indication of any immediate medical attention and special treatment needed**

Treatment : 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.

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**SECTION 5: Firefighting measures****5.1 Extinguishing media**

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : None known.

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

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Hydrogen fluoride  
carbonyl fluoride  
Carbon oxides  
Chlorine compounds

**Vertrel™ X-DF specialty fluid**

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

---

**5.3 Advice for firefighters**

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.
- 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.
- 

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

- Personal precautions : Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

**6.2 Environmental precautions**

- 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.

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

- Methods for cleaning up : Soak up with inert absorbent material. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked 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.

**6.4 Reference to other sections**

See sections: 7, 8, 11, 12 and 13.

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**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

Version 8.0      Revision Date: 21.04.2023      SDS Number: 1325035-00045      Date of last issue: 19.01.2023  
Date of first issue: 27.02.2017

- Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.
- Advice on safe handling : Do not get on skin or clothing.  
Avoid breathing mist or vapours.  
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  
Take care to prevent spills, waste and minimize release to the environment.
- 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.

### 7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : 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 labelled containers. Store locked up. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations.
- Advice on common storage : No special restrictions on storage with other products.
- Recommended storage temperature : < 46 °C
- Further information on storage stability : The product has an indefinite shelf life when stored properly.

### 7.3 Specific end use(s)

- Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

| Components                                    | CAS-No.     | Value type (Form of exposure) | Control parameters     | Basis |
|-----------------------------------------------|-------------|-------------------------------|------------------------|-------|
| Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5- | 138495-42-8 | TWA                           | 225 ppm<br>2,320 mg/m3 | WEEL  |

## SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

Version 8.0      Revision Date: 21.04.2023      SDS Number: 1325035-00045      Date of last issue: 19.01.2023  
 Date of first issue: 27.02.2017

|                                                                     |  |      |                        |      |
|---------------------------------------------------------------------|--|------|------------------------|------|
| decafluoropentane and (3S,4S)-1,1,1,2,2,3,4,5,5,5-decafluoropentane |  |      |                        |      |
|                                                                     |  | STEL | 700 ppm<br>7,217 mg/m3 | WEEL |

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

| Substance name                                                                                                   | End Use   | Exposure routes | Potential health effects   | Value           |
|------------------------------------------------------------------------------------------------------------------|-----------|-----------------|----------------------------|-----------------|
| Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)-1,1,1,2,2,3,4,5,5,5-decafluoropentane | Workers   | Inhalation      | Long-term systemic effects | 2072 mg/m3      |
|                                                                                                                  | Workers   | Inhalation      | Acute systemic effects     | 2072 mg/m3      |
|                                                                                                                  | Consumers | Inhalation      | Long-term systemic effects | 1546 mg/m3      |
|                                                                                                                  | Consumers | Ingestion       | Long-term systemic effects | 37 mg/kg bw/day |
|                                                                                                                  | Consumers | Inhalation      | Acute systemic effects     | 1546 mg/m3      |
| Trans-Dichloroethylene                                                                                           | Workers   | Inhalation      | Long-term systemic effects | 797 mg/m3       |
|                                                                                                                  | Consumers | Inhalation      | Long-term systemic effects | 198 mg/m3       |
|                                                                                                                  | Consumers | Ingestion       | Long-term systemic effects | 57 mg/kg bw/day |

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

| Substance name                                                                                                   | Environmental Compartment | Value                         |
|------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|
| Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)-1,1,1,2,2,3,4,5,5,5-decafluoropentane | Fresh water               | 0.0344 mg/l                   |
|                                                                                                                  | Freshwater - intermittent | 0.106 mg/l                    |
|                                                                                                                  | Marine water              | 0.0034 mg/l                   |
|                                                                                                                  | Marine sediment           | 0.175 mg/kg dry weight (d.w.) |
|                                                                                                                  | Fresh water sediment      | 1.75 mg/kg dry weight (d.w.)  |
|                                                                                                                  | Soil                      | 0.215 mg/kg dry weight (d.w.) |
| Trans-Dichloroethylene                                                                                           | Fresh water               | 0.0364 mg/l                   |
|                                                                                                                  | Freshwater - intermittent | 0.3636 mg/l                   |
|                                                                                                                  | Marine water              | 0.0036 mg/l                   |

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

Version 8.0      Revision Date: 21.04.2023      SDS Number: 1325035-00045      Date of last issue: 19.01.2023  
Date of first issue: 27.02.2017

|  |                        |                                |
|--|------------------------|--------------------------------|
|  | Marine sediment        | 0.055 mg/kg dry weight (d.w.)  |
|  | Fresh water sediment   | 0.5483 mg/kg dry weight (d.w.) |
|  | Sewage treatment plant | 17 mg/l                        |
|  | Soil                   | 0.056 mg/kg dry weight (d.w.)  |

### 8.2 Exposure controls

#### Engineering measures

Minimize workplace exposure concentrations.  
If sufficient ventilation is unavailable, use with local exhaust ventilation.

#### Personal protective equipment

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

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 and quantity of the hazardous substance and 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!

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.

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Organic gas and low boiling vapour type (AX)

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance : liquid  
Colour : colourless  
Odour : ether-like  
Odour Threshold : No data available



# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

---

|                                                  |   |                                                                                                   |
|--------------------------------------------------|---|---------------------------------------------------------------------------------------------------|
| pH                                               | : | No data available                                                                                 |
| Melting point/freezing point                     | : | < -50 °C                                                                                          |
| Initial boiling point and boiling range          | : | 39 °C (1,013 hPa)                                                                                 |
| Flash point                                      | : | Method: Pensky-Martens closed cup<br>does not flash                                               |
| Evaporation rate                                 | : | No data available                                                                                 |
| Flammability (solid, gas)                        | : | Not applicable                                                                                    |
| Upper explosion limit / Upper flammability limit | : | Upper flammability limit<br>Method: ASTM E681<br>None.                                            |
| Lower explosion limit / Lower flammability limit | : | Lower flammability limit<br>Method: ASTM E681<br>None.                                            |
| Vapour pressure                                  | : | 619 hPa (25 °C)                                                                                   |
| Relative vapour density                          | : | 5.4                                                                                               |
| Density                                          | : | 1.41 g/cm <sup>3</sup> (25 °C)<br>1.47 g/cm <sup>3</sup> (0 °C)<br>1.35 g/cm <sup>3</sup> (50 °C) |
| Solubility(ies)<br>Water solubility              | : | 15 g/l (25 °C)                                                                                    |
| Partition coefficient: n-octanol/water           | : | Not applicable                                                                                    |
| Auto-ignition temperature                        | : | No data available                                                                                 |
| Decomposition temperature                        | : | No data available                                                                                 |
| Viscosity<br>Viscosity, dynamic                  | : | 0.49 mPa.s (25 °C)                                                                                |
| Viscosity, kinematic                             | : | No data available                                                                                 |
| Explosive properties                             | : | Not explosive                                                                                     |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.                                          |

### 9.2 Other information

|                        |   |                   |
|------------------------|---|-------------------|
| Flammability (liquids) | : | No data available |
|------------------------|---|-------------------|

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

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Particle size : Not applicable

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### SECTION 10: Stability and reactivity

#### 10.1 Reactivity

Not classified as a reactivity hazard.

#### 10.2 Chemical stability

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions

Hazardous reactions : None known.

#### 10.4 Conditions to avoid

Conditions to avoid : None known.

#### 10.5 Incompatible materials

Materials to avoid : None.

#### 10.6 Hazardous decomposition products

No hazardous decomposition products are known.

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### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

Information on likely routes of exposure : Inhalation  
Skin contact  
Ingestion  
Eye contact

#### Acute toxicity

Not classified based on available information.

#### Product:

Acute inhalation toxicity : Acute toxicity estimate: > 20 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: Calculation method

#### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 114.428 mg/l

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

|                       |                                                                                                                               |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                       | Exposure time: 4 h<br>Test atmosphere: vapour<br>Method: OECD Test Guideline 403                                              |
|                       | No observed adverse effect concentration (Dog): 5000 ppm<br>Test atmosphere: gas<br>Method: Cardiac sensitisation study       |
|                       | Lowest observed adverse effect concentration (Dog): > 5000 ppm<br>Test atmosphere: gas<br>Method: Cardiac sensitisation study |
|                       | Cardiac sensitisation threshold limit (Dog): > 51,544 mg/m3<br>Test atmosphere: gas<br>Method: Cardiac sensitisation study    |
| Acute dermal toxicity | : LD50 (Rabbit): > 5,000 mg/kg<br>Method: OECD Test Guideline 402                                                             |

### Trans-Dichloroethylene:

|                           |                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute oral toxicity       | : LD50 (Rat): 7,902 mg/kg<br>Method: OECD Test Guideline 420                                                                                                                                                                                                                                                                                                                                |
| Acute inhalation toxicity | : Lowest observed adverse effect concentration (Dog): 250000 ppm<br>Test atmosphere: gas<br><br>Cardiac sensitisation threshold limit (Dog): 991,309 mg/m3<br>Test atmosphere: gas<br><br>Acute toxicity estimate: 11 mg/l<br>Exposure time: 4 h<br>Test atmosphere: vapour<br>Method: Expert judgement<br>Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI |
| Acute dermal toxicity     | : LD50 (Rabbit): > 5,000 mg/kg<br>Method: OECD Test Guideline 402                                                                                                                                                                                                                                                                                                                           |

### Skin corrosion/irritation

Not classified based on available information.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

|         |                           |
|---------|---------------------------|
| :       |                           |
| Species | : Rabbit                  |
| Method  | : OECD Test Guideline 404 |
| Result  | : No skin irritation      |

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

---

### Trans-Dichloroethylene:

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

### Serious eye damage/eye irritation

Causes serious eye irritation.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|         |                           |
|---------|---------------------------|
| Species | : Rabbit                  |
| Method  | : OECD Test Guideline 405 |
| Result  | : No eye irritation       |

### Trans-Dichloroethylene:

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

### Respiratory or skin sensitisation

#### Skin sensitisation

Not classified based on available information.

#### Respiratory sensitisation

Not classified based on available information.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                 |                           |
|-----------------|---------------------------|
| Test Type       | : Buehler Test            |
| Exposure routes | : Skin contact            |
| Species         | : Guinea pig              |
| Method          | : OECD Test Guideline 406 |
| Result          | : negative                |

|                 |              |
|-----------------|--------------|
| Exposure routes | : Inhalation |
| Result          | : negative   |

### Germ cell mutagenicity

Not classified based on available information.

## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

**Components:**

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                                    |   |                                                                                                                                                                                                 |
|------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro              | : | Test Type: Bacterial reverse mutation assay (AMES)<br>Method: OECD Test Guideline 471<br>Result: negative                                                                                       |
|                                    |   | Test Type: In vitro mammalian cell gene mutation test<br>Method: OECD Test Guideline 476<br>Result: negative                                                                                    |
| Genotoxicity in vivo               | : | Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Method: OECD Test Guideline 474<br>Result: negative |
| Germ cell mutagenicity- Assessment | : | Weight of evidence does not support classification as a germ cell mutagen.                                                                                                                      |

**Trans-Dichloroethylene:**

|                                    |   |                                                                                                                                                                                         |
|------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro              | : | Test Type: Bacterial reverse mutation assay (AMES)<br>Method: OECD Test Guideline 471<br>Result: negative                                                                               |
|                                    |   | Test Type: In vitro mammalian cell gene mutation test<br>Method: OECD Test Guideline 476<br>Result: negative                                                                            |
|                                    |   | Test Type: Chromosome aberration test in vitro<br>Method: OECD Test Guideline 473<br>Result: negative                                                                                   |
| Genotoxicity in vivo               | : | Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)<br>Species: Mouse<br>Application Route: Ingestion<br>Method: OECD Test Guideline 474<br>Result: negative |
| Germ cell mutagenicity- Assessment | : | Weight of evidence does not support classification as a germ cell mutagen.                                                                                                              |

**Carcinogenicity**

Not classified based on available information.

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                              |                                                                      |
|------------------------------|----------------------------------------------------------------------|
| Carcinogenicity - Assessment | : Weight of evidence does not support classification as a carcinogen |
|------------------------------|----------------------------------------------------------------------|

### **Reproductive toxicity**

Not classified based on available information.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                      |                                                                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility | : Test Type: One-generation reproduction toxicity study<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Method: OECD Test Guideline 415<br>Result: negative |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                               |                                                                                                                                                                                    |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : Test Type: Prenatal development toxicity study (teratogenicity)<br>Species: Rat<br>Application Route: inhalation (vapour)<br>Method: OECD Test Guideline 414<br>Result: negative |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

### **Trans-Dichloroethylene:**

|                               |                                                                                                                                                |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on foetal development | : Test Type: Embryo-foetal development<br>Species: Rat<br>Application Route: Inhalation<br>Method: OECD Test Guideline 414<br>Result: negative |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|

### **STOT - single exposure**

May cause drowsiness or dizziness.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                 |                                                                                                |
|-----------------|------------------------------------------------------------------------------------------------|
| Exposure routes | : Ingestion                                                                                    |
| Assessment      | : No significant health effects observed in animals at concentrations of 2000 mg/kg bw or less |

|                 |                |
|-----------------|----------------|
| Exposure routes | : Skin contact |
|-----------------|----------------|

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

Assessment : No significant health effects observed in animals at concentrations of 2000 mg/kg bw or less

Exposure routes : inhalation (vapour)  
Assessment : No significant health effects observed in animals at concentrations of 20 mg/l/4h or less

### Trans-Dichloroethylene:

Assessment : May cause drowsiness or dizziness.

### STOT - repeated exposure

Not classified based on available information.

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

Exposure routes : inhalation (vapour)  
Assessment : No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

### Trans-Dichloroethylene:

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

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

### Repeated dose toxicity

### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

Species : Rat, male and female  
NOAEL : 15.463 mg/l  
LOAEL : 20.618 mg/l  
Application Route : inhalation (vapour)  
Exposure time : 90 Days  
Method : OECD Test Guideline 413

### Trans-Dichloroethylene:

Species : Rat, male and female  
NOAEL : 4000 ppm  
LOAEL : > 4000 ppm  
Application Route : Inhalation  
Exposure time : 90 Days

## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

|| 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

**Aspiration toxicity**

Not classified based on available information.

**Components:**

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|| No aspiration toxicity classification

**SECTION 12: Ecological information****12.1 Toxicity****Components:**

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|| Toxicity to fish : LC50 (Danio rerio (zebra fish)): 13 mg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203

|| Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 10.6 mg/l  
 aquatic invertebrates Exposure time: 48 h  
 Method: OECD Test Guideline 202

|| Toxicity to algae/aquatic : EC50 (Selenastrum capricornutum (green algae)): > 120 mg/l  
 plants Exposure time: 72 h  
 Method: OECD Test Guideline 201  
  
 NOEC (Scenedesmus capricornutum (fresh water algae)): 120 mg/l  
 Exposure time: 72 h  
 Method: OECD Test Guideline 201

|| Toxicity to daphnia and other : NOEC: 1.72 mg/l  
 aquatic invertebrates (Chron- Exposure time: 21 d  
 ic toxicity) Species: Daphnia magna (Water flea)  
 Method: OECD Test Guideline 211

**Trans-Dichloroethylene:**



# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

|                                                     |   |                                                                                                                                 |
|-----------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | : | LC50 (Lepomis macrochirus (Bluegill sunfish)): 135 mg/l<br>Exposure time: 96 h<br>Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 220 mg/l<br>Exposure time: 48 h<br>Method: EPA-660/3-75-009                                  |
| Toxicity to algae/aquatic plants                    | : | EbC50 (Pseudokirchneriella subcapitata (green algae)): 36.36 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 201     |

### 12.2 Persistence and degradability

#### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                  |   |                                                                        |
|------------------|---|------------------------------------------------------------------------|
| Biodegradability | : | Result: Not readily biodegradable.<br>Method: OECD Test Guideline 301D |
|------------------|---|------------------------------------------------------------------------|

#### Trans-Dichloroethylene:

|                  |   |                                                                    |
|------------------|---|--------------------------------------------------------------------|
| Biodegradability | : | Result: not rapidly degradable<br>Method: OECD Test Guideline 301D |
|------------------|---|--------------------------------------------------------------------|

### 12.3 Bioaccumulative potential

#### Components:

Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)- 1,1,1,2,2,3,4,5,5,5-decafluoropentane

:

|                 |   |                                       |
|-----------------|---|---------------------------------------|
| Bioaccumulation | : | Remarks: Bioaccumulation is unlikely. |
|-----------------|---|---------------------------------------|

|                                        |   |                      |
|----------------------------------------|---|----------------------|
| Partition coefficient: n-octanol/water | : | log Pow: 2.4 (24 °C) |
|----------------------------------------|---|----------------------|

#### Trans-Dichloroethylene:

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

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

#### Product:

|            |   |                                                                                                                       |
|------------|---|-----------------------------------------------------------------------------------------------------------------------|
| Assessment | : | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or |
|------------|---|-----------------------------------------------------------------------------------------------------------------------|

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 12.6 Other adverse effects

#### Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

|                        |                                                                                                                                                                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | : Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. Do not dispose of waste into sewer. |
| 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.                                                                                                                                                  |

## SECTION 14: Transport information

### 14.1 UN number

|      |                                     |
|------|-------------------------------------|
| ADN  | : Not regulated as a dangerous good |
| ADR  | : Not regulated as a dangerous good |
| RID  | : Not regulated as a dangerous good |
| IMDG | : Not regulated as a dangerous good |
| IATA | : Not regulated as a dangerous good |

### 14.2 UN proper shipping name

|      |                                     |
|------|-------------------------------------|
| ADN  | : Not regulated as a dangerous good |
| ADR  | : Not regulated as a dangerous good |
| RID  | : Not regulated as a dangerous good |
| IMDG | : Not regulated as a dangerous good |
| IATA | : Not regulated as a dangerous good |

### 14.3 Transport hazard class(es)

|     |                                     |
|-----|-------------------------------------|
| ADN | : Not regulated as a dangerous good |
|-----|-------------------------------------|

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

|      |                                     |
|------|-------------------------------------|
| ADR  | : Not regulated as a dangerous good |
| RID  | : Not regulated as a dangerous good |
| IMDG | : Not regulated as a dangerous good |
| IATA | : Not regulated as a dangerous good |

### 14.4 Packing group

|                  |                                     |
|------------------|-------------------------------------|
| ADN              | : Not regulated as a dangerous good |
| ADR              | : Not regulated as a dangerous good |
| RID              | : Not regulated as a dangerous good |
| IMDG             | : Not regulated as a dangerous good |
| IATA (Cargo)     | : Not regulated as a dangerous good |
| IATA (Passenger) | : Not regulated as a dangerous good |

### 14.5 Environmental hazards

Not regulated as a dangerous good

### 14.6 Special precautions for user

Not applicable

### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Remarks : Not applicable for product as supplied.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

|                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| Montreal Protocol | : Reaction mass of (3R,4R)-1,1,1,2,2,3,4,5,5,5-decafluoropentane and (3S,4S)-1,1,1,2,2,3,4,5,5,5-decafluoropentane |
|-------------------|--------------------------------------------------------------------------------------------------------------------|

### 15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

|                   |                                                                                                                                                                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other information | : Vertrel™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company. Before use read Chemours safety information. For further information contact the local Chemours office or nominated distributors. |
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# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

lines.

### Full text of H-Statements

|      |                                                      |
|------|------------------------------------------------------|
| H225 | : Highly flammable liquid and vapour.                |
| H319 | : Causes serious eye irritation.                     |
| H332 | : Harmful if inhaled.                                |
| H336 | : May cause drowsiness or dizziness.                 |
| H412 | : Harmful to aquatic life with long lasting effects. |

### Full text of other abbreviations

|                 |                                                    |
|-----------------|----------------------------------------------------|
| Acute Tox.      | : Acute toxicity                                   |
| Aquatic Chronic | : Long-term (chronic) aquatic hazard               |
| Eye Irrit.      | : Eye irritation                                   |
| Flam. Liq.      | : Flammable liquids                                |
| STOT SE         | : Specific target organ toxicity - single exposure |
| WEEL            | : Workplace Environmental Exposure Levels (WEEL)   |
| WEEL / STEL     | : Short term exposure limit                        |
| WEEL / TWA      | : 8-hr TWA                                         |

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; 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; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - 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

### Further information

Sources of key data used to : Internal technical data, data from raw material SDSs, OECD

# SAFETY DATA SHEET



## Vertrel™ X-DF specialty fluid

|         |                |               |                                 |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number:   | Date of last issue: 19.01.2023  |
| 8.0     | 21.04.2023     | 1325035-00045 | Date of first issue: 27.02.2017 |

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eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

### Classification of the mixture:

|                   |      |
|-------------------|------|
| Eye Irrit. 2      | H319 |
| STOT SE 3         | H336 |
| Aquatic Chronic 3 | H412 |

### Classification procedure:

|                    |
|--------------------|
| Calculation method |
| Calculation method |
| Calculation method |

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