

# SAFETY DATA SHEET FRC - GENERAL PURPOSE FLUX REMOVER - FLUX REMOVER C, BULK

According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

| SECTION 1: Identification of t           | he substance/mixture and of the company/undertaking   |
|--|---|
| 1.1. Product identifier                  |   |
| Product name                             | FRC - GENERAL PURPOSE FLUX REMOVER - FLUX REMOVER C, BULK   |
| Product number                           | MCC-FRCL, MCC-FRCG, MCC-FRCP, MCC-FRCD, MCC-FRCGL, MCC-FRCGG  |
| Synonyms; trade names                    | FRC - FLUX REMOVER C - BULK   |
| 1.2. Relevant identified uses of         | of the substance or mixture and uses advised against  |
| Uses advised against                     | No specific uses advised against are identified.  |
| 1.3. Details of the supplier of t        | the safety data sheet   |
| Supplier                                 | MICROCARE EUROPE BVBA<br>VEKESTRAAT 29 B11<br>INDUSTRIEZONE 'T SAS<br>1910 KAMPENHOUT, Belgium<br>Phone +32.2.251.95.05<br>Fax +32.2.400.96.39<br>EuroSales@MicroCare.com |
| Manufacturer                             | MICROCARE U.K. LTD<br>SEVEN HILLS BUSINESS CENTRE<br>SOUTH STREET, MORLEY<br>LEEDS, WEST YORKSHIRE, UK LS27 8AT<br>Tel: +44 (0) 113 3609019<br>mcceurope@microcare.com    |
| 1.4. Emergency telephone nu              | mber  |
| Emergency telephone                      | INFOTRAC +44 330 027 0156 (UK)<br>1-352-323-3500 (from anywhere in the world)   |
| SECTION 2: Hazards identific             | ation   |
| 2.1. Classification of the subs          | ance or mixture   |
| Classification (EC 1272/2008)            |   |
| Physical hazards                         | Not Classified  |
| Health hazards                           | Eye Irrit. 2 - H319 STOT SE 2 - H371 STOT SE 3 - H336   |
| Environmental hazards                    | Aquatic Chronic 3 - H412  |
| 2.2. Label elements<br>Hazard pictograms |   |

Signal word

| Hazard statements                      | H319 Causes serious eye irritation.<br>H371 May cause damage to organs .<br>H336 May cause drowsiness or dizziness.<br>H412 Harmful to aquatic life with long lasting effects.   |
|--|--|
| Precautionary statements               | <ul> <li>P260 Do not breathe vapour/ spray.</li> <li>P273 Avoid release to the environment.</li> <li>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</li> <li>P302+P352 IF ON SKIN: Wash with plenty of water.</li> <li>P314 Get medical advice/ attention if you feel unwell.</li> <li>P501 Dispose of contents/ container in accordance with national regulations.</li> </ul> |
| Supplemental label information         | EUH210 Safety data sheet available on request.<br>RCH001a For use in industrial installations only.  |
| Contains                               | trans-dichloroethylene, methanol   |
| Supplementary precautionary statements | <ul> <li>P264 Wash contaminated skin thoroughly after handling.</li> <li>P261 Avoid breathing vapour/ spray.</li> <li>P270 Do not eat, drink or smoke when using this product.</li> <li>P308+P311 IF exposed or concerned: Call a POISON CENTER or doctor.</li> <li>P405 Store locked up.</li> </ul>   |

## 2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

# SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

| trans-1,2-DICHLOROETHYLENE            |                      | 30-60%   |
|---------------------------------------|----------------------|--|
| CAS number: 156-60-5                  | EC number: 205-860-2 | REACH registration number: 01-<br>2120093504-55-0003 |
| Classification                        |                      |  |
| Flam. Liq. 2 - H225                   |                      |  |
| Acute Tox. 4 - H332                   |                      |  |
| Eye Irrit. 2 - H319                   |                      |  |
| STOT SE 3 - H336                      |                      |  |
| Aquatic Chronic 3 - H412              |                      |  |
| 1,1,1,2,2,3,4,5,5,5-decafluoropentane |                      | 30-60%   |
| CAS number: 138495-42-8               | EC number: 420-640-8 | REACH registration number: 01-<br>2119446695-28-0000 |
| Classification                        |                      |  |
| Aquatic Chronic 3 - H412              |                      |  |
| 1,1,1,3,3-PENTAFLUOROBUTANE           |                      | 10-30%   |
| CAS number: 406-58-6                  | EC number: 430-250-1 | REACH registration number: 01-<br>0000017653-68-0000 |
| Classification                        |                      |  |
| Flam. Liq. 2 - H225                   |                      |  |

| METHANOL   | 1-5%   |
|--|--|
| CAS number: 67-56-1  | EC number: 200-659-6   |
| Classification<br>Flam. Liq. 2 - H225<br>Acute Tox. 3 - H301<br>Acute Tox. 3 - H311<br>Acute Tox. 3 - H331<br>STOT SE 1 - H370 |  |
| The full text for all hazard sta   | atements is displayed in Section 16.   |
| Composition comments   | The data shown are in accordance with the latest EC Directives.  |
| Ingredient notes   | A MIXTURE OF: (R,R)-1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE, (S,S)-<br>1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE has been revised to 1,1,1,2,2,3,4,5,5,5-<br>decafluoropentane. No change in chemistry. 20JUL17  |
| Composition  |  |
| SECTION 4: First aid measu   | ires   |
| 4.1. Description of first aid m  | neasures   |
| General information  | Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.   |
| Inhalation   | Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place.             |
| Ingestion  | Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if<br>the affected person feels sick as vomiting may be dangerous. Never give anything by mouth<br>to an unconscious person. Place unconscious person on their side in the recovery position<br>and ensure breathing can take place. Keep affected person under observation. Get medical<br>attention if symptoms are severe or persist. |
| Skin contact   | Rinse with water.  |
| Eye contact  | Remove any contact lenses and open eyelids wide apart. Rinse with water. Get medical attention if any discomfort continues.  |
| Protection of first aiders   | First aid personnel should wear appropriate protective equipment during any rescue.  |
| 4.2. Most important symptor  | ns and effects, both acute and delayed   |
| General information  | The severity of the symptoms described will vary dependent on the concentration and the length of exposure.  |
| Inhalation   | A single exposure may cause the following adverse effects: Pain or irritation. Intoxication. Narcotic effect. Muscle weakness. Nausea, vomiting.   |
| Ingestion  | A single exposure may cause the following adverse effects: Intoxication. Nausea, vomiting.<br>May cause drowsiness or dizziness. Central nervous system depression. May cause severe<br>internal injury.   |
| Skin contact   | A single exposure may cause the following adverse effects: Pain.   |
| Eye contact  | No specific symptoms known. May be slightly irritating to eyes.  |

| Notes for the doctor                             | Treat symptomatically.  |
|--|---|
| SECTION 5: Firefighting meas                     | sures   |
| 5.1. Extinguishing media                         |   |
| Suitable extinguishing media                     | The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.  |
| Unsuitable extinguishing media                   | Do not use water jet as an extinguisher, as this will spread the fire.  |
| 5.2. Special hazards arising fro                 | om the substance or mixture   |
| Specific hazards                                 | Containers can burst violently or explode when heated, due to excessive pressure build-up.  |
| Hazardous combustion<br>products                 | Thermal decomposition or combustion products may include the following substances:<br>Harmful gases or vapours.   |
| 5.3. Advice for firefighters                     |   |
| Protective actions during firefighting           | Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Ventilate closed spaces before entering them. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities. |
| Special protective equipment<br>for firefighters | Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.  |
| SECTION 6: Accidental releas                     | e measures  |
| 6.1. Personal precautions, pro                   | tective equipment and emergency procedures  |
| Personal precautions                             | Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of vapours and spray/mists. Use suitable respiratory protection if ventilation is inadequate.  |
| 6.2. Environmental precaution                    | S   |
| Environmental precautions                        | Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.   |
| 6.3. Methods and material for                    | containment and cleaning up   |
| Methods for cleaning up                          | Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Small Spillages: Collect spillage. Large Spillages: Absorb spillage with non-combustible, absorbent material. The contaminated absorbent may   |

## 4.3. Indication of any immediate medical attention and special treatment needed

### 6.4. Reference to other sections

| Reference to other sections                      | For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.   |
|--|---|
| SECTION 7: Handling and sto                      | prage   |
| 7.1. Precautions for safe hand                   | lling   |
| Usage precautions                                | Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid the formation of mists. Avoid discharge to the aquatic environment. |
| Advice on general occupational hygiene           | Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse.  |
| 7.2. Conditions for safe storage                 | ge, including any incompatibilities   |
| Storage precautions                              | Store away from incompatible materials (see Section 10). Keep only in the original container.<br>Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect<br>containers from damage.   |
| Storage class                                    | Miscellaneous hazardous material storage.   |
| 7.3. Specific end use(s)                         |   |
| Specific end use(s)                              | The identified uses for this product are detailed in Section 1.2.   |
| Reference to other sections.                     | Store away from incompatible materials (see Section 10).  |
| SECTION 8: Exposure controls/Personal protection |   |

### 8.1. Control parameters

Occupational exposure limits

### trans-1,2-DICHLOROETHYLENE

Long-term exposure limit (8-hour TWA): ACGIH Short-term exposure limit (15-minute): ACGIH 200 ppm

### 1,1,1,2,2,3,4,5,5,5-decafluoropentane

No information available that would effect occupational exposure limit values.

### 1,1,1,3,3-PENTAFLUOROBUTANE

Long-term exposure limit (8-hour TWA): 1000 ppm

### METHANOL

Long-term exposure limit (8-hour TWA): WEL 200 ppm 266 mg/m<sup>3</sup> Short-term exposure limit (15-minute): WEL 250 ppm 333 mg/m<sup>3</sup>

# Sk

ACGIH = American Conference of Governmental Industrial Hygienists. WEL = Workplace Exposure Limit. Sk = Can be absorbed through the skin.

### Ingredient comments

WEL = Workplace Exposure Limits ACGIH = US Standard.

#### 8.2. Exposure controls

Protective equipment



| Appropriate engineering controls | Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.  |
|----------------------------------|--|
| Eye/face protection              | Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.  |
| Hand protection                  | No specific hand protection recommended. Avoid contact with skin.  |
| Other skin and body protection   | Wear appropriate clothing to prevent repeated or prolonged skin contact.   |
| Hygiene measures                 | Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.  |
| Respiratory protection           | Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask Standard EN140. |
| Environmental exposure controls  | Keep container tightly sealed when not in use. Emissions from ventilation or work process<br>equipment should be checked to ensure they comply with the requirements of environmental<br>protection legislation. In some cases, fume scrubbers, filters or engineering modifications to<br>the process equipment will be necessary to reduce emissions to acceptable levels.   |

# SECTION 9: Physical and chemical properties

| 9.1. Information on basic physical and chemical properties |   |
|--|---|
| Appearance   | Clear liquid.   |
| Colour   | Colourless.   |
| Odour  | Slight. Ether.  |
| Initial boiling point and range                            | 37°C/99°F @ 101.3 kPa   |
| Flash point  | The product is not flammable.   |
| Upper/lower flammability or<br>explosive limits            | Upper flammable/explosive limit: 9.0 %(V) Lower flammable/explosive limit: 7.5 %(V) |
| Other flammability   | The product is not flammable.   |
| Vapour pressure  | 65 kPa @ 25°C   |
| Vapour density   | 4.0   |
| Relative density   | 1.37  |
| Bulk density   | Not applicable.   |
| Solubility(ies)  | Slightly soluble in water.  |
| Auto-ignition temperature                                  | No information available.   |
| Viscosity  | No information available.   |
| Explosive properties                                       | No information available.   |
| Global Warming Potential<br>(GWP)                          |   |

| 9.2. Other information                                       |  |
|--|--|
| Refractive index   | No information available.  |
| Particle size  | No information available.  |
| Molecular weight   | No information available.  |
| Volatility   | 100%   |
| Saturation concentration                                     | 600  |
| Critical temperature   | No information available.  |
| Volatile organic compound                                    | This product contains a maximum VOC content of 590 g/l.  |
| Heat of vaporization (at boiling point), cal/g (Btu/lb)      |  |
| SECTION 10: Stability and rea                                | ıctivity   |
| 10.1. Reactivity   |  |
| Reactivity   | See the other subsections of this section for further details.   |
| 10.2. Chemical stability                                     |  |
| Stability  | Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.  |
| 10.3. Possibility of hazardous                               | reactions  |
| Possibility of hazardous<br>reactions                        | No potentially hazardous reactions known.  |
| 10.4. Conditions to avoid                                    |  |
| Conditions to avoid  | There are no known conditions that are likely to result in a hazardous situation.  |
| 10.5. Incompatible materials                                 |  |
| Materials to avoid   | No specific material or group of materials is likely to react with the product to produce a hazardous situation.   |
| 10.6. Hazardous decompositio                                 | n products   |
| Hazardous decomposition<br>products                          | Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours. |
| SECTION 11: Toxicological int                                | formation  |
| 11.1. Information on toxicologi                              | cal effects  |
| Acute toxicity - oral  |  |
| Notes (oral LD₅₀)  | Based on available data the classification criteria are not met.   |
| ATE oral (mg/kg)   | 2,857.14   |
| Acute toxicity - dermal                                      |  |
| Notes (dermal LD₅o)  | Based on available data the classification criteria are not met.   |
| ATE dermal (mg/kg)   | 8,571.43   |
| Acute toxicity - inhalation<br>Notes (inhalation $LC_{50}$ ) | Based on available data the classification criteria are not met.   |

| ATE inhalation (vapours mg/l)                                  | 20.43  |
|--|--|
| ATE inhalation (dusts/mists<br>mg/l)                           | 14.29  |
| Skin corrosion/irritation<br>Animal data                       | Based on available data the classification criteria are not met.   |
| Serious eye damage/irritation<br>Serious eye damage/irritation | Based on available data the classification criteria are not met.   |
| Respiratory sensitisation<br>Respiratory sensitisation         | Based on available data the classification criteria are not met.   |
| Skin sensitisation<br>Skin sensitisation                       | Based on available data the classification criteria are not met.   |
| Germ cell mutagenicity<br>Genotoxicity - in vitro              | Based on available data the classification criteria are not met.   |
| Carcinogenicity<br>Carcinogenicity                             | Based on available data the classification criteria are not met.   |
| IARC carcinogenicity   | None of the ingredients are listed or exempt.  |
| Reproductive toxicity<br>Reproductive toxicity - fertility     | Based on available data the classification criteria are not met.   |
| Reproductive toxicity -<br>development                         | Based on available data the classification criteria are not met.   |
| Specific target organ toxicity -                               | single exposure  |
| STOT - single exposure   | STOT SE 1 - H370 Causes damage to organs .   |
| Specific target organ toxicity -                               |  |
| STOT - repeated exposure                                       | Not classified as a specific target organ toxicant after repeated exposure.  |
| Aspiration hazard<br>Aspiration hazard                         | Based on available data the classification criteria are not met.   |
| General information  | The severity of the symptoms described will vary dependent on the concentration and the length of exposure.  |
| Inhalation   | A single exposure may cause the following adverse effects: Pain or irritation. Intoxication.<br>Narcotic effect. Muscle weakness. Nausea, vomiting.  |
| Ingestion  | A single exposure may cause the following adverse effects: Intoxication. Nausea, vomiting.<br>May cause drowsiness or dizziness. Central nervous system depression. May cause severe<br>internal injury. |
| Skin contact   | A single exposure may cause the following adverse effects: Pain.   |
| Eye contact  | No specific symptoms known.  |
| Route of exposure  | Ingestion Inhalation Skin and/or eye contact   |
| Target organs  | No specific target organs known.   |
| Toxicological information on in                                | gredients.   |

trans-1,2-DICHLOROETHYLENE

| Other health effects                               | There is no evidence that the product can cause cancer.                     |  |
|--|---|--|
| Acute toxicity - oral                              |   |  |
| Acute toxicity oral (LD₅₀<br>mg/kg)                | 7,902.0   |  |
| Species  | Rat   |  |
| ATE oral (mg/kg)                                   | 7,902.0   |  |
| Acute toxicity - dermal                            |   |  |
| Acute toxicity dermal (LD₅₀<br>mg/kg)              | 5,000.0   |  |
| Species  | Rat   |  |
| ATE dermal (mg/kg)                                 | 5,000.0   |  |
| Acute toxicity - inhalation                        |   |  |
| ATE inhalation (vapours<br>mg/l)                   | 11.0  |  |
| Skin corrosion/irritation                          |   |  |
| Skin corrosion/irritation                          | Prolonged and frequent contact may cause redness and irritation.            |  |
| Animal data  | Slightly irritating. Rabbit   |  |
| Serious eye damage/irritation                      | on  |  |
| Serious eye<br>damage/irritation                   | Supplier's information. Rabbit 500 mg 24 hours Causes mild skin irritation. |  |
| Respiratory sensitisation                          |   |  |
| Respiratory sensitisation                          | No specific test data are available.  |  |
| Skin sensitisation                                 |   |  |
| Skin sensitisation                                 | No specific test data are available.  |  |
| Germ cell mutagenicity                             |   |  |
| Genotoxicity - in vitro                            | This substance has no evidence of mutagenic properties.                     |  |
| Genotoxicity - in vivo                             | This substance has no evidence of mutagenic properties.                     |  |
| Carcinogenicity                                    |   |  |
| Carcinogenicity                                    | No specific test data are available.  |  |
| Specific target organ toxicity - single exposure   |   |  |
| STOT - single exposure                             | NOAEL Not available.  |  |
| Specific target organ toxicity - repeated exposure |   |  |
| STOT - repeated exposure                           | NOAEL 16 mg/l, 90 days  |  |
| Target organs                                      | Endocrine system Liver Kidneys Bladder Respiratory tract                    |  |
|  | 1,1,1,2,2,3,4,5,5,5-decafluoropentane                                       |  |
| Acute toxicity - oral                              |   |  |

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| Acute toxicity oral (LD₅₀<br>mg/kg)  | 5,000.0   |
|--|---|
| Species  | Rat   |
| ATE oral (mg/kg)   | 5,000.0   |
| Acute toxicity - dermal  |   |
| Acute toxicity dermal (LD₅₀<br>mg/kg)  | 5,000.0   |
| Species  | Rat   |
| ATE dermal (mg/kg)   | 5,000.0   |
| Acute toxicity - inhalation  |   |
| Acute toxicity inhalation (LC <sub>50</sub> vapours mg/l)  | 114.0   |
| Species  | Rat   |
| ATE inhalation (vapours mg/l)  | 114.0   |
| Skin corrosion/irritation  |   |
| Animal data  | Not irritating. Rabbit  |
| Human skin model test  | Data lacking.   |
| Extreme pH   | Not applicable. Not corrosive to skin.  |
| Serious eye damage/irritati  | on  |
| Senous eye damaye/imali  |   |
| Serious eye<br>damage/irritation   | Not irritating. Rabbit  |
| Serious eye  |   |
| Serious eye<br>damage/irritation   |   |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation  | —<br>Not irritating. Rabbit   |
| Serious eye<br>damage/irritation<br><u>Respiratory sensitisation</u><br>Respiratory sensitisation  | —<br>Not irritating. Rabbit   |
| Serious eye<br>damage/irritation<br><u>Respiratory sensitisation</u><br>Respiratory sensitisation<br><u>Skin sensitisation</u>   | Not irritating. Rabbit<br>Data lacking.<br>Not sensitising Guinea pig: Not sensitising.   |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation   | Not irritating. Rabbit<br>Data lacking.   |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity   | Not irritating. Rabbit<br>Data lacking.<br>Not sensitising Guinea pig: Not sensitising.   |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity<br>Genotoxicity - in vitro  | Not irritating. Rabbit<br>Data lacking.<br>Not sensitising Guinea pig: Not sensitising.<br>This substance has no evidence of mutagenic properties.  |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity<br>Genotoxicity - in vitro<br>Genotoxicity - in vivo  | Not irritating. Rabbit<br>Data lacking.<br>Not sensitising Guinea pig: Not sensitising.<br>This substance has no evidence of mutagenic properties.  |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity<br>Genotoxicity - in vitro<br>Genotoxicity - in vivo<br>Carcinogenicity   | Not irritating. Rabbit<br>Data lacking.<br>Not sensitising Guinea pig: Not sensitising.<br>This substance has no evidence of mutagenic properties.<br>This substance has no evidence of mutagenic properties.   |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity<br>Genotoxicity - in vitro<br>Genotoxicity - in vivo<br>Carcinogenicity<br>Carcinogenicity                          | Not irritating. Rabbit         Data lacking.         Not sensitising Guinea pig: Not sensitising.         This substance has no evidence of mutagenic properties.         This substance has no evidence of mutagenic properties.         Does not contain any substances known to be carcinogenic. |
| Serious eye<br>damage/irritation<br>Respiratory sensitisation<br>Respiratory sensitisation<br>Skin sensitisation<br>Skin sensitisation<br>Germ cell mutagenicity<br>Genotoxicity - in vitro<br>Genotoxicity - in vitro<br>Carcinogenicity<br>Carcinogenicity<br>IARC carcinogenicity | Not irritating. Rabbit         Data lacking.         Not sensitising Guinea pig: Not sensitising.         This substance has no evidence of mutagenic properties.         This substance has no evidence of mutagenic properties.         Does not contain any substances known to be carcinogenic. |

| Eye contact                                     | May cause eye irritation.  |
|---|--|
| Acute and chronic health hazards                | There is no evidence that the product can cause cancer.          |
|   | 1,1,1,3,3-PENTAFLUOROBUTANE                                      |
| Acute toxicity - inhalation                     |  |
| Acute toxicity inhalation<br>(LC∞ vapours mg/l) | 100,000.0  |
| ATE inhalation (vapours mg/l)                   | 100,000.0  |
| Specific target organ toxici                    | ty - single exposure   |
| STOT - single exposure                          | LOAEL 75100 ppm, Inhalation,                                     |
| Specific target organ toxici                    | ty - repeated exposure   |
| STOT - repeated exposure                        | NOAEC 6 mg/l, Inhalation, Rat                                    |
| Target organs                                   | Liver Kidneys  |
|   | METHANOL   |
| Acute toxicity - oral                           |  |
| Notes (oral LD₅₀)                               | Acute Tox. 3 - H301 Toxic if swallowed.                          |
| ATE oral (mg/kg)                                | 100.0  |
| Acute toxicity - dermal                         |  |
| Notes (dermal LD <sub>50</sub> )                | Acute Tox. 3 - H311 Toxic in contact with skin.                  |
| ATE dermal (mg/kg)                              | 300.0  |
| Acute toxicity - inhalation                     |  |
| Notes (inhalation LC₅₀)                         | Acute Tox. 3 - H331 Toxic if inhaled.                            |
| ATE inhalation (vapours mg/l)                   | 3.0  |
| ATE inhalation<br>(dusts/mists mg/l)            | 0.5  |
| Skin corrosion/irritation                       |  |
| Animal data                                     | Based on available data the classification criteria are not met. |
| Serious eye damage/irritat                      | ion  |
| Serious eye<br>damage/irritation                | Based on available data the classification criteria are not met. |
| Respiratory sensitisation                       |  |
| Respiratory sensitisation                       | Based on available data the classification criteria are not met. |
| Skin sensitisation                              |  |
| Skin sensitisation                              | Based on available data the classification criteria are not met. |
| Germ cell mutagenicity                          |  |
| Genotoxicity - in vitro                         | Based on available data the classification criteria are not met. |
|   |  |

| Carcinogenicity                        |   |  |
|--|---|--|
| Carcinogenicity                        | Based on available data the classification criteria are not met.  |  |
| IARC carcinogenicity                   | None of the ingredients are listed or exempt.   |  |
| Reproductive toxicity                  |   |  |
| Reproductive toxicity -<br>fertility   | Based on available data the classification criteria are not met.  |  |
| Reproductive toxicity -<br>development | Based on available data the classification criteria are not met.  |  |
| Specific target organ toxicit          | y - single exposure   |  |
| STOT - single exposure                 | STOT SE 1 - H370 Causes damage to organs .  |  |
| Specific target organ toxicit          | y - repeated exposure   |  |
| STOT - repeated exposure               | Not classified as a specific target organ toxicant after repeated exposure.   |  |
| Aspiration hazard                      |   |  |
| Aspiration hazard                      | Based on available data the classification criteria are not met.  |  |
| General information                    | The severity of the symptoms described will vary dependent on the concentration   |  |
|  | and the length of exposure.   |  |
| Inhalation                             | A single exposure may cause the following adverse effects: Drowsiness, dizziness, disorientation, vertigo. Unconsciousness. High concentrations may be fatal. |  |
| Ingestion                              | May cause stomach pain or vomiting. May cause severe internal injury.   |  |
| Skin contact                           | A single exposure may cause the following adverse effects: Pain.  |  |
| Eye contact                            | No specific symptoms known.   |  |
| Route of exposure                      | Ingestion Inhalation Skin and/or eye contact  |  |
| Target organs                          | No specific target organs known.  |  |

SECTION 12: Ecological information

Ecological information on ingredients.

## trans-1,2-DICHLOROETHYLENE

| Ecotoxicity    | Harmful to aquatic life. May cause long lasting harmful effects to aquatic life.  |
|----------------|---|
|                | 1,1,1,2,2,3,4,5,5,5-decafluoropentane   |
| Ecotoxicity    | It is unlikely that the substance will dissolve in water in amounts big enough to have a toxic effect on fish and daphnies.     |
|                | METHANOL  |
| Ecotoxicity    | Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment. |
| 12.1. Toxicity |   |
| Toxicity       | Aquatic Chronic 3 - H412 Harmful to aquatic life with long lasting effects.   |

## Ecological information on ingredients.

# trans-1,2-DICHLOROETHYLENE

| Acute aqua                   | tic toxicity      |  |
|------------------------------|-------------------|--|
| Acute toxici                 | ty - fish         | LC₅₀, 96 hours: 135 mg/l, Fish                                   |
| Acute toxici<br>invertebrate |                   | EC₅₀, 48 hours: 220 mg/l, Daphnia magna                          |
| Acute toxici<br>plants       | ty - aquatic      | LC₅₀, 72 hours: 36.36 mg/l, Pseudokirchneriella subcapitata      |
| Chronic aqu                  | atic toxicity     |  |
| Chronic toxi<br>life stage   | city - fish early | NOEC, 48 hours: 110,000 mg/l, Daphnia magna                      |
|                              |                   | 1,1,1,2,2,3,4,5,5,5-decafluoropentane                            |
| Acute aqua                   | tic toxicity      |  |
| Acute toxici                 | ty - fish         | LC₅₀, 96 hours: 13.9 mg/l, Oncorhynchus mykiss (Rainbow trout)   |
| Acute toxici<br>invertebrate |                   | LC₅₀, 48 hours: 11.7 mg/l, Daphnia magna                         |
| Acute toxici<br>plants       | ty - aquatic      | EC₅₀, 72 hours: >120 mg/l, Algae                                 |
|                              |                   | METHANOL   |
| Toxicity                     |                   | Based on available data the classification criteria are not met. |
| Acute aqua                   | tic toxicity      |  |
| Acute toxici                 | ty - fish         | LC₅₀, 96 hours: >100 mg/l, Pimephales promelas (Fat-head Minnow) |
| Acute toxici invertebrate    |                   | EC₅₀, 48 hours: >10000 mg/l, Daphnia magna                       |
| 12.2. Persistence and de     | gradability       |  |
| Persistence and degrada      | bility The deg    | radability of the product is not known.                          |
| Ecological information or    | ingredients.      |  |
|                              |                   | trans-1,2-DICHLOROETHYLENE                                       |
| Biodegrada                   | tion              | Not readily biodegradable.<br>Method: OECD Test Guideline 301D   |
|                              |                   | METHANOL   |
| Persistence<br>degradabilit  |                   | The degradability of the product is not known.                   |
| 12.3. Bioaccumulative po     | tential           |  |
| Bioaccumulative potentia     | No data           | available on bioaccumulation.                                    |
| Ecological information or    | ingredients.      |  |
|                              |                   | trans-1,2-DICHLOROETHYLENE                                       |

| Bioaccum                          | ulative potential                           | Bioaccumulation is unlikely to be significant because of the low water-solubility of this product.   |  |
|-----------------------------------|---|--|--|
| Partition co                      | oefficient                                  | log Pow: 2.06  |  |
|                                   |   | 1,1,1,2,2,3,4,5,5,5-decafluoropentane  |  |
| Bioaccum                          | ulative potential                           | Bioaccumulation is unlikely to be significant because of the low water-solubility of this product.   |  |
| Partition c                       | oefficient                                  | Pow: 2.7   |  |
|                                   |   | METHANOL   |  |
| Bioaccum                          | ulative potential                           | No data available on bioaccumulation.  |  |
| Partition c                       | oefficient                                  | : -0.77  |  |
| 12.4. Mobility in soil            |   |  |  |
| Mobility                          | No data available.                          |  |  |
| Ecological information of         | on ingredients.                             |  |  |
|                                   |   | trans-1,2-DICHLOROETHYLENE   |  |
| Mobility                          |   | The product has poor water-solubility.   |  |
|                                   |   | METHANOL   |  |
| Mobility                          |   | No data available.   |  |
| 12.5. Results of PBT an           | nd vPvB assessm                             | nent   |  |
| Results of PBT and vPv assessment | <b>/B</b> This pro                          | duct does not contain any substances classified as PBT or vPvB.  |  |
| 12.6. Other adverse effe          | ects  |  |  |
| Other adverse effects             | None kn                                     | iown.  |  |
| Ecological information of         | on ingredients.                             |  |  |
|                                   |   | METHANOL   |  |
| Other adve                        | erse effects                                | None known.  |  |
| SECTION 13: Disposal              | considerations                              |  |  |
| 13.1. Waste treatment r           | nethods                                     |  |  |
| General information               | products<br>way. Wh<br>be consi<br>thorough | The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous. |  |
| Disposal methods                  | Do not e                                    | empty into drains.   |  |
| SECTION 14. Transpor              | tinformation                                |  |  |

# SECTION 14: Transport information

### General

The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

### 14.1. UN number

Not applicable.

#### 14.2. UN proper shipping name

Not applicable.

### 14.3. Transport hazard class(es)

No transport warning sign required.

#### 14.4. Packing group

Not applicable.

## 14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant No.

### 14.6. Special precautions for user

Not applicable.

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

# Transport in bulk according to Not applicable. Annex II of MARPOL 73/78 and the IBC Code

### SECTION 15: Regulatory information

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

| National regulations | Health and Safety at Work etc. Act 1974 (as amended).                                   |
|----------------------|---|
|                      | The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment             |
|                      | Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].                          |
|                      | EH40/2005 Workplace exposure limits.  |
| EU legislation       | Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18        |
|                      | December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of |
|                      | Chemicals (REACH) (as amended).   |
|                      | Commission Regulation (EU) No 2015/830 of 28 May 2015.                                  |
|                      | Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16        |
|                      | December 2008 on classification, labelling and packaging of substances and mixtures (as |
|                      | amended).   |

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

## Inventories

### **EU - EINECS/ELINCS**

None of the ingredients are listed or exempt.

## SECTION 16: Other information

| Abbreviations and acronyms<br>used in the safety data sheet            | <ul> <li>ADR: European Agreement concerning the International Carriage of Dangerous Goods by<br/>Road.</li> <li>ADN: European Agreement concerning the International Carriage of Dangerous Goods by<br/>Inland Waterways.</li> <li>RID: European Agreement concerning the International Carriage of Dangerous Goods by<br/>Rail.</li> <li>IATA: International Air Transport Association.</li> <li>ICAO: Technical Instructions for the Safe Transport of Dangerous Goods by Air.</li> <li>IMDG: International Maritime Dangerous Goods.</li> <li>CAS: Chemical Abstracts Service.</li> <li>ATE: Acute Toxicity Estimate.</li> <li>LC<sub>50</sub>: Lethal Concentration to 50 % of a test population.</li> <li>LD<sub>50</sub>: Lethal Dose to 50% of a test population (Median Lethal Dose).</li> <li>EC<sub>50</sub>: 50% of maximal Effective Concentration.</li> <li>PBT: Persistent, Bioaccumulative and Toxic substance.</li> <li>vPvB: Very Persistent and Very Bioaccumulative.</li> </ul> |
|--|--|
| Classification abbreviations<br>and acronyms                           | STOT SE = Specific target organ toxicity-single exposure<br>Aquatic Chronic = Hazardous to the aquatic environment (chronic)   |
| Classification procedures<br>according to Regulation (EC)<br>1272/2008 | STOT SE 1 - H370: : Calculation method. Aquatic Chronic 3 - H412: : Calculation method.  |
| Training advice  | Only trained personnel should use this material.   |
| Revision comments  | NOTE: Lines within the margin indicate significant changes from the previous revision.   |
| Revision date  | 21/05/2021   |
| Revision   | 33   |
| Supersedes date  | 21/05/2021   |
| SDS number   | BULK - FRC   |
| SDS status   | Approved.  |
| Hazard statements in full  | <ul> <li>H225 Highly flammable liquid and vapour.</li> <li>H301 Toxic if swallowed.</li> <li>H311 Toxic in contact with skin.</li> <li>H319 Causes serious eye irritation.</li> <li>H331 Toxic if inhaled.</li> <li>H332 Harmful if inhaled.</li> <li>H336 May cause drowsiness or dizziness.</li> <li>H370 Causes damage to organs .</li> <li>H371 May cause damage to organs .</li> <li>H412 Harmful to aquatic life with long lasting effects.</li> </ul>   |

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.