

**Material Safety Data Sheet**  
According to Regulation (EC) No. 1907/2006

Printing date: 15.04.10

reviewed: 09.09.09/ Rev. 4.0

**1 Identification of substance/preparation and company:**

- **Product details:**
- **Tradename: Cooling spray, non-flammable**
- **Manufacturer/Supplier:**  
GREEN CLEAN GmbH.  
Oberndorferstrasse 16  
Hagenau  
e-mail:office@green-clean.at  
Phone: + 43 (0)662 / 453254 A- 5101  
Fax: + 43 (0)662 / 450178
- **Information providing department:** Dep. Development and Application
- **Emergency information**  
Call public emergency number  
During normal office hours call company phone numbers.
- **Use of the substance/preparation:**  
**Common use:** not yet determined  
**Mode of operation:** not yet determined  
**Exposure categories (EC):** not yet determined

|                                | Industrial | Professional | Private   |
|--------------------------------|------------|--------------|-----------|
| <b>Human</b>                   | <b>EC</b>  | <b>EC</b>    | <b>EC</b> |
| Oral, short term               | 1          | 2            | 3         |
| Oral, long term/repeated       | 4          | 5            | 6         |
| Dermal, short term             | 7          | 8            | 9         |
| Dermal, long term/repeated     | 10         | 11           | 12        |
| Inhalative, short term         | 13         | 14           | 15        |
| Inhalative, long term/repeated | 16         | 17           | 18        |
| <b>Environment</b>             |            |              |           |
| Water, short term              | 19         | 20           | 21        |
| Water, long term, local        | 22         | 23           | 24        |
| diffuse                        | 22diff     | 23diff       | 24diff    |
| Air, short term                | 25         | 26           | 27        |
| Air, long term                 | 28         | 29           | 30        |
| Soil, short term               | 31         | 32           | 33        |
| Soil, long term                | 34         | 35           | 36        |

+ relevant EC; - non relevant EC; 0 relevant EC, but not considered

**2 Hazards identification:**

- **Hazard designation:**  
Not applicable

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- **Instructions on particular hazards to man and environment:**  
Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Keep away from sources of ignition – no smoking. Keep out of reach of children.  
5 – 10 % by mass of the contents are flammable.
- **Classification system:**  
The classification is conform to the current EC lists. In addition it is supplemented by data taken from technical literature and by company data.

### **3 Composition/Information on ingredients:**

- **Chemical characterization**  
**Hazardous ingredients:**

| <b>CAS No.</b>    | <b>REACH</b>            | <b>Designation,</b>              | <b>Conc.</b> |
|-------------------|-------------------------|----------------------------------|--------------|
| <b>EINECS No.</b> | <b>Registration No.</b> | <b>Danger symbols, R phrases</b> |              |
| 115-10-6          |                         | Dimethyl ether                   | 1 – 10 %     |
| 204-065-8         |                         | F+; R 12                         |              |
| 811-97-2          |                         | 1,1,1,2-Tetrafluoroethane        | 75 – 100 %   |
| 212-377-0         |                         |                                  |              |

- **Additional information:**  
For wording of the mentioned Risk Phrases please see chapter 16.

### **4 First aid measures:**

- **General instructions:**  
In case of an accident or illness seek medical advice immediately.  
We recommend showing this Material Safety Data Sheet when consulting a physician. Remove soiled or soaked clothing immediately.
- **After inhalation:**  
Supply fresh air. Seek medical advice. If breathing has stopped administer artificial respiration. Do not administer adrenalin or derivatives.
- **After skin contact:**  
Let product evaporate. Rinse with lukewarm water afterwards. Consult a doctor if skin irritation persists.
- **After eye contact:**  
Rinse immediately opened eye thoroughly under plenty of running water for several minutes. Protect uninjured eye, remove contact lenses. Seek medical advice.
- **After ingestion:**  
Does not constitute a hazard of ingestion if used in accordance with instructions.
- **Advice for the physician:**  
Do not use adrenalin or derivatives!

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**Symptoms:** Can cause cold burns due to contact with skin and eyes. Can cause cardiac arrhythmia.

**Treatment:** Symptomatic treatment.

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### **5 Fire fighting measures:**

- **Suitable extinguishing agents:**  
CO<sub>2</sub>, sand, extinguishing powder or water spray/ mist. Fight against larger fires with alcohol resistant foam.  
Product itself is not flammable. Extinguishing media suitable to fight against surrounding fire.
  - **Unsuitable extinguishing agents for safety reasons:** Water jet.
  - **Specific hazards caused by the substance, its combustion products or resulting gases:** Formation of carbon monoxide, carbon dioxide, hydrogen fluoride in case of fire is possible.
  - **Protective equipment for fire fighting:** Protective clothing. Do not inhale explosion gases or combustion gases. Use self-contained breathing apparatus.
  - **Additional information:**  
Keep adjacent containers cool by spraying with water. Danger of bursting.  
Product by itself does not burn. Extinguishing measures should be based on demand of surrounding fire.
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### **6 Accidental release measures:**

- **Personal safety precautions:**  
Use personal protective clothing. Keep away unprotected persons. Provide sufficient ventilation. Do not breathe vapour or spray. Avoid contact with eyes, skin and clothing.  
Vapours, that are heavier than air, may accumulate in enclosed rooms and may cause oxygen deficiency.
  - **Environmental protection precautions:**  
Product evaporates. No specific measures required.
  - **Procedures for cleaning up and collecting:**  
Ensure adequate ventilation. Leave the product to evaporate.
  - **Additional information:**  
Observe official regulations.  
The information given in the Material Safety Data Sheet should be seen as basis for the risk assessment of the conditions on site to define adequate measures and controls for safe handling, storage and disposal of this material.
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### **7 Handling and storage:**

- **Handling:**  
**Instructions for safe handling:**  
Provide sufficient ventilation. Do not use in enclosed rooms. Avoid contact with eyes, skin and clothing. Do not breathe vapour, aerosol or mist.

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Always press nozzle completely. Do not use can overhead, as liquid propellant may leak out. Only use equipment, which is suitable for this product. Avoid decomposition by electric arc (welding). Keep away from reactive substances.

**Instructions for fire and explosion protection:**

Pressurized container. Protect from sunlight and do not expose to temperature exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on naked flame or any incandescent material. Keep away from sources of ignition – do not smoke. Take precautionary measures against static discharge.

Apply only on devices, which are not energized. Always press nozzle completely. Product is not flammable according to relevant testing, when used in accordance with instructions.

– **Storage:****Requirements for storage rooms and containers:**

Keep in a well ventilated, cool place. Observe official regulations on storage of aerosols.

**Precautions for environmental protection:**

If threshold value limits are to be exceeded, use an exhaust air treatment.

**Instructions on storage in one common storage facility:**

Keep away from flammable materials and organic peroxides.

**Additional information regarding storage conditions:**

Protect from temperatures above 50 °C and direct sunlight.

**Storage classification (VCI (D)):** 2B Pressurized container

**8 Exposure controls and personal protection:**– **Components with threshold values that require monitoring at the workplace (workplace exposure levels):**

| CAS No.  | Component name            | Type                      | Value and unit  |
|----------|---------------------------|---------------------------|---|
| 115-10-6 | Dimethyl ether            | MAK (D)                   | 1900 mg/m <sup>3</sup> , 1000 ml/m <sup>3</sup>                 |
| 811-97-2 | 1,1,1,2-Tetrafluoroethane | MAK<br>SAEL (Solvay 2002) | 4200 mg/m <sup>3</sup> , 1000 ml/m <sup>3</sup><br>TWA 1000 ppm |

**Additional information:**

As a basis the valid lists were used..

Scope (as far as not stated otherwise): Germany

– **Personal protective equipment:****General protective and hygiene measures:**

Avoid contact with eyes, skin and clothes. Remove contaminated clothes.

Observe the common precautions when dealing with chemicals. Wash hands before breaks and after work. Do not eat, drink or smoke during working hours. Keep away from food, beverages and animal feed stokes.

**Respiratory protection:** Not required if good ventilated.

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If ventilation is insufficient use suitable breathing protection.

**Hand protection:**

In case of prolonged or repeated contact with skin use gloves.

Gloves made of the following materials may provide suitable protection: polyvinyl alcohol.

**Glove material/ diffusion time of glove material:**

Suitability and durability of gloves is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness and dexterity. Always seek advice from glove suppliers.

Unsuitable materials: Avoid prolonged contact with natural, butyl or nitrile rubber.

**Eye protection:** Safety goggles are recommended.

**Body protection:** Suitable working clothes.

– **Environmental exposure controls:**

Not specified

**9 Physical and chemical characteristics:**

|                                      |  |
|--------------------------------------|--|
| – <b>Physical state:</b>             | Compressed liquefied gas   |
| – <b>Colour:</b>                     | colourless   |
| – <b>Odour:</b>                      | slightly ethereal  |
|                                      | <u>Value/Range      Unit                      Method</u>                               |
| – <b>Change of physical state:</b>   |  |
| – <b>Melting point/melting range</b> | Not applicable as aerosol  |
| – <b>Boiling point/boiling range</b> | Not applicable as aerosol  |
| – <b>Flash point (cc):</b>           | Not applicable   |
| – <b>Ignition temperature:</b>       | Not determined   |
| – <b>Auto-ignition temperature:</b>  | This product is not self-igniting.   |
| – <b>Explosion risk:</b>             | Product is not explosive. However formation of explosive air-steam mixtures may occur. |
| – <b>Explosion limits in air:</b>    | Not applicable   |
| – <b>Upper:</b>                      |  |
| – <b>Lower:</b>                      |  |
| – <b>Vapour pressure:</b>            | 6,0 bar (20°C)   |
| – <b>Density (20°C):</b>             | approx. 1,2 g/cm <sup>3</sup>  |
| – <b>viscosity, dynamic:</b>         | Not applicable   |
| – <b>viscosity, kinematic:</b>       | Not applicable   |

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- **pH value:** Not applicable
- **Partition coefficient (n-Octanol/water):** Not applicable
- **Solubility in / Miscibility with water:** Insolubility respectively low solubility.

**10 Stability and reactivity:**

- **Thermal decomposition/conditions to avoid:**  
Stable if used under appropriate use conditions.  
Avoid contact with heat, flames and sparks, and any aflame or incandescent materials or metal surfaces.
- **Materials to avoid:**  
Alkali, earth alkali metals and their alloys, powdery metal salts, powdery Al, Zn, Be, etc.
- **Dangerous reactions:**  
Increasing internal pressure due to warming up. Spraying against flames or incandescent objects may cause hazardous decomposition products. Contact with alkali or earth alkali metals may cause vigorous reactions or explosions.
- **Hazardous decomposition products:**  
Thermal decomposition depends strongly on external conditions. A complex mixture of solids, liquids and gases (e.g. carbon monoxide, carbon dioxide, hydrogen fluoride, traces of fluorophosgene) and other organic compounds is formed, if this product is burned or decomposed thermally or oxidative.

**11 Toxicological information:**

- **Basis for assessment:**  
This product is a preparation according to chemical legislation. Information given is based on data of the components and the toxicology of similar products.  
Toxicological data for the product is not available. The product was classified on the basis of the calculation procedure of the EC preparation directive. Practical experience is not available
- **Acute toxicity:**  
Relevant LD/LC 50 values:  
  
Dimethyl ether:  
Inhalation: LC50/ 4h            312 mg/l (rat)  
Inhalation: LC50/ 15 min      0,739 mg/l (mouse)  
  
1,1,1,2-Tetrafluoroethane:  
Inhalation: LC50/ 4 h            500000 ppm (rat)
- **Chronic toxicity:**  
According to our knowledge the compound is not mutagenic, carcinogenic or

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teratogenic.

– **Primary irritations:**

**To the skin:**

Gas: No skin irritation.

Liquefied gas: Sensation of cold, then skin redness. Direct contact with the liquefied gas may cause freezing effects.

**To the eyes:**

Gas: In case of direct contact with eyes, it may cause minor irritations.

Liquefied gas: Contact with liquefied gas causes severe irritations, tears, redness and swelling of eyelids. May cause cold burns or damage of the eye tissue.

**After inhalation:**

Higher concentrations may cause in narcotic effects and arrhythmia. At even higher concentrations risk of apnoea due to oxygen deficiency.

– **Sensitisation:** Not expected to be a skin sensitizer.

– **Additional toxicological information:**

Does not constitute a hazard of ingestion if used in accordance with instructions. According to the existing experiences and available information no particular hazards are known if used under appropriate use conditions.

**12 Ecological information:**

– **Acute ecological toxicity:**

Dimethyl ether:

LC50 (*Poecilia reticula*): > 4000 mg/l (96 h)

EC50 (*Daphnia magna*): > 4000 mg/l (48 h)

1,1,1,2-Tetrafluoroethane:

LC50 (*Salmo gairdneri*): 450 mg/l (96 h)

NOEC (*Salmo gairdneri*): 300 mg/l (96 h)

EC50 (*daphnia*): 980 mg/l (48 h)

EC10 (*bacteria*): > 730 mg/l (6 h)

(NOEC = No-Observed-Effect-Concentration, is defined as highest tested concentration which does not lead to mortality or immobilisation of the exposed organisms during testing period.)

– **Mobility/ Behaviour in environmental compartments:**

Air: Significant volatility due to high vapour pressure and high Henry Constant

Water: Significant volatility in water.

Soil/sediment: Will be absorbed only to a small extent and is rapidly volatile.

– **Persistence, degradability:**

DME can be decomposed through abiotic (e.g. chemical or photochemical) processes.

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1,1,1,2-Tetrafluoroethane:

Air, indirect photo oxidation:  $t_{1/2} = 10,9a$ 

Conditions sensitizer: OH radical

Decomposition products: CO<sub>2</sub>, HF, Trifluoro acetic acid.

When released to air or soil, there is a high volatility to the atmosphere.

Biodegradability or hydrolysis in water or soil are not significant.

– **Bioaccumulation:**

Does not have the potential to bio accumulate.

– **PBT information:**

No data available.

– **Other harmful properties:**

1,1,1,2-Tetrafluoroethane:

**Air, photolysis, ozone depleting potential:** ODP = 0; without an effect on the stratosphere ozone; (reference value for R11: ODP = 1).**Air, greenhouse effect, global warming potential:** GWP = 1300; (see EG regulation 842/2006).– **General information:**

Water hazard class 1: slightly hazardous to water (self classification).

Undiluted product or large quantities of the product should not be allowed to enter drains or waterways.

**13 Disposal considerations:**– **Product:****Recommendation:** Must not be disposed off together with domestic waste. Disposal in accordance with the corresponding regulations.– **European Waste Catalogue:**

Waste code: 16 05 Gases in pressure containers and discarded chemicals

16 05 04 Gases in pressurized containers containing dangerous substances

– **Contaminated packaging:****Recommendation:** Disposal in accordance to official regulations. Contaminated packaging has to be emptied completely.

Waste code: 15 01 10 packaging containing residues of or contaminated by dangerous substances

**14 Transport information:**

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- **ADR/RID and GGVSE:** UN 1950  
Aerosols  
Class 2.1, (D), ADR  
limited quantities acc. to Chap. 3.4
  - **Other information:** none
- 

**15 Regulatory information:**

- **Designation according to EC guidelines:**  
The classification and designation of the product is in accordance with EC directives/ the relevant national regulations.
- **Classification and hazard designation of product:**  
Not applicable.
- **Risk and Safety phrases:**  
S 2 Keep out of reach of children; S 23 Do not breathe spray; S 51 Use only in well-ventilated areas;
- **Specific designation of definite preparations:**  
Designation as aerosol according to GefStoffV (D) and Directive 75/324/EWG: Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Keep away from sources of ignition – no smoking. Keep out of reach of children. Do not used in enclosed rooms.  
5 – 10 % by mass of the contents are flammable.  
  
Name, address, phone number of manufacturer or distributor.
- **Additional regulations:**  
**Störfallverordnung (Statutory order on hazardous incidents) (D):**  
The allowed threshold values according to the Statutory order on hazardous incidents should be observed.

**VOC contingent (CH):** 5 – 10 %**VOC contingent (EU directive 1999/13/EG):** 100 %**Technische Anleitung Luft (D / Categorization according to clean air act):**see chapter 5.2.5 Organic compounds, except suspended organic compounds  
The following values for exhaust gas must not be exceeded:

Mass flow: 0,50 kg/h or

Mass concentration: 50 mg/m<sup>3</sup>

as total carbon, respectively.

**Water hazard classification (D):**

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WGK 1: slightly hazardous to water (self classification).(self assessment)

**Designation according to Regulation (EC) 1494/2007:**

Contains fluorinated greenhouse gases covered by the Kyoto Protocol: R 134a;

Overall amount: (please ask the manufacturer).

**16 Other information:**

The information contained in this Material Safety Data Sheet is based on our current knowledge of the product and do not represent a guarantee for product characteristics and do not provide the legal basis for a contractual relationship. Please consult the Data Sheet prior to any use and processing.

The information given in the Material Safety Data Sheet should be seen as basis for the risk assessment of the conditions on site to define adequate measures and controls for safe handling, storage and disposal of this material.

**EC Risk phrases as mentioned in chapter 2 and 3:**

R 12 Extremely flammable;

**Training advice:**

The persons in charge of creating the Material Safety Data Sheet were instructed in accordance with EC regulations

**Responsible Department :** Dept. Development and Application**Contact Person:** C. Meyer-Pundsack, Dipl-Chem.**Sources:**

\* EC Directives 67/548/EWG, 1999/45/EG, 75/324/EWG

\* EC Regulation 1907/2006

\* Material Safety Data Sheets of the suppliers

\* GESTIS database

\* Information given in the regulatory data bases of EC, Germany and other countries

**Changes to prior version:** Chapter 14**Reasons for changes:** Changes in transportation.