SECTION 1: IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>1.1 Product identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
</tr>
<tr>
<td><strong>Chemical name, formula</strong></td>
</tr>
<tr>
<td><strong>CAS number</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 Relevant identified uses of the substance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identified uses</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Use advised against</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3 Details of the supplier of the safety data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darment Oy</td>
</tr>
<tr>
<td>VAT: FI09368266</td>
</tr>
<tr>
<td>Address: Ruosilantie 18</td>
</tr>
<tr>
<td>Postal code and city: 00390 HELSINKI</td>
</tr>
<tr>
<td>Telephone: +358 20 5588 250</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:info@darment.fi">info@darment.fi</a></td>
</tr>
<tr>
<td>www-site: <a href="http://www.darment.eu">www.darment.eu</a></td>
</tr>
</tbody>
</table>

Emergency telephone numbers in Finland

tel. 112

tes. **0800 147 111**, HUS Poison Information Center (free calls), tel. **09 471 977**, open 24 h/day.

SECTION 2: HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>2.1 Classification of the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification according to Regulation (EU) N:o 1272/2008 as amended.</td>
</tr>
</tbody>
</table>

Physical Hazards
Gases under pressure - Liquefied gas
H280: Contains gas under pressure; may explode if heated.
### 2.2 Label Elements

<table>
<thead>
<tr>
<th>Warning label</th>
<th>Signal Words: Warning</th>
<th>Hazard Statement/-s:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>H280, Contains gas under pressure; may explode if heated.</td>
</tr>
</tbody>
</table>

**Precautionary Statements**

**Prevention:** P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

**Response:** P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: Eliminate all ignition sources if safe to do so.

**Storage:** P403: Store in a well-ventilated place

**Disposal:** None.

**Supplemental label information**

EIGA-0783: Contains fluorinated greenhouse gases

EIGA-As: Asphyxiant in high concentrations.

### 2.3 Other hazards

Contact with evaporating liquid may cause frostbite or freezing of skin.

---

### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

#### 3.1 Substances (**)

<table>
<thead>
<tr>
<th>Chemical name, trade name</th>
<th>CAS No, EC-No, REACH Reg. No</th>
<th>Purity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R424A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.2 Mixtures (**)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS</th>
<th>REACH Registration name</th>
<th>Concentration %</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2H2F5, R125</td>
<td>354-33-6</td>
<td>01-2119485636-25</td>
<td>50,5 %</td>
<td>Compr. Gas Liquef. Gas; H280</td>
</tr>
<tr>
<td>C2H2F4, R134A</td>
<td>811-97-2</td>
<td>01-2119493974-33</td>
<td>47 %</td>
<td>Compr. Gas Liquef. Gas; H280</td>
</tr>
<tr>
<td>C4H10 (CH3CH2CH2CH3), R600, Butane</td>
<td>106-97-8</td>
<td>01-2119474691-32</td>
<td>1 %</td>
<td>Compr. Gas Liquef. Gas; H280, Flam Gas 1; H220, F+,R12</td>
</tr>
<tr>
<td>C4H10 (CH3CH2CH2CH3), R600A, Isobutane</td>
<td>75-28-5</td>
<td>01-2119485395-27</td>
<td>0,9%</td>
<td>Compr. Gas Liquef. Gas; H280, Flam Gas 1; H220, F+,R12</td>
</tr>
<tr>
<td>C5H12, [(CH3)2-CH-CH2-CH3], R601A, Isopentane</td>
<td>78-78-4</td>
<td>01-2119548407-38</td>
<td>0,6%</td>
<td>Flam. Liq. 1; H224, Asp. Tox. 1; H304, STOT SE 3; H336, Aquatic Chronic 2; H411</td>
</tr>
</tbody>
</table>

### SECTION 4: FIRST AID MEASURES

#### 4.1 Description of first aid measures

**Inhalation:** In high concentrations may cause asphyxiation. Symptoms may include loss of mobility or consciousness. Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor or emergency number. Apply artificial respiration if breathing stopped.

**Skin contact:** Contact with evaporating liquid may cause frostbite or freezing of skin.

**Eye contact:** Rinse the eye with water immediately. Remove contact lenses, if present and easy to do. Continue rinsing. Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.
**Ingestion:** Ingestion is not considered a potential route of exposure. But in case of ingestion, seek medical advice immediately and show the safety data sheet for this product.

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

Respiratory arrest. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. g. Loss of coordination. In low concentrations may cause narcotic effects - dizziness, headache, unconsciousness, nausea and vomiting.

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

**Hazards:** Respiratory arrest. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.

**Treatment:** Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention. Or call to emergency number and ask advice.

### SECTION 5: FIREFIGHTING MEASURES

Heat may cause the containers to explode. Material will not burn.

In case of fire, use appropriate extinguishing media.

#### 5.1 Extinguishing media

Use appropriate extinguishing media.

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

Thermal decomposition or combustion may produce reaction products which may be very toxic and/or corrosive, causing serious damage to health.

#### 5.3 Advice for firefighters

**Special fire fighting procedures:** In case of fire stop leak if safe to do so. Continue spraying water from protected position until container stays cool. Use extinguishing. Isolate the source of the fire or let it burn out.

Follow the internal emergency plan and general accident and emergency guidelines.

Depending on the intensity of the fire, it may be necessary to wear full protective clothing and self-contained breathing apparatus. Safety equipment and first aid equipment must be available at the minimum level.

**Firefighters** must wear standard protective equipment: a fire-resistant jacket, a helmet with a face shield, gloves and rubber boots even in an enclosed area with an oxygen device.

**Instructions:** EN 469 Protective clothing for firefighters. Requirements and test methods for fire rating. EN 15090 Safety footwear for firefighters. EN 659 Protective gloves for firefighters. EN 443 Helmets for fire fighting in houses and others constructions. Standard EN 137 Compressed air breathing apparatus - Portable open circuit compressed air devices - Requirements, testing, marking.
SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipments and emergency procedures

Evacuate area and provide good ventilation. Consider the risk of explosion - eliminate all ignition sources if safe to do so. Monitor the concentration of the released product. Prevent the substance from entering sewers, basements and work pits, or any place where its accumulation can be dangerous. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Standard EN 137 Respiratory protective devices – Self-contained open-circuit compressed air breathing apparatus with full face mask – Requirements, testing, marking.

6.2 Environmental precautions

Prevent further leakage if it is safe to do so.

6.3 Methods and material for containment and cleaning up

Provide adequate ventilation. Eliminate sources of ignition.

6.4 References to other sections

Refer to sections 8 and 13.
SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

- Only experienced and properly instructed persons should handle gases under pressure.
- Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
- Refer to supplier’s handling instructions.
- Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide.
- Assess the risk of a potentially explosive atmosphere and the need for suitable equipment i.e. explosion-proof.
- Take precautionary measures against static discharges.
- Keep away from ignition sources (including static discharges).
- Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres.
- Use only non-sparking tools.
- Ensure the complete system is checked for leaks before use.
- The substance must be handled in accordance with good industrial hygiene and safety procedures.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- Do not remove or deface labels provided by the supplier for the identification of the container contents.
- When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc.
- Secure cylinders in an upright position at all times, close all valves when not in use.
- Provide adequate ventilation.
- Suck back of water into the container must be prevented.
- Do not allow backfeed into the container.
- Avoid suckback of water, acid and alkalis.
- Keep container below 50°C in a well ventilated place.
- Observe all regulations and local requirements regarding storage of containers.
- When using do not eat, drink or smoke.
- Observe all legal and local requirements for the storage of cylinders / containers.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- Damaged valves should be reported immediately to the supplier.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to repair or modify container valves or safety relief devices.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Keep container valve outlets clean and free from contaminates particularly oil and water.
- If user experiences any difficulty operating container valve discontinue use and contact supplier.
- Never attempt to transfer gases from one container to another.
- Container valve guards or caps should be in place.

7.2 Conditions for safe storage including any incompatibilities

- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
- Segregate from oxidant gases and other oxidants being stored.
- Containers should not be stored in conditions likely to encourage corrosion.
- Stored containers should be periodically checked for general conditions and leakage.
- Container valve guards or caps should be in place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible material.

7.3 Specific end use(s)

None.
SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure limit values:

1,1,1,2-Tetrafluoroethane HTP 8h 1000 ppm 4240 mg / m³
Butane HTP 8h 600 ppm 1450 mg / m³
Iso-pentane HTP 8h 1000 ppm 3000 mg / m³

Source:
Työperäisen altistuksen rajat 05/2012 / UK Workplace Exposure Limits (WELs), EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)

DNEL Values (Derived No Effect Level)

<table>
<thead>
<tr>
<th>Critical component</th>
<th>Type</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,2-Tetrafluoroethane</td>
<td>Workers - by inhalation, systemic, long-term</td>
<td>13936 mg/m³</td>
<td></td>
</tr>
<tr>
<td>1,1,1,2,2-Pentafluoroethane</td>
<td>Workers - by inhalation, systemic, long-term</td>
<td>16444 mg/m³</td>
<td>Repeated dose toxicity</td>
</tr>
</tbody>
</table>

PNEC Values

<table>
<thead>
<tr>
<th>Critical component</th>
<th>Type</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,2-Tetrafluoroethane</td>
<td>Aquatic (intermit.releases)</td>
<td>1 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sediment (freshwater)</td>
<td>0,75 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wastewater treatment plant</td>
<td>73 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic (freshwater)</td>
<td>0,1 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic (marine water)</td>
<td>0,01 mg/l</td>
<td></td>
</tr>
<tr>
<td>1,1,1,2,2-Pentafluoroethane</td>
<td>Aquatic (intermt.releases)</td>
<td>1 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic (freshwater)</td>
<td>0,1 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sediment (freshwater)</td>
<td>0,6 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
- Consider a work permit system e.g. for maintenance activities.
- Ensure adequate ventilation including exhaust ventilation to ensure that the specified exposure limit value is not exceeded.
- Systems under pressure should be regularly checked for leakages.
- Keep concentrations well below lower explosion limits.
- Product to be handled in a closed system.
- Only use permanent leak tight installations.
- Gas detectors should be used when quantities of flammable gases or vapours may be released.
- Take precautionary measures against static discharges.
- Do not eat, drink or smoke when using the product.
Individual protection measure

General information: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Keep self contained breathing apparatus readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Eye and face protection
To avoid exposure to liquid splashes, safety glasses, eye protection or face shields should be used in accordance with EN 166. (Instructions: EN 166 Personal Eye Protection.)

Hand protection: Wear working gloves while handling containers. (Guidelines: EN 388 Protective gloves against mechanical risks) Body protection: Wear fire/flame resistant/retardant clothing. (Guidelines: EN 943 Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles.)


Respiratory protection: Respiratory protection may be required. When allowed by a risk assessment. Respiratory Protective Equipment (RPE) may be used The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. Material: Filter AX. Guideline: EN 14387 Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking. Guideline: EN 136 Respiratory protective devices. Full face masks. Requirements, testing, marking. Thermal hazards: No precautionary measures are necessary.

Hygiene measures: Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product.

Environmental exposure controls: Waste disposal, see sec. 13.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance, physical state, form and color</td>
<td>Gas, liquefied gas, colorless.</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight, ether-like</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Subjective and inadequate to warn of over exposure.</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available.</td>
</tr>
<tr>
<td>Boiling point</td>
<td>- 38,7 °C</td>
</tr>
<tr>
<td>Critical temperature (°C)</td>
<td>No data available.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable to gases and gas mixtures.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable to gases and gas mixtures.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not easily flammable gas.</td>
</tr>
<tr>
<td>Flammability limit upper / lower</td>
<td>Not easily flammable gas.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available.</td>
</tr>
<tr>
<td>Vapor density (air=1)</td>
<td>No data available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available.</td>
</tr>
<tr>
<td>Solubility (ies), 25°C</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Partition coefficient, n-oktanol/water</td>
<td>No data available.</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No data available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available.</td>
</tr>
</tbody>
</table>
Viscosity, kinematic / dynamic
Explosive properties
Oxidizing properties

9.2 Other information
Gas/vapour is heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
See the effects described in sub-section below.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
None.

10.4 Conditions to avoid
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible materials
Does not react with common materials in dry or humid conditions.

Alkali and alkali earth metals. Chemically-active metals (such as calcium, powdered aluminum, zinc, and magnesium) For material compatibility see ISO-11114.

10.6 Hazardous decomposition products
Under normal conditions of storage and use hazardous decomposition products should not be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
General information:
Acute toxicity / Oral
Based on available data, the classification criteria are not met.

Acute toxicity / Dermal
May cause frostbite on the skin.

Acute toxicity / Inhalation
Based on available data, the classification criteria are not met.
Ingredients: Isobutane, LC50 (Rat, 10min): > 800000ppm Remarks: Inhalation, experimental result, main study

Ingredient information
Isobutane: NOAEL (no-observed-adverse-effect level) Rat (female, male), inhalation, 13 wk): 10,000 ppm (m) by inhalation, interpolation, based on grouping of substances (category-based approach), the main study.
1,1,1,2-Tetrafluoroethane: NOAEL (No-observed-adverse-effect level) Rat (Male), inhalation, 14d): 100.000ppm (m) by inhalation, experimental result, supportive study.
Pentafluoroethane: NOAEL (No-observed-adverse-effect level) Rat (female, male), inhalation, 13 weeks): ≥ 50,000 ppm (m) inhalation, experimental result, main study.

Skin corrosion / Irritation
Based on available data, the classification criteria are not met.

Serious eye damage / Eye irritation
Based on available data, the classification criteria are not met.

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Carcinogenicity
Based on available data, the classification criteria are not met.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Specific target organ toxicity – single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity – repeated exposure
Based on available data, the classification criteria are not met.

Aspiration hazard
Not suitable for gases and gas mixtures.

Other information about toxicity:
1,1,1,2-Tetrafluoroethane Cardiac sensitization limit 40,000 ppm, Beagle (dog) NOAEC
pentfluoroethane Cardiac sensitization limit 80,000 ppm, Beagle (dog) LOAEC
Isobutane, Butane, Isopentane Cardiac sensitization limit 100,000 ppm, Beagle (dog) NOAEC
Cardiac sensitization limit 75000 ppm, Beagle (dog) LOAEC

Light hydrocarbons have been considered to be associated with cardiac sensitization in an abuse situation. Injection of hypoxia or adrenaline-type substances increases these effects. May cause cardiac arrhythmias and nervous system symptoms.
SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Immediate: The product does not harm the environment.

Toxicity to fish
1,1,1,2-Tetrafluoroethane: LC50 / 96 h / Oncorhynchus mykiss (rainbow trout): 450 mg / l
Pentafluoroethane: LC 50 (Oncorhynchus mykiss, 96 h): 450 mg / l
Isobutane LC 50 (various, 96 h): 24.11 mg / l

Toxicity to aquatic invertebrates
1,1,1,2-Tetrafluoroethane: EC 50 (Water flea, Daphnia magna, 24h): 960 mg / l
Pentafluoroethane: EC 50 (Water flea, Daphnia magna, 48h): > 200 mg / l
Isobutane: EC 50 (Daphnid, 48h): 14.22 mg / l

Toxicity to micro-organisms
1,1,1-Trifluoroethane: EX 50 (Algae, 72h): 71 mg / l

Chronic toxicity, aquatic invertebrates
Pentafluoroethane: EC 50 (16d): 12 mg / l
Toxicity to aquatic plants:
Pentafluoroethane: EC 50 (Green algae, 72h): 142 mg / l

12.2 Persistence and degradability

Product: Not applicable to gases and gas mixtures.

12.3 Bioaccumulative potential

Product: This product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment.

12.4 Mobility in soil

Because of its high volatility, the product is unlikely to cause ground water pollution. 1,1,1,2-Tetrafluoroethane, Henry’s constant: 8,580 MPa (25 ° C).

12.5 Results of PBT and vPvB

Not classified as PBT or vPvB.

12.6 Other adverse effects

Global Warming Potential: 2440. Contains fluorinated greenhouse gases. When large quantities are released into the atmosphere may contribute to the greenhouse effect.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Recover is possible. In so doing, comply with the local and national regulations currently in force.

General information:
Do not discharge into any place where its accumulation could be dangerous. Consult supplier for specific recommendations.
Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.

**Disposal methods**
Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", http://www.eiga.org) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

**European Waste Codes:**

**SECTION 14: TRANSPORT INFORMATION, ADR 2015 ja RID 2015, IMDG 37-14, IATA/ICAO 2015**

**14.1 UN Number**

UN 1078

**14.2 UN proper shipping name**

REFRIGERANT GAS, N.O.S. (Pentafluoroethane, 1,1,1,2-Tetrafluoroethane, Iso-Pentane, Butane, Isobutane)

**14.3 Transport hazard class**

2 (IMDG 2.1), Labels 2.2 Hazard nr (ADF) 20, Tunnel restriction code (C / E), EmS No: : F-C, S-V

**14.4 Packing Group**

-

**14.5 Environmental hazards**

Not applicable.

**14.6 Special Precautions fo Users**

Special provisions: not applicable.

Tunnel restriction code C / E.

Passenger and cargo aircraft: Allowed, maximum 75kg.
Freight flight only: Allowed, maximum 150kg.

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

Not applicable.
Additional identification:

- Avoid transport on vehicles where the load space is not separated from the driver’s compartment.
- Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
- Before transporting product containers ensure that they are firmly secured.
- Ensure that the container valve is closed and not leaking.
- Container valve guards or caps should be in place.
- Ensure adequate air ventilation.

SECTION 15: REGULATORY INFORMATION

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

National regulations:
- Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.
- This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

EU Regulations
Directive 96/61/EC: concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER):

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS no</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutane</td>
<td>75-28-5</td>
<td>1-10%</td>
</tr>
<tr>
<td>Butane</td>
<td>106-97-8</td>
<td>1-10%</td>
</tr>
<tr>
<td>Isopentane</td>
<td>78-78-4</td>
<td>0.1-1%</td>
</tr>
</tbody>
</table>

Other legislation:
- Chemicals Act 599/2013
- Chemical Regulation 675/1993
- Security seal for the cover and danger symbol for the visually impaired 414/2011
- Regulation on the names of substances 5/2010, amendment 1123/2010
- Government Decree on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products 837/2005.
- Government Decree on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations 435/2001, as amended
- Waste Act 646/2011
- Concentrations known as harmful 268/2014

15.2 Chemical safety assessment

The supplier has not performed a chemical safety assessment.
SECTION 16: OTHER INFORMATION

Revision information -

Data sources of this SDS

Safety Data Sheet provided by the manufacturer.

Legislation on hazardous chemicals valid at the time of writing.


European Chemicals Agency, Information on registered substances.

International Programme on Chemical Safety.

WWW-SOURCES

echa.europa.eu
eiga.org
esis.jrc.ec.europa.eu
eur-lex.europa.eu
atsdr.cc.gov
www.who.int/ipcs/en/
www.ericards.net

Rating methods of classification


Precautionary, Wording of the H-statements in section 2 and 3

H280 Contains gas under pressure; may explode if heated.

Classification according to Regulation (EC No 1272/2008 as amended

Press. Gas Liq. Gas, H280

Training information

It is recommended that persons handling the product have minimum training in the prevention and protection of work-related hazards. This makes it easier to understand and interpret the safety data sheet and product labels. Users of breathing apparatus must be trained. Ensure all operators understand the flammability hazard.

Other information

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Ensure equipment is adequately earthed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. ASHRAE: A2L
Disclaimer:
This information is provided without warranty. The data is trusted to be flawless. This information should be used to make an independent determination of the practices that protect workers and the environment.

The information contained in this MSDS is based on sources, scientific and technical knowledge, existing national and EU legislation.

The release is intended to serve the safe use of the product. We do not know or control the working methods or conditions of the users of the product. The user is always ultimately responsible for taking measures to ensure compliance with the regulations in force in the handling, storage, use and disposal of chemicals.

In this context, it is noted that the information provided in the SDS also helps employers to fulfill their obligations under Directive 98/24 / EU10 on the protection of the health and safety of workers from the risks related to chemical agents at work.

On the basis of the safety data sheet, users should be able to take the necessary measures in the field of health and safety to ensure safety and protect the environment.

The Safety Data Sheet is provided for in Article 31 of REACH Regulation (EU) No 1907/2006 and in Annex II to the Regulation.