

Safety data sheet

according to 1907/2006/EC, Article 31



Printing date 17.11.2015

Revision: 17.11.2015

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

- **1.1 Product identifier**
- **Trade name:** Cryogen Spray, 10 oz.
- **Article number:** AGH119
- **CAS Number:**
811-97-2
- **EC number:**
212-377-0
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
- **Product category**
Hydrofluorocarbon.
Clear gas at standard temperature and pressure with a slight ethereal odour.
Finished package: aerosol container filled w/liquified gas.
Does not contain dichlorodifluoromethane, cools to -65°C.
- **Application of the substance / the preparation:** No further relevant information available.
- **1.3 Details of the supplier of the safety data sheet**
- **Supplier.**
Agar Scientific
Elektron Technology UK Ltd
Parsonage Lane
Stansted CM24 8GF
United Kingdom
sales@agarscientific.com
Tel: +44 (0) 1279 813 519
- **Further information obtainable from:** Technical Support
- **1.4 Emergency telephone number:** 24 hours: +44 (0)1856 407333

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
 GHS04 gas cylinder
Press. Gas C H280 Contains gas under pressure; may explode if heated.
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Not applicable.
- **Information concerning particular hazards for human and environment:** Not applicable.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**

GHS04
- **Signal word** Warning
- **Hazard statements**
H280 Contains gas under pressure; may explode if heated.
- **Precautionary statements**
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.

(Contd. on page 2)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.11.2015

Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.*(Contd. of page 1)*

P410+P403 Protect from sunlight. Store in a well-ventilated place.

Information concerning particular hazards for human and environment:

Intentional misuse by deliberately concentrating and inhaling the contents of the can may be harmful or fatal.

2.3 Other hazards**Results of PBT and vPvB assessment**• **PBT:** Not applicable.• **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation: Substances**CAS No. Description**

811-97-2 1,1,1,2-Tetrafluoroethane

Identification number(s)• **EC number:** 212-377-0

SECTION 4: First aid measures

4.1 Description of first aid measures**General information:**

Skin contact: Liquid contact can cause frostbite.

Eye contact: Liquid contact can cause frostbite.

Inhalation: Vapour is heavier than air and can cause suffocation by reducing oxygen available for breathing. Breathing high concentrations of vapour may cause lightheadedness, giddiness, shortness of breath and may lead to narcosis, cardiac irregularities, unconsciousness or death.

After inhalation:

Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing difficult, give oxygen. Do not give epinephrine or similar drugs. Call a physician.

After skin contact: Flush with water. Treat for frostbite if necessary.**After eye contact:** Immediately flush eyes with plenty of cold water. Call a physician.**After swallowing:** Ingestion is not considered a potential route of exposure.**4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

Information for doctor:

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should only be used with special caution in situations of emergency life support.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media• **Suitable extinguishing agents:** Use media appropriate for surrounding material.**5.2 Special hazards arising from the substance or mixture**

Hazardous decomposition products. This material can be decomposed by high temperature (open flames, flowing metal surfaces, etc.) forming hydrofluoric acids and possibly carbonyl halides.

5.3 Advice for firefighters

Water may be used to cool closed containers to prevent pressure build-up and possible bursting when exposed to high temperatures.

Protective equipment:

Firemen should wear self-contained, positive pressure, respiratory equipment.

(Contd. on page 3)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.11.2015

Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.

(Contd. of page 2)

· **Additional information**

Contents under pressure. Keep temperatures of containers below 49°C (120F) to prevent bursting. Exposure to temperature above 49°C (120F) may cause can to be burst with violence and cause injury.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**

Avoid skin and eye contact with spray and liquid due to frostbite hazard. Do not store above 43°C (110F). Do not store near any open flames or ignition sources.

· **6.2 Environmental precautions:** Not required.

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

Ventilate area, especially low places where heavy vapours might collect. Remove open flames. Use self-contained breathing apparatus for large spills.

· **6.4 Reference to other sections**

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**

Avoid skin and eye contact with spray and liquid due to frostbite hazard. Do not intentionally breathe material.

· **Information about fire - and explosion protection:** No special measures required.

· **7.2 Conditions for safe storage, including any incompatibilities**

Do not store above 43°C (110F). Do not store near any open flames or ignition sources.

· **Storage:**

· **Requirements to be met by storerooms and receptacles:** No special requirements.

· **Information about storage in one common storage facility:** Not required.

· **Further information about storage conditions:** None.

· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical facilities:**

Local or mechanical exhaust to keep below TLV.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

811-97-2 1,1,1,2-Tetrafluoroethane

WEL | Long-term value: 4240 mg/m³, 1000 ppm

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Wash hands before breaks and at the end of work.
Avoid skin and eye contact.
Avoid breathing the product.
Do not puncture or incinerate.

· **Respiratory protection:**

Under normal use conditions no respiratory protection is required. Self-contained breathing apparatus is required if a large spill or release occurs.

(Contd. on page 4)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.11.2015

Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.

(Contd. of page 3)

Protection of hands:


Protective gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves** Lined butyl gloves should be worn when handling liquid.

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:** Safety glasses or goggles should be worn when handling liquid.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form: Compressed liquefied gas

Colour: Colourless

- **Odour:** Slight ethereal.

- **Odour threshold:** Not determined.

- **pH-value:** Not determined.

- **Change in condition**

Melting point/Melting range: -108 °C

Boiling point/Boiling range: -15 °C

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** Not determined.

- **Ignition temperature:** >742 °C

- **Decomposition temperature:** Not determined.

- **Self-igniting:** Not determined.

- **Danger of explosion:** Not determined.

- **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

- **Vapour pressure:** Not determined.
6.6 (@25°C) Ba

- **Density at 20 °C:** 1.2 g/cm³

- **Relative density** Not determined.

- **Vapour density** >1 (air=1)

- **Evaporation rate** >1 (@(1atm;25°C)) (n-Butyl Acetate=1)

- **Solubility in / Miscibility with water:**

substantial (@{1atm;25°C})

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**

Dynamic: Not determined.

Kinematic: Not determined.

(Contd. on page 5)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.11.2015

Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.

(Contd. of page 4)

- **Solvent content:**
- VOC (EC)** 100%
- **9.2 Other information** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability** Stable.
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** Hazardous polymerisation will not occur.
- **10.4 Conditions to avoid**
Avoid excessive heat, ignition sources, open flames, or other high temperatures which induce thermal decomposition.
- **10.5 Incompatible materials:**
Alkali or alkaline earth metals; powdered aluminium, zinc, berillium etc.
- **10.6 Hazardous decomposition products:**
This material can be decomposed by high temperature (open flames, flowing metal surface, etc.) forming hydrofluoric acids and possibly carbonyl halides.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity**

- **LD/LC50 values relevant for classification:**

811-97-2 1,1,1,2-Tetrafluoroethane

Inhalative	LC50/4 h	980 mg/l (Daphnia magna)
		450 mg/l (Oncorhynchus mykiss (rainbow trout))
		1500 mg/l (rat)

- **Skin corrosion/irritation** No irritant effect.
- **Serious eye damage/irritation** No irritating effect.
- **Respiratory or skin sensitisation** No sensitising effects known.

SECTION 12: Ecological information

- **12.1 Toxicity**

- **Aquatic toxicity:**

811-97-2 1,1,1,2-Tetrafluoroethane

EC50	>730 mg/kg (Pseudomonas putida)
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- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

(Contd. on page 6)

Safety data sheet

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Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.

(Contd. of page 5)

- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
This product, in its present state, when discarded or disposed of, is not a hazardous waste.
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

<ul style="list-style-type: none"> · 14.1 UN-Number · ADR, IMDG, IATA 	UN3159
<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR · IMDG, IATA 	3159 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a) 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR, IMDG, IATA · Class 	2.2
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	Void
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: 	No
<ul style="list-style-type: none"> · 14.6 Special precautions for user · EMS Number: 	Not applicable. F-C,S-V
<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	Not applicable.
<ul style="list-style-type: none"> · Transport/Additional information: 	
<ul style="list-style-type: none"> · ADR · Limited quantities (LQ) · Excepted quantities (EQ) 	120 ml Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	120 ml Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
<ul style="list-style-type: none"> · UN "Model Regulation": 	UN3159, 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a), 2.2

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(Contd. on page 7)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.11.2015

Revision: 17.11.2015

Trade name: Cryogen Spray, 10 oz.

(Contd. of page 6)

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge and should assist the user with the safe handling of this material when properly applied. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Sales department
- **Contact:**
sales@agarscientific.com
Tel: +44 (0) 1279 813 519
- **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Press. Gas C: Gases under pressure: Compressed gas

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