

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: **PELCO Histo/Cyto-freeze™, 10 oz.**

- Article number: AGH118

- CAS Number:

811-97-2

- EC number:

212-377-0

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

Excellent for cooling liquid, semi-solid and solid specimens. Ideal for ultra-rapid freezing of fresh tissue, cooling of liquids to induce precipitation prior to filtering and cooling of field samples. PELCO Histo/Cyto-Freeze delivers instant flash freezing for cryostat sectioning. It cools down to -60°F (-50°C) in just three seconds.

- **Application of the substance / the preparation:**

To cut frozen sections, mount sample directly on the microtome holder, simply spray to flash freeze and section. Time saving procedure and prevents water crystals built up caused by slower methods. The provided nozzle delivers the freezing action exactly where it is needed. Contains 10 oz. pure, 100% virgin tetrafluoroethane for enhanced freezing and cooling performance. Non-flammable, non-corrosive odorless gas. Ozone safe. Contains no CFC's.

- **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.

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- **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.
 - P410+P403 Protect from sunlight. Store in a well-ventilated place.
- **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
- **Additional information:**

Ingredients are not considered hazardous under the Federal Hazard Communication Standard.
DuPont AEL (Acceptable Exposure Limit): 1000 PPM, 8 & 12 Hr. TWA.
WEEL (AIHA): 1000 PPM, 8 Hr. TWA.
EPA's inhalation reference concentration (daily inhalational exposure likely to be without an appreciable risk of deleterious effects during a lifetime) for 1,1,1,2-tetra-fluoroethane is 80 mg/m³.

SECTION 4: First aid measures

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

Primary Routes of entry: Inhalation, eyes, skin.
Signs and Symptoms of Overexposure: ND
Eyes: Irritant. Liquid may cause freezing.
Skin: Contact with liquid may cause freezing or frost bite.
Ingestion: Not considered a potential route of exposure. Inhalation: High concentrations of vapor are harmful and may cause heart irregularities, unconscious, or death.
Chronic Exposure: ND
Chemical Listed As Carcinogen Or Potential Carcinogen: None.
- **After inhalation:** If unconscious, remove to fresh air and call a physician.
- **After skin contact:**

Wash with copious amounts of water for at least 15 minutes. Contact medical attention if complications arise.
- **After eye contact:**

Flush eyes with large amounts of water and allow to evaporate. Get medical attention if irritation persists.
- **After swallowing:** Have victim rinse mouth thoroughly with water.
- **4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.
- **Information for doctor:**

Medical Conditions generally Aggravated by Exposure: Preexisting diseases of the central nervous system may be aggravated by exposure to this product.
- **4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

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SECTION 5: Firefighting measures

5.1 Extinguishing media

Not a fire hazard. The product is not flammable.

Auto-ignition point: >743 °C.

- **Suitable extinguishing agents:** Carbon dioxide, foam and/or dry chemical may be used.

5.2 Special hazards arising from the substance or mixture

At elevated temperatures (over 54°C-130F) containers exposed to direct flame or heat contact should be cooled with water to prevent weakening of container structure.

Hazardous combustion products: Oxides of carbon. Hydrofluoric acid, carbonyl fluoride, and additional toxic chemicals may be formed in small amounts.

DOT Class: ORM-D

5.3 Advice for firefighters

Containers should be cooled with water to prevent vapour pressure build up. Use equipment or shielding, as required, to protect personnel from containers bursting, rupturing or venting.

- **Protective equipment:** No special measures required.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition and provide good ventilation.

- **6.2 Environmental precautions:** No special measures required.

6.3 Methods and material for containment and cleaning up:

Do not puncture or incinerate containers. When contents are depleted continue to depress button until all gas is expelled.

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 breathing vapor. Keep away from heat and flame. Use with adequate ventilation. Do not puncture or incinerate containers. Do not expose to direct sunlight or store at temperatures above 54°C (130F).

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

7.2 Conditions for safe storage, including any incompatibilities**Storage:****Requirements to be met by storerooms and receptacles:**

Store as Level 3 Aerosol (NFPA 30B).

Storage temperature: Ambient.

- **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:

Ventilation required: Provide sufficient mechanical ventilation to maintain exposure below TLV(s).

Overexposure to vapours and mist may be prevented by ensuring ventilation controls, local exhausts and/or fresh air entry.

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- **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/m ³ , 1000 ppm
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- **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.

- **Respiratory protection:** None if adequate ventilation is maintained.

- **Protection of hands:**



Protective gloves

Optional: Chemical resistant gloves.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **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:** Chemical safety glasses are recommended.

- **Body protection:** Wear impervious clothing to prevent skin contact.

SECTION 9: Physical and chemical properties

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

- **General Information**

- **Appearance:**

Form:	Compressed liquefied gas
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Colour:	Colourless
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· Odour:	Odourless
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· Odour threshold:	Not determined.
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· pH-value:	Not determined.
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- **Change in condition**

Melting point/Melting range:	-108 °C
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Boiling point/Boiling range:	-26.1 °C
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· Flash point:	Not applicable.
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· Flammability (solid, gaseous):	Not determined.
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- **Ignition temperature:**

Decomposition temperature:	Not determined.
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· Self-igniting:	>743 °C
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· Danger of explosion:	Not determined.
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- **Explosion limits:**

Lower:	Not determined.
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Upper:	Not determined.
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· Vapour pressure:	4.96-5.65 (@ 21°C) Ba
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· Density at 20 °C:	1.226 g/cm ³
· Relative density	Not determined.
· Vapour density	3.6 (air=1)
· Evaporation rate	>1 (CCl ₄ =1)
· Solubility in / Miscibility with water:	0.15 (@25°C) wt%
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· 9.2 Other information	Molecular weight: 102.03 g/mol

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** No dangerous reactions known.
- **10.4 Conditions to avoid**
Do not store above 54°C (130F). Keep away from heat, direct sunlight, open flames, glowing surfaces or sparks. Dropping containers may cause bursting.
- **10.5 Incompatible materials:**
Oxidising agents. Alkali or alkaline earth metals – powdered Al, Zn, Be, etc.
- **10.6 Hazardous decomposition products:**
Hydrofluoric acid, carbonyl fluoride, oxides of carbon and additional toxic chemicals may be formed in small amounts.

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)

- **Specific symptoms in biological assay:**
Results of component toxicity test performed: 1,1,1,2-Tetrafluoroethane (811-97-2): Rat (Inhalation) 4 hr, ALC: 567,000 PPM.
- **Skin corrosion/irritation** No irritant effect.
- **Serious eye damage/irritation** No irritating effect.
- **Respiratory or skin sensitisation** No sensitising effects known.
- **Other information (about experimental toxicology):**
Animal Data: A short duration spray of vapor produced very slight eye irritation. This material is a slight skin irritant, but not a skin sensitizer.
Human experience: OSHA: Human experience: Because of its use in metered-dose inhalers, 1,1,1,2-tetrafluoroethane has been studied in human volunteers with singlebreath inhalation and one-hour exposures to concentrations up to 8000 ppm, which caused no respiratory irritation or adverse effects on pulse, blood pressure, lung function, electrocardiogram or on the CNS. Not expected to be hazardous by OSHA criteria.
This product does not contain any compounds listed by NTP or IARC or regulated by OSHA as a

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carcinogen.

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SECTION 12: Ecological information

- **12.1 Toxicity** This product has no significant ecotoxicological effects.

- **Aquatic toxicity:**

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

EC50 >730 mg/kg (Pseudomonas putida)

- **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.

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

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**

- **Recommendation**

Classification: Contents under pressure. Do not puncture, incinerate or crush. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR261.4(b)(4)).

- **Recommendation:**

Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

SECTION 14: Transport information

- **14.1 UN-Number**

- **ADR, IMDG, IATA**

UN3159

- **14.2 UN proper shipping name**

- **ADR**

3159 1,1,1,2-TETRAFLUOROETHANE
(REFRIGERANT GAS R 134a)

- **IMDG, IATA**

1,1,1,2-TETRAFLUOROETHANE
(REFRIGERANT GAS R 134a)

- **14.3 Transport hazard class(es)**

- **ADR, IMDG, IATA**

- **Class**

2.2

- **14.4 Packing group**

- **ADR, IMDG, IATA**

Void

- **14.5 Environmental hazards:**

- **Marine pollutant:**

No

- **14.6 Special precautions for user**

Not applicable.

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· EMS Number:	F-C,S-V
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	UN3159, 1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a), 2.2

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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