

Perfluorobutane

1 – Identification of the substance and the company	
Trade name:	Perfluorobutane
Primary uses:	Medical gas
Company:	F2 Chemicals Ltd.
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2 – Composition/information on ingredients	
<i>Substances</i>	<i>CAS number</i>
Perfluorobutane	355-25-9
3 – Hazards identification	
	Liquified gas. May cause asphyxiation in high concentrations.
4 – First-aid measures	
a) Inhalation:	In case of severe exposure; remove from exposure, rest and keep warm. Apply artificial respiration if breathing has ceased. Obtain medical attention if effects are other than slight.
b) Skin contact:	Remove contaminated clothing and wash off with soap and water. Obtain medical attention if adverse symptoms arise. Possible risk of frostbite from evaporating liquid.
c) Eye contact:	Irrigate thoroughly with water. Obtain medical attention if adverse symptoms arise. Possible risk of frostbite from evaporating liquid
d) Ingestion:	Wash out mouth with water. Obtain medical attention if adverse symptoms persist.

5 – Fire-fighting measures

- a) Suitable Extinguishers: Carbon dioxide
Alcohol resistant foam
Powder
Halons
Water fog
Water jets
Inert material – Sand, earth, etc.
Non-combustible material
- b) Unsuitable Extinguishers: None.
- c) Hazardous Decomposition: Toxic fumes, including hydrogen fluoride fumes, may be produced on thermal decomposition, such as contact with flames, and in particular where hydrogen-containing compounds are also present.
- d) Protective equipment: Use approved self-contained breathing apparatus.
- e) Other hazards Gas under pressure. Cylinder may explode if exposed to high temperatures of fire.

6 – Accidental release measures

- a) Personal precautions: Ensure area is well ventilated before approaching or use approved, self-contained breathing apparatus.
If safe to do so, try to stop the release.
Gas heavier than air, may accumulate in low areas, such as basements and workpits.

7 – Handling and storage

- a) Handling: Do not smoke, eat or drink when handling.
Avoid contact of vapour or liquid with red hot surfaces, flames or electrical arcs as this may give rise to toxic gases such as hydrogen fluoride.
Do not use sodium or similar metals or their hydrides for removing water from the liquid; other desiccants are acceptable.
Where possible, systems should be designed to reduce the risk of releases to the atmosphere.
- b) Storage: Keep cylinder below 50°C in a well-ventilated area.

8 – Exposure controls and personal protection	
a) Exposure Limit Values:	None
b) Exposure Controls:	Recommend using in a well-ventilated area
c) Occupational exposure:	Light eye protection (safety glasses). Thermally insulated gloves for handling the compressed liquid.
d) Environmental exposure:	Where applicable, use in closed systems.
9 – Physical and chemical properties	
Appearance:	Clear, colourless gas or compressed liquid
Odour:	Odourless
pH	n/a
Boiling Point:	-1.6°C
Flash point	Non-flammable
Explosive properties	None
Oxidising properties	None
Vapour Pressure:	3.759 mbar
Density:	1.517 kg/l @25°C
Pour Point:	-94.5°C
Dynamic viscosity	0.465 mPa s @25°C
Vapour density	0.0125 kg/l @25°C
Evaporation rate	Fast
Solubility in Water:	Insoluble (< 25 ppm)
Solubility in Organic Solvents:	Sparingly soluble in most common solvents. Miscible with CFCs.
10 – Stability and reactivity	
a) Stability:	Extremely stable.
b) Conditions to Avoid:	Naked flames, hot surfaces (>400°C).
c) Materials to Avoid:	Lithium, sodium, potassium, calcium, and barium.
11 – Toxicological information	
The substance has been assessed on adequate evidence and found to produce no effect.	

12 – Ecological information	
a) Ecotoxicity:	No specific data available
b) Mobility:	Compressed gas; material readily lost to the atmosphere
c) Persistence:	Material liable to persist in the environment for considerable time; not subject to biodegradation.
d) Bioaccumulation:	Material not expected to accumulate in biota.
13 – Disposal considerations	
Observe all national and regional regulations.	
14 – Transport information	
Transport name – Liquefied gas, n.o.s. UN Number – 3163 IATA/ICAO – Class 2.2 ADR – Class 2.2 IMDG – Class 2.2 UK Road – Transport category 3 Hazchem code – Not classified	
15 – Regulatory information	
a) Hazard symbols:	None
b) Risk and Safety phrases:	None.
c) Other regulations:	Health and Safety at Work Act 1974. Within the UK, the use of this material must be assessed under COSHH regulations, with reference to COSHH Essentials.
16 – Other information	
a) Suitability for purpose:	F2 Chemicals Ltd cannot guarantee the suitability of this material for any particular purpose. It is the responsibility of the customer to satisfy himself that the product is suitable for his purpose. In the event of doubt the customer may contact F2 Chemicals for advice.