



**HAZARDS IDENTIFICATION**

Extremely flammable liquefied gas. Asphyxiant. Frostbite from contact with liquid.

**Eyes:** Liquid or cold vapour may cause frostbite and corneal damage.

**Skin:** Liquid or cold vapour may cause frostbite

**Inhalation:** As a simple asphyxiant, symptoms of oxygen deficiency, leading to loss of consciousness if exposure continues

Exposure to vapour at high concentration may cause:  
 central nervous system depression  
 loss of consciousness  
 cardiac sensitisation leading to risk of fatal arrhythmias

**4 FIRST AID MEASURES****TYPE OF EXPOSURE****Ingestion**

Not normally applicable.

**Skin**

Liquid or cold vapour may cause frostbite.

**Eyes**

Liquid or cold vapour may cause frostbite and corneal damage.

**Inhalation**

May cause symptoms of oxygen deficiency, leading to loss of consciousness if exposure continues

**FIRST AID MEASURES****Ingestion**

Immediately seek hospital attention

**Skin**

Thaw the affected area by placing in warm water (40 - 42 °C). Obtain medical attention.

**Eyes**

Immediately flood the eye with plenty of water, preferably warm, for at least 20 minutes, holding the eye open. Obtain medical attention urgently.

**Inhalation**

Remove from exposure. Keep warm and at rest. If breathing difficult give oxygen. If breathing stops, give artificial respiration. If heartbeat absent, give external cardiac compression.

**5 FIRE-FIGHTING MEASURES**

Extinguish with Dry Powder or Carbon dioxide only. Do not extinguish a leaking gas flame unless absolutely necessary.

Isolate source of gas if possible. Otherwise allow fires to burn out under controlled conditions.

Keep containers and surroundings cool with water spray. Disperse any accumulating vapour with water spray.

Do not use water jets.

Be aware of the possibility of re-ignition.

Wear full protective clothing and self-contained breathing apparatus.

**6 ACCIDENTAL RELEASE MEASURES**

Consider the need for evacuation. Eliminate all sources of ignition.

Disperse vapour with water spray. Allow to evaporate if safe to do so, or contain or absorb using earth, sand or other inert material.

**7 HANDLING AND STORAGE****7.1 Handling**

Avoid contact with eyes, skin and clothing. Adequate ventilation should be provided where there is risk of vapour build-up. Vessels should preferably be bottom filled. Filling arrangements should minimise the possibility of splashing. Never subject cylinders to severe mechanical shock.

**7.2 Storage**

Store away from sources of heat or ignition. Storage tanks must be positioned within a bunded area. Storage and transfer equipment should be adequately earthed and bonded to prevent the accumulation of static charges. Pipes which can entrap liquid or vapours require pressure release facilities.

Auto refrigeration: drains can become plugged and valves may become inoperable because of formation of ice due to expanding vapours or vapourising liquids.

Suitable storage materials include aluminium and its alloys, mild steel and stainless steel.

**8 EXPOSURE CONTROL / PERSONAL PROTECTION**

Simple asphyxiant. The minimal atmospheric oxygen concentration should be 18% by volume under normal atmospheric pressure.

**Respiratory protection** - Unlikely to be required in normal use but ensure good ventilation - note classified Extremely Flammable. It is suggested that exposure is kept well below the current occupational exposure standards in EH 40 -

8 hour TWA	- 600 ppm
	- 1450 milligrams per cubic metre

15 minute STEL	- 750 ppm
	- 1810 milligrams per cubic metre

Hand protection: leather, thick textile or other thermal gloves

Eye protection: suitable chemical goggles must be worn

Body protection: anti-static footwear

**9 PHYSICAL AND CHEMICAL PROPERTIES****Typical properties:**

Appearance	gas or liquefied gas - colourless
Odour	faint, sweet
pH	not soluble in water
Boiling point / boiling range °C	boils above -1 (n) and -12 (iso)
Melting point / melting range °C	melts above -135 to -138
Flash Point (PMC) °C	-107 (iso) to -60 (n)
Flammability limits %	1.9-9.0
Autoflammability °C	450
Explosive properties	n/a
Oxidising properties	n/a
Vapour pressure hPa @ 20°C	2076 (n) to 3200 (iso)
Density @ 20°C, kg/m <sup>3</sup>	570 to 575
Solubility - water	insoluble
Partition coefficient n-octanol/water	2.68 to 2.81
Relative Vapour Density (Air = 1)	1.9 to 2.1

**10 STABILITY AND REACTIVITY**

**Stability:** stable at ambient temperatures, hazardous polymerisation reactions will not occur

**Conditions to Avoid** - sources of ignition

**Materials to Avoid** -. Nitric acid, nitrogen dioxide Sulphuric acid. Oxidising agents.

**Hazardous Decomposition Products** - oxides of carbon

**11 TOXICOLOGICAL INFORMATION**

**Acute toxicity:** is of a low order: not considered toxic during normal handling

**12 ECOLOGICAL INFORMATION**

The product is gaseous and will partition to the air phase where it will be rapidly broken down by hydroxyl radicals

96 hour LC50 – fish >1000 mg/l

**13 DISPOSAL CONSIDERATIONS**

If recovery is not possible, allow to evaporate, if it is safe. If not, then incinerate.

Empty containers may contain hazardous residues; do not cut, puncture or weld, or remove labels, until cleaned. Return all cylinders to supplier

**14 TRANSPORT INFORMATION****TRANSPORT CLASSIFICATION**

HAZCHEM Code: 2/WE:

UN: Butane  
S.I.N. 1011  
IMO Class 2 (2.1)  
ICAO Class 2.1  
ADR/RID Class 2  
Item No. 2° F  
Hazard No. 23

**15 REGULATORY INFORMATION**

Classification: Extremely Flammable  
Symbol: Black flame on orange background

**Risk Phrase**

R12 - Extremely flammable

**Safety Phrases:**

(S2 - Keep out of reach of children)  
S9 - Keep containers in a well ventilated place  
S16 - Keep away from sources of ignition - no smoking  
S33 - Take precautionary measures against static discharges

**16 OTHER INFORMATION**

Further information can be found in Health and Safety Executive publications, a list of which may be made available on request from HSE Books - Tel: 01787 881165

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