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

1.1 Product identifier

Product name: Natural gas

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

Identified uses: Industrial and professional. Perform risk assessment prior to use.
Uses advised against Consumer use.

1.3 Details of the supplier of the safety data sheet

Supplier

BOC
Priestley Road, Worsley
M28 2UT Manchester

Telephone: 0800 111 333

E-Mail: ReachSDS@boc.com

1.4 Emergency telephone number: 0800 111 333

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

F+; R12

The full text for all R-phrases is displayed in section 16.

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

Physical hazards

Flammable gas	Category 1	H220: Extremely flammable gas.
Gases under pressure	Compressed gas	H280: Contains gas under pressure; may explode if heated.

2.2 Label elements

Signal words: Danger

Hazard Statement(s): H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

Precautionary statement

Prevention: P210: Keep away from heat/sparks/open flames/hot surfaces. 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.

2.3 Other hazards: None.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical name	Chemical formula	Concentration	CAS-No.	EC No.	REACH Registration No.	Notes
ethane	C2H6	3,5%	74-84-0	200-814-8	01-2119486765-21	
propane	C3H8	7.000PPM	74-98-6	200-827-9	01-2119486944-21	
Butane	C4H10	1.200PPM	106-97-8	203-448-7	01-2119474691-32	#
Isobutane	C4H10	1.000PPM	75-28-5	200-857-2	01-2119485395-27	
pentane	C5H12	350PPM	109-66-0	203-692-4	01-2119459286-30	#
isopentane; 2-methylbutane	C5H12	350PPM	78-78-4	201-142-8	01-2119475602-38	#
n-hexane	C6H14	300PPM	110-54-3	203-777-6	01-2119480412-44	#
heptane; n-heptane	C7H16	200PPM	142-82-5	205-563-8	01-2119457603-38	#
octane; n-octane	C8H18	100PPM	111-65-9	203-892-1	01-2119463939-19	
Nonane	C9H20	50PPM	111-84-2	203-913-4	01-2119463259-31	
benzene	C6H6	200PPM	71-43-2	200-753-7	01-2119447106-44	#
toluene	C7H8	70PPM	108-88-3	203-625-9	01-2119471310-51	#
Nitrogen	N2	1,5PPM	7727-37-9	231-783-9	Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.	
Carbon dioxide	CO2	5.000PPM	124-38-9	204-696-9	Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.	#
Helium	He	300PPM	7440-59-7	231-168-5	Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.	
methane	CH4	933.88	74-82-8	200-812-7	01-2119474442-39	

This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
ethane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280	
propane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280	
Butane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280	
Isobutane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280, Press. Gas Liquef. Gas;H280	
pentane	DSD:	F+; R12 Xn; R65 R66 R67 N; R51/53	
	CLP:	Flam. Liq. 2;H225, Asp. Tox. 1;H304, STOT SE 3;H336, Aquatic Chronic 2;H411	Note C
isopentane; 2-methylbutane	DSD:	F+; R12 Xn; R65 R66 R67 N; R51/53	
	CLP:	Flam. Liq. 1;H224, Asp. Tox. 1;H304, STOT SE 3;H336, Aquatic Chronic 2;H411	
n-hexane	DSD:	F; R11 Repr. 3; R62 Xi; R38 Xn; R65, R48/20 R67 N; R51/53	
	CLP:	Flam. Liq. 2;H225, Repr. 2;H361f, STOT RE 2;H373, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Chronic 2;H411	
heptane; n-heptane	DSD:	F; R11 Xi; R38 Xn; R65 R67 N; R50/53	
	CLP:	Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Acute 1;H400, Aquatic Chronic 1;H410	Note C
octane; n-octane	DSD:	F; R11 Xi; R38 Xn; R65 R67 N; R50/53	
	CLP:	Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Acute 1;H400, Aquatic Chronic 1;H410	Note C
Nonane	DSD:	F; R10 Xn; R65 R67 Xi; R38 N; R50/53	
	CLP:	Flam. Liq. 3;, Skin Corr. 2;, Asp. Tox. 1;, STOT SE 3;, Aquatic Chronic 1;, Aquatic Acute 1;	
benzene	DSD:	F; R11 Carc. 1; R45 Muta. 2; R46 Xi; R36/38 T; R48/23/24/25 Xn; R65	
	CLP:	Flam. Liq. 2;H225, Carc. 1A;H350, Muta. 1B;H340, STOT RE 1;H372, Asp. Tox. 1;H304, Eye Irrit. 2;H319, Skin Irrit. 2;H315	
toluene	DSD:	F; R11 Repr. 3; R63 Xi; R38 Xn; R48/20, R65 R67	
	CLP:	Flam. Liq. 2;H225, Repr. 2;H361d, STOT RE 2;H373, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336	
Nitrogen	DSD:	-; EIGA-As	
	CLP:	Press. Gas Compr. Gas;H280	
Carbon dioxide	DSD:	None	
	CLP:	Press. Gas Liquef. Gas;H280	
Helium	DSD:	-; EIGA-As	
	CLP:	Press. Gas Compr. Gas;H280	

methane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Compr. Gas;H280	

DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.
Note C: Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First Aid Measures

General: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/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. Apply artificial respiration if breathing stopped.

4.1 Description of first aid measures

Inhalation: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/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. Apply artificial respiration if breathing stopped. Low concentrations of CO2 cause increased respiration and headache.

Eye contact: Adverse effects not expected from this product.

Skin contact: Adverse effects not expected from this product.

Ingestion: Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed: Respiratory arrest

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: None.

Treatment: None.

SECTION 5: Firefighting Measures

General fire hazards: Heat may cause the containers to explode.

5.1 Extinguishing media

Suitable extinguishing media: Water. Dry powder. Foam.

Unsuitable extinguishing media: Carbon dioxide.

5.2 Special hazards arising from the substance or mixture: Incomplete combustion may form carbon monoxide

5.3 Advice for firefighters

Special fire fighting procedures:	In case of fire: Stop leak if safe to do so. Do not extinguish flames at leak because possibility of uncontrolled explosive re-ignition exists. Continue water spray from protected position until container stays cool. Use extinguishants to contain the fire. Isolate the source of the fire or let it burn out.
Special protective equipment for firefighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Guideline: EN 469 Protective clothing for firefighters. Performance requirements for protective clothing for firefighting. EN 15090 Footwear for firefighters. EN 659 Protective gloves for firefighters. EN 443 Helmets for fire fighting in buildings and other structures. EN 137 Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:	Evacuate area. Provide adequate ventilation. Consider the risk of potentially explosive atmospheres . Eliminate all ignition sources if safe to do so. Monitor the concentration of the released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. 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 or spillage if safe to do so.
6.3 Methods and material for containment and cleaning up:	Provide adequate ventilation. Eliminate sources of ignition.
6.4 Reference 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. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Purge air from system before introducing gas. 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. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Ensure the complete system has been (or is regularly) checked for leaks before use. 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. Store in accordance with local/regional/national/international regulations. 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

Occupational Exposure Limits

Chemical name	Type	Exposure Limit Values		Source
Carbon dioxide	TWA	5.000 ppm	9.150 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	STEL	15.000 ppm	27.400 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	5.000 ppm	9.000 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
Butane	TWA	600 ppm	1.450 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	STEL	750 ppm	1.810 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
pentane	TWA	600 ppm	1.800 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	1.000 ppm	3.000 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
isopentane; 2-methylbutane	TWA	600 ppm	1.800 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	1.000 ppm	3.000 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
n-hexane	TWA	20 ppm	72 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	20 ppm	72 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
heptane; n-heptane	TWA	500 ppm		UK. EH40 Workplace Exposure Limits (WELs) (2007)
	TWA	500 ppm	2.085 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
benzene	TWA	1 ppm		UK. EH40 Workplace Exposure Limits (WELs) (2007)
	TWA	1 ppm	3,25 mg/m3	EU. OELs, Directive 2004/37/EC on carcinogen and mutagens from Annex III, Part A (08 2007)
toluene	TWA	50 ppm	191 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	STEL	100 ppm	384 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	50 ppm	192 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
	STEL	100 ppm	384 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)

8.2 Exposure controls

Appropriate engineering controls: Consider a work permit system e.g. for maintenance activities. Ensure adequate air ventilation. Provide adequate general and local exhaust ventilation. Keep concentrations well below lower explosion limits. Gas detectors should be used when quantities of flammable gases or vapours may be released. Systems under pressure should be regularly checked for leakages. Product to be handled in a closed system. Use only permanent leak tight installations (e.g. welded pipes) Take precautionary measures against static discharges.

Individual protection measures, such as personal protective equipment

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. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment. Do not eat, drink or smoke when using the product.

Eye/face protection: Wear eye protection to EN 166 when using gases.
Guideline: EN 166 Personal Eye Protection.

Skin protection

Hand protection: Wear working gloves while handling containers
Guideline: EN 388 Protective gloves against mechanical risks

Body protection: Wear fire/flame resistant/retardant clothing.
Guideline: ISO/TR 2801:2007 Clothing for protection against heat and flame -- General recommendations for selection, care and use of protective clothing.

Other: Wear safety shoes while handling containers
Guideline: ISO 20345 Personal protective equipment - Safety footwear.

Respiratory Protection: Not required.

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: For waste disposal, see section 13.

SECTION 9: Physical And Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state:	Gas
Form:	Compressed gas

Colour:	Colourless
Odour:	Depending on the specific mixture a stenchant may be added.
Odour Threshold:	Odour threshold is subjective and is inadequate to warn of over exposure.
pH:	No data available.
Melting Point:	No data available.
Boiling Point:	No data available.
Sublimation Point:	Not applicable.
Critical Temp. (°C):	No data available.
Flash Point:	Not applicable to gases and gas mixtures
Evaporation Rate:	Not applicable to gases and gas mixtures
Flammability (solid, gas):	Flammable Gas
Flammability limit - upper (%)–:	Not known.
Flammability limit - lower(%)–:	Not known.
Vapour pressure:	Not applicable.
Vapour density (air=1):	Lighter or similar to air.
Relative density:	No data available.
Solubility(ies)	
Solubility in Water:	No reliable data available.
Partition coefficient (n-octanol/water):	Not known.
Autoignition Temperature:	Not applicable.
Decomposition Temperature:	Not applicable.
Viscosity	
Kinematic viscosity:	No data available.
Dynamic Viscosity:	No data available.
Explosive properties:	Not applicable.
Oxidising Properties:	Not applicable.

9.2 Other information: None.

SECTION 10: Stability and Reactivity

10.1 Reactivity:	No reactivity hazard other than the effects described in sub-section below.
10.2 Chemical stability:	Stable under normal conditions.
10.3 Possibility of hazardous reactions:	Can form a potentially explosive atmosphere in air. May react violently with oxidants.
10.4 Conditions to avoid:	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
10.5 Incompatible materials:	Air and oxidisers. For material compatibility see latest version of 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

General information: None.

11.1 Information on toxicological effects

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Acute Toxicity

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

Benzene - Toxic by inhalation./May have carcinogenic effect./Can affect blood cell formation.
Toluene - In low concentrations may cause narcotic effects. Symptoms may include dizziness,
headache, nausea and loss of co-ordination./Irritation to eyes./Can affect blood cell formation
n-Hexane - In low concentrations may cause narcotic effects. Symptoms may include dizziness,
headache, nausea and loss of co-ordination. / May cause irritation to the respiratory tract.
Butane n- - In low concentrations may cause narcotic effects. Symptoms may include dizziness,
headache, nausea and loss of co-ordination.
Isobutane - In low concentrations may cause narcotic effects. Symptoms may include dizziness,
headache, nausea and loss of co-ordination.
Carbon dioxide - In high concentrations cause rapid circulatory insufficiency. Symptoms are headache,
nausea and vomiting, which may lead to unconsciousness

Repeated dose toxicity

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

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 sensitisation

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 applicable to gases and gas mixtures.

SECTION 12: Ecological Information

12.1 Toxicity

Acute toxicity
No ecological damage caused by this product.

12.2 Persistence and degradability
No ecological damage caused by this product.

12.3 Bioaccumulative potential
No ecological damage caused by this product.

12.4 Mobility in soil
No ecological damage caused by this product.

12.5 Results of PBT and vPvB assessment: Not classified as PBT or vPvB.

12.6 Other adverse effects: When discharged in large quantities may contribute to the greenhouse effect.

Global Warming Potential
Contains greenhouse gas(es).

Carbon dioxide	Global warming potential: 1
methane	Global warming potential: 23

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

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", downloadable at http://www.eiga.org) for more guidance on suitable disposal methods. Dispose of container via gas supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

European Waste Codes

Container: 16 05 04*: gases in pressure containers (including halons) containing dangerous substances

SECTION 14: Transport Information

ADR

14.1 UN number:	UN 1971
14.2 UN proper shipping name:	NATURAL GAS, COMPRESSED
14.3 Transport hazard class(es)	
Class:	2
Label(s):	2.1
Hazard No. (ADR):	23
Tunnel restriction code:	(B/D)
Emergency Action Code:	–
14.4 Packing group:	–
14.5 Environmental hazards:	Not applicable
14.6 Special precautions for user:	–

RID

14.1 UN number:	UN 1971
14.2 UN proper shipping name	NATURAL GAS, COMPRESSED
14.3 Transport hazard class(es)	
Class:	2
Label(s):	2.1
14.4 Packing group:	–
14.5 Environmental hazards:	Not applicable
14.6 Special precautions for user:	–

IMDG

14.1 UN number:	UN 1971
14.2 UN proper shipping name:	NATURAL GAS, COMPRESSED
14.3 Transport hazard class(es)	
Class:	2.1
Label(s):	2.1
EmS No.:	F-D, S-U
14.3 Packing group:	–
14.5 Environmental hazards:	Not applicable
14.6 Special precautions for user:	–

IATA

14.1 UN number:	UN 1971
14.2 Proper Shipping Name:	Natural gas, compressed
14.3 Transport hazard class(es):	
Class:	2.1
Label(s):	2.1
14.4 Packing group:	–
14.5 Environmental hazards:	Not applicable
14.6 Special precautions for user:	–
Other information	
Passenger and cargo aircraft:	Forbidden.
Cargo aircraft only:	Allowed.

14.7 Transport in bulk according to Annex II of MARPOL73/78 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 cylinder 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:

EU Regulations

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

Chemical name	CAS-No.	Concentration
propane	74-98-6	0,1 - 1,0%
Butane	106-97-8	0,1 - 1,0%

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work:

Chemical name	CAS-No.	Concentration
methane	74-82-8	90 - 100%
ethane	74-84-0	1,0 - 10%
propane	74-98-6	0,1 - 1,0%
Butane	106-97-8	0,1 - 1,0%

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.:

Chemical name	CAS-No.	Concentration
methane	74-82-8	90 - 100%
ethane	74-84-0	1,0 - 10%
propane	74-98-6	0,1 - 1,0%
Butane	106-97-8	0,1 - 1,0%

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

Chemical name	CAS-No.	Concentration
methane	74-82-8	90 - 100%
Carbon dioxide	124-38-9	0,1 - 1,0%

Directive 96/82/EC (Seveso II): on the control of major accident hazards involving dangerous substances:

Chemical name	CAS-No.	Concentration
methane	74-82-8	90 - 100%
ethane	74-84-0	1,0 - 10%
propane	74-98-6	0,1 - 1,0%
Butane	106-97-8	0,1 - 1,0%
Isobutane	75-28-5	0,1 - 1,0%

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work.:

Chemical name	CAS-No.	Concentration
methane	74-82-8	90 - 100%
ethane	74-84-0	1,0 - 10%
propane	74-98-6	0,1 - 1,0%
Butane	106-97-8	0,1 - 1,0%
Isobutane	75-28-5	0,1 - 1,0%

National Regulations

Dangerous Substances and Explosive Atmospheres Regulations (DSEAR 2002 No. 2776) Management of Health and Safety at Work Regulations (1999 No. 3242) The Regulatory Reform (Fire Safety) Order 2005 (2005 No. 1541) Control of Substances Hazardous to Health Regulations (COSHH, 2002 No. 2677) Provision and Use of Work Equipment Regulations (PUWER, 1998 No. 2306) Personal Protective Equipment Regulations (1992 No. 2966) Control of Major Accident Hazards Regulations (COMAH, 1999 No. 743) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations (EPS, 1996 No. 192) Chemical Hazards Information and Packaging for Supply (CHIP, 1994 No. 3247) Pressure Systems Safety Regulations (PSSR, 2000 No. 128) Only products that comply with the food regulations 95/2/EC and 2008/84/EC and are labelled as such may be used as food additives. This Safety Data Sheet has been produced to comply with Regulation (EU) 453/2010.

15.2 Chemical safety assessment: No Chemical Safety Assessment has been carried out.

SECTION 16: Other Information

Revision Information: Not relevant.

Key literature references and sources for data:

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:
Agency for Toxic Substances and Diseases Registry (ATSDR) http://www.atsdr.cdc.gov/
European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.
European Chemical Agency: Information on Registered Substances http://apps.echa.europa.eu/registered/registered-sub.aspx#search
European Industrial Gases Association (EIGA) Doc. 169 Classification and Labelling guide.
International Programme on Chemical Safety (http://www.inchem.org/)
ISO 10156:2010 Gases and gas mixtures - Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.
Matheson Gas Data Book, 7th Edition.
National Institute for Standards and Technology (NIST) Standard Reference Database Number 69
The ESIS (European chemical Substances 5 Information System) platform of the former European Chemicals Bureau (ECB) ESIS (http://ecb.jrc.ec.europa.eu/esis/).
The European Chemical Industry Council (CEFIC) ERICards.
United States of America's National Library of Medicine's toxicology data network TOXNET (http://toxnet.nlm.nih.gov/index.html)
Threshold Limit Values (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH).
Substance specific information from suppliers.
Details given in this document are believed to be correct at the time of publication.
EH40 (as amended) Workplace exposure limits.

Wording of the R-phrases and H-statements in sections 2 and 3

H220	Extremely flammable gas.
H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361d	Suspected of damaging the unborn child.
H361f	Suspected of damaging fertility.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
R11	Highly flammable.
R12	Extremely flammable.
R36/38	Irritating to eyes and skin.
R38	Irritating to skin.
R45	May cause cancer.
R46	May cause heritable genetic damage.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R48/23/24/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness

Training information: Users of breathing apparatus must be trained. Ensure operators understand the flammability hazard.

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

Flam. Gas 1, H220

Press. Gas Compr. Gas, H280

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. Note: When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line. As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

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Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.