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

1.1 Product identifier

Product name: C5H12 1000 PPM;C5H12 1000 PPM;C4H10 2500 PPM;C4H10 2500 PPM;C3H8 2500 PPM;C2H6 5000 PPM;CH4 1 %;N2 97,55 %

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.

Not classified

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

Physical Hazards

Gases under pressure	Compressed gas	H280: Contains gas under pressure; may explode if heated.

2.2 Label Elements

Signal Words: Warning

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

Precautionary Statement

Prevention: None.

Response: None.

Storage: P403: Store in a well-ventilated place.

Disposal: None.

Supplemental label information

EIGA-As: Asphyxiant in high concentrations.

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
pentane	C5H12	1,000PPM	109-66-0	203-692-4	01-2119459286-30	#
isopentane; 2-methylbutane	C5H12	1,000PPM	78-78-4	201-142-8	01-2119475602-38	#
ethane	C2H6	5,000PPM	74-84-0	200-814-8	01-2119486765-21	
Butane	C4H10	2,500PPM	106-97-8	203-448-7	01-2119474691-32	#
Isobutane	C4H10	2,500PPM	75-28-5	200-857-2	01-2119485395-27	
propane	C3H8	2,500PPM	74-98-6	200-827-9	01-2119486944-21	
methane	CH4	1%	74-82-8	200-812-7	01-2119474442-39	
Nitrogen	N2	97.5500%	7727-37-9	231-783-9	Listed in Annex IV / V of Regulation (EC) No 1907 / 2006 (REACH), exempted from registration.	

The concentrations of the components in the SDS header, product name on page one and in section 3.2 are in mol due to regulatory requirements.
All concentrations are nominal.
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
pentane	DSD:	F+; R12 Xn; R65 R66 R67 N; R51 / 53	
	CLP:	Asp. Tox. 1;H304, STOT SE 3;H336, Aquatic Chronic 2;H411, Flam. Liq. 1;H224	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	
ethane	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, Press. Gas Liquef. Gas;H280	
propane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280	
methane	DSD:	F+; R12	
	CLP:	Flam. Gas 1;H220, Press. Gas Compr. Gas;H280	Note U
Nitrogen	DSD:	none	
	CLP:	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.
Note U: When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

The full text for all R-phrases and H-statements 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.

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: Material will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: None.

5.2 Special hazards arising from the substance or mixture: None.

Hazardous Combustion Products: None.

5.3 Advice for firefighters

Special fire fighting procedures: In case of fire: Stop leak if safe to do so. 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. 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. Guideline 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.

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. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. 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: 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
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)

DNEL-Values

Critical component	type	Value	Remarks
pentane	Worker - inhalative, long-term - systemic	3000 mg/m3	-
	Worker - dermal, long-term - systemic	432 mg/kg bw/day	-
isopentane; 2-methylbutane	Worker - inhalative, long-term - systemic	3000 mg/m3	-
	Worker - dermal, long-term - systemic	432 mg/kg bw/day	-

PNEC-Values

Critical component	type	Value	Remarks
pentane	Aquatic (freshwater)	230 µg/l	-
	Soil	0.55 mg/kg	-
	Sediment (marine water)	1.2 mg/kg	-
	Sewage treatment plant	3600 µg/l	-
	Sediment (freshwater)	1.2 mg/kg	-
	Aquatic (marine water)	230 µg/l	-
	Aquatic (intermit. releases)	880 µg/l	-

8.2 Exposure controls

Appropriate engineering controls: Consider a work permit system e.g. for maintenance activities. Ensure adequate air ventilation. Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded. Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leakages. Preferably use permanent leak tight connections (eg. welded pipes). Do not eat, drink or smoke when using the product.

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.

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: No special precautions.

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:	C5H12: Colourless C2H6: Colorless C4H10: Colorless C4H10: Colourless

	C3H8: Colorless CH4: Colorless N2: Colorless C5H12: Colourless
Odour:	C5H12: Gasoline-like odor C2H6: Odorless C4H10: Gasoline-like or natural gas odor C4H10: Gasoline-like or natural gas odor C3H8: Odorless CH4: Odorless N2: Odorless gas C5H12: Faint
Odour Threshold:	Odour threshold is subjective and is inadequate to warn of over exposure.
pH:	not applicable.
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):	This product is not flammable.
Flammability limit - upper (%):	not applicable.
Flammability limit - lower(%):	not applicable.
Vapour pressure:	No reliable data available.
Vapour density (air=1):	0.99 (calculated) (15 °C)
Relative density:	No data available.
Solubility(ies)	
Solubility in Water:	No data available.
Partition coefficient (n-octanol / water):	Not known.
Autoignition Temperature:	not applicable.
Decomposition Temperature:	Not known.
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: None.

10.4 Conditions to Avoid: None.

10.5 Incompatible Materials: No reaction with any common materials in dry or wet conditions.

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

Acute toxicity - Oral

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

Component information

pentane	LD 50 (Rat): > 2,000 mg / kg LD 50 (Rat): >2000 mg / kg bw / day
isopentane; 2-methylbutane	LD 50 (Rat): > 2,000 mg / kg

Acute toxicity - Dermal

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

Acute toxicity - Inhalation

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

Component information

pentane	LC 50 (Rat, 4 h): > 25.3 mg / l Remarks: Vapor LC 50 (2 h): 23500 ppm
isopentane; 2-methylbutane	LC 50 (Rat, 4 h): > 25.3 mg / l Remarks: Vapor

Repeated dose toxicity

Component information

pentane	NOAEL (Rat(Female, Male), Inhalation): 20,000 mg / m3
isopentane; 2-methylbutane	NOAEL (Rat(Female, Male), Inhalation): 20,000 mg / m3 NOAEL (Rat, Inhalation): 30 mg / l

ethane	NOAEL (Rat(Female, Male), Inhalation): 19,678 mg / m3 Inhalation Experimental result, Key study NOAEC (Rat, Inhalation): 19678 mg / m³
Butane	NOAEL (Rat(Female, Male), Inhalation, >= 42 d): 16,000 ppm(m) Inhalation Experimental result, Key study
Isobutane	NOAEL (Rat(Female, Male), Inhalation, >= 42 d): 16,000 ppm(m) Inhalation Experimental result, Key study
methane	NOAEL (Rat(Female, Male), Inhalation, 13 Weeks): 10,000 ppm(m) Inhalation Read-across based on grouping of substances (category approach), Key study NOAEC (Rat, Inhalation): 4000 ppm LOAEC (Rat, Inhalation): 12000 ppm

Skin Corrosion / Irritation

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

Component information

pentane	in vivo (Rabbit): Not classified as an Irritant
isopentane; 2-methylbutane	in vivo (Rabbit): Not classified as an Irritant

Serious Eye Damage / Eye Irritation

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

Component information

pentane	in vivo (Rabbit, 48 hrs): Not irritatingOECD GHS
isopentane; 2-methylbutane	in vivo (Rabbit, 24 hrs): Not irritatingOECD GHS
ethane	Not irritating
Butane	Not irritating

Respiratory or Skin Sensitisation

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

Germ Cell Mutagenicity

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

In vitro

Component information

ethane	Ames test in vitro: (OECD Guideline 471 (Bacterial Reverse Mutation Test)): Negative.

methane	Chromosome aberration (OECD Guideline 473 (In Vitro Mammalian Chromosome Aberration Test)): Negative.

In vivo
Component information

ethane	Drosophila Sex-Linked Recessive Lethal Assay (SLRL) test: Negative.
methane	Drosophila Sex-Linked Recessive Lethal Assay (SLRL) test: Negative.

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

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

Reproductive toxicity (Fertility)
Component information

methane	Gestation: Rat Inhalation (OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)) NOAEC: 9,000 ppm Fertility: Rat Inhalation (OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)) NOAEC: 3,000 ppm

Developmental toxicity (Teratogenicity)
Component information

methane	Rat Inhalation (OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)) NOAEC: 9,000 ppm

Specific Target Organ Toxicity - Single Exposure
Product Based on available data, the classification criteria are not met.

Component information

Specific Target Organ Toxicity - Repeated Exposure
Product Based on available data, the classification criteria are not met.

Aspiration Hazard
Product Not applicable to gases and gas mixtures..

SECTION 12: Ecological Information

12.1 Toxicity

Acute toxicity
Product No ecological damage caused by this product.

Acute toxicity - Fish

Component information

pentane	LC 50 (Oncorhynchus mykiss, 96 h): 4.26 mg / l (Static renewal) Remarks: experimental result
isopentane; 2-methylbutane	LC 50 (Oncorhynchus mykiss, 96 h): 4.26 mg / l (Static renewal) Remarks: interpreted LC 50 (Rainbow trout (Oncorhynchus mykiss), 96 h): 4.26 mg / l
ethane	LC 50 (Various, 96 h): 147.54 mg / l (QSAR) Remarks: QSAR QSAR, Key study LC50 (Fish, 96 h): 91.4 mg / l
Butane	LC 50 (Various, 96 h): 147.54 mg / l (QSAR) Remarks: QSAR QSAR, Key study
Isobutane	LC 50 (Various, 96 h): 147.54 mg / l (QSAR) Remarks: QSAR QSAR, Key study
propane	LC 50 (Various, 96 h): 147.54 mg / l (QSAR) Remarks: QSAR QSAR, Key study LC50 (Fish, 96 h): 49.9 mg / l
methane	LC 50 (Various, 96 h): 91.42 mg / l (QSAR) Remarks: QSAR QSAR, Key study LC 50 (Various (Freshwater), 96 h): 27.98 mg / l (calculated)

Acute toxicity - Aquatic Invertebrates

Component information

pentane	EC 50 (Water flea (Daphnia magna), 48 h): 2.7 mmol / m³
isopentane; 2-methylbutane	EC 50 (Water flea (Daphnia magna)): 2.3 mg / l
ethane	EC50 (Water flea (Daphnia magna), 48 h): 46.6 mg / l
Butane	LC50 (Water flea (Daphnia magna), 48 h): 14.2 mg / l
propane	EC50 (Water flea (Daphnia magna), 48 h): 27.1 mg / l
methane	LC 50 (Water flea (Daphnia magna), 48 h): 27.14 mg / l

Toxicity to microorganisms

Component information

ethane	EC50 (Alga, 72 h): 16.5 mg / l
propane	EC50 (Alga, 72 h): 11.9 mg / l
methane	EC 50 (Alga, 96 h): 19.37 mg / l Not harmful to microorganisms

Toxicity to aquatic plants

Component information

pentane	EC 50 (Green algae (Selenastrum capricornutum), 72 h): 10.7 mg/l NOEC (Green algae (Selenastrum capricornutum), 72 h): 2.04 mg/l
isopentane; 2-methylbutane	NOEC (Algae (Pseudokirchneriella subcapitata), 72 h): 7.51 mg/l EC 50 (Algae (Pseudokirchneriella subcapitata), 72 h): 10.7 mg/l
Butane	LC50 (Alga, 72 h): 7.7 mg/l

12.2 Persistence and Degradability

Product Not applicable to gases and gas mixtures..

Biodegradation

Component information

methane	100 %

Photodegradation

Component information

pentane	Non-significant photolysis

Stability in water

Component information

pentane	87 %Non-significant hydrolysis

12.3 Bioaccumulative Potential

Product The product is expected to biodegrade and is not expected to persist for long periods in an aquatic environment.

12.4 Mobility in Soil

Product Because of its high volatility, the product is unlikely to cause ground or water pollution.

Component information

pentane	Henry's Law Constant: 7,010 MPa (25 °C)
isopentane; 2-methylbutane	Henry's Law Constant: 7,851 MPa
methane	Henry's Law Constant: 3,690 MPa (25 °C)

12.5 Results of PBT and vPvB assessment

Product Not classified as PBT or vPvB.

12.6 Other Adverse Effects:

Global Warming Potential

Global warming potential: 0.2
Contains fluorinated greenhouse gases covered by the Kyoto protocol. When discharged in large quantities may contribute to the greenhouse effect.

Component information

methane	UN / IPCC. Greenhouse Gas Global Warming Potentials (IPCC Fourth Assessment Report, Climate Change, Table TS.2 - Global warming potential: 25 100-yr
pentane	Global warming potential: 5
isopentane; 2-methylbutane	Global warming potential: 5
ethane	Global warming potential: 6
Butane	
Isobutane	Global warming potential: 3
propane	Global warming potential: 3

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

General information: Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well ventilated place.

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 supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

European Waste Codes

Container: 16 05 05: Gases in pressure containers other than those mentioned in 16 05 04.

SECTION 14: Transport Information

ADR

14.1 UN Number:	UN 1956
14.2 UN Proper Shipping Name:	COMPRESSED GAS, N.O.S.(Nitrogen, Methane)
14.3 Transport Hazard Class(es)	
Class:	2
Label(s):	2.2
Hazard No. (ADR):	20
Tunnel restriction code:	(E)
Emergency Action Code:	2TE
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

RID

14.1 UN Number:	UN 1956
14.2 UN Proper Shipping Name	COMPRESSED GAS, N.O.S.(Nitrogen, Methane)
14.3 Transport Hazard Class(es)	
Class:	2
Label(s):	2.2
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

IMDG

14.1 UN Number:	UN 1956
14.2 UN Proper Shipping Name:	COMPRESSED GAS, N.O.S.(Nitrogen, Methane)
14.3 Transport Hazard Class(es)	
Class:	2.2
Label(s):	2.2
EmS No.:	F-C, S-V
14.3 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

IATA

14.1 UN Number:	UN 1956
14.2 Proper Shipping Name:	Compressed gas, n.o.s.(Nitrogen, Methane)
14.3 Transport Hazard Class(es):	
Class:	2.2
Label(s):	2.2
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–
Other information	
Passenger and cargo aircraft:	Allowed.
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 container 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
pentane	109-66-0	0.1 - 1.0%
isopentane; 2-methylbutane	78-78-4	0.1 - 1.0%
propane	74-98-6	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
pentane	109-66-0	0.1 - 1.0%
isopentane; 2-methylbutane	78-78-4	0.1 - 1.0%
ethane	74-84-0	0.1 - 1.0%
propane	74-98-6	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	1.0 - 10%
pentane	109-66-0	0.1 - 1.0%
isopentane; 2-methylbutane	78-78-4	0.1 - 1.0%
ethane	74-84-0	0.1 - 1.0%
propane	74-98-6	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
pentane	109-66-0	0.1 - 1.0%
isopentane; 2-methylbutane	78-78-4	0.1 - 1.0%
ethane	74-84-0	0.1 - 1.0%
Butane	106-97-8	0.1 - 1.0%
Isobutane	75-28-5	0.1 - 1.0%
propane	74-98-6	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	1.0 - 10%
pentane	109-66-0	0.1 - 1.0%
isopentane; 2-methylbutane	78-78-4	0.1 - 1.0%
ethane	74-84-0	0.1 - 1.0%
Butane	106-97-8	0.1 - 1.0%
Isobutane	75-28-5	0.1 - 1.0%
propane	74-98-6	0.1 - 1.0%

National Regulations

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, 2015 No. 483). Pressure Systems Safety Regulations (PSSR, 2000 No. 128). Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 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

H224	Extremely flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.
R12	Extremely flammable.
R51 / 53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
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. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Ensure operators understand the hazards.

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

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. 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 the Product Name appears in the SDS header the decimal sign and its position comply 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).

Last revised date: 08.08.2016

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.