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

### 1.1 Product identifier

**Product name:** C3H8 2000 PPM;CO 3,5 %;CO2 14 %;N2 64,6 %

### 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.**

Repr. 1; R61 Xn; R20 Xn; R48 / 20

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

**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. |

**Health Hazards**

| | | |
|---|---|---|
| Toxic to reproduction | Category 1A | H360D: May damage the unborn child. |
| Specific Target Organ Toxicity - Repeated Exposure | Category 2 | H373: May cause damage to organs through prolonged or repeated exposure. |

### 2.2 Label Elements

**Contains:** carbon monoxide

**Signal Words:** Danger

**Hazard Statement(s):**
H280: Contains gas under pressure; may explode if heated.
H360D: May damage the unborn child.
H373: May cause damage to organs through prolonged or repeated exposure.

**Precautionary Statement**

**Prevention:**
P202: Do not handle until all safety precautions have been read and understood.
P260: Do not breathe gas / vapours.

**Response:** P308+P313: IF exposed or concerned: Get medical advice / attention.

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

**Disposal:** None.

**Supplemental label information**
Restricted to professional users.

**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 |
|---|---|---|---|---|---|---|
| Carbon dioxide | CO2 | 14% | 124-38-9 | 204-696-9 | Listed in Annex IV / V of Regulation (EC) No 1907 / 2006 (REACH), exempted from registration. | # |
| carbon monoxide | CO | 3.5000% | 630-08-0 | 211-128-3 | 01-2119480165-39 | # |
| propane | C3H8 | 2,000PPM | 74-98-6 | 200-827-9 | 01-2119486944-21 | |
| Nitrogen | N2 | 64.6000% | 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 |
|---|---|---|---|
| Carbon dioxide | DSD: | none | |
| | CLP: | Press. Gas Liquef. Gas;H280 | |
| carbon monoxide | DSD: | F+; R12 Repr. 1; R61 T; R23, R48 / 23 | |
| | CLP: | Flam. Gas 1;H220, Press. Gas Compr. Gas;H280, Repr. 1A;H360D, Acute Tox. 3;H331, STOT RE 1;H372 | |
| propane | DSD: | F+; R12 | |
| | CLP: | Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280 | |
| Nitrogen | DSD: | none | |
| | CLP: | Press. Gas Compr. Gas;H280 | |

DSD: Directive 67 / 548 / EEC.
CLP: Regulation No. 1272 / 2008.

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

## SECTION 4: First Aid Measures

**General:** 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:** Low concentrations of CO2 cause increased respiration and headache. 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:** Danger of serious damage to health by prolonged exposure. Causes damage to organs.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Hazards:** Danger of serious damage to health by prolonged exposure. Causes damage to organs.

**Treatment:** Get immediate medical advice / attention.

## SECTION 5: Firefighting Measures

**General Fire Hazards:** Heat may cause the containers to explode.

**5.1 Extinguishing media**

**Suitable extinguishing media:** Use water spray to reduce vapours or divert vapour cloud drift. Water. Dry powder. Foam. Carbon dioxide.

**Unsuitable extinguishing media:** None.

**5.2 Special hazards arising from the substance or mixture:** No data available.

**Hazardous Combustion Products:** None that are more toxic than the product itself.

**5.3 Advice for firefighters**

**Special fire fighting procedures:** In case of fire: Stop leak if safe to do so. Keep run-off water out of sewers and water sources. Dyke for water control. 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:** Gas tight chemically protective clothing (Type 1) in combination with self contained breathing apparatus.
Guideline: EN 943-2 Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for gas-tight (Type 1) chemical protective suits for emergency teams (ET)

## SECTION 6: Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures:** Evacuate area. Provide adequate ventilation. 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. Reduce vapour with fog or fine water spray. Keep run-off water out of sewers and water sources. Dyke for water control.

**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. Avoid exposure - obtain special instructions before use. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Installation of a cross purge assembly between the container and the regulator is recommended. Excess pressure must be vented through an appropriate scrubber system. 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. Keep away from food, drink and animal feeding stuffs. 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) |
| carbon monoxide | TWA | 30 ppm 35 mg/m3 | UK. EH40 Workplace Exposure Limits (WELs) (12 2011) |
| | STEL | 200 ppm 232 mg/m3 | UK. EH40 Workplace Exposure Limits (WELs) (12 2011) |

**Biological Limit Values**

| Chemical name | Exposure Limit Values | Source |
|---|---|---|
| carbon monoxide (Carbon monoxide: Sampling time: End of shift.) | 30 ppm (end-tidal breath) | UKEH40BMGV (12 2011) |

**DNEL-Values**

| Critical component | type | Value | Remarks |
|---|---|---|---|
| carbon monoxide | Worker - inhalative, long-term - systemic | 23 mg/m3 | - |
| | Worker - inhalative, short-term - systemic | 117 mg/m3 | - |
| | Worker - inhalative, long-term - local | 23 mg/m3 | - |
| | Worker - inhalative, short-term - local | 117 mg/m3 | - |

**PNEC-Values**

| Critical component | type | Value | Remarks |
|---|---|---|---|
| carbon monoxide | | | PNEC not available. |

### 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 occupational exposure limits. Systems under pressure should be regularly checked for leakages. Product to be handled in a closed system and under strictly controlled conditions. Use only permanent leak tight installations (e.g. 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. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Protect eyes, face and skin from contact with product. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

**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.
Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Guideline: EN 374-1 / 2 / 3 Protective gloves against chemicals and micro-organisms.

**Body protection:** No special precautions.

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

**Respiratory Protection:** Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.

**Thermal hazards:** No precautionary measures are necessary.

**Hygiene measures:** Obtain special instructions before use. 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:** | CO2: Colorless |

| | |
|---|---|
| | CO: Colorless<br>C3H8: Colorless<br>N2: Colorless |
| **Odour:** | CO2: Odorless<br>CO: Odorless<br>C3H8: Odorless<br>N2: Odorless gas |
| **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):** | 0.89 (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:** No data available.

**10.4 Conditions to Avoid:** Avoid moisture in the installation.

**10.5 Incompatible Materials:** Moisture. 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:** Carbon monoxide: Has been shown to produce adverse effects to the cardiovascular, central nervous, and reproductive systems in laboratory animals and chronically exposed humans.

### 11.1 Information on toxicological effects

**Acute toxicity - Oral**
**Product** Based on available data, the classification criteria are not met.

**Acute toxicity - Dermal**
**Product** Based on available data, the classification criteria are not met.

**Acute toxicity - Inhalation**
**Product** ATEmix (4 h): > 20000 ppm Based on available data, the classification criteria are not met.

**Component information**
carbon monoxide LC 50 (Rat, 4 h): 1300 ppm
LC 50 (Rat, 1 h): 3760 ppm

**Repeated dose toxicity**
**Component information**
carbon monoxide LOAEC (Rat, Inhalation): 200 ppm (Target Organ(s): Respiratory system)

propane LOAEL (Rat(Female, Male), Inhalation): 21,641 mg/m3 Inhalation Experimental result, Key study

**Skin Corrosion / Irritation**
**Product** Based on available data, the classification criteria are not met.

**Component information**
carbon monoxide Not classified as an irritant.

**Serious Eye Damage / Eye Irritation**
**Product** Based on available data, the classification criteria are not met.

**Component information**
carbon monoxide Not classified as an irritant.

**Respiratory or Skin Sensitisation**

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

**Component information**

carbon monoxide No known effects from this product.

**Germ Cell Mutagenicity**

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

**Component information**

carbon monoxide There is no evidence of mutagenic potential.

**Carcinogenicity**

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

**Component information**

carbon monoxide No evidence of carcinogenic effects.

**Reproductive toxicity**

**Product** May damage fertility or the unborn child.

**Component information**

carbon monoxide May damage fertility or the unborn child.

**Reproductive toxicity (Fertility)**

**Component information**

carbon monoxide NOAEC (embryotoxicity): 65 ppm

**Developmental toxicity (Teratogenicity)**

**Component information**

carbon monoxide LOAEC: 125 ppm

**Specific Target Organ Toxicity - Single Exposure**

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

**Component information**

carbon monoxide Route of Exposure: Inhalation
Target Organ(s): Blood
Causes damage to red blood cells (haemolytic poison). Carbon monoxide binds reversibly to haemoglobin (Hb) to form carboxyhaemoglobin (CoHb), reducing the capacity of the blood to transport oxygen.

**Specific Target Organ Toxicity - Repeated Exposure**

**Product** May cause damage to organs through prolonged or repeated exposure.

**Component information**

carbon monoxide
Route of Exposure: Inhalation
Target Organ(s): Heart
Risk of serious health injuries in case of long term exposure.

**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**

propane
LC 50 (Various, 96 h): 147.54 mg/l (QSAR) Remarks: QSAR QSAR, Key study
LC50 (Fish, 96 h): 49.9 mg/l

**Acute toxicity - Aquatic Invertebrates**

**Component information**

propane
EC50 (Water flea (Daphnia magna), 48 h): 27.1 mg/l

**Toxicity to microorganisms**

**Component information**

propane
EC50 (Alga, 72 h): 11.9 mg/l

### 12.2 Persistence and Degradability

**Product** Not applicable to gases and gas mixtures..

**Component information**

carbon monoxide
Will not undergo hydrolysis.

**Biodegradation**

**Component information**

carbon monoxide
Not readily biodegradable. Inorganic compound.

**12.3 Bioaccumulative Potential**

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

**Component information**

carbon monoxide Because of the low log Kow, accumulation in organisms is not expected.

**12.4 Mobility in Soil**

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

**Component information**

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

**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: 0.3
Contains fluorinated greenhouse gases covered by the Kyoto protocol. When discharged in large quantities may contribute to the greenhouse effect.

**Component information**

Carbon dioxide — UN / IPCC. Greenhouse Gas Global Warming Potentials (IPCC Fourth Assessment Report, Climate Change, Table TS.2
- Global warming potential: 1 100-yr

carbon monoxide — Global warming potential: 1.9

propane — Global warming potential: 3

## SECTION 13: Disposal Considerations

**13.1 Waste treatment methods**

**General information:** Avoid discharges to atmosphere. Consult supplier for specific recommendations.

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

## SECTION 14: Transport Information

**ADR**

| | |
|---|---|
| 14.1 UN Number: | UN 1956 |
| 14.2 UN Proper Shipping Name: | COMPRESSED GAS, N.O.S.(Nitrogen, Carbon Monoxide) |
| 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, Carbon Monoxide) |
| 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, Carbon Monoxide) |
| 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, Carbon Monoxide) |
| 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 |
|---|---|---|
| carbon monoxide | 630-08-0 | 1.0 - 10% |
| 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 |
|---|---|---|
| carbon monoxide | 630-08-0 | 1.0 - 10% |

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

| Chemical name | CAS-No. | Concentration |
|---|---|---|
| Carbon dioxide | 124-38-9 | 10 - 20% |
| carbon monoxide | 630-08-0 | 1.0 - 10% |

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

| Chemical name | CAS-No. | Concentration |
|---|---|---|
| carbon monoxide | 630-08-0 | 1.0 - 10% |
| 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 |
|---|---|---|
| carbon monoxide | 630-08-0 | 1.0 - 10% |

**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**

| | |
|---|---|
| H220 | Extremely flammable gas. |
| H280 | Contains gas under pressure; may explode if heated. |
| H331 | Toxic if inhaled. |
| H360D | May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| R12 | Extremely flammable. |
| R20 | Harmful by inhalation. |
| R23 | Toxic by inhalation. |
| R48/20 | Harmful: danger of serious damage to health by prolonged exposure through inhalation. |
| R48/23 | Toxic: danger of serious damage to health by prolonged exposure through inhalation. |
| R61 | May cause harm to the unborn child. |

**Training information:**

Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard.

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

Repr. 1A, H360D
STOT RE 2, H373
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:** 20.05.2016

**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.