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

1.1 Product identifier

Product name: C2H4O 15 %;CO2 85 %

Trade name: Gasart 386 Sterilisiergas 15 % Ethylenoxid, Rest Kohlendioxid

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

Linde Gas GmbH
Carl-von-Linde-Platz 1
A-4651 Stadl-Paura

Telephone: +43 50 4273

E-mail: office@at.linde-gas.com

1.4 Emergency telephone number: Emergency number Linde: + 43 50 4273 (during business hours), Poisoning Information Center: +43 1 406 43 43

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 R6 Carc. 2; R45 Muta. 2; R46 T; R23 Xi; R36 / 37 / 38

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.

Health Hazards

Acute toxicity (Inhalation - gas)	Category 4	H332: Harmful if inhaled.
Skin irritation	Category 2	H315: Causes skin irritation.
Serious eye irritation	Category 2	H319: Causes serious eye irritation.
Germ Cell Mutagenicity	Category 1B	H340: May cause genetic defects.
Carcinogenicity	Category 1B	H350: May cause cancer.

Specific Target Organ Toxicity - Single Exposure	Category 3	H335: May cause respiratory irritation.

2.2 Label Elements

Contains: Ethylene oxide

Signal Words: Danger

Hazard Statement(s):
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H340: May cause genetic defects.
H350: May cause cancer.

Precautionary Statement

Prevention:
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe gas / vapors.
P280: Wear protective gloves / protective clothing / eye protection / face protection.

Response:
P304+P340+P315: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice / attention.
P308+P313: IF exposed or concerned: Get medical advice / attention.

Storage: None.

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	85%	124-38-9	204-696-9	Listed in Annex IV / V of Regulation (EC) No 1907 / 2006 (REACH), exempted from registration.	#
Ethylene oxide	C2H4O	15%	75-21-8	200-849-9	01-2119432402-53	#

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	
Ethylene oxide	DSD:	R6 F+; R12 Carc. 2; R45 Muta. 2; R46 T; R23 Xi; R36 / 37 / 38	
	CLP:	Chem. Unst. Gas A;H230, Flam. Gas 1;H220, Press. Gas Liquef. Gas;H280, Carc. 1B;H350, Muta. 1B;H340, Acute Tox. 3;H331, Eye Irrit. 2;H319, STOT SE 3;H335, Skin Irrit. 2;H315	

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: 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: Make sure to remove any contact lenses from the eyes before rinsing. Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

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

4.2 Most important symptoms and effects, both acute and delayed: Irritating to eyes, respiratory system and skin. May be harmful if inhaled.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: Irritating to eyes, respiratory system and skin. May be harmful if inhaled.

Treatment: None.

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 vapors or divert vapor cloud drift. Water Spray or Fog. Dry powder. Foam.

Unsuitable extinguishing media: Carbon Dioxide.

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

5.3 Advice for firefighters

Special fire fighting procedures: In case of fire: Stop leak if safe to do so. Use of water may result in the formation of very toxic aqueous solutions. Keep run-off water out of sewers and water sources. Dike 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 fire-fighters: 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. 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. Reduce vapour with fog or fine water spray. Keep run-off water out of sewers and water sources. Dike for water control.

6.3 Methods and material for containment and cleaning up: Provide adequate ventilation. Eliminate sources of ignition. Wash contaminated equipment or sites of leaks with copious quantities of water.

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. 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. 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. 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. Keep away from food, drink and animal feeding stuffs. 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	9.000 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
	MAK	5.000 ppm	9.000 mg/m3	Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001 (09 2007)
	MAK CEIL	10.000 ppm	18.000 mg/m3	Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001 (09 2007)
Ethylene oxide	TRK	1 ppm	2 mg/m3	Austria. TRK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001 (09 2007)
	TRK STEL	4 ppm	8 mg/m3	Austria. TRK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001 (09 2007)

DNEL-Values

Critical component	type	Value	Remarks
Ethylene oxide	Worker - inhalative, short-term - systemic	5 mg/m3	-
	Worker - inhalative, long-term - systemic	1,6 mg/m3	-

PNEC-Values

Critical component	type	Value	Remarks
Ethylene oxide	Aquatic (freshwater)	0,084 mg / l	-
	Aquatic (intermit. releases)	0,84 mg / l	-
	Sediment (marine water)	0,0329 mg / kg	-
	Sewage treatment plant	13 mg / l	-
	Soil	0,0165 mg / kg	-
	Aquatic (marine water)	0,0084 mg / l	-
	Sediment (freshwater)	0,329 mg / kg	-

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. Gas detectors should be used when toxic quantities may be released. 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 and under strictly controlled conditions. Only use permanent leak tight installations (e.g. welded pipes). Take precautionary measures against static discharges. 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:	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:	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 of the SDS.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state:	Gas
Form:	Compressed gas
Color:	CO2: Colorless C2H4O: Colorless
Odor:	CO2: Odorless C2H4O: Ether-like odor
Odor Threshold:	Odor 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):	Flammable Gas
Flammability Limit - Upper (%)–:	not applicable.
Flammability Limit - Lower (%)–:	not applicable.
Vapor pressure:	No reliable data available.

Vapor density (air=1):	1,55 (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.
Oxidizing properties:	not applicable.

9.2 Other information: Gas / vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

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: Avoid moisture in the installation. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible Materials: Air and oxidizers. 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: None.

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): 9666,67 ppm
Harmful if inhaled.

Component Information

Ethylene oxide LC 50 (Rat, 1,0 h): 2900 ppm

Skin Corrosion / Irritation

Product Causes skin irritation.

Component Information

Ethylene oxide Irritating

Serious Eye Damage / Eye Irritation

Product Causes serious eye irritation.

Component Information

Ethylene oxide Irritating

Respiratory or Skin Sensitization

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

Germ Cell Mutagenicity

Product May cause genetic defects.

Carcinogenicity

Product May cause cancer.

Reproductive toxicity

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

Specific Target Organ Toxicity - Single Exposure

Product May cause respiratory irritation.

Component Information

Ethylene oxide Causes damage to red blood cells (haemolytic poison). Causes irritation to the respiratory tract

Specific Target Organ Toxicity - Repeated Exposure

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

Component Information

Ethylene oxide Causes damage to red blood cells (haemolytic poison).

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

Ethylene oxide LC 50 (Fathead minnow (Pimephales promelas), 96 h): 73 - 96 mg/l (Static) Remarks: Mortality

Acute toxicity - Aquatic Invertebrates

Component Information

Ethylene oxide LC 50 (Water flea (Daphnia magna), 48 h): 150 - 243 mg/l (Static) Remarks: Mortality

Toxicity to microorganisms

Component Information

Ethylene oxide EC50 (Alga, 72 h): 240 mg/l

12.2 Persistence and Degradability

Product Not applicable to gases and gas mixtures..

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.

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: 0,8
When discharged in large quantities may contribute to the greenhouse effect.

Component Information

Carbon dioxide — Global warming potential: 1

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 1954
14.2 UN Proper Shipping Name:	COMPRESSED GAS, FLAMMABLE, N.O.S.(Ethylene Oxide, Carbon Dioxide)
14.3 Transport Hazard Class(es)	
Class:	2
Label(s):	2.1
Hazard No. (ADR):	23
Tunnel restriction code:	(B / D)
14.4 Packing Group:	–
14.5 Environmental hazards:	not applicable
14.6 Special precautions for user:	–

RID

14.1 UN Number:	UN 1954
14.2 UN Proper Shipping Name	COMPRESSED GAS, FLAMMABLE, N.O.S.(Ethylene Oxide, Carbon Dioxide)
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 1954
14.2 UN Proper Shipping Name:	COMPRESSED GAS, FLAMMABLE, N.O.S.(Ethylene Oxide, Carbon Dioxide)
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 1954
14.2 Proper Shipping Name:	Compressed gas, flammable, n.o.s.(Ethylene Oxide, Carbon Dioxide)
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 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:

The packaging shall be visibly, legibly and indelibly marked as follows:
Restricted to professional users.

Chemical name	CAS-No.	Concentration
Ethylene oxide	75-21-8	10 - 20%

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
Ethylene oxide	75-21-8	10 - 20%

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
Ethylene oxide	75-21-8	10 - 20%

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	80 - 90%
Ethylene oxide	75-21-8	10 - 20%

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

Chemical name	CAS-No.	Concentration
Ethylene oxide	75-21-8	10 - 20%

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

Chemical name	CAS-No.	Concentration
Ethylene oxide	75-21-8	10 - 20%

National Regulations

Council Directive 89 / 391 / EEC on the introduction of measures to encourage improvements in the safety and health of workers at work Directive 89 / 686 / EEC on personal protective equipment Directive 94 / 9 / EC on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX) 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.

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

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H340	May cause genetic defects.
H350	May cause cancer.
R6	Explosive with or without contact with air.
R12	Extremely flammable.
R23	Toxic by inhalation.
R36/37/38	Irritating to eyes, respiratory system and skin.
R45	May cause cancer.
R46	May cause heritable genetic damage.

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

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

Flam. Gas 1, H220
Acute Tox. 4, H332
Skin Irrit. 2, H315
Eye Irrit. 2, H319
Muta. 1B, H340
Carc. 1B, H350
STOT SE 3, H335
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.

Last revised date: 26.06.2015

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.