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

1.1. Product identifier

Trade name	Mixture 3-6 % ethylene oxide / 94-97 % carbon dioxide
Chemical description	3-6% Ethylene Oxide / 94-97% Carbon Dioxide
CAS N°	-
CE N°	-
Index N°	-
Registration n°	-
Chemical formula	C_2H_4O / CO_2

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

Relevant identified uses	Industrial and professional Test gas/Calibration gas Laboratory use Contact supplier for more information on uses
Uses advised against	Consumer use not recommended

1.3. Details of the supplier of the safety data sheet

Company identification	MULTIGAS Route de l'Industrie 102 CH-1564 Domdidier
Phone number	+41 (0) 26 676 94 94
E-mail address	info@multigas.ch

1.4. Emergency telephone numbers

145 (Toxicology Centre Zurich) or +41 (0) 44 251 51 51

+41 (0) 26 676 94 94 (Multigas)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Gases under pressure : Liquefied gas	H280
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335

Germ cell mutagenicity, Category 1B	H340
Carcinogenicity, Category 1B	H350
Specific target organ toxicity (repeated exposure) Category 2	H373

For the complete H-sentences texts mentioned in that chapter, refer to Section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms

GHS04 GHS07 GHS08

Signal word Danger

Hazard statements

H280	Contains gas under pressure; may explode if heated
H335	May cause respiratory irritation
H340	May cause genetic defects
H350	May cause cancer
H373	May cause damage to organs through prolonged or repeated exposure

Precautionary statements

P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe gas, vapours
P280	Wear protective gloves, protective clothing, eye protection, face protection
P304+P340+P315	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention
P308+P313	IF exposed or concerned: Get medical advice/attention
P405	Store locked up
P410+403	Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

None

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	Concentration	Classification
Carbon dioxide	(CAS-No.) 124-38-9 (EC-No.) 204-696-9 (EC Index-No.) (REACH-no) --	94-97%	Press. Gas (Liq.), H280
Ethylene oxide	(CAS-No.) 75-21-8 (EC-No.) 200-849-9 (EC Index-No.) 603-023-00-X (REACH-No) 01-2119432402-53	3-6%	Flam. Gas 1, H220 Chem. Unst. Gas A, H230 Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1B, H350 STOT SE 3, H335 STOT RE 1, H372

For the complete H-sentences texts mentioned in that chapter, refer to Section 16

Contains no other components or impurities which will influence the classification of the product

3.2. Mixtures

Not established

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice See a doctor. Show this safety data sheet to the attending physician

In case of inhalation In case of inhalation, remove the person from the contaminated area. In case of respiratory arrest, give artificial respiration. See a doctor

In case of skin contact Wash with soap with a large amount of water

In case of eyes contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a doctor

In case of ingestion Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. See a doctor

4.2. Most important symptoms and effects, both acute and delayed

May cause corneal irritation (with temporary eye disorder)

May cause skin irritation

May cause irritation of the respiratory tract, sneezing, coughing, burning of the throat with laryngeal contraction and difficulty breathing

Refer to Section 11

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

No data available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Water spray or water mist. Dry powder. Carbon dioxide. Foam

Unsuitable extinguishing media Do not use water jet to extinguish

5.2. Special hazards arising from the substance or mixture

Specific hazards In case of fire or excessive heat, hazardous combustion products may be produced

Exposure to fire may cause containers to rupture/explode

Hazardous combustion products In case of fire or excessive heat, hazardous combustion products may be produced such as : carbon oxides

5.3. Additional information

Cool endangered receptacles with water spray jet from a protected position

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing vapours, spray mists or gases

Provide adequate ventilation

Remove all sources of ignition

Evacuate personnel to a safe place

Beware of vapours that accumulate forming explosive concentrations. Vapours may accumulate in low areas

Personal protective equipment, see section 8

6.2. Environmental precautions

Try to stop the leak

6.3. Methods and material for containment and cleaning up

Ventilate area

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (ground free from frost)

6.4. Reference to other sections

See also sections 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes
Avoid breathing vapour or mist
Keep away from sources of ignition - No smoking
Take measures to prevent the accumulation of electrostatic charges
For precautions, see section 2.2

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool place. Keep container tightly closed in a dry and well-ventilated place
Content under pressure

7.3. Specific end use(s)

None

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components with occupational exposure limits

Component	CAS N°	Exposure value type	Control parameter	Source
Carbon dioxide	124-38-9	TWA	5000 ppm	SUVA: Limit values of exposure to workstations
			9000 mg/m^3	
		OEL	-	SUVA: Limit values of exposure to workstations
			-	
Ethylene oxide	75-21-8	TWA	1 ppm	SUVA: Limit values of exposure to workstations
			2 mg/m^3	
		OEL	-	SUVA: Limit values of exposure to workstations
			-	

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation

Gas detectors should be used when toxic gases may be released

8.2.2. Individual protection measures, e.g. personal protective equipment

Eye/face protection

Wear goggles and a face shield when transfilling or breaking transfer connections. Standard EN 166

Skin / hand protection

Wear protective gloves when handling gas cylinders. Standard EN 388

The selected protective gloves have to satisfy the specifications of EU Directive 89/686 / EEC and the standard EN 374 derived from it

For short-term use

Material: Butyl rubber

Penetration time:> 10 min

Glove thickness: 0.3 mm

For long-term use

Material: Butyl rubber

Penetration time:> 480 min

Glove thickness: 0.7 mm

Have appropriate, chemical-resistant protective clothing ready for use in emergencies. Norm EN943-1

Respiratory protection

Self-contained breathing apparatus (SCBA) or positive pressure air mask must be used in oxygenated atmospheres. Standard EN 137 - Self-contained compressed air device with a full face mask

8.2.3. Environmental exposure controls

No data available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
• **Physical state at 20°C / 101.3kPa**	Gas
• **Colour**	Colourless
Odour	No data available
Odour threshold	No data available
pH	No data available
Melting point / Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Evaporation rate	No data available

Flammability (solid, gas)	No data available
Explosive limits	No data available
Vapour pressure [20°C]	54 - 55,7 bar (calculated)
Vapour pressure [50°C]	No data available
Vapour density	1.52 (calculated)
Relative density, liquid (water=1)	No data available
Relative density, gas (air=1)	Heavier than air
Water solubility	No data available
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

9.2. Other information

Molar mass	No data available
Critical temperature [°C]	No data available
Relative vapour density	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-sections below

10.2. Chemical stability

Stable under recommended storage conditions
Risk of polymerisation

10.3. Possibility of hazardous reactions

Highly exothermic reaction with acids
Risk of polymerisation
Reacts in contact with light metals
Reacts with alkaline metals
Reactions with materials containing activated hydrogen

10.4. Conditions to avoid

Heat sources

Humidity

10.5. Incompatible materials

Alcohols, alkali metals, ammonia, oxidants, chemically active metals and their salts

For more information on compatibility, refer to 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

11.1. Chemical safety assessment

Acute toxicity	Classification criteria are not met Toxicological effects not expected from this product if occupational exposure limit values are not exceeded
Skin corrosion/irritation	No data available
Serious eye damage/irritation	No data available
Respiratory or skin sensitisation	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT-single exposure – Target organ(s)	Irritation to the respiratory tract
STOT-repeated exposure	No data available
Ingestion hazard	No data available

SECTION 12: Ecological information

12.1. Toxicity

Assessment	Classification criteria are not met

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

PBT / vPvB assessment is not available because the chemical safety assessment is not required / is not conducted

12.6. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product

Avoid discharge to atmosphere
Burn in a chemical incinerator equipped with an afterburner and scrubber
Return to the supplier the product not consumed in its original container

Contaminated container

Eliminate as unused product
Contact the supplier if instructions are needed

OMoD Code

16 05 04
Gases in pressure containers containing dangerous substances

SECTION 14: Transport information

14.1. UN number

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
1952	1952	1952

14.2. UN proper shipping name

Transport par road/rail ADR / RID	Transport by sea IMDG	Transport by air IATA
Ethylene oxide and carbon dioxide mixture	Ethylene oxide and carbon dioxide mixture	Ethylene oxide and carbon dioxide mixture

14.3. Transport hazard class(es)

Labelling

ADR/RID
IMDG

2.2 : Non-flammable, non-toxic gases

IATA	

14.4. Packing group

ADR/RID	
IMDG	Not established
IATA	

14.5. Environmental hazards

ADR/RID	None
IMDG	None
ICAO-TI / IATA-DGR	None

14.6. Special precautions for user

No data available

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of Regulation (CE) No. 1907/2006

15.2. Chemical safety assessment

A CSA does not need to be carried out for this product

SECTION 16: Other information

Indication of changes

Revised safety data sheet in accordance with commission regulation (EU) No 2015/830

Abbreviations and acronyms

ADR :	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS :	Chemical Abstract Service number (USA)
CLP :	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
CSA :	Chemical Safety Assessment
EIGA :	European Industrial Gases Association
EINECS :	European Inventory of Existing Commercial Chemical Substances
EN :	European Standard

ATE :	Acute Toxicity Estimate
IATA :	International Air Transport Association
IMDG Code :	International Maritime Dangerous Goods Code
LC50 :	Lethal Concentration to 50 % of a test population
OMoD :	Swiss Ordinance on the movement of waste
PBT :	Persistent, Bioaccumulative and Toxic
PPE:	Personal Protection Equipment
REACH :	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID :	Regulations concerning the international carriage of dangerous goods by rail
RMM :	Risk Management Measures
STOT-SE :	Specific Target Organ Toxicity - Single Exposure
UN :	United Nations
vPvB :	Very Persistent and Very Bioaccumulative
WGK:	Water Hazards Class

Full text of H, EUH and P statements used in sections 2 and 3

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Disclaimer of liability

Details given in this document have been prepared based on the most available reliable documents and are believed to be correct at the time of going to press

They do not claim to be exhaustive and should be considered as a guide