

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110



! 1. Identification of the substance/mixture and of the company/undertaking

Product identifier

Name of product Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
Art-Nr.: 5110

Manufacturer/distributor

GHC Gerling, Holz & Co. Handels GmbH
Ruhrstraße 113, D-22761 Hamburg
Phone +49 (0) 40 853 123-0, Fax +49 (0) 40 853 123-66
E-Mail msds@ghc.de
Internet www.ghc.de

Advice

Phone +49 (0) 40 853 123-0
Fax +49 (0) 40 853 123-66

Emergency advice

GHC Gerling, Holz & Co. Handels GmbH
Phone +49 (0) 40 853 123-0

Recommended intended purpose(s)

Biocidal product.
Fumigant.

2. Hazards identification

Classification according to 67/548/EEC or 1999/45/EC

F+; R12
T; R23
Xi; R36/37/38
Carc. Cat. 2; R45
Muta. Cat. 2; R46
R6

R-phrases

45 May cause cancer.
46 May cause heritable genetic damage.
12 Extremely flammable.
36/37/38 Irritating to eyes, respiratory system and skin.
6 Explosive with or without contact with air.
23 Also toxic by inhalation.

Labelling according to 67/548/EEC or 1999/45/EC

Remarks for labelling

Classification happened on the basis of calculation methods of preparation directive (1999/45/EC).

F+ Extremely flammable
T Toxic

R-phrases

45 May cause cancer.
46 May cause heritable genetic damage.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110



12 Extremely flammable.
36/37/38 Irritating to eyes, respiratory system and skin.
6 Explosive with or without contact with air.
23 Also toxic by inhalation.

S-phrases

53 Avoid exposure - obtain special instructions before use.
45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Hazardous ingredients for labeling

ethylene-oxide

Special rules for supplemental label elements for certain mixtures

Read attached instructions before use.

Restricted to professional users.

Information pertaining to special dangers for human and environment

In use, may form flammable/explosive vapour-air mixture.

In high concentrations may cause asphyxiation.

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

Contact with liquid may cause cold burns/frostbite.

Receptacle under pressure.

3. Composition/information on ingredients

Hazardous ingredients

CAS No	EC No	Name	[% weight]	Classification according to 67/548/EEC
124-38-9	204-696-9	Carbon dioxide	10	
75-21-8	200-849-9	ethylene-oxide	90	F+ R12; Carc.Cat.2 R45; Muta.Cat.2 R46; T R23; Xi R36/37/38

CAS No	EC No	Name	[% weight]	Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
124-38-9	204-696-9	Carbon dioxide	10	Liq. Gas, H280
75-21-8	200-849-9	ethylene-oxide	90	Flam. Gas 1, H220 / Liq. Gas, H280 / Carc. 1B, H350 / Muta. 1B, H340 / Acute Tox. 3, H331 / Eye Irrit. 2, H319 / STOT SE 3, H335 / Skin Irrit. 2, H315

REACH

CAS No	Name	REACH registration number
75-21-8	ethylene-oxide	01-2119432402-53

4. First aid measures

General information

Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.
Seek medical advice immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.
In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).
Seek medical treatment immediately.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110

In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of frostbite rinse with plenty of water. Don't remove clothing.

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

In case of contact with skin wash off immediately and for a long time (at least 15 minutes) with plenty of water. Refer for medical treatment.

In case of eye contact

Eye rinsing with water carefully while protecting unhurt eye.

Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Treatment (Advice to doctor)

Treat symptoms.

Symptoms may not occur until several hours.

5. Firefighting measures

Suitable extinguishing media

Foam

Dry powder

Carbon dioxide

Water spray jet

Extinguishing media which must not be used for safety reasons

Full water jet

Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.

Formation of explosive gas mixtures in air.

In the event of fire the following can be released:

Carbon monoxide (CO)

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated).

Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture / explode.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Extinguish any other fire.

6. Accidental release measures

Personal precautions

See chapter 8.

Keep away sources of ignition.

Environmental precautions

If possible, stop flow of product.

Eliminate ignition sources.

Do not discharge into the drains/surface waters/groundwater.

Prevent spread over a wide area (e.g. by containment or oil barriers).

Suppress gases/vapours/mists with water spray jet

Do not discharge into the subsoil/soil.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110

Methods for cleaning up

Ensure adequate air ventilation.

Additional Information

Informations for safe handling see chapter 7.

Informations for personal protective equipment see chapter 8.

No water on the leaks.

! 7. Handling and storage

! Advice on safe handling

Use only in thoroughly ventilated areas.

Transfer and handle only in enclosed systems.

Barrels and installations thoroughly earthing (grounding).

Use antistatic tools.

Treatment only in suitable rooms and systems.

Provide good room ventilation even at ground level (vapours are heavier than air).

Prevent cylinders from falling over.

Ensure valve protection device is correctly fitted.

Ensure valve outlet cap nut or plug (where provided) is correctly fitted.

Open valve slowly to avoid pressure shock.

Do not allow backfeed into the container.

No water to valves, flanges and other fittings.

Purging of pipes and valves with inert gases - to avoid: water, solvents.

Advice on protection against fire and explosion

The product is combustible.

Because of risk of explosion avoid vapours getting into cellar, sewage system and holes.

Take precautionary measures against static discharges.

Formation of explosive gas mixtures in air.

Use explosion-proof equipment / fittings and non-sparking tools.

Requirements for storage rooms and vessels

Keep in closed original container.

Ventilate store-rooms thoroughly.

Use transportable pressure equipment.

Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel.

Valve: Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

Advice on storage compatibility

Do not store with spontaneously flammable materials.

Do not store together with combustible liquids or combustible solids.

Do not store together with feedstuff.

Do not store together with explosives.

Do not store together with infectious substances.

Do not store together with radioactive material.

Do not store together with toxic liquids or toxic solids.

Do not store together with food.

Do not store together with oxidizing liquids or oxidizing solids.

Further information on storage conditions

Ensure valve protection device is correctly fitted.

Keep container tightly closed and store at cool and aired place.

Prevent cylinders from falling over.

Protect of heat.

Storage temperature may not exceed 50°C (=122°F).

Recommended storage temperature: =< 10 °C.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110



Recommendation(s) for intended use

Use as biocidal product in accordance with Directive 98/8/EC concerning the placing of biocidal products on the market.

! 8. Exposure controls/personal protection

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
75-21-8	Ethylene oxide	WEL, 8 hours	9.2	5	EH40, UK
75-21-8	Ethylene oxide	PEL, 8 hours		1	OSHA, USA
		Short-term		5	
75-21-8	Ethylene oxide	TLV, 8 hours		1	ACGIH, USA
		Short-term		3	
75-21-8	Ethylene oxide	REL, 8 hours	0.18	0.1	NIOSH, USA
		Short-term	9	5	
124-38-9	Carbon dioxide	WEL, 8 hours	9150	5000	EH40, UK
		Short-term	27400	15000	
124-38-9	Carbon dioxide	REL, 8 hours	9000	5000	NIOSH, USA
		Short-term	54000	30000	
124-38-9	Carbon dioxide	PEL, 8 hours	9000	5000	OSHA, USA

Indicative occupational exposure limit values (91/322/EEC, 2000/39/EC, 2006/15/EC or 2009/161/EU)

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
124-38-9	carbon dioxide	8 hours	9000	5000	

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen

Short-term: filter apparatus, filter AX, otherwise environment-independent breathing apparatus.

Hand protection

chemical-resistant gloves

Leather gloves

Glove material specification [make/type, thickness, permeation time/life]: IIR, >= 0,7 mm, > 30 min

Eye protection

safety goggles, in case of increased risk add protective face shield

! Skin protection

Safety shoes with steel toe.

Body covering work clothing, or chemical resistant suit at increased risk.

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

Limitation and surveillance of the environment

See chapter 7.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110



9. Physical and chemical properties

Form	Colour	Odour
Gaseous / liquefied under pressure.	colourless	ethereal

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
boiling point					not determined
melting point	-132 °C				
Flash point	-57 °C			DIN 51758	Information concerns to main component.
Ignition temperature	429 °C			DIN 51794	
Lower explosion limit	2,6 Vol-%				Information concerns to main component.
Upper explosion limit	100 Vol-%				Information concerns to main component.
Vapour pressure	7100 hPa	20 °C			
Density	0,865 g/cm ³	20 °C			liquid phase
Rel. vapour density	1,52				air = 1
Solubility in water					easy soluble
Solubility/other					soluble in organic solvent
Partition coefficient (log p_{OW})	0,3				Information concerns to main component.
Viscosity dynamic	0,25 mPa*s	20 °C			Information concerns to main component.

Additional information

Vapours are heavier than air.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110

10. Stability and reactivity

Conditions to avoid

Formation of explosive gas/air mixtures.
Heat sources / heat - risk of bursting.

Materials to avoid

Reactions with numerous chemical compounds.

Hazardous decomposition products

Carbon monoxide
Hydrogen
Methane

Thermal decomposition

Remark No decomposition if used as directed.

Additional information

Unstable product may polymerize spontaneously.

11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LD50 acute oral	72 mg/kg	rat		Information concerns to ethylene oxide.
LC50 acute inhalation	1,44 mg/l (4 h)	rat		Information concerns to ethylene oxide.
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity		Information concerns to main component.		Information on genotoxicity in vivo available.
Reproduction-Toxicity		Information concerns to main component.		Indications of toxic effects are available from reproduction studies in animals.
Carcinogenicity		Information concerns to main component.		Indications of carcinogenic effects are available from long-term trials.

Toxicity test (Additional information)

In animal studies cancerogenic effects proved.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110



Experiences made from practice

May cause frostbite.
Gases have a suffocating effect.

Additional information

The product is a substance of Carc. Cat. 2
The product is a substance of Muta. Cat. 2.

12. Ecological information

Data on elimination (persistence and degradability)

	Elimination rate	Method of analysis	Method	Validation
Physico-chemical degradability	not determined			
Biological degradability	not determined			
Degradability	not determined			
Biological eliminability	not determined			

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 90 mg/l (24 h)	Carassius Auratus		Information concerns to main component.
Daphnia	EC50 137 - 300 mg/l (48 h)	Daphnia magna		Information concerns to main component.
Algae	not determined			
Bacteria	EC50 > 3000 mg/l	activated sludge	OECD 209	Information concerns to main component.

Behaviour in sewage plant

When low concentrations are discharged correctly into adapted biological sewage treatment plants, interference with the degradation activity of activated sludge is not likely.

Additional ecological information

	Value	Method	Remark
COD	not determined		

General regulation

Do not allow uncontrolled leakage of product into the environment.

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011
Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %
5110

13. Disposal considerations

Waste code No.	Name of waste
16 05 04*	gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. Transport information

Land and inland navigation transport ADR/RID

UN 3300 ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE, 2.3 (2.1), (B/D), Classification code: 2TF

Marine transport IMDG

UN 3300 ETHYLENE OXIDE AND CARBON DIOXIDE MIXTURE, 2.3 (2.1)

Ems: F-D, S-U

Air transport ICAO/IATA-DGR

UN 3300 Ethylene oxide and carbon dioxide mixture, 2.3 (2.1)

FORBIDDEN

15. Regulatory information

Other regulations (EU)

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 28 - 30.

Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals.

Biocide directive (98/8/EC).

16. Other information

Recommend uses and restrictions

Use as biocidal product in accordance with Directive 98/8/EC concerning the placing of biocidal products on the market.

National and local regulations concerning chemicals shall be observed.

Further information

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

R 12 Extremely flammable.

R 23 Toxic by inhalation.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

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.

H335 May cause respiratory irritation.

H340 May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 16.11.2011

Revision 11.11.2011 (GB) Version 6.1

Mixture Ethylene oxid 90 % / Carbon dioxide 10 %

5110



H350 May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).