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

1.1. Product identifier

Name of product	Ethane Art-Nr(n).: 1003, 1005, 1007, 0075
Name of substance	ethane
Index No	601-002-00-X
EC No	200-814-8
REACH registration number	01-2119486765-21
CAS No	74-84-0

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

Identified uses

! **Remark**
Restricted to professional users.

! **Recommended intended purpose(s)**
Fuel gas.
Basic substance.
Foam expansion agent.
Propellant.
Laboratory reagent.
Refrigerant (R-170)
Test gas.

1.3. Details of the supplier of the safety data sheet

Manufacturer/distributor	GHC Gerling, Holz & Co. Handels GmbH Ruhrstraße 113, D-22761 Hamburg Phone +49 40 853 123-0, Fax +49 40 853 123-66 E-Mail hamburg@ghc.de Internet www.ghc.com
Advice	GHC Gerling, Holz & Co. Handels GmbH Phone +49 40 853 123-0 Fax +49 40 853 123-66 E-mail (competent person): msds@ghc.de

1.4. Emergency telephone number

Emergency advice	Giftinformationszentrum (Poison Control Centre) Mainz Phone +49 6131 19240

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
Flam. Gas 1	**H220**	
Liquef. Gas	**H280**	

Hazard statements for physical hazards

H220	**Extremely flammable gas.**
H280	**Contains gas under pressure; may explode if heated.**

Additional hints
Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

2.2. Label elements
Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]

GHS02 **GHS04**

Signal word
Danger

Hazard statements for physical hazards
H220 **Extremely flammable gas.**
H280 **Contains gas under pressure; may explode if heated.**

Precautionary Statements

Prevention
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 In case of leakage, eliminate all ignition sources.

Storage
P403 Store in a well-ventilated place.

Hazardous ingredients for labeling
ethane

2.3. Other hazards
Adverse physicochemical effects
In the case of insufficient ventilation and/or through the formation of a explosive/highly flammable mixture is possible.

! **Information pertaining to special dangers for human and environment**
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.

Results of PBT and vPvB assessment
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

! SECTION 3: Composition/ information on ingredients

3.1. Substances
! **Description**
Content: > 99 %

CAS No 74-84-0 **ethane**
EC No 200-814-8
Index No 601-002-00-X
REACH registration number 01-2119486765-21

3.2. Mixtures
not applicable

! SECTION 4: First aid measures

4.1. Description of 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.
Seek medical treatment immediately.
In case of respiratory standstill give artifical respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

! **In case of skin contact**
In case of contact with skin wash off with warm water.
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. Do not remove clothing frozen to the skin. Thaw it with lukewarm water. Apply a sterile dressing. Obtain medical assistance.

! **In case of eye contact**
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call for a doctor immediately.

In case of ingestion
Ingestion is not considered a potential route of exposure.

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

! **Physician's information / possible symptoms**
The following symptoms may occur in case of strong exposition:
Unconsciousness
Shortness of breath
Cardiopulmonary arrest.
Headache
Nausea
Confusion
Convulsions
Circulatory collapse.
Contact with liquid may cause cold burns/frostbite.

! **Physician's information / possible dangers**
In case of strong exposition risk of cardiac rhythm disturbances.

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

Treatment (Advice to doctor)
Treat symptoms.
Do not give any preparations of the adrenalin-ephedrine group.
Monitor circulation.

! SECTION 5: Firefighting measures

5.1. Extinguishing media

! **Suitable extinguishing media**
Dry powder
Carbon dioxide
Water spray jet

! **Unsuitable extinguishing media**
Full water jet

5.2. 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)
Carbon dioxide (CO2)

5.3. Advice for firefighters
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.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

! SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
! **For non-emergency personnel**
Evacuate area.
Keep people away and stay on the upwind side.
Keep away sources of ignition.

! **For emergency responders**
Remove persons to safety.
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).
Personal protection by wearing close-fitting protective clothing and breathing apparatus.
Eliminate all ignition sources if safe to do so.

6.2. Environmental precautions
If possible, stop flow of product.
Do not discharge into the drains/surface waters/groundwater.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
If necessary, secure leaky pressure receptacles in a salvage packaging.
Suppress gases/vapours/mists with water spray jet
Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up
Ensure adequate air ventilation.
Allow to vaporise.

6.4. Reference to other sections
Safe handling: see section 7
Disposal: see section 13
Personal protection equipment: see section 8

! SECTION 7: Handling and storage

7.1. Precautions for safe handling

! **Advice on safe handling**

Use only in thoroughly ventilated areas.
Transfer and handle only in enclosed systems.
Containers' temperature may not be increased above 50 °C.
Do not heat with open flames.
The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.
Take measures against electrostatically charging.
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.
Suck back of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.
Containers and installations thoroughly earthing (grounding).

General protective measures

Do not inhale gases/vapours/aerosols.

! **Hygiene measures**

At work do not eat, drink and smoke.
Wash hands before breaks and after work.

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.
Pay attention to general rules of internal fire prevention.
Use explosion-proof equipment / fittings and non-sparking tools.

7.2. Conditions for safe storage, including any incompatibilities

! **Requirements for storage rooms and vessels**

Keep in closed original container.
Ventilate store-rooms thoroughly.
Only use containers that are approved specifically for the substance/product.
Suitable materials: Normalised carbon steel, tempered alloy steel, aluminium alloys, austenitic stainless steels.
Valve: Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, austenitic stainless steels.
Other material details see ISO 11114.
All regulations and local requirements for the storage of containers have to be respected.

! **Advice on storage compatibility**

Do not store together with spontaneously flammable materials.
Do not store together with combustible liquids or combustible solids.
Do not store together with animal feedstuffs.
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.
Store closed container at cool and aired place.
Store only in original container at temperature of 50°C maximum (=122°F).
Prevent cylinders from falling over.
Protect of heat.

7.3. Specific end use(s)
! **Recommendation(s) for intended use**
No further recommendations.

! SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
74-84-0	Aliphatic hydrocarbon gases: alkane [C1-C4]	TLV, 8 hours		1000	ACGIH, USA
		Short-term		3000	

8.2. Exposure controls
Respiratory protection
Keep self contained breathing apparatus readily available for emergency use.
Do not use any filter apparatus.
Respiratory protection complying with EN 136.
Respiratory protection complying with EN 14387.
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

Hand protection
Leather gloves
Protective gloves complying with EN 374.
Safety gloves according EN 388

! **Eye protection**
Protective goggles according to EN 166, in case of increased risk add protective face shield.

! **Other protection measures**
Safety shoes with steel toe.
Body covering work clothing, or chemical resistant suit at increased risk.

! **Appropriate engineering controls**
Transfer and handle only in enclosed systems.
Industrial ventilation (local ventilation).

! SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Colour	Odour
Gaseous / liquefied under pressure.	colourless	odourless

Odour threshold
not applicable

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value	not applicable				
boiling point	-88,6 °C		1013 hPa		
melting point	-183,3 °C				
Flash point	not applicable				
Vapourisation rate	not applicable				
Flammable (solid)	not applicable				
Flammability (gas)	inflammable				
Ignition temperature	515 °C			DIN 51794	
Self ignition temperature	not determined				
Lower explosion limit	2,4 Vol-%				
Upper explosion limit	14,8 Vol-%				
Vapour pressure	37800 hPa	20 °C			
Relative density	1,3551 kg/m3	0 °C	1013 mbar		
Vapour density	1,05				air = 1
Solubility in water	61 mg/l	25 °C			
Solubility/other					soluble in organic solvent
Partition coefficient n-octanol/water (log P O/W)	1,81				
Decomposition temperature	not determined				
Viscosity dynamic	not applicable				

Oxidising properties
no

Explosive properties
no

9.2. Other information
Vapours are heavier than air.

! SECTION 10: Stability and reactivity

10.1. Reactivity
See section "Possibility of hazardous reactions".

10.2. Chemical stability
Stable under recommended conditions of use and storage (see section 7).

10.3. Possibility of hazardous reactions
Formation of explosive gas/air mixtures.
Reactions with oxidising agents.

10.4. Conditions to avoid
Heat sources / heat - risk of bursting.
Sources of ignition.
Avoid contact with open flames, glowing metal surfaces, etc..

10.5. Incompatible materials
! **Substances to avoid**
Air, oxidiser.

10.6. Hazardous decomposition products
When handled and stored appropriately, no dangerous decomposition products are known.

Thermal decomposition

Remark No decomposition below 500 °C.

! SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity/Irritation/Sensitization

	Value/Validation	Species	Method	Remark
LD50 acute oral	Study technically not feasible.			
LD50 acute dermal	Study technically not feasible.			
LC50 acute inhalation	> 800000 ppm (15 min)	rat (male / female)		
Skin irritation	Study technically not feasible.			
Eye irritation	Study technically not feasible.			

	Value/Validation	Species	Method	Remark
Skin sensitization	Study technically not feasible.			
Sensitization respiratory system	not determined			

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Subchronic Toxicity	NOAEC 19678 mg/m3 (33 - 42 d) Inhalation 6 h/d, 7 d/w	Rat (male / female)	OECD 422.	No effects of toxicological significance.
Mutagenicity	Inhalation.			No experimental information on genotoxicity in vitro and in vivo available.
Reproduction-Toxicity	NOAEC 19678 mg/m3 Inhalation. 6 h/d, 7 d/w	Rat (male / female)	OECD 422.	No indications of toxic effects were observed in reproduction studies in animals.
Carcinogenicity				Study scientifically not necessary.

! **Specific target organ toxicity (single exposure)**
Substance or mixture is not classified in GHS-criteria as specific target organ toxic with single exposure.

! **Specific target organ toxicity (repeated exposure)**
Substance or mixture is not classified in GHS-criteria as specific target organ toxic with repeated exposure.

Aspiration hazard
Not applicable for gases and gas mixtures

Toxicity test (Additional information)
No indication of cancerogenic effects (conclusion by analogy).

Experiences made from practice
May cause frostbite.
Gases have a suffocating effect.
Inhalation causes narcotic effect/intoxication.

! SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicological effects

Value	Species	Method	Validation

	Value	Species	Method	Validation
Fish	LC50 91,42 mg/l (96 h)	Fish	QSAR	The product was tested above its maximum solubility.
Daphnia	EC50 46,6 mg/l (48 h)	Daphnia	QSAR	
Algae	EC50 16,47 mg/l (96 h)	Algae	QSAR	

12.2. Persistence and degradability

	Elimination rate	Method of analysis	Method	Validation
Physico-chemical degradability	At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed.			
Biological degradability			OECD	The product is readily biodegradable to OECD criteria.

12.3. Bioaccumulative potential
Bioaccumulation improbable.
Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is not expected.

12.4. Mobility in soil
Adsorption in the soil is not likely.
Because of its high volatility, it is unlikely that the product soil, water caused.

12.5. Results of PBT and vPvB assessment
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6. Other adverse effects
ODP: 0
GWP: 6

! **General regulation**
Avoid release to the environment.

! SECTION 13: Disposal considerations

13.1. Waste treatment methods

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

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 2008/98/EC on hazardous waste.

! **Recommendations for the product**
Dispose of as hazardous waste.
Return to manufacturer.
Incinerate in suitable incineration plant, but care for official regulations.

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

! SECTION 14: Transport information

	ADR/RID	IMDG	IATA-DGR
14.1. UN number	1035	1035	1035
14.2. UN proper shipping name	ETHANE	ETHANE	Ethane
14.3. Transport hazard class(es)	2.1	2.1	2.1
14.4. Packing group	-	-	-
14.5. Environmental hazards	No	No	No

14.6. Special precautions for user
The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not applicable
No transport as bulk according IBC - Code.

Land and inland navigation transport ADR/RID
Hazard label(s) 2.1
tunnel restriction code B/D
Classification code 2F

Marine transport IMDG
Ems: F-D, S-U

Air transport ICAO/IATA-DGR
Cargo aircraft only: Package max. 150 kg.

! SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Other regulations (EU)
Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 40.
Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.

VOC standard
VOC content >=99 % 20 °C 37800 hPa

15.2. Chemical Safety Assessment
The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.
For this substance a chemical safety assessment has been carried out.
An exposure scenario is not required.

! SECTION 16: Other information

Recommended uses and restrictions
National and local regulations concerning chemicals shall be observed.

Further information
All declarations of safety-data-sheet refer to pure substance.
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.

Indication of changes: "!" = Data changed compared with the previous version. Previous version: 10.0

! **Sources of key data used**
For the preparation of this safety data sheet, information from our suppliers as well as data from the "database of registered substances" of the European Chemicals Agency (ECHA) were used.