

**Safety data sheet**  
 according to 1907/2006/EC, Article 31

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Version number 4.02 (replaces version 4.01)

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

- **1.1 Product identifier**
- **Trade name:** Ethanol 70 % denatured with IPA, MEK and Bitrex
- **Article number:** 147196
- **Application of the substance / the mixture** Laboratory chemicals
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
 AppliChem GmbH  
 Ottoweg 4  
 D-64291 Darmstadt
- Tel.: +49 (0)6151 93570  
 Fax.: +49 (0)6151 935711  
 msds@applichem.com
- **Further information obtainable from:** Dept. Compliance
- **1.4 Emergency telephone number:** +49(0)6151 93570 (Mo-Th 08:00 - 17:00 h; Fr 08:00 - 14:30 h)

## SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**  
 Flam. Liq. 2 H225 Highly flammable liquid and vapour.  
 Eye Irrit. 2 H319 Causes serious eye irritation.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
 The product is classified and labelled according to the GB CLP regulation.
- **Hazard pictograms**



GHS02 GHS07

- **Signal word** Danger
- **Hazard statements**  
 H225 Highly flammable liquid and vapour.  
 H319 Causes serious eye irritation.
- **Precautionary statements**  
 P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.  
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

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GB

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P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P403+P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

- **3.2 Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components:**

CAS: 64-17-5 EINECS: 200-578-6 Reg.nr.: 01-2119457610-43-XXXX	ethanol Flam. Liq. 2, H225; Eye Irrit. 2, H319 Specific concentration limit: Eye Irrit. 2; H319: C ≥ 50%	>50-<100%
CAS: 78-93-3 EINECS: 201-159-0 Reg.nr.: 01-2119457290-43-XXXX	butanone Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	>0.1-≤1%

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

## SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**  
Take affected persons out of danger area and lay down.  
Take affected persons out into the fresh air.  
Keep warm, position comfortably and cover well.  
Seek medical treatment.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**  
Wash off with plenty of water.  
Immediately remove any clothing soiled by the product.  
If skin irritation continues, consult a doctor.
- **After eye contact:** Call a doctor immediately.
- **After swallowing:**  
make victim drink water (maximum of 2 drinking glasses)  
Seek medical treatment in case of complaints.
- **4.2 Most important symptoms and effects, both acute and delayed**  
Irritation to eyes, skin and mucous membrane  
Dizziness  
Dizziness  
Nausea
- **4.3 Indication of any immediate medical attention and special treatment needed**  
Treat symptomatically and supportively.

## SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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- **5.2 Special hazards arising from the substance or mixture**  
In case of fire, the following can be released:  
Carbon monoxide and carbon dioxide  
Combustible.  
Forms explosive mixtures with air at ambient temperatures.  
Vapours are heavier than air and may spread along floors.  
Beware of backfiring.  
Forms explosive mixtures with air on intense heating.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**  
Cool endangered receptacles with water spray.  
Collect contaminated fire fighting water separately. It must not enter the sewage system.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.  
Contain escaping vapours with water.

## SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Protect against electrostatic charges.  
Use explosion-proof apparatus / fittings and spark-proof tools.  
Keep ignition sources away - Do not smoke.  
Wear protective equipment. Keep unprotected persons away.  
Avoid substance contact.  
Do not inhale steams/aerosols.
- **6.2 Environmental precautions:**  
danger of explosion!  
Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Dilute with plenty water.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Ensure adequate ventilation.  
Clean up affected area.
- **6.4 Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

## SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
Keep away from heat and direct sunlight.  
Work only in fume cupboard.  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.  
Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
- **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
Protect from heat.  
Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
Provide solvent resistant, sealed floor.  
Keep receptacles tightly sealed.
- **Information about storage in one common storage facility:**  
Store away from foodstuffs and feedstuffs  
Away from sources of ignition and heat.

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- **Further information about storage conditions:**  
Keep away from open flames, hot surfaces and sources of ignition.  
Keep container tightly sealed.  
Protect from heat and direct sunlight.  
Open receptacle only under localised extractor facilities.
- **Recommended storage temperature:** Room Temperature
- **Storage class:** 3
- **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

### · 8.1 Control parameters

#### · **Ingredients with limit values that require monitoring at the workplace:**

##### **64-17-5 ethanol**

WEL Long-term value: 1920 mg/m<sup>3</sup>, 1000 ppm

##### **78-93-3 butanone**

WEL Short-term value: 899 mg/m<sup>3</sup>, 300 ppm  
Long-term value: 600 mg/m<sup>3</sup>, 200 ppm  
Sk, BMGV

#### · **DNELs**

##### **64-17-5 ethanol**

Oral	Long-term - systemic effects, general population	87 mg/kg
Dermal	Acute - systemic effects, worker	343 mg/kg
	Long term - systemic effects, general population	206 mg/kg
Inhalative	Acute - local effects, worker	1,900 mg/m <sup>3</sup>
	Long-term - systemic effects, worker	950 mg/m <sup>3</sup>
	Acute - local effects, general population	950 mg/m <sup>3</sup>
	Long-term - systemic effects, general population	114 mg/m <sup>3</sup>

#### · **PNECs**

##### **64-17-5 ethanol**

Aquatic compartment - freshwater	0.96 mg/L
Aquatic compartment - marine water	0.79 mg/L
Aquatic compartment - water, intermittent releases	2.75 mg/L
Aquatic compartment - sediment in freshwater	3.6 mg/kg
Terrestrial compartment - soil	0.63 mg/kg
Sewage treatment plant	580 mg/L
Oral secondary poisoning	0.72 mg/kg food

#### · **Ingredients with biological limit values:**

##### **78-93-3 butanone**

BMGV 70 µmol/L  
Medium: urine  
Sampling time: post shift  
Parameter: butan-2-one

- **Additional information:** The lists valid during the making were used as basis.

### · 8.2 Exposure controls

- **Appropriate engineering controls** No further data; see item 7.
- **Individual protection measures, such as personal protective equipment**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes and skin.

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· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Use suitable respiratory protective device only when aerosol or mist is formed.

· **Recommended filter device for short term use:** Filter AX

· **Hand protection**

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **For the permanent contact gloves made of the following materials are suitable:**

Butyl rubber, BR

Recommended thickness of the material:  $\geq 0.7$  mm

Value for the permeation: Level  $\geq 480$  min

· **As protection from splashes gloves made of the following materials are suitable:**

Nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.11$  mm

Value for the permeation: Level  $\geq 480$  min

· **Eye/face protection**



Tightly sealed goggles

· **Body protection:**

Solvent resistant protective clothing

Flame retardant antistatic protective clothing

**SECTION 9: Physical and chemical properties**

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Physical state**

Fluid

· **Colour:**

Colourless

· **Odour:**

Alcohol-like

· **Odour threshold:**

Not determined.

· **Melting point/freezing point:**

-114.5 °C

· **Boiling point or initial boiling point and boiling range**

78 °C

· **Flammability**

Not applicable.

Flammable.

· **Lower and upper explosion limit**

· **Lower:**

2.5 Vol %

· **Upper:**

13.5 Vol %

· **Flash point:**

21 °C

· **Auto-ignition temperature:**

363-425 °C

· **Decomposition temperature:**

Not determined.

· **pH at 20 °C**

5.3

· **Viscosity:**

· **Kinematic viscosity**

Not determined.

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- |  |                         |
|--|-------------------------|
| · <b>Dynamic:</b>  | Not determined.         |
| · <b>Solubility</b>  |                         |
| · <b>water:</b>  | Easily soluble.         |
| · <b>Partition coefficient n-octanol/water (log value)</b> | Not determined.         |
| · <b>Vapour pressure at 20 °C:</b>                         | 57.3 hPa                |
| · <b>Density and/or relative density</b>                   |                         |
| · <b>Density at 20 °C:</b>                                 | 0.885 g/cm <sup>3</sup> |
| · <b>Relative density</b>                                  | Not determined.         |
| · <b>Vapour density</b>                                    | Not determined.         |

· **9.2 Other information**

- |  |   |
|--|---|
| · <b>Appearance:</b>   |   |
| · <b>Form:</b>   | Liquid  |
| · <b>Important information on protection of health and environment, and on safety.</b> |   |
| · <b>Ignition temperature:</b>   | Product is not selfigniting.  |
| · <b>Explosive properties:</b>   | Product is not explosive. However, formation of explosive air/vapour mixtures are possible. |
| · <b>Solvent content:</b>  |   |
| · <b>Organic solvents:</b>   | 71.4 %  |
| · <b>Water:</b>  | 28.6 %  |
| · <b>VOC (EC)</b>  | 71.40 %   |
| · <b>Solids content:</b>   | 0.0 %   |
| · <b>Change in condition</b>   |   |
| · <b>Evaporation rate</b>  | Not determined.   |

· **Information with regard to physical hazard classes**

- |  |                                     |
|--|-------------------------------------|
| · <b>Explosives</b>  | Void                                |
| · <b>Flammable gases</b>   | Void                                |
| · <b>Aerosols</b>  | Void                                |
| · <b>Oxidising gases</b>   | Void                                |
| · <b>Gases under pressure</b>  | Void                                |
| · <b>Flammable liquids</b>   | Highly flammable liquid and vapour. |
| · <b>Flammable solids</b>  | Void                                |
| · <b>Self-reactive substances and mixtures</b>                                     | Void                                |
| · <b>Pyrophoric liquids</b>  | Void                                |
| · <b>Pyrophoric solids</b>   | Void                                |
| · <b>Self-heating substances and mixtures</b>                                      | Void                                |
| · <b>Substances and mixtures, which emit flammable gases in contact with water</b> | Void                                |
| · <b>Oxidising liquids</b>   | Void                                |
| · <b>Oxidising solids</b>  | Void                                |
| · <b>Organic peroxides</b>   | Void                                |
| · <b>Corrosive to metals</b>   | Void                                |
| · <b>Desensitised explosives</b>   | Void                                |

## SECTION 10: Stability and reactivity

- **10.1 Reactivity** Forms explosive gas mixture with air.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**  
Reacts with strong acids.  
Reacts with oxidising agents.  
Forms explosive gas mixture with air.

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- **10.4 Conditions to avoid**  
Danger of receptacles bursting because of high vapour pressure when heated.  
Forms explosive gas mixture with air.
- **10.5 Incompatible materials:**  
alkali metals  
alkaline earth metals
- **10.6 Hazardous decomposition products:** In the event of fire: See chapter 5
- **Additional information:** Explosible with air in a vaporous/gaseous state.

## SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity** Based on available data, the classification criteria are not met.
- **LD/LC50 values relevant for classification:**  
Quantitative data on the toxicological effect of this product are not available.

Components	Type	Value	Species
<b>64-17-5 ethanol</b>			
Oral	LD50	8,350 mg/kg (mouse)	
		10,470 mg/kg (rat)	
Inhalative	LC50/4 h	116.9 mg/l (rat)	

- **Serious eye damage/irritation** Causes serious eye irritation.
- **After inhalation:** No irritant effect.

<b>· Carcinogenicity</b>			
<b>64-17-5 ethanol</b>			
NOAEL (carcinogenicity)		>3,000 mg/kg bw/day (rat)	

<b>· Reproductive toxicity</b>			
<b>64-17-5 ethanol</b>			
NOAEL (Fertility)		13,800 mg/kg bw/day (mouse)	

- **11.2 Information on other hazards**

<b>· Endocrine disrupting properties</b>			
78-93-3	butanone		List II

## SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.

Type of test	Effective concentration	Method	Assessment
<b>64-17-5 ethanol</b>			
EC50/72 h	275 mg/l (Algae)		
EC50/48 h	12,900 mg/l (Algae)		
LC50/24 h	11,200 mg/l (fish)		
LC50/48 h	12,340 mg/l (daphnia magna)		
LC50/96 h	13,000 mg/l (fish)		

- **12.2 Persistence and degradability** The product is easily biodegradable.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Endocrine disrupting properties**  
For information on endocrine disrupting properties see section 11.

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- **12.7 Other adverse effects**
- **Additional ecological information:**
- **General notes:**  
Do not allow product to reach ground water, water course or sewage system.  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.  
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

## SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
Chemicals must be disposed of in compliance with the respective national regulations.  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:**  
Disposal must be made according to official regulations.  
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

## SECTION 14: Transport information

- |   |                             |
|---|-----------------------------|
| · <b>14.1 UN number or ID number</b>  | UN1170                      |
| · <b>ADR, IMDG, IATA</b>  |                             |
| · <b>14.2 UN proper shipping name</b>   | ETHANOL (ETHYL ALCOHOL)     |
| · <b>ADR, IMDG</b>  | ETHANOL                     |
| · <b>IATA</b>   |                             |
| · <b>14.3 Transport hazard class(es)</b>  |                             |
| · <b>ADR</b>  |                             |
|  |                             |
| · <b>Class</b>  | 3 (F1) Flammable liquids.   |
| · <b>Label</b>  | 3                           |
| · <b>IMDG, IATA</b>   |                             |
|  |                             |
| · <b>Class</b>  | 3 Flammable liquids.        |
| · <b>Label</b>  | 3                           |
| · <b>14.4 Packing group</b>   | II                          |
| · <b>ADR, IMDG, IATA</b>  |                             |
| · <b>14.5 Environmental hazards:</b>  | Not applicable.             |
| · <b>14.6 Special precautions for user</b>  | Warning: Flammable liquids. |
| · <b>Hazard identification number (Kemler code):</b>                                | 33                          |
| · <b>EMS Number:</b>  | F-E,S-D                     |
| · <b>Stowage Category</b>   | A                           |
| · <b>14.7 Maritime transport in bulk according to IMO instruments</b>               | Not applicable.             |

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**Trade name: Ethanol 70 % denatured with IPA, MEK and Bitrex**

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· **Transport/Additional information:**

· **ADR**

- **Limited quantities (LQ)**
- **Excepted quantities (EQ)**

1L

Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

· **Transport category**

2

· **Tunnel restriction code**

D/E

· **IMDG**

- **Limited quantities (LQ)**
- **Excepted quantities (EQ)**

1L

Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

· **UN "Model Regulation":**

UN 1170 ETHANOL (ETHYL ALCOHOL), 3, II

## SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **Seveso category** P5c FLAMMABLE LIQUIDS
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

EUH066 Repeated exposure may cause skin dryness or cracking.

· **Department issuing SDS:** Dept. Compliance

· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

DNEL: Derived No-Effect Level (UK REACH)

PNEC: Predicted No-Effect Concentration (UK REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

· **\* Data compared to the previous version altered.**