

## SAFETY DATA SHEET

Ethanol (Ethyl Alcohol) denatured, min. 99.7 vol.-%

[info@deffner-johann.de](mailto:info@deffner-johann.de) | +49 9723 9350-0

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# Safety Data Sheet

according to Regulation (EC) No 1907/2006

## Ethanol

Revision date: 21.09.2017

Product code:

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

#### 1.1. Product identifier

Ethanol

##### Further trade names

This MSDS covers the following products:

- Ethanol, solutions 50 - 96% vol, denatured with 1% MEK / IPA and 1 g denatonium benzoate/100 l (article no.: B50 to B95)
- Ethanol, dehydrated, denatured with 1% MEK/IPA and 10 g/100L (article no.: B100)
- Ethanol, solution, 96 % vol, denatured with 1 % MEK (article no.: 641)
- Ethanol, dehydrated, denatured with 1 % MEK (article no.: 642)
- Ethanol, solution, 50 to 95 % vol, denatured with 1 % MEK (article no.: 642/50)
- Ethanol, undenatured, 96 % vol (article no. 410)
- Ethanol, undenatured, solutions 50 - 95 % vol (article no. 410/50)
- Ethanol, dehydrated, non-denatured (article no.: 510)
- ethanol, 96 % vol, denatured with 5 % diethyl ether (article no. 410D)

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

##### Use of the substance/mixture

Solvent  
Industrial use

##### Uses advised against

Any non-intended use.

#### 1.3. Details of the supplier of the safety data sheet

Company name:	Karl-Josef Kost	
	Alkohole & Produkte aus Alkohol KG	
Street:	Raentalshöhe 4	
Place:	D-56073 Koblenz	
Telephone:	+49 261 46 211	Telefax: +49 261 40 38 58
e-mail:	info@kost-alkohole.de	
Internet:	www.kost-alkohole.de	
Responsible Department:	Dr. Gans-Eichler	e-mail: info@tge-consult.de
	Chemieberatung GmbH	Tel.: +49(0)251/394868-69
	Raesfeldstr. 22	www.tge-consult.de
	D - 48149 Münster	
<b>1.4. Emergency telephone number:</b>	+49 261 - 46 211 (Mo-Fr 9:00-16:00)	

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Regulation (EC) No. 1272/2008

Hazard categories:  
 Flammable liquid: Flam. Liq. 2  
 Serious eye damage/eye irritation: Eye Irrit. 2  
 Hazard Statements:  
 Highly flammable liquid and vapour.  
 Causes serious eye irritation.

#### 2.2. Label elements

##### Regulation (EC) No. 1272/2008

Signal word: Danger

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### Pictograms:



### 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.  
P233 Keep container tightly closed.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P403+P235 Store in a well-ventilated place. Keep cool.  
P501 Dispose of contents/container to local/regional/national/international regulations.

### 2.3. Other hazards

In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.  
The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

#### Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
64-17-5	ethanol, ethyl alcohol			95 - <= 100 %
	200-578-6	603-002-00-5	01-2119457610-43	
	Flam. Liq. 2, Eye Irrit. 2; H225 H319			
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol			0 - 1 %
	200-661-7	603-117-00-0	01-2119457558-25	
	Flam. Liq. 2, Eye Irrit. 2, STOT SE 3; H225 H319 H336			
78-93-3	butanone; ethyl methyl ketone			0 - 1 %
	201-159-0	606-002-00-3	01-2119457290-43	
	Flam. Liq. 2, Eye Irrit. 2, STOT SE 3; H225 H319 H336 EUH066			

Full text of H and EUH statements: see section 16.

#### Further Information

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH).

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### General information

Remove affected person from the danger area and lay down. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

#### After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. If unconscious place in

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recovery position and seek medical advice. In case of allergic symptoms, especially in the breathing area, seek medical advice immediately.

### After contact with skin

After contact with skin, wash immediately with plenty of water and soap. In case of skin irritation, seek medical treatment.

### After contact with eyes

Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

### After ingestion

Rinse mouth thoroughly with water. Let water be drunk in little sips (dilution effect). Seek medical advice.

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

Acute effects: Mucous membrane irritation after eye contact or inhalation.

Delayed effects: Impairment of inhibitory functions of the central nervous system, skin redness, nausea after ingestion of large amounts.

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

Treat symptomatically.

Percutaneously absorbed and inhaled substance causes next to irritation of affected mucous membranes only an indicated impairment of the inhibitory functions of the central nervous system, clinically recognizable as the beginning of a euphoric stage. At the same time face and skin redness is caused by dilation of peripheral blood vessels in the body.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

Carbon dioxide (CO<sub>2</sub>). Dry extinguishing powder. alcohol resistant foam. Atomized water.

#### Unsuitable extinguishing media

High power water jet.

### 5.2. Special hazards arising from the substance or mixture

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

Vapours are heavier than air and will spread at floor level.

Can be released in case of fire: Carbon monoxide Carbon dioxide (CO<sub>2</sub>).

### 5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.

#### Additional information

Use water spray jet to protect personnel and to cool endangered containers. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Ventilate affected area.

Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes.

Special danger of slipping by leaking/spilling product.

Wear personal protection equipment. (refer to chapter 8)

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Prevent spread over a wide area (e.g. by containment or oil barriers). In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

### 6.3. Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).

Ventilate affected area.

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Treat the recovered material as prescribed in the section on waste disposal.

Clear contaminated areas thoroughly.

### 6.4. Reference to other sections

See protective measures under point 7 and 8.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Advice on safe handling

Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes.

Wear personal protection equipment. (See section 8.)

#### Advice on protection against fire and explosion

Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharges.

Flammable vapours can accumulate in head space of closed systems. In use, may form flammable/explosive vapour-air mixture. Heating causes rise in pressure with risk of bursting.

#### Further information on handling

General protection and hygiene measures: refer to chapter 8

### 7.2. Conditions for safe storage, including any incompatibilities

#### Requirements for storage rooms and vessels

Keep/Store only in original container. Keep container tightly closed in a cool, well-ventilated place. Protect against direct sunlight.

Ensure adequate ventilation of the storage area. Concentrated vapours are heavier than air.

Suitable material for Container: Stainless steel. (1.4301 (V2), 1.4401 (V4)); iron. solvent resistant plastics.

Unsuitable materials for Container: Aluminium. Rubber. various plastics.

#### Advice on storage compatibility

Do not store together with: Gas. Explosives. Flammable solids. Pyrophoric liquids and solids. Self-heating substances and mixtures. Substances and mixtures which, in contact with water, emit flammable gases.

Oxidizing liquids. Oxidizing solids. ammonium nitrate. Self-reactive substances and mixtures. Organic peroxides. Non-combustible toxic substances. Radioactive substances. Infectious substances.

#### Further information on storage conditions

Recommended storage temperature: 5-25°C

Protect against: UV-radiation/sunlight. heat. Cold.

### 7.3. Specific end use(s)

refer to chapter 1.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Exposure limits (EH40)

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
78-93-3	Butan-2-one (methyl ethyl ketone)	200	600		TWA (8 h)	WEL
		300	899		STEL (15 min)	WEL
64-17-5	Ethanol	1000	1920		TWA (8 h)	WEL
		-	-		STEL (15 min)	WEL
67-63-0	Propan-2-ol	400	999		TWA (8 h)	WEL
		500	1250		STEL (15 min)	WEL

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#### Biological Monitoring Guidance Values (EH40)

CAS No	Substance	Parameter	Value	Test material	Sampling time
78-93-3	Butan-2-one	butan-2-one	70 µmol/L	urine	Post shift

#### DNEL/DMEL values

CAS No	Substance	DNEL type	Exposure route	Effect	Value
64-17-5	ethanol, ethyl alcohol	Worker DNEL, acute	inhalation	local	1900 mg/m <sup>3</sup>
		Worker DNEL, long-term	dermal	systemic	343 mg/kg bw/day
		Worker DNEL, long-term	inhalation	systemic	950 mg/m <sup>3</sup>
		Consumer DNEL, acute	inhalation	local	950 mg/m <sup>3</sup>
		Consumer DNEL, long-term	dermal	systemic	206 mg/kg bw/day
		Consumer DNEL, long-term	inhalation	systemic	114 mg/m <sup>3</sup>
		Consumer DNEL, long-term	oral	systemic	87 mg/kg bw/day
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol	Worker DNEL, long-term	inhalation	systemic	500 mg/m <sup>3</sup>
		Consumer DNEL, long-term	inhalation	systemic	89 mg/m <sup>3</sup>
		Worker DNEL, long-term	dermal	systemic	888 mg/kg bw/day
		Consumer DNEL, long-term	oral	systemic	26 mg/kg bw/day
		Consumer DNEL, long-term	dermal	systemic	319 mg/kg bw/day
78-93-3	butanone; ethyl methyl ketone	Worker DNEL, long-term	dermal	systemic	1161 mg/kg bw/day
		Worker DNEL, long-term	inhalation	systemic	600 mg/m <sup>3</sup>
		Consumer DNEL, long-term	inhalation	systemic	106 mg/m <sup>3</sup>
		Consumer DNEL, long-term	dermal	systemic	412 mg/kg bw/day
		Consumer DNEL, long-term	oral	systemic	31 mg/kg bw/day

#### PNEC values

CAS No	Substance	Environmental compartment	Value
64-17-5	ethanol, ethyl alcohol	Freshwater	0,96 mg/l
		Freshwater (intermittent releases)	2,75 mg/l
		Marine water	0,79 mg/l
		Marine water (intermittent releases)	2,75 mg/l
		Freshwater sediment	3,6 mg/kg
		Marine sediment	2,9 mg/kg
		Secondary poisoning	0,72 mg/kg
		Micro-organisms in sewage treatment plants (STP)	580 mg/l
		Soil	0,63 mg/kg
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol		

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Freshwater	140,9 mg/l
Marine water	140,9 mg/l
Freshwater sediment	552 mg/kg
Marine sediment	552 mg/kg
Secondary poisoning	160 mg/kg
Soil	28 mg/kg
78-93-3	butanone; ethyl methyl ketone
Freshwater	55,8 mg/l
Marine water	55,8 mg/l
Freshwater sediment	285 mg/kg
Marine sediment	284,7 mg/kg
Secondary poisoning	1000 mg/kg
Micro-organisms in sewage treatment plants (STP)	709 mg/l
Soil	22,5 mg/kg

### 8.2. Exposure controls



#### Appropriate engineering controls

Provide adequate ventilation.

If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.

#### Protective and hygiene measures

Always close containers tightly after the removal of product. When using do not eat, drink or smoke. Wash hands before breaks and after work. Take off contaminated clothing. Protect skin by using skin protective cream.

#### Eye/face protection

Tightly sealed safety glasses. DIN EN 166

#### Hand protection

In case of prolonged or frequently repeated skin contact:

Tested protective gloves are to be worn:

Suitable material:

Butyl rubber. (0,7 mm, Breakthrough time  $\geq$ 480 min, penetration time (maximum wearing period): 160 min):

NBR (Nitrile rubber). (0,4 mm, Breakthrough time  $\geq$ 120 min, penetration time (maximum wearing period): 40 min)

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

Before using check leak tightness / impermeability. In the case of wanting to use the gloves again, clean them before taking off and air them well.

#### Skin protection

Protective clothing. (fire retardant.)

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

#### Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.

Respiratory protection necessary at:

Insufficient ventilation.

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exceeding exposure limit values  
 generation/formation of aerosols  
 Suitable respiratory protective equipment:  
 gas filtering equipment (EN 141). Type : A  
 The filter class must be suitable for the maximum contaminant concentration  
 (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded,  
 self-contained breathing apparatus must be used.

#### Environmental exposure controls

Do not allow to enter into surface water or drains.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state:	liquid
Colour:	colourless
Odour:	characteristic

#### Test method

pH-Value (at 20 °C):	7,0 (1%, ethanol, ethyl alcohol)
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#### Changes in the physical state

Melting point:	ethanol, ethyl alcohol: -114,5 °C
Initial boiling point and boiling range:	ethanol, ethyl alcohol: 78,3 °C
Sublimation point:	not determined
Softening point:	not determined
Pour point:	not determined
Flash point:	ethanol, ethyl alcohol: 12 °C Closed Cup

#### Explosive properties

Vapours can travel considerable distances to a source of ignition where they can ignite , flash back, or explode.

Lower explosion limits:	ethanol, ethyl alcohol: 3,5 vol. %
Upper explosion limits:	ethanol, ethyl alcohol: 15,0 vol. %
Ignition temperature:	ethanol, ethyl alcohol: 425 °C DIN 51794

#### Auto-ignition temperature

Gas:	not determined
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#### Oxidizing properties

none

Vapour pressure: (at 20 °C)	ethanol, ethyl alcohol: 59 hPa
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Density:	ethanol, ethyl alcohol: 0,8075 g/cm <sup>3</sup>
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Water solubility:	highly soluble.
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#### Solubility in other solvents

not determined

Viscosity / dynamic: (at 20 °C)	ethanol, ethyl alcohol: 1,2 mPa·s
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Viscosity / kinematic:	not determined
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Flow time:	not determined
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Vapour density:	not determined
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Evaporation rate:	not determined
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Solvent separation test: not determined  
Solvent content: 95-100 %

### 9.2. Other information

Solid content: not determined  
Relative vapour density (air=1): 1,6 (ethanol, ethyl alcohol)

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No information available.

### 10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

### 10.3. Possibility of hazardous reactions

Explosion risk in contact with: Oxidizing agents, strong. nitric acid. Hydrogenium peroxide.  
Exothermic reactions with: Alkali metals. Alkaline earth metals. Reducing agents, strong.

### 10.4. Conditions to avoid

Keep away from heat. Protect against direct sunlight. Protect from moisture.  
In use may form flammable/explosive vapour-air mixture.  
Heating causes rise in pressure with risk of bursting. Recommended storage temperature: < 40 °C

### 10.5. Incompatible materials

Strong acid. Oxidizing agents. Alkali metals. Alkaline earth metals. Peroxides. phosphorus oxides. Nitrogen oxides (NOx). Hydrogenium peroxide. Nitric acid. hydrochloric acid. Sulfuric acid. Perchlorates. Chromium oxides. Acid chlorides.

### 10.6. Hazardous decomposition products

Can be released in case of fire: Carbon monoxide Carbon dioxide (CO<sub>2</sub>).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### **Toxicokinetics, metabolism and distribution**

Adsorption.

Ethanol has a low molecular weight and has a good water and fat solubility. Therefor it can be adsorbed well in the entire gastrointestinal tract, lungs and the skin. After swallowing approximately 90% is taken up via the gastrointestinal tract. When inhaled, this value is 61%. Because of the rapid evaporation of ethanol the dermal adsorption is very limited; theoretically 21% can be accommodated, however, the absorption rate of uncovered skin is only 1 to 2%.

Distribution:

Regardless of the exposure pathway ethanol is distributed via the bloodstream throughout the body, comparable to the distribution of water. Highly perfused organs (brain, lung and liver) are passed quickly. An equal distribution between tissue and blood is reached after 1 to 1.5 h.

metabolism:

Even before the absorption a small proportion of ethanol is enzymatically metabolized in the stomach (alcohol dehydrogenase). After absorption ethanol is preferably metabolized in the liver (92-95%) and partly in the kidneys and lungs. Metabolism occurs usually in three steps: 1. oxidation of ethanol to acetaldehyde; 2. oxidation of acetaldehyde to acetate; 3. oxidation of acetate to carbon dioxide and water

elimination:

The vast majority of ethanol is eliminated by metabolism, the excretion via breath, urine and sweat plays a minor role. The maximum elimination of ethanol is estimated on the 127 mg / kgbw / h.

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#### Acute toxicity

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

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
64-17-5	ethanol, ethyl alcohol				
	oral	LD50 >5000 mg/kg	Rat	ECHA Dossier	
	inhalation (4 h) vapour	LC50 124,7 mg/l	Rat	ECHA Dossier	
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol				
	oral	LD50 >5000 mg/kg	Rat	ECHA Dossier	
	dermal	LD50 >5000 mg/kg	Rabbit	ECHA Dossier	
78-93-3	butanone; ethyl methyl ketone				
	oral	LD50 >2000 mg/kg	Rat	ECHA Dossier	
	dermal	LD50 >2000 mg/kg	Rabbit	ECHA Dossier	

#### Irritation and corrosivity

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Irritant effect on the skin: slightly irritant but not relevant for classification.

Ethanol.: Specific concentration limit (SCL): Eye Irrit. 2 > 50%

#### Sensitising effects

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

The product is: not sensitising. The statement is derived from the properties of the components.

#### Carcinogenic/mutagenic/toxic effects for reproduction

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

Ethanol. (CAS-No.: 64-17-5):

In-vitro mutagenicity: No experimental indications of mutagenicity in-vitro exist.

Reproductive toxicity: Exposure time: 18 weeks; Species: CD-1 Mouse. Method: OECD Guideline 416;

Result: NOAEL = 20700 mg/kg/day. Developmental toxicity/teratogenicity: Exposure time: 19d; Species: Sprague-Dawley Rat. Method: OECD Guideline 414; Result: NOAEL = 16000 ppm (maternal toxicity), Result: NOAEL >= 20000 ppm (teratogenicity); Literature information: ECHA Dossier

propan-2-ol; isopropyl alcohol; isopropanol:

OECD Guideline 471 (Bacterial Reverse Mutation Assay) = negative., AllgK267153: ECHA Dossier; OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test) = negative., Literature information: ECHA Dossier;

No indications of human carcinogenicity exist., Literature information: ECHA Dossier; Reproductive toxicity: Method: OECD Guideline 415 (One-Generation Reproduction Toxicity Study); Species: Rat ; Result: NOAEL = 853 mg/kg; Literature information: ECHA Dossier; Developmental toxicity/teratogenicity: Method: (oral.)

OECD Guideline 414 (Prenatal Developmental Toxicity Study); Species: Rabbit ; Result: NOAEL = 480 mg/kg; Literature information: ECHA Dossier

butanone; ethyl methyl ketone:

In-vitro mutagenicity: Method: OECD Guideline 471 (Bacterial Reverse Mutation Assay); Result: negative.;

Literature information: ECHA Dossier; Reproductive toxicity: (read-across); Method: OECD Guideline 416 (Two-Generation Reproduction Toxicity Study); Species: Rat.; Results: NOAEL = 1644 mg/kg; Literature information: ECHA Dossier; Developmental toxicity/teratogenicity: Method: OECD Guideline 414 (Prenatal Developmental Toxicity Study); Species: Rat.; Results: NOAEL = 1002 ppm; Literature information: ECHA Dossier

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### STOT-single exposure

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

butanone; ethyl methyl ketone:

Developmental toxicity/teratogenicity: NOAEL = 1000 ppm; [Schwetz BA et al; Fundam Appl Toxicol 16 (4): 742-8 (1991)]

In-vitro mutagenicity: negative.

### STOT-repeated exposure

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

Ethanol. (CAS-No.: 64-17-5):

Subchronic oral toxicity: Exposure time: 90d; Species: Sprague-Dawley Rat. Method: OECD Guideline 408; Result: NOAEL = 1280 mg/kg; Literature information: ECHA Dossier

propan-2-ol; isopropyl alcohol; isopropanol:

Chronic inhalative toxicity (Rat): NOAEC = 5000 ppm (OECD 451), Literature information: ECHA Dossier  
butanone; ethyl methyl ketone:

Subchronic inhalation toxicity: Method: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day);

Species: Rat. ; Exposure duration: 90 d. Result: NOAEC = 5014 ppm ; AllgK267153: ECHA Dossier

### Aspiration hazard

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

### Specific effects in experiment on an animal

No data available

### Practical experience

### Other observations

Excessive alcohol consumption during pregnancy induces fetal alcohol syndrome (reduced birth weight, physical and mental disorders). So far there is no indication that this symptom is caused by dermal or inhalative intake.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ethanol. (CAS-No.: 64-17-5):

Acute earthworm toxicity: LC50 (48h) = <1mg/cm<sup>2</sup> (Eisenia fetida, non-guideline study)

Acute plant toxicity: EC50 (6d) = 11800 mg/l (Allium cepa, non-guideline study)

Sediment organisms: LC59 (18h) = 8200 mg/l (Hyalloella sp, non-guideline study)

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
64-17-5	ethanol, ethyl alcohol					
	Acute fish toxicity	LC50 mg/l	14200	96 h	Pimephales promelas	ECHA Dossier
	Acute algae toxicity	ErC50 mg/l	275	72 h	Chlorella vulgaris	ECHA Dossier
	Acute crustacea toxicity	EC50 mg/l	5012	48 h	Ceriodaphnia dubia	ECHA Dossier
	Crustacea toxicity	NOEC mg/l	(9,6)	9 d	Daphnia magna	ECHA Dossier
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol					
	Acute fish toxicity	LC50 mg/l	9640	96 h	Pimephales promelas	ECHA Dossier OECD Guideline 203
	Acute algae toxicity	ErC50 mg/l	1800		Scenedesmus quadricauda	ECHA Dossier
	Acute crustacea toxicity	EC50 mg/l	>10000	48 h	Daphnia magna (24h)	ECHA Dossier OECD Guideline 202
78-93-3	butanone; ethyl methyl ketone					

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	Acute fish toxicity	LC50 mg/l	1656	96 h	Pimephales promelas	ECHA Dossier	
	Acute algae toxicity	ErC50 mg/l	1982	72 h	Pseudokirchnerella subcapitata	ECHA Dossier	
	Acute crustacea toxicity	EC50	308 mg/l	48 h	Daphnia magna	ECHA Dossier	
	Acute bacteria toxicity	(1150 mg/l)			Pseudomonas putida (16h)	ECHA Dossier	

#### 12.2. Persistence and degradability

Ethanol. (CAS-No.: 64-17-5):

Chemical Oxygen Demand (COD): CSB = 1900 mg/g

Biochemical oxygen demand (BOD): BSB5 = 1000 mg/g

Abiotic degradation in water: Hydrolysis  $t_{1/2}$  (20°C, pH 7) = >1 - <36 a.Abiotic degradation in Air  $t_{1/2}$  (Air.) = 38 d;  $t_{1/2}$  (Air. 100 ppm NO<sub>2</sub>) = 11,5 h

CAS No	Chemical name			
	Method	Value	d	Source
	Evaluation			
64-17-5	ethanol, ethyl alcohol			
	other guideline	84%	20	ECHA Dossier
	Biodegradable.			
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol			
	EU Method C.5/ EU Method C.6	53%	5	ECHA Dossier
	Easily biodegradable (concerning to the criteria of the OECD)			
78-93-3	butanone; ethyl methyl ketone			
	OECD 301D/ EEC 92/69/V, C.4-E	98%	28	ECHA Dossier
	Readily biodegradable (according to OECD criteria).			

#### 12.3. Bioaccumulative potential

##### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
64-17-5	ethanol, ethyl alcohol	-0,31
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol	0,05
78-93-3	butanone; ethyl methyl ketone	0,29

#### 12.4. Mobility in soil

Ethanol. (CAS-No.: 64-17-5):

Volatility: Henry constant:  $3,3 \cdot 10^{-6}$  atm. m<sup>3</sup>/mol; dimension less  $1,28 \cdot 10^{-4}$  (Calculation method.)

Distribution: Calculation according to: Mackay, EPIWIN: Air. 45,0%; Water. 33,1%; soil. 13,7%; sediment: 0,1%

#### 12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

#### 12.6. Other adverse effects

No data available

#### Further information

Do not allow to enter into surface water or drains.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

##### Advice on disposal

Dispose of waste according to applicable legislation. Consult the local waste disposal expert about waste

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disposal. Non-contaminated packages may be recycled. According to EAKV, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Control report for waste code/ waste marking according to EAKV:

#### Waste disposal number of waste from residues/unused products

070104 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals; other organic solvents, washing liquids and mother liquors; hazardous waste

#### Waste disposal number of used product

070104 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals; other organic solvents, washing liquids and mother liquors; hazardous waste

#### Waste disposal number of contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

#### Contaminated packaging

Handle contaminated packages in the same way as the substance itself.

### SECTION 14: Transport information

#### Land transport (ADR/RID)

**14.1. UN number:** UN 1170  
**14.2. UN proper shipping name:** ETHANOL (ETHYL ALCOHOL)  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** II  
 Hazard label: 3



Classification code: F1  
 Special Provisions: 144 601  
 Limited quantity: 1 L  
 Excepted quantity: E2  
 Transport category: 2  
 Hazard No: 33  
 Tunnel restriction code: D/E

#### Inland waterways transport (ADN)

**14.1. UN number:** UN 1170  
**14.2. UN proper shipping name:** ETHANOL (ETHYL ALCOHOL)  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** II  
 Hazard label: 3



Classification code: F1  
 Special Provisions: 144 601  
 Limited quantity: 1 L  
 Excepted quantity: E2

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#### Marine transport (IMDG)

<b>14.1. UN number:</b>	UN 1170
<b>14.2. UN proper shipping name:</b>	ETHANOL (ETHYL ALCOHOL)
<b>14.3. Transport hazard class(es):</b>	3
<b>14.4. Packing group:</b>	II
Hazard label:	3



Marine pollutant:	NO
Special Provisions:	144
Limited quantity:	1 L
Excepted quantity:	E2
EmS:	F-E, S-D

#### Air transport (ICAO-TI/IATA-DGR)

<b>14.1. UN number:</b>	UN 1170
<b>14.2. UN proper shipping name:</b>	ETHANOL (ETHYL ALCOHOL)
<b>14.3. Transport hazard class(es):</b>	3
<b>14.4. Packing group:</b>	II
Hazard label:	3



Special Provisions:	A3 A58 A180
Limited quantity Passenger:	1 L
Passenger LQ:	Y341
Excepted quantity:	E2
IATA-packing instructions - Passenger:	353
IATA-max. quantity - Passenger:	5 L
IATA-packing instructions - Cargo:	364
IATA-max. quantity - Cargo:	60 L

#### 14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

#### 14.6. Special precautions for user

refer to chapter 6-8

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

not relevant

### SECTION 15: Regulatory information

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

##### EU regulatory information

2010/75/EU (VOC):	= < 100% (calculated)
2004/42/EC (VOC):	= < 807,5 g/L (calculated)
Information according to 2012/18/EU (SEVESO III):	P5c FLAMMABLE LIQUIDS

##### Additional information

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

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REACH 1907/2006 Appendix XVII, No (mixture): 3

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

Water contaminating class (D): 1 - slightly water contaminating

**15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:

ethanol, ethyl alcohol  
 propan-2-ol; isopropyl alcohol; isopropanol  
 butanone; ethyl methyl ketone

**SECTION 16: Other information****Changes**

Rev. 1.00; 10.06.2014, Neuerstellung  
 Rev. 1.10; 07.01.2015, Changes in chapter: 1, 2, 3, 4, 6, 7, 11, 12.  
 Rev. 2.00; 07.01.2015, Changes in chapter: 1-16

**Abbreviations and acronyms**

ADR: Accord européen sur le transport des marchandises dangereuses par Route  
 CAS Chemical Abstracts Service  
 DNEL: Derived No Effect Level  
 IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organization  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)  
 LOAEL: Lowest observed adverse effect level  
 LOAEC: Lowest observed adverse effect concentration  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent  
 NOAEL: No observed adverse effect level  
 NOAEC: No observed adverse effect level  
 NTP: National Toxicology Program  
 N/A: not applicable  
 OSHA: Occupational Safety and Health Administration  
 PNEC: predicted no effect concentration  
 PBT: Persistent bioaccumulative toxic  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail )  
 SARA: Superfund Amendments and Reauthorization Act  
 SVHC: substance of very high concern  
 TRGS Technische Regeln fuerGefahrstoffe  
 TSCA: Toxic Substances Control Act  
 VOC: Volatile Organic Compounds  
 VwVwS: Verwaltungsvorschrift wassergefaehrdender Stoffe  
 WGK: Wassergefaehrdungsklasse

**Relevant H and EUH statements (number and full text)**

H225 Highly flammable liquid and vapour.  
 H319 Causes serious eye irritation.  
 H336 May cause drowsiness or dizziness.

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EUH066 Repeated exposure may cause skin dryness or cracking.

**Further Information**

Classification according EC regulation 1272/2008 (CLP): - Classification procedure:

Health hazards: Calculation method.

Environmental hazards: Calculation method.

Physical hazards: On basis of test data and / or calculated and / or estimated.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

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*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*