

Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878 and to Annex II to UK REACH

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

1.1. Product identifier

Code: TC54472
 Product name: ETHYL ALCOHOL DG 99 ° complet.denat. Reg UE 2017/1112

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

Identified Uses: solvent for industrial use

1.3. Details of the supplier of the safety data sheet

Name: TITOLCHIMICA SPA
 Full address: VIA S.PIETRO MARTIRE 1054
 District and Country: 45030 PONTECCHIO POLESINE (RO)
 ITALIA
 Tel. +39425492644

e-mail address of the competent person

responsible for the Safety Data Sheet Supplier: utecnico@titolchimica.it
 TITOLCHIMICA SPA

1.4. Emergency telephone number

For urgent inquiries refer to
Poison Centers (24 / 24h):
 Pavia - 038224444;
 Milan - 0266101029;
 Bergamo - 80083300;
 Verona - 800011858;
 Florence - 0557947819;
 Rome - Gemini 063054343;
 Rome - Umberto I 0649978000;
 Rome - Baby Jesus 0668593726;
 Naples - 0815453333;
 Foggia - 800183459.

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Flammable liquid, category 2	H225	Highly flammable liquid and vapour.
Eye irritation, category 2	H319	Causes serious eye irritation.

2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Danger

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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.
P370+P378 In case of fire: use carbon dioxide, foam, chemical powder to extinguish.

2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage \geq than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration \geq 0.1%.

SECTION 3. Composition/information on ingredients
3.2. Mixtures

Contains:

Identification	Conc. %	Classification (EC) 1272/2008 (CLP)
Ethanol		
INDEX 603-002-00-5	>96	Flam. Liq. 2 H225, Eye Irrit. 2 H319
EC 200-578-6		Eye Irrit. 2 H319: \geq 50%
CAS 64-17-5		
REACH Reg. 01-2119457610-43-XXXX		
Methyl ethyl ketone		
INDEX 606-002-00-3	1,0 – 1,5	Flam. Liq. 2 H225, Eye Irrit. 2 H319, STOT SE 3 H336, EUH066
EC 201-159-0		
CAS 78-93-3		
REACH Reg. 01-2119457290-43-XXXX		
Propan-2-ol		
INDEX 603-117-00-0	1,0 – 1,5	Flam. Liq. 2 H225, Eye Irrit. 2 H319, STOT SE 3 H336
EC 200-661-7		
CAS 67-63-0		
REACH Reg. 01-2119457558-25-XXXX		

The full wording of hazard (H) phrases is given in section 16 of the sheet.

SECTION 4. First aid measures
4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

SKIN: Remove contaminated clothing. Wash immediately with plenty of water. If irritation persists, get medical advice/attention. Wash contaminated clothing before using it again.

INHALATION: Remove to open air. In the event of breathing difficulties, get medical advice/attention immediately.

INGESTION: Get medical advice/attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person, unless authorised by a doctor.

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

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Specific information on symptoms and effects caused by the product are unknown.

Ethanol

Acute dose-dependent effects.

Skin: irritation, delipidation

Nervous system: in case of ingestion depression

Eyes: irritation, corneal damage

Upper respiratory tract: irritation

Lungs: irritation

Chronic effects.

Skin: irritation, delipidation

Nervous system: headache, asthenia, depression

Upper respiratory tract: irritation

Lungs: irritation

Methyl ethyl ketone

Acute dose-dependent effects.

Nervous system: headache, depression, confusion

Eyes: irritation

Upper airways: irritation

Lungs: irritation, chemical pneumonia

Digestive system: dyspepsia

Chronic effects.

Skin: delipidization, dermatitis

Propan-2-ol

Acute dose-dependent effects. Skin: irritation. Nervous system: ingestion and inhalation cause depression. Eyes: irritation. Nose: irritation. Lungs: irritation.

Chronic effects. Skin: irritation, sensitization, delipidization.

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

Useful medical intervention. Treat symptomatically.

SECTION 5. Firefighting measures**5.1. Extinguishing media****SUITABLE EXTINGUISHING EQUIPMENT**

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

UNSUITABLE EXTINGUISHING EQUIPMENT

Do not use jets of water. Water is not effective for putting out fires but can be used to cool containers exposed to flames to prevent explosions.

5.2. Special hazards arising from the substance or mixture**HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE**

Excess pressure may form in containers exposed to fire at a risk of explosion. Do not breathe combustion products.

5.3. Advice for firefighters**GENERAL INFORMATION**

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

SECTION 6. Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Block the leakage if there is no hazard.

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Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

Send away individuals who are not suitably equipped. Use explosion-proof equipment. Eliminate all sources of ignition (cigarettes, flames, sparks, etc.) from the leakage site.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Keep away from heat, sparks and naked flames; do not smoke or use matches or lighters. Without adequate ventilation, vapours may accumulate at ground level and, if ignited, catch fire even at a distance, with the danger of backfire. Avoid bunching of electrostatic charges. When performing transfer operations involving large containers, connect to an earthing system and wear antistatic footwear. Vigorous stirring and flow through the tubes and equipment may cause the formation and accumulation of electrostatic charges. In order to avoid the risk of fires and explosions, never use compressed air when handling. Open containers with caution as they may be pressurised. Do not eat, drink or smoke during use. Avoid leakage of the product into the environment.

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Store in a cool and well ventilated place, keep far away from sources of heat, naked flames and sparks and other sources of ignition. Keep containers away from any incompatible materials, see section 10 for details.

7.3. Specific end use(s)

Information not available

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Regulatory References:

DEU	Deutschland	Technischen Regeln für Gefahrstoffe (TRGS 900) - Liste der Arbeitsplatzgrenzwerte und Kurzzeitwerte. MAK- und BAT-Werte-Liste 2020, Ständige Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe, Mitteilung 56
ESP	España	Límites de exposición profesional para agentes químicos en España 2021
FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en France. ED 984 - INRS
ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
ROU	România	Hotărârea nr. 53/2021 pentru modificarea hotărârii guvernului nr. 1.218/2006, precum și pentru modificarea și completarea hotărârii guvernului nr. 1.093/2006
GBR	United Kingdom	EH40/2005 Workplace exposure limits (Fourth Edition 2020)
EU	OEL EU	Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
	TLV-ACGIH	ACGIH 2022

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Ethanol
Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
AGW	DEU	380	200	1520	800	
MAK	DEU	380	200	1520	800	
VLA	ESP			1910	1000	
VLEP	FRA	1900	1000	9500	5000	
TLV	ROU	1900	1000	9500	5000	
WEL	GBR	1920	1000			
TLV-ACGIH				1880	1000	A3, urt irr
Predicted no-effect concentration - PNEC						
Normal value in fresh water				0,96	mg/l	
Normal value in marine water				0,79	mg/l	
Normal value for fresh water sediment				3,6	mg/kg/d	
Normal value for marine water sediment				2,9	mg/kg/d	
Normal value of STP microorganisms				580	mg/l	
Normal value for the food chain (secondary poisoning)				0,72	mg/kg	
Normal value for the terrestrial compartment				0,63	mg/kg	

Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					1900 mg/m3			950 mg/m3

Methyl ethyl ketone
Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
AGW	DEU	600	200	600	200	SKIN
MAK	DEU	600	200	600	200	SKIN
VLA	ESP	600	200	900	300	
VLEP	FRA	600	200	900	300	SKIN
VLEP	ITA	600	200	900	300	
TLV	ROU	600	200	900	300	
WEL	GBR	600	200	899	300	SKIN
OEL	EU	600	200	900	300	
TLV-ACGIH		590	200	885	300	irrt rspr, ssnc, ssnp

Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation						900 mg/m3		600 mg/m3
Skin								1161 mg/kg bw/d

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**Propan-2-ol
 Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
AGW	DEU	500	200	1000	400	
MAK	DEU	500	200	1000	400	
VLA	ESP	500	200	1000	400	
VLEP	FRA			980	400	
TLV	ROU	200	81	500	203	
WEL	GBR	999	400	1250	500	

Predicted no-effect concentration - PNEC

Normal value in fresh water	140,9	mg/l
Normal value in marine water	140,9	mg/l
Normal value for fresh water sediment	552	mg/kg
Normal value for marine water sediment	552	mg/kg
Normal value for the terrestrial compartment	28	mg/kg

Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation								500 mg/kg
Skin							VND	888 mg/kg

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

Sampling methods

 Ethanol: http://amcaw.ifa.dguv.de/substance/methoden/063-Ethanol_2016.pdf.

 Methyleneylethylketone: https://amcaw.ifa.dguv.de/substance/methoden/105-Butan-2-one_2016.pdf

 2- propanol: <http://amcaw.ifa.dguv.de/substance/methoden/066-L-Propan-2-ol.pdf>.

Biological Exposure Indicators (IBE) - Source: ACGIH 2017

Substance: 2-Propanol

Biological indicator: Acetone in the urine

Pick-up time: End of shift, working weekend.

IBE: 40 mg / l

Notation: B, Ns.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

HAND PROTECTION

Protect hands with category III work gloves.

The following should be considered when choosing work glove material (see standard EN 374): compatibility, degradation, failure time and permeability.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration

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and type of use.

SKIN PROTECTION

Wear category I professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

Consider the appropriateness of providing antistatic clothing in the case of working environments in which there is a risk of explosion.

EYE PROTECTION

Wear airtight protective goggles (see standard EN 166).

RESPIRATORY PROTECTION

If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, use a mask with a type A filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387). In the presence of gases or vapours of various kinds and/or gases or vapours containing particulate (aerosol sprays, fumes, mists, etc.) combined filters are required.

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	liquid	
Colour	pink	
Odour	characteristic of alcohol	
Melting point / freezing point	-114 °C	
Initial boiling point	81 °C	
Flammability	not available	
Lower explosive limit	2,5 % (v/v)	
Upper explosive limit	13,5 % (v/v)	
Flash point	13 °C	
Auto-ignition temperature	> 422 °C	
Decomposition temperature	not available	
pH	not available	
Kinematic viscosity	not available	
Dynamic viscosity	1,2 mPa.s	Remark:for ethanol
Solubility	soluble in water	
Partition coefficient: n-octanol/water	-0,35	
Vapour pressure	not available	
Density and/or relative density	0,8	
Relative vapour density	not available	
Particle characteristics	not applicable	

9.2. Other information

9.2.1. Information with regard to physical hazard classes

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Information not available

9.2.2. Other safety characteristics

VOC (Directive 2010/75/EU)	100,00 % - 800,00 g/litre
Explosive properties	not explosive
Oxidising properties	not oxidising

SECTION 10. Stability and reactivity

In the absence of information on the mixture, the literature information on the components is reported. This information is not characteristic of the solution but of the dangerous components.

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

Ethanol

Highly flammable liquid and vapour. Possible formation of explosive vapour/air mixtures.

Methyl ethyl ketone

reacts with light metals, such as aluminum, and with strong oxidants; attaches different types of plastic. It decomposes due to the effect of heat.

Propan-2-ol

It possesses the properties of secondary alcohols (oxidation reactions, dehydrogenation, dehydration, esterification).

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

Ethanol

Explosion hazard by contact with: alkali metals, alkaline oxides, calcium hypochlorite, sulfur monofluoride, acetic anhydride (with acids), concentrated hydrogen peroxide, perchlorates, perchloric acid, perchloronitrile, mercury nitrate, nitric acid, silver and acid nitric, silver nitrate, silver nitrate and ammonia, silver oxide and ammonia, strong oxidizing agents, nitrogen dioxide. May react dangerously with: bromine acetylene, chlorine acetylene, bromine trifluoride, chromium trioxide, chromyl chloride, oxiranes, fluorine, potassium tert-butoxide, lithium hydride, phosphorus trioxide, black platinum, zirconium chloride (IV), iodide of zirconium (IV). Forms explosive mixtures with air.

Methyl ethyl ketone

Vapors can form explosive mixtures with air.

May form peroxides with: air, light, strong oxidising agents.

Risk of explosion on contact with: hydrogen peroxide, nitric acid, sulphuric acid.

May react dangerously with: oxidising agents, oxidising agents, trichloromethane, alkalis.

Propan-2-ol

Forms explosive mixtures with air. Reacts violently with oxidants. At high temperatures it can react vigorously with oxygen in the air.

10.4. Conditions to avoid

Avoid overheating. Avoid bunching of electrostatic charges. Avoid all sources of ignition.

Ethanol

Avoid exposure to: heat sources, open flames.

Heat. Sparks. Naked flame. Sources of ignition. Direct sunlight.

Methyl ethyl ketone

Avoid exposure to: sources of heat.

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Propan-2-ol
Exposure to sunlight. Heating and open flames. No ventilation. Exposure to air.

10.5. Incompatible materials

Ethanol
Strong oxidizing agents, sulfuric acid, nitric acid, alkaline and alkaline earth metals, alkaline oxides, acetyl chloride, peroxides, ammonia, sodium hypochlorite, calcium hypochlorite, perchlorates.

Methyl ethyl ketone
Incompatible with: strong oxidants, inorganic acids, ammonia, copper, chloroform.

Propan-2-ol
Aluminum and oxidants. Plastic and rubbers.

10.6. Hazardous decomposition products

In the event of thermal decomposition or fire, gases and vapours that are potentially dangerous to health may be released.

Ethanol
The burning of ethanol creates carbon monoxide.

Methyl ethyl ketone
When heated to decomposition releases: gases and vapors harmful to health.

Propan-2-ol
In the event of a fire, toxic gases and vapors may be released.

SECTION 11. Toxicological information**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**Metabolism, toxicokinetics, mechanism of action and other information

Ethanol
It is rapidly absorbed by ingestion and by inhalation, poorly by skin contact.
It is distributed in all the tissues and liquids of the organism, in particular the brain, lungs and liver.
About 90-98% of the ingested quantity is metabolized in the liver to acetaldehyde and then into acetic acid.
Acetaldehyde is rapidly metabolized to acetic acid by liver aldehyde dehydrogenase.
Acetic acid is subsequently oxidized in the peripheral tissues in carbon dioxide and water. A small amount of ethanol is eliminated unchanged in the urine, sweat and exhaled air.
Its effects are due to the inhibition of synaptic transmission in the brain.
It also has action on lipid metabolism.

Methyl ethyl ketone
In humans, the substance is well absorbed by inhalation and skin. After 8 hours of exposure, lung retention is 53%. The skin absorption (3% of the dose) is greater on wet than dry skin.
There are no studies on digestive absorption.
Butanone is rapidly transformed into the blood with a plasma half-life of 49-96 minutes and is distributed to all tissues. It is metabolized in the liver where it is mainly oxidized to 3-hydroxy-2-butanone and subsequently reduced to 2,3-butanediol. A small amount can be reduced to 2-butanol, which is quickly reoxidized into butanone.
The metabolites are eliminated mainly through the lungs and only a small amount is excreted in the urine (0.1%).
Butanone increases the microsomal enzyme activity of cytochrome P-450.

Propan-2-ol
In humans, the substance is rapidly absorbed by the lungs and the gastrointestinal tract, in contrast, the absorption through the skin is slow. It is metabolized in acetone from the aldehyde dehydrogenase, but much is excreted unmodified with exhaled air and urine.

Information on likely routes of exposure

Ethanol
The main potential routes of exposure are ingestion, inhalation and skin contact.

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Methyl ethyl ketone

The main potential routes of exposure are expected to be skin contact and inhalation in workers exposed to the production and use of the substance. Potential exposure of the general population can occur through inhalation from the ambient air and by ingestion of food or water.

Propan-2-ol

The main routes of potential exposure are expected to be skin contact and inhalation in workers exposed during the production and use of the substance. Possible exposure of the general population can be by ingesting contaminated food or water, by ambient air and by contact with products containing the substance.

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Ethanol

Acute toxicity is mild both by ingestion and by inhalation. By the dermal route it is minimal.

In humans, in the case of acute intoxication by ingestion, the manifestations are essentially neuropsychic (intellectual and psychic arousal with cerebellar motor incoordination, then more or less deep coma and possible paralysis of the respiratory centers). These disorders are closely related to the blood sugar level.

Industrial alcohol which has denaturation additives, for concentrations equal to 70% of ethanol, causes serious gastric lesions.

In case of inhalation of ethanol vapors, the risk of severe intoxication is slight.

The chronic effects of ethylism by ingestion are: neuropsychics (polyneuritis, cerebellar atrophy, memory disorders), digestive (steatosis and cirrhosis of the liver, chronic gastritis, pancreatitis) cardiovascular (myocardiopathy, high blood pressure) and hematological.

In the industrial field, hepatotoxic synergistic effects can occur due to simultaneous exposure to chlorinated solvents and to interactions with amides, oximes, thiurams and carbonates, inhibitors of aldehyde dehydrogenase.

In case of repeated inhalations of ethanol vapors there are irritation of the eyes, upper airways, headaches, fatigue, decreased concentration and alertness. Studies show that excessive alcohol consumption is a factor that causes arteriosclerosis, while moderate consumption has a protective power.

On the skin, repeated contact can cause erythema and edema in particular if there is an occlusion which determines evaporation.

Methyl ethyl ketone

Methyl ethyl ketone, following inhalation, may cause mild CNS effects including headache and dizziness; nausea and vomiting may also appear (Martindale, 2014).

Some isolated reports of methyl ethyl ketone-induced neurotoxicity alone are available. One case of retrobulbar neuritis and one of peripheral neuropathy are reported (Martindale, 2014).

At high concentrations, in addition to the irritative symptoms, digestive disorders, headache and CNS disorders of the confusion type may occur.

Repeated or prolonged exposure degreases the skin and can cause dryness and cracking (IPCS, 1998).

Repeated skin contact can cause dermatitis.

Propan-2-ol

Swallowing a massive dose causes digestive disorders (repeated vomiting) and, after 30 to 60 minutes, a euphoric syndrome that can evolve to coma with respiratory depression, hypotension, and dysphasia. Complications are: digestive hemorrhage and acute renal failure. Fatal cases are reported. Exposure to 400 ppm for 3 minutes in the form of vapor causes irritation of the eyes, nose and throat. Inhalation of high concentrations causes narcotic effects that may complicate with coma, rhabdomyolysis, kidney failure and, in some cases, death due to respiratory failure. The liquid has degreasing properties of the skin.

In rats long-term inhaled and / or digestive exposure mainly results in CNS depression and renal lesions.

Interactive effects
Methyl ethyl ketone

Some isolated reports of methyl ethyl ketone-induced neurotoxicity alone are available. One case of retrobulbar neuritis and one of peripheral neuropathy are reported. However, methyl ethyl ketone has been shown to potentiate peripheral neuropathy induced by methyl butyl ketone and n-hexane (Martindale, 2014).

Ingestion of ethanol combined with exposure to inhaled butanone slows the metabolism of butanone and increases its concentration in the blood, urine and exhaled air.

Propan-2-ol

In man, concurrent ingestion of an equal dose of ethanol cancels the effects of the substance. The substance enhances the toxicity of carbon tetrachloride. Contemporary exposure to the two substances has caused acute hepatitis and renal failure. In one case you had pulmonary edema.

ACUTE TOXICITY

ATE (Inhalation) of the mixture:	Not classified (no significant component)
ATE (Oral) of the mixture:	Not classified (no significant component)
ATE (Dermal) of the mixture:	Not classified (no significant component)

Ethanol

LD50 (Oral):	> 5000 mg/kg ratto
LC50 (Inhalation vapours):	120 mg/l/4h Pimephales promelas

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LD50 mouse (oral): 3400 mg / kg (HSDB, 2015);
Mouse CL50 - 4 hours = 39 mg / m3 (HSDB, 2015).
Symptomatology is related to the dose. CNS depression can occur, which varies from excitement to anesthesia, coma narcosis and respiratory arrest.

Methyl ethyl ketone

LD50 (Dermal):	6480 mg/kg coniglio
LD50 (Oral):	2737 mg/kg Rat
LC50 (Inhalation vapours):	23,5 mg/l/8h rat

Propan-2-ol

LD50 (Dermal):	12800 mg/kg Rat
LD50 (Oral):	4710 mg/kg Rat
LC50 (Inhalation vapours):	72,6 mg/l/4h Rat (INRS, 2009)

Mouse CL50 - 4 hours (inhalation): 27200 mg / m3 (INRS, 2009)

SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

Ethanol

Frequent or prolonged contact with skin may cause dermatoses.

Methyl ethyl ketone

Repeated exposure may cause skin dryness or cracking.
It does not meet the classification criteria for this hazard class

Propan-2-ol

It's a bit irritating.

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye irritation

Ethanol

The substance is irritating to the eyes, but in general the resolution is rapid and complete.
The substance causes pain, watery eyes, lesions of the corneal epithelium and conjunctival hyperemia.

Methyl ethyl ketone

Causes serious eye irritation

Propan-2-ol

It has irritating power.

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

Skin sensitization**Methyl ethyl ketone**

The substance did not show any sensitizing power.

Ethanol

The substance did not show any sensitizing power.

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

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complet.denat. Reg UE 2017/1112****Ethanol**

Invitro leads to an increase in exchanges between sister chromatids in cultures of hamster ovary cells or human lymphocytes.
In vivo there is an increase in exchanges between sibling chromatids in the rat and mouse exposed orally to massive doses of ethanol for several weeks.
It also determines mutations of dominant lethals in the rat and mouse exposed orally at 1240 mg / kg / day for 3 days and the formation of micronuclei in bone marrow erythrocytes in the mouse starting from doses of 620 mg / kg intraperitoneally.
Chromosomal aberration assays were negative.

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

Ethanol

Alcohol consumption can cause cancer of the oral cavity, pharynx, larynx, esophagus, colorectal, liver (hepatocellular carcinoma) and, in women, breast cancer. There was also an association between alcohol consumption and pancreatic cancer. There is sufficient epidemiological evidence showing that individuals who consume alcohol and who have deficiencies in the oxidation of acetaldehyde to acetate have a substantially increased risk of developing cancer, particularly of the esophagus and upper respiratory and digestive tract (IARC, 2012) .

-The International Agency for Research on Cancer (IARC) allocates ethanol in alcoholic beverages in group 1 (carcinogen ascertains to humans) on the basis of evidence of sufficient carcinogenicity both in humans (as regards alcohol consumption) and in laboratory animals (as regards ethanol) (IARC, 2012).

Methyl ethyl ketone

Adequate studies are not available for the evaluation of the carcinogenic power.

- The US Environmental Protection Agency (EPA) concludes that the data are inadequate to evaluate the carcinogenic potential of methyl ethyl ketone in humans :. studies in chronically exposed individuals are not conclusive and in animals the carcinogenicity of methyl ethyl ketone has not been tested by the oral or inhalation route (2003 evaluation on USEPA file online 2014).

Propan-2-ol

There is evidence from epidemiological studies that exposure during the production of isopropanol from strong acid processes causes nasal cancer.

- The International Agency for Research on Cancer (IARC) allocates it to Group 1 (carcinogen for humans) based on evidence of sufficient carcinogenicity in humans and identifies nasal cavity and paranasal sinuses as target organs, Evidence of carcinogenicity is certain.

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

Adverse effects on sexual function and fertility**Ethanol**

Ingestion of the substance alters fertility but schile: testicular atrophy, decreased libido and testosterone.

In women there are changes in the menstrual cycle. There is also a decrease in the incidence of conception per cycle in cases of substance consumption in quantities of 5 glasses per week.

Methyl ethyl ketone

No human studies are available.

Limited animal studies showed no toxicity.

Propan-2-ol

No data available on man. In animal studies, the substance did not show reproductive toxicity unless it was toxic to parents.

Adverse effects on development of the offspring**Ethanol**

Alcohol consumption leads to multiple congenital anomalies: growth retardation, CNS changes, external malformations. The frequency of these abnormalities depends on the daily dose of alcohol absorbed.

In women who took daily doses of 10 to 20 g, an increase in spontaneous abortions, intellectual (reduced IQ) and behavioral delays was observed.

Methyl ethyl ketone

No human studies are available.

In animal studies it did not show teratogenic power, but induced maternal and fetal toxicity evidenced by growth retardation in utero.

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Propan-2-ol

No data available on man. In animal studies, the substance did not show toxicity unless it was toxic to the mother.

Effects on or via lactation

Ethanol

Ethanol crosses the placental barrier.

Excessive consumption of alcoholic beverages during breastfeeding, in women who were already drinking alcohol during pregnancy, may increase the negative effects

Propan-2-ol

There are no data on effects on breastfeeding or breastfeeding.

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

Ethanol

In humans, in the case of acute intoxication by ingestion, the manifestations are essentially neuropsychic (intellectual and psychic arousal with motor incoordination of the cerebellar type, then more or less deep coma and possible paralysis of the respiratory centers).

Methyl ethyl ketone

It has irritating power for the respiratory system (IPCS, 1998).

Methyl ethyl ketone, following inhalation, may cause mild CNS effects including headache and dizziness; nausea and vomiting may also appear (Martindale, 2014). Some isolated reports of methyl ethyl ketone-induced neurotoxicity alone are available. One case of retrobulbar neuritis and one of peripheral neuropathy are reported (Martindale, 2014).

See also the Interactive Effects section

Target organs

Propan-2-ol

It is irritating to the respiratory system. Strong concentrations cause SNC depression with narcosis.

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

Ethanol

Repeated exposure if swallowed causes toxicity of the nervous system (polyneuritis, cerebellar atrophy, memory disorders), of the digestive system (steatosis and cirrhosis of the liver, chronic gastritis, pancreatitis) of the cardiovascular system (myocardiopathy, arterial hypertension).

Methyl ethyl ketone

Repeated or prolonged exposure degrades the skin and can cause dryness and cracking (IPCS, 1998).

Repeated skin contact can cause dermatitis.

Target organs

Propan-2-ol

The liquid has degreasing properties of the skin. In rats, long-term inhaled and / or digestive exposure mainly results in SNC depression and renal lesions.

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

Propan-2-ol

In open literature no experimental data or evidence based on practical experience are available.

11.2. Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

SECTION 12. Ecological information

12.1. Toxicity

Ethanol	
LC50 - for Fish	> 13500 mg/l/96h Pimephales promelas
EC50 - for Crustacea	12340 mg/l/48h Daphnia magna
EC50 - for Algae / Aquatic Plants	275 mg/l/72h Chlorella vulgaris
Chronic NOEC for Crustacea	> 10 mg/l/21g Daphnia magna
Chronic NOEC for Algae / Aquatic Plants	3240 mg/l Skeletonema costatum

Propan-2-ol

LC50 - for Fish	1400 mg/l/96h Lepomis macrochirus-Gambusia affinis (HSDB, 2015)
EC50 - for Crustacea	1400 mg/l/48h Crangon crangon (HSDB, 2015; OECD, 1997)
EC50 - for Algae / Aquatic Plants	> 1000 mg/l/72h
LC10 for Fish	1500 mg/l/96h

12.2. Persistence and degradability

Ethanol
Quickly degradable

Methyl ethyl ketone
Decomposes rapidly in air by photochemical reactions. Biodegrades.
Solubility in water > 10000 mg/l

Propan-2-ol
Expected to biodegrade. The vapor phase photochemically degrades in the atmosphere.

12.3. Bioaccumulative potential

Ethanol
Low octanol/water partition coefficient indicates it does not bioconcentrate (-0.35)

Methyl ethyl ketone
Partition coefficient: n-octanol/water 0,3

Propan-2-ol
Partition coefficient: n-octanol/water 0,05

12.4. Mobility in soil

Ethanol
Ecology - soil: weak absorption. the product evaporates quickly in the atmosphere.

Propan-2-ol
High ground mobility. Volatilizes from wet surfaces. Does not absorb to sediment and suspended solids. In the atmosphere exists in the vapor phase.

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage \geq than 0,1%.

12.6. Endocrine disrupting properties

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

12.7. Other adverse effects

Information not available

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SECTION 13. Disposal considerations
13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

Waste transportation may be subject to ADR restrictions.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

SECTION 14. Transport information
14.1. UN number or ID number

ADR / RID, IMDG, IATA: 1993

14.2. UN proper shipping name

ADR / RID: FLAMMABLE LIQUID, N.O.S.(ethanol)

IMDG: FLAMMABLE LIQUID, N.O.S. (ethanol)

IATA: FLAMMABLE LIQUID, N.O.S.(ethanol)

14.3. Transport hazard class(es)

ADR / RID: Class: 3 Label: 3

IMDG: Class: 3 Label: 3

IATA: Class: 3 Label: 3


14.4. Packing group

ADR / RID, IMDG, IATA: II

14.5. Environmental hazards

ADR / RID: NO

IMDG: NO

IATA: NO

14.6. Special precautions for user

ADR / RID:	HIN - Kemler: 33 Special provision: 274, 601, 640(C-D)	Limited Quantities: 1 L	Tunnel restriction code: (D/E)
IMDG:	EMS: F-E, <u>S-E</u>	Limited Quantities: 1 L	
IATA:	Cargo: Passengers: Special provision:	Maximum quantity: 60 L Maximum quantity: 5 L A3	Packaging instructions: 364 Packaging instructions: 353

14.7. Maritime transport in bulk according to IMO instruments

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Information not relevant

SECTION 15. Regulatory information

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

Seveso Category - Directive 2012/18/EU: P5c

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

<u>Product</u>	
Point	3 - 40

Contained substance

Point	75
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Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors

not applicable

Substances in Candidate List (Art. 59 REACH)

On the basis of available data, the product does not contain any SVHC in percentage \geq than 0,1%.

Substances subject to authorisation (Annex XIV REACH)

None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

15.2. Chemical safety assessment

A chemical safety assessment has been performed for the following contained substances

Methyl ethyl ketone

Propan-2-ol

Ethanol

SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Flam. Liq. 2	Flammable liquid, category 2
Eye Irrit. 2	Eye irritation, category 2
STOT SE 3	Specific target organ toxicity - single exposure, category 3
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.

LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)

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20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)
22. Delegated Regulation (UE) 2022/692 (XVIII Atp. CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

CALCULATION METHODS FOR CLASSIFICATION

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.

Changes to previous review n.2 - 02/04/20:

The following sections were modified:

01 / 02 / 03 / 07 / 08 / 09 / 10 / 11 / 12 / 14 / 15 / 16.