

## ENGLISH

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name: Gram Color Kit  
Product Number: 80293

#### 1.2 Identified uses of the relevant substance or mixture and uses advised against

Identified uses relevant: Professional uses, Health Services, scientific research and development

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

Manufacturer/Supplier: Liofilchem®  
Address: Via Scozia, 64026 - Roseto degli Abruzzi (TE)  
Telephone number: 085/8930745  
Fax number: 085/8930330  
E-mail address: liofilchem@liofilchem.com

#### 1.4 Emergency telephone number

+39 02-66101029 (Centro Antiveleni Niguarda Cà Granda - Milano).

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

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

Flam. Liq. 2 Flammable liquids (Category 2); H225  
Skin Sens. 1, Skin sensitization (Category 1); H317  
Eye Irrit. 2, Eye irritation (Category 2); H319  
Resp. Sens. 1, Respiratory sensitization (Category 1); H334  
Carc. 2, Carcinogenicity (Category 2); H351  
STOT SE 3, Specific target organ toxicity - Single exposure (Category 3); H336  
STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2); H373  
Aquatic Chronic 3, Chronic toxicity to the aquatic environment (Category 3); H412

#### 2.2 Label elements

##### Labelling according Regulation (EC) No 1272/2008 [CLP]

##### Pictogram



##### Hazard statement(s)

H225	Highly Flammable liquid and vapour.
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure
H412	Harmful to aquatic life with long lasting effects
EUH066	Repeated exposure may cause skin dryness or cracking

##### Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233	Keep container tightly closed
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]
P304 + P341	IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**Supplemental Hazard Statements** - none

#### 2.3 Other hazards - Refer to the individual component safety data sheets

## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Refer to the individual component safety data sheets

## SECTION 4. FIRST AID MEASURES

Refer to the individual component safety data sheets

## SECTION 5. FIRE-FIGHTING MEASURES

Refer to the individual component safety data sheets

## SECTION 6. ACCIDENTAL RELEASE MEASURES

Refer to the individual component safety data sheets

## SECTION 7. HANDLING AND STORAGE

Refer to the individual component safety data sheets

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Refer to the individual component safety data sheets

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Refer to the individual component safety data sheets

## SECTION 10. STABILITY AND REACTIVITY

Refer to the individual component safety data sheets

## SECTION 11. TOXICOLOGICAL INFORMATION

Refer to the individual component safety data sheets

## SECTION 12. ECOLOGICAL INFORMATION

Refer to the individual component safety data sheets

## SECTION 13. DISPOSAL CONSIDERATIONS

Refer to the individual component safety data sheets

## SECTION 14. TRANSPORT INFORMATION

### 14.1 UN number

ADR/RID: UN 3316                      IMDG: UN 3316                      IATA: UN 3316

### 14.2 UN proper shipping name

ADR/RID: CHEMICAL KIT

IMDG: CHEMICAL KIT

IATA: CHEMICAL KIT

### 14.3 Transport hazard class(es)

ADR/RID: 9                      IMDG: 9                      IATA: 9

### 14.4 Packaging group

ADR/RID: II                      IMDG: II                      IATA: II

### 14.5 Environmental hazards

ADR/RID: no                      IMDG: no                      IATA: no

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15. REGULATORY INFORMATION

This safety datasheet complies with:

- the requirements of European Parliament and of the Council Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and Commission Regulation (EU) No. 453/2010 amending Commission Regulation (EC) No. 1907/2006.
- the requirements of Commission Regulation EU 2020/878

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

The product is classified, coded and labeled in accordance with EU Regulation on Hazardous Materials.  
The product does not contain any restricted substances – Article XIV & Article XVIII REACH

### 15.2 Chemical Safety Assessment

This product has not been made a chemical safety assessment.

## 16. OTHER INFORMATION

80293A Bottle 1	Crystal Violet Solution	Flam. Liq. 3, Flammable liquids (Category 3); H226 Eye Irrit. 2, Eye irritation (Category 2); H319 Carc. 2, Carcinogenicity (Category 2); H351 STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2); H373 Aquatic Chronic 3, Chronic toxicity to the aquatic environment (Category 3); H412
80293B Bottle 2	Lugol PVP Solution	STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2); H373
80293C Bottle 3	Decolourizing Solution	Flam. Liq. 2, Flammable liquids (Category 2); H225 Eye Irrit. 2, Eye irritation (Category 2); H319 STOT SE 3, Specific target organ toxicity - Single exposure (Category 3); H336
80293D Bottle 4	Safranin Solution	Not dangerous

### Text of H code(s) mentioned in Section 3

Refer to the individual component safety data sheets

### Abbreviations and acronyms

Refer to the individual component safety data sheets

### Training advice

The product must be used by qualified personnel. It is recommended to provide basic training with regard to safety and health at work to ensure proper handling of the product.

### Further information

The information in this document is based on the present state of our knowledge. The user must ensure the accuracy and completeness of such information in relation to the specific use intended.

Liofilchem® shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.liofilchem.com](http://www.liofilchem.com). for additional terms and conditions of sale.

Previous date: 17.04.2023

Revision date: 09.12.2024

Revision Number: rev. 11

## ENGLISH

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name: Crystal Violet Solution  
Product Number: 80293A (Bottle 1)

#### 1.2 Identified uses of the relevant substance or mixture and uses advised against

Identified uses relevant: Professional uses, Health Services, scientific research and development

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

Manufacturer/Supplier: Liofilchem®  
Address: Via Scozia, 64026 - Roseto degli Abruzzi (TE)  
Telephone number: 085/8930745  
Fax number: 085/8930330  
E-mail address: liofilchem@liofilchem.com

#### 1.4 Emergency telephone number

Poison control centers  
Pavia - 038224444;  
Milano - 0266101029;  
Bergamo - 800883300;  
Verona - 800011858;  
Firenze - 0557947819;  
Roma - Gemelli 063054343;  
Roma - Umberto I 0649978000;  
Roma - Bambino Gesù 0668593726;  
Napoli - 0815453333;  
Foggia - 800183459.

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

The product is classified as dangerous pursuant to the provisions of Regulation (EC) 1272/2008 (CLP) (and subsequent amendments and adjustments). The product therefore requires a safety data sheet compliant with the provisions of Regulation (EC) 1907/2006 and subsequent amendments. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

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

Flam. Liq. 3, Flammable liquids (Category 3); H226  
Eye Irrit. 2, Eye irritation (Category 2); H319  
Carc. 2, Carcinogenicity (Category 2); H351  
STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2); H373  
Aquatic Chronic 3, Chronic toxicity to the aquatic environment (Category 3); H412

#### 2.2 Label elements

##### Labelling according Regulation (EC) No 1272/2008 [CLP]

##### Pictogram



##### Signal word

Danger

##### Hazard statement(s)

H226 Flammable liquid and vapour.  
H351 Suspected of causing cancer  
H373 May cause damage to organs through prolonged or repeated exposure.  
H319 Causes serious eye irritation.  
H412 Harmful to aquatic life with long lasting effects.

##### Precautionary statement(s)

P201 Obtain special instructions before use.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing / eye protection / face protection.  
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

**Supplemental Hazard Statements** - none

**2.3 Other hazards** - This substance/mixture does not contain components considered to be both persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher.  
The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

### 3.2 Mixtures:

#### Hazardous substances

CAS n°	EC n°	Index n°	Registration number REACH	Concentration	Classification according Regulation (EC) No 1272/2008
<b>Ethylene glycol</b>					
107-21-1	203-473-3	603-027-00-1	01-2119456816-28-XXXX	20.0 – 25.0 %	Acute Tox. 4 H302, STOT RE 2 H373
<b>Ethanol</b>					
64-17-5	200-578-6	603-002-00-5	01-2119457610-43-XXXX	12.0 – 15.0 %	Flam. Liq. 2 H225, Eye Irrit. 2 H319
<b>Gentian Violet</b>					
548-62-9	208-953-6	612-204-00-2	-	1.0 – 2.5 %	Carc. 2 H351, Acute Tox. 4 H302, Eye Dam. 1 H318, Skin Irrit. 2 H315, Aquatic Acute 1 H400 M=1, Aquatic Chronic 1 H410 M=1

#### Additional Information:

For full text of H-statements, see SECTION 16

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:** Consult a physician. Show this safety data sheet to the doctor in attendance.

**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

**INGESTION:** Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

**INHALATION:** Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

For symptoms and effects due to the substances contained, see chap. 11..

#### ETHYLENE GLYCOL

Signs and symptoms of poisoning include anion deficiency in metabolic acidosis, central nervous system depression, kidney damage and possible late stage cranial nerve involvement. Respiratory symptoms may occur, including edema pulmonary, with delayed effect. People who are subjected to significant exposure should be kept under observation for 24-48 hours, in

case of any breathing problems. In case of severe poisoning, support may be required mechanical ventilation with positive expiratory pressure. Maintain an adequate level of ventilation and oxygen supply to the patient. If gastric lavage is performed, endotracheal and / or esophageal control is suggested. Dangers from pulmonary aspiration must be evaluated for toxicity when gastric lavage is considered. If there is a burn, treat as thermal burn, after decontamination. Treatment in the event of exposure should be aimed at symptom control and treatment clinical condition of the patient.

## ETHANOL

Acute dose-dependent effects.

Skin: irritation, delipidization

Nervous system: in case of depression ingestion

Eyes: irritation, corneal damage

Upper airways: irritation

Lungs: irritation

Chronic effects.

Skin: irritation, delipidization

Nervous system: headache, asthenia, depression

Upper airways: irritation

Lungs: irritation.

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

## ETHYLENE GLYCOL

If a quantity of ethylene glycol of about 60 - 100 ml has been ingested, the rapid administration of ethanol can counteract the toxic effects (metabolic acidosis, kidney damage). Consider hemodialysis or peritoneal dialysis and administration of thiamine 100 mg e pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range 100-150 mg / dl can be achieved with a rapid attack dose followed by continuous intravenous infusion. Consult the literature available for treatment details. 4-methyl pyrazole is an effective alcoholic dehydrogenase blocker and is available as Fomepizole (Antizol (R)) and should be used in the treatment, if available, of poisoning by mono-, di- or tri-ethylene glycol, methanol and ethylene glycol butyl ether. Fomepizole protocol (Brent J. et al., New EngJ Med, Feb 8 2001 244: 6, p 424-9): attack dose 15 mg / kg for intravenously, followed by a maintenance dose of 10 mg / kg every 12 hours. After 48 hours increase the dose to 15 mg / kg every 12 hours. Continue administration of Fomepizole until serum from methanol, mono, di or triethylene glycol is no longer present.

## SECTION 5. FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media

#### SUITABLE EXTINGUISHING EQUIPMENT

CO2, foam, chemical powder for flammable liquids.

#### 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.

Ethylene glycol: If possible, move the containers of the substance away from the fire or cool, since if exposed to thermal adiation or if directly involved it can give rise to toxic fumes. Vapors can cause dizziness, fainting or choking.

### 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.

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 uses

Apart from the uses described in section 1.2 are not covered other specific uses.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### • ETHYLENE GLYCOL

Threshold limit value.								
Type	Country	TWA/8h		STEL/15min				
		mg/m3	ppm	mg/m3	ppm			
VLEP	ITA	52	20	104	40			
TLV-ACGIH				100 (C)		Aerosol		
Predicted no-effect concentration - PNEC								
Normal value in fresh water				10		mg/l		
Normal value in marine water				1		mg/l		
Normal value for fresh water sediment				20,9		mg/kg		
Normal value for water, intermittent release				10		mg/l		
Normal value of STP microorganisms				199,5		mg/l		
Normal value for the terrestrial compartment				1,53		mg/kg		
Health - Derived no-effect level - DNEL / DMEL								
		Effects on consumers			Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation			VND	7 mg/m3			VND	35 mg/m3
Skin			VND	53 mg/kg/d			VND	106 mg/kg/d

#### • ETHANOL



Threshold Limit Value								
Type	Country	TWA/8h		STEL/15min		Remarks / Observations		
		mg/m3	ppm	mg/m3	ppm			
WEL	GBR	1920	1000					
TLV-ACGIH				1884	1000			(in TRS)
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		
Normal value for marine water sediment				2.9		mg/kg		
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/d		
Health - Derived no-effect level - DNEL / DMEL								
		Effects on consumers				Effects on workers		
Route of exposure		Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local
Skin								VND
Inhalation					1900 mg/m3		VND	VND
								343 mg/m3
								950 mg/m3

## 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. Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

### HAND PROTECTION

Protect hands with category III work gloves (see standard EN 374).

The following should be considered when choosing work glove material: 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 and type of use.

### SKIN PROTECTION

Wear category II 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.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

Form Clear Liquid  
Color Violet

#### Odour

characteristic

#### pH

No data available

#### Melting point/ freezing point

No data available

#### Initial boiling point and boiling range

No data available

#### Evaporation rate

No data available

#### Flammability (solid, gas)

No data available



**Upper / lower flammability or explosive limits**
**Flash point**
**Auto-ignition temperature**
**Decomposition temperature**
**Vapour pressure**
**Vapour density**
**Relative density**
**Water solubility**
**Partition coefficient: n-octanol/water**
**Viscosity**
**Explosive properties**
**Oxidizing properties**

No data available

38°C

Not applicable

Not applicable

No data available

No data available

No data available

Soluble

Not applicable

No data available

No data available

No data available

**9.2 Other safety information**

VOC (Directive 2010/75 / EC): 38.04%

VOC (volatile carbon): 0

Explosion hazard Product is not explosive. However, formation of explosive air / vapor mixtures are possible.

**SECTION 10. STABILITY AND REACTIVITY**
**10.1 Reactivity**

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

**ETHYLENE GLYCOL**

Reacts violently with chlorosulfonic acid, oleum, perchloric acid, P2S5.

**10.2 Chemical stability**

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

**ETHYLENE GLYCOL**

It is very hygroscopic.

**10.3 Possibility of hazardous reactions**

The vapours may also form explosive mixtures with the air.

**ETHANOL**

Forms explosive mixtures with air (Pohanish, 2009).

It can react violently with strong oxidants and strong acids; bases, strong peroxides; acetic anhydride, acetyl bromide, acetyl chloride, aliphatic amines, bromine pentafluoride, calcium oxide (quicklime), cesium oxide, chloryl perchlorate, disulphoryl difluoride, ethylene glycol methyl ether, iodine heptafluoride, isocyanates, nitrosyl perchlorate, platinum ally black diplomat; potassium-tert-butoxide, potassium, potassium oxide, potassium peroxide, potassium superoxide; phosphorus (III) oxide, silver nitrate, silver oxide, sulfuric acid, oleum, sodium, sodium hydrazide, sodium peroxide, sulfinyl yanamide, tetrachlorosilane, s-triazine-2,4,6-triol, triethoxy aluminum tribromide, triethylaluminium, uranium fluoride, xenon tetrafluoride (Pohanish, 2009).

The mixture with concentrated hydrogen peroxide forms powerful explosives. The mixture with mercury nitrate (II) forms explosive fulminate mercury. Forms explosive complexes with perchlorates, magnesium perchlorate (form ethyl perchlorate), silver perchlorate (Pohanish, 2009).

Reacts with hypochlorous acid or chlorine to form explosive and heat sensitive ethyl hypochlorite (which can decompose when cold) (Pohanish, 2009).

**10.4 Conditions to avoid**

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

**Ethylene glycol**

No ventilation. Heating and open flames. Avoid build-up of static electricity

**ETHANOL**

Flow or agitation of the substance can generate electrostatic charges due to low conductivity (Pohanish, 2009).

Heating, open flames and sparks.

No ventilation.

Exposure to air.

Containers not properly closed.

**10.5 Incompatible materials**

## ETHYLENE GLYCOL

Strong oxidants. Strong bases

## ETHANOL

Strong oxidants. Perchlorates, peroxides, silver oxide, hydrogen peroxide, potassium, sodium, chlorine, permanganate or chromate in acid solutions, ruthenium oxide, uranium hexafluoride, iodine or bromine pentafluoride, chromyl chloride, iodine heptafluoride, bromide or chloride of acetyl, disulfuryl difluoride, platinum, nitric acid, peroxides, calcium hypochlorite, chlorine oxides, silver nitrate, dipotassium dioxide, hexoxide tetraphosphorus, chromium trioxide, fluorine nitrate, strong oxidants.

### 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.

Ethylene glycol

Possible decomposition products: carbonyl compounds, dioxolane derivatives.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### ETHYLENE GLYCOL

##### Metabolism, kinetics, mechanism of action and other information

The substance is rapidly absorbed orally and inhaled, distributed in the body and metabolized. In rats and dogs, approximately 20-30% of the absorbed dose is excreted by the kidneys. Metabolism occurs in the kidneys and liver 2-4 hours after exposure and metabolites appear in the urine within 24-48 hours. In man it is initially metabolized by alcohol dehydrogenase into glycoaldehyde and then into glycolic acid which subsequently undergoes conversion into oxalic acid by glycolic acid oxidase. The toxic action of the substance, especially in the kidney, is attributed to its metabolites, in particular glycolic acid and oxalate. The neurotoxicity of the substance is probably caused by the formation of calcium oxalate crystals, which can lead to a disturbance of intracellular calcium homeostasis with membrane abnormalities, associated with cell damage and even cell death.

##### Acute toxicity

LD50 (Oral). 7712 mg / kg rat

LD50 (Dermal). > 3500 mg / kg mouse

LC50 (Inhalation). > 2.5 mg / l / 6h rat (aerosol)

##### Skin corrosion / irritation

It has a mild skin irritant effect.

##### Corrosion to the respiratory tract

Date not available.

##### Serious eye damage / eye irritation

In volunteers, exposure to vapors and aerosols of substance equal to 137 mg / m<sup>3</sup> caused irritation of the ocular mucous membranes. Above 200 mg / m<sup>3</sup> the intensity of the irritation made it impossible to continue the exposure. In rabbits, instillation of a 0.4% isotonic solution has no effect. 4% solutions are moderately irritating. Higher concentrations cause caustic lesions.

##### Germ cell mutagenicity

The available studies do not show mutagenic power.

##### Carcinogenicity

Available studies have not shown carcinogenic potential. In a two-year NTP carcinogenicity study in which ethylene glycol as administered in the feed, "no evidence of carcinogenic activity" was observed in male and female B6C3F1 mice (NTP, 1993).

##### Reproductive toxicity

- Adverse Effects on Sexual Function and Fertility: Animal studies have not shown reproductive toxicity.

- Adverse Developmental Effects: Studies in rats and mice have shown teratogenic effects with skeletal abnormalities and external malformations.

- Effects on lactation or through lactation: Data not available.

##### Specific target organ toxicity (STOT) - single exposure

The vapors and aerosol of the substance are strongly irritating to the respiratory system. In volunteers, exposure to vapors and aerosols of the substance equal to 137 mg / m<sup>3</sup> caused irritation of the upper airways. Above 200 mg / m<sup>3</sup> the intensity of the irritation made it impossible to continue the exposure.

Available studies indicate the kidney as a target organ in acute poisoning.

##### Specific target organ toxicity (STOT) - repeated exposure

The available data are insufficient to pronounce on the possibility of neurological or immunological effects due to long-term exposure.

##### Aspiration hazard

Date not available.

##### Likely routes of exposure

The main routes of occupational exposure are inhalation and skin contact. The general population may be exposed by inhalation from ambient air or by skin contact with products containing the substance.

##### Delayed, immediate and chronic effects from short and long term exposure

The digestive substance is more toxic to humans than animals. The clinical symptomatology develops in 4 phases. In the 1st phase (30 minutes-12 hours after ingestion) there is nausea, vomiting, agitation, stupor, inhibition of reflexes, epileptic seizures and convulsions. Cause of death at this stage can be central respiratory paralysis, coma and cardiocirculatory arrest.

Other symptoms are: acute gastritis, meningoencephalitis, metabolic acidosis, leukocytosis, proteinuria. Ocular level shows: nystagmus, ophthalmoplegia, papilledema and optic atrophy. In the 2nd phase (12-24 hours) the main symptoms are affecting the cardio-respiratory system: tachycardia, tachypnea, bronchopneumonia, pulmonary edema and respiratory arrest within 72 hours. In the 3rd phase (24-72 hours) renal damage occurs mainly: initially polyuria followed by oliguria and anuria. Kidney changes usually subside within 50 days. In one case, chronic renal failure was observed. In the 4th phase (6-14 days) there are symptoms of CNS degeneration: facial paralysis, dysphagia, hyperreflexia, ataxia, cerebral edema and calcium oxalate deposits in the brain tissue. Hepatic necrosis is also reported. The available data are not sufficient to pronounce on the possibility of effect

**ETHANOL**Metabolism, kinetics, mechanism of action and other information

It is rapidly absorbed by ingestion and by inhalation, poorly by skin contact. It is distributed throughout the body's tissues and fluids, especially the brain, lungs and liver. About 90-98% of the ingested amount is metabolized in the liver to acetaldehyde and then to acetic acid. Acetaldehyde is rapidly metabolised to acetic acid by liver aldehyde dehydrogenase. The acetic acid is subsequently oxidized in the peripheral tissues to carbon dioxide and water. A small amount of ethanol is excreted unchanged in urine, sweat and exhaled air. Its effects are due to the inhibition of synaptic transmission in the brain.

It also has an action on lipid metabolism.

Acute toxicity

Rat LD50 (oral): 7060 mg / kg

Rabbit LD50 (cutaneous): > 20000 mg / kg

Rat LC50-10 hours (by inhalation): 20000 ppm

Skin corrosion / irritation

The substance is not irritating.

Corrosion to the respiratory tract

Date not available.

Serious eye damage / eye irritation

The substance is irritating to the eyes, but resolution is generally quick and complete.

The substance causes pain, tearing, corneal epithelial lesions and conjunctival hyperemia.

Germ cell mutagenicity

In vitro it leads to increased sister chromatid exchanges in hamster or hamster ovary cell cultures

human lymphocytes. In vivo, increased sister chromatid exchanges are observed in rats and mice exposed orally to massive doses of ethanol for several weeks. It also determines dominant lethal mutations in rats and mice exposed orally at 1240 mg / kg / day for 3 days and the formation of micronuclei in bone marrow erythrocytes in mice starting at doses of 620 mg / kg intraperitoneally.

Chromosomal aberration assays were negative.

Carcinogenicity

Alcohol consumption can cause cancer of the oral cavity, pharynx, larynx, esophagus, colorectal, liver (hepatocellular carcinoma) and, in women, breast cancer. There has also been 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 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 (known Carcinogen to humans) based on evidence of sufficient carcinogenicity in both humans (regarding alcohol consumption) and in laboratory animals (regarding ethanol) (IARC, 2012)

Reproductive toxicity

- Adverse Effects on Sexual Function and Fertility:

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

In women there are alterations in the menstrual cycle. A decrease in the incidence of conception per cycle is also reported in cases of substance consumption in quantities of 5 glasses per week.

- Adverse effects on development:

The consumption of alcohol causes multiple congenital anomalies: growth retardation, CNS alterations, external malformations. The frequency of these anomalies depends on the daily dose of alcohol absorbed.

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

- Effects on or through lactation: 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.

Specific target organ toxicity (STOT) - single exposure

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

Specific target organ toxicity (STOT) - repeated exposure

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

Aspiration hazard

Date not available.

## Likely routes of exposure

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

## Delayed, immediate and chronic effects from short and long term exposure

Acute toxicity is mild both by ingestion and by inhalation. Through the skin it is minimal.

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

The chronic effects of alcoholism by ingestion are: neuropsychic (polyneuritis, cerebellar atrophy, memory disorders), digestive (fatty liver and cirrhosis of the liver, chronic gastritis, pancreatitis), cardiovascular (myocardiopathy, arterial hypertension) and haematological.

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

In case of repeated inhalation of ethanol vapors there is irritation of the eyes, upper airways, headaches, fatigue, decreased ability to concentrate and alertness.

Studies show that excessive alcohol consumption is a factor that causes arteriosclerosis, while moderate consumption has a protective power. At the skin level, repeated contact can cause erythema and edema in particular if there is an occlusion that determines evaporation.

## **VIOLET GENTIAN**

### **ACUTE TOXICITY**

LC50 (Inhalation - vapors) of the mixture: Not classified (no relevant component).

LC50 (Inhalation - mists / powders) of the mixture: Not classified (no relevant component).

LD50 (Oral) of the mixture: 23212.389 mg / kg

LD50 (Dermal) of the mixture: Not classified (no relevant component).

### **SKIN CORROSION / SKIN IRRITATION.**

It does not meet the classification criteria for this hazard class.

### **SERIOUS EYE DAMAGE / EYE IRRITATION.**

Causes serious eye irritation.

### **RESPIRATORY OR SKIN SENSITIZATION.**

It does not meet the classification criteria for this hazard class.

### **MUTAGENICITY ON GERMINAL CELLS.**

It does not meet the classification criteria for this hazard class.

### **CARCINOGENICITY.**

Suspected of causing cancer.

### **REPRODUCTION TOXICITY.**

It does not meet the classification criteria for this hazard class.

### **SPECIFIC TOXICITY FOR TARGET ORGANS (STOT) - SINGLE EXPOSURE.**

It does not meet the classification criteria for this hazard class.

### **SPECIFIC TARGET ORGAN TOXICITY (STOT) - REPEATED EXPOSURE.**

It can cause damage to organs.

### **DANGER IN CASE OF SUCTION.**

It does not meet the classification criteria for this hazard class.

## **11.2 Other informations**

Endocrine disrupting properties: The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 of the Commission at levels of 0.1% or higher

## **SECTION 12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

#### **ETHANOL**

EC50 - Crustaceans. > 10 mg / l / 48h

EC50 - Algae / Aquatic Plants. > 10 mg / l / 72h

EC10 Algae / Aquatic Plants. > 11 mg / l / 72h

Chronic NOEC for Pisces. 12.34 mg / l

Chronic NOEC for Algae / Aquatic Plants. > 3 mg / l

#### **Short-term effects**

Fish (Pimephales promelas) LC50-96 hours > 100 mg / l (OECD, 2004);

Crustaceans (Artemia salina) LC50-24 hours: 1833 mg / l (OECD, 2004);

Crustaceans (Paramecium caudatum) 4-hour LC50: 5980 mg / l (OECD, 2004);

Algae (Chlorella vulgaris) EC50-96 hours: 1000 mg / l (growth inhibition) (OECD, 2004).

## Long-term effects

Crustaceans (Ceriodaphnia sp.) NOEC-10 days: 9.6 mg / l (effects on reproduction) (OECD, 2004)

Algae (Lemna gibba) NOEC-7 days: 280 mg / l (OECD, 2004).

**VIOLET GENTIAN**

EC50 - Crustaceans. 0.24 mg / l / 48h (0.24-5 mg / l) Daphnia magna

EC50 - Algae / Aquatic Plants. 0.025 mg / l / 72h (0.025-0.8 mg / l) Pseudokirchneriella subcapitata

**ETHYLENE GLYCOL**

LC50 - Pisces.

72860 mg / l / 96h Pimepales promelas

EC50 - Crustaceans.

&gt; 100 mg / l / 48h Daphnia magna

Chronic NOEC for Pisces.

15830 mg / l Pimepales promelas (7 days)

**12.2 Persistence and degradability****ETHYLENE GLYCOL**

Biodegrades to the soil. In water it biodegrades both aerobically and anaerobically. Photodegrades in the air.

**ETHANOL**

The vapor pressure (7906 Pa at 25 ° C) indicates that when released into the atmosphere, ethanol exists only as vapor in the atmosphere where it degrades by reaction with photochemically produced hydroxyl radicals; for this reaction in air is Estimated to have a half-life of 36 hours (HSDB, 2015).

Ethanol does not contain chromophores that absorb wavelengths at &gt; 290 nm, and therefore it is not expected to be susceptible to direct photolysis by solar radiation (HSDB, 2015).

Hydrolysis is not expected to be an important environmental fate process since ethanol is devoid of functional groups which hydrolyze in environmental conditions (pH 5 to 9) (HSDB, 2015).

Ethanol was biodegraded with half-lives of the order of a few days using microcosms built with soil sandy with low organic content and groundwater, this indicates that biodegradation is a process of important environmental fate in soil and water (HSDB, 2015).

**12.3 Bioaccumulative potential****ETHANOL**

An estimated BCF value of 3 suggests low bioconcentration potential in aquatic organisms (HSDB, 2015).

**12.4 Mobility in soil****ETHYLENE GLYCOL**

High mobility on the ground. Volatilization from wet surfaces and water is not significant; it does not adsorb to sediments and suspended solids. In the atmosphere it exists in the vapor phase.

**ETHANOL**

Ethanol is not persistent in the environment. The fugacity model (level III) shows that, released in the environment it is mainly distributed in air and water. The relative distributions between the sub-funds are 57% in air, 34% in water and 9% in soil. This prediction is supported by the limited data available on prevailing concentrations, which show that ethanol has been detected in outdoor air and river water (OECD, 2004). The Koc of 2.75 (determined by the log Kow of 0.44) indicates that if released to the ground, ethanol has much mobility high and, if released in water, it does not adsorb to suspended solids and sediments (HSDB, 2015).

The Henry's law constant of  $5 \times 10^{-6}$  atm-m<sup>3</sup> / mole indicates that the volatilization is from surfaces of moist soil that from water surfaces is an important fate process (for a model river and a lake model were estimated volatilization half-lives, respectively, of 5 and 39 days) (HSDB, 2015). The vapor pressure indicates that ethanol can volatilize from dry soil surfaces (HSDB, 2015).**12.5 Results of PBT and vPvB assessment**

This mixture contains no substances evaluated PBT or vPvB

**12.6 Endocrine disrupting properties**



The mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

None

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

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

ADR/RID: 1170                      IMDG: 1170                      IATA: 1170

### 14.2 UN proper shipping name

ADR/RID: ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

IMDG: ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

IATA: ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

### 14.3 Transport hazard class(es)

ADR/RID: 3                      IMDG: 3                      IATA: 3

### 14.4 Packaging group

ADR/RID: III                      IMDG: III                      IATA: III

### 14.5 Environmental hazards

ADR/RID: no                      IMDG: no                      IATA: no

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15. REGULATORY INFORMATION

This safety datasheet complies with:

- the requirements of European Parliament and of the Council Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and Commission Regulation (EU) No. 453/2010 amending Commission Regulation (EC) No. 1907/2006.
- the requirements of Commission Regulation EU 2020/878

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

The product is classified, coded and labeled in accordance with EU Regulation on Hazardous Materials.

The product does not contain any restricted substances – Article XIV & Article XVIII REACH

### 15.2 Chemical Safety Assessment

This product has not been made a chemical safety assessment.

## 16. OTHER INFORMATION

### Text of H code(s) mentioned in Section 3

Flam. Liq. 2, Flammable liquids (Category 2);

Flam. Liq. 3, Flammable liquids (Category 3);

Eye Dam. 1, Serious eye damage, category 1

Eye Irrit. 2, Eye irritation (Category 2);

Skin Irrit. 2, Skin irritation (Category 2);

Acute Tox. 4, Acute toxicity, category 4

Carc. 2, Carcinogenicity (Category 2);

STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2);

Aquatic Chronic 3, Chronic toxicity to the aquatic environment (Category 3);



H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour.
H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

**Abbreviations and acronyms**

- 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

**Training advice**

The product must be used by qualified personnel. It is recommended to provide basic training with regard to safety and health at work to ensure proper handling of the product.

**Further information**

The information in this document is based on the present state of our knowledge. The user must ensure the accuracy and completeness of such information in relation to the specific use intended.

Liofilchem® shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.liofilchem.com](http://www.liofilchem.com). for additional terms and conditions of sale.

Previous date: 17.04.2023

Revision date: 09.12.2024

Revision Number: rev. 10

## ENGLISH

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name: Lugol PVP Solution  
Product Number: 80293B (Bottle 2)

#### 1.2 Identified uses of the relevant substance or mixture and uses advised against

Identified uses relevant: Professional uses, Health Services, scientific research and development

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

Manufacturer/Supplier: Liofilchem®  
Address: Via Scozia, 64026 - Roseto degli Abruzzi (TE)  
Telephone number: 085/8930745  
Fax number: 085/8930330  
E-mail address: liofilchem@liofilchem.com

#### 1.4 Emergency telephone number

Poison control centers  
Pavia - 038224444;  
Milano - 0266101029;  
Bergamo - 800883300;  
Verona - 800011858;  
Firenze - 0557947819;  
Roma - Gemelli 063054343;  
Roma - Umberto I 0649978000;  
Roma - Bambino Gesù 0668593726;  
Napoli - 0815453333;  
Foggia - 800183459.

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

The product is classified as dangerous pursuant to the provisions of Regulation (EC) 1272/2008 (CLP) (and subsequent amendments and adjustments). The product therefore requires a safety data sheet compliant with the provisions of Regulation (EC) 1907/2006 and subsequent amendments. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

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

STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2); H373

#### 2.2 Label elements

##### Labelling according Regulation (EC) No 1272/2008 [CLP]

##### Pictogram



##### Signal word

Warning

##### Hazard statement(s)

H373 May cause damage to organs through prolonged or repeated

##### Precautionary statement(s)

P314 Get medical advice / attention if you feel unwell.

##### Supplemental Hazard Statements - none

**2.3 Other hazards** – This substance/mixture does not contain components considered to be both persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher. The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

### 3.2 Mixtures:

#### Hazardous substances

CAS n°	EC n°	Index n°	Registration number REACH	Concentration	Classification according Regulation (EC) No 1272/2008
<b>Potassium iodide</b>					
7681-11-0	231-659-4	-	01-2119966161-40-XXXX	1.0 – 5.0 %	STOT RE 1 H372

#### Additional Information:

For full text of H-statements, see SECTION 16

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:** Consult a physician. Show this safety data sheet to the doctor in attendance.

**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

**INGESTION:** Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

**INHALATION:** Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

For symptoms and effects due to the substances contained, see chap. 11..

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

No data available

## SECTION 5. FIRE-FIGHTING 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

None in particular.

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

#### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

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.

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.

### 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

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

### 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. Keep containers away from any incompatible materials, see section 10 for details..

### 7.3 Specific end uses

Apart from the uses described in section 1.2 are not covered other specific uses.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### • POTASSIUM IODIDE

Threshold Limit Value								
Type	Country	TWA/8h		STEL/15min		Remarks / Observations		
		mg/m3	ppm	mg/m3	ppm			
TLV-ACGIH			0,01			A4; Hypothyroidism; URT irr		
Predicted no-effect concentration - PNEC								
Normal value in fresh water				0,007		mg/l		
Normal value for fresh water sediment				0,007		mg/kg/d		
Normal value for the food chain (secondary poisoning)				0,3		mg/kg		
Normal value for the terrestrial compartment				0,0397		mg/kg		
Health - Derived no-effect level - DNEL / DMEL								
	Effects on consumers			Effects on workers				
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		0,01 mg/kg bw/d		0,01 mg/kg bw/d				
Inhalation				0,035 mg/m3				0,07 mg/m3
Skin				1 mg/kg bw/d				1 mg/kg bw/d

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## 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. Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

### HAND PROTECTION

Protect hands with category III work gloves (see standard EN 374).

The following should be considered when choosing work glove material: 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 and type of use.

### SKIN PROTECTION

Wear category II 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.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

Form	Clear Liquid
Color	cOLOURLESS

#### Odour

characteristic

#### pH

No data available

#### Melting point/ freezing point

No data available

#### Initial boiling point and boiling range

110°C

#### Evaporation rate

No data available

#### Flammability (solid, gas)

No data available

#### Upper / lower flammability or explosive limits

No data available

#### Flash point

No data available

#### Auto-ignition temperature

Not applicable

#### Decomposition temperature

Not applicable

#### Vapour pressure

No data available

#### Vapour density

No data available

#### Relative density

No data available

#### Water solubility

Soluble

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

Not applicable

#### Viscosity

No data available

#### Explosive properties

No data available

#### Oxidizing properties

No data available

### 9.2 Other safety information

None

## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

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

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage

### 10.4 Conditions to avoid

None. However the usual precautions used for chemical products should be respected.

### 10.5 Incompatible materials

Oxidising agents, strong acids, metals.

### 10.6 Hazardous decomposition products

When heated to decomposition releases: iodine, iododric acid, potassium oxides.  
Decomposes on heating, developing sulfur and sodium oxides.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### POTASSIUM IODIDE

##### Acute toxicity

LD50 (Oral). 3118 mg / kg rat

##### Skin corrosion / irritation

Does not meet the classification criteria for this hazard class

##### Corrosion to the respiratory tract

Does not meet the classification criteria for this hazard class

##### Serious eye damage / eye irritation

Does not meet the classification criteria for this hazard class

##### Germ cell mutagenicity

Does not meet the classification criteria for this hazard class

##### Carcinogenicity

Does not meet the classification criteria for this hazard class

##### Reproductive toxicity

Does not meet the classification criteria for this hazard class

##### Specific target organ toxicity (STOT) - single exposure

Does not meet the classification criteria for this hazard class

##### Specific target organ toxicity (STOT) - repeated exposure

May cause damage to organs

##### Aspiration hazard

Does not meet the classification criteria for this hazard class

##### Likely routes of exposure

### 11.2 Other informations

Endocrine disrupting properties: The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 of the Commission at levels of 0.1% or higher



## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

LC50 - Fishes.  
> 3780 mg/l/96h Oncorhynchus mykiss  
EC50 - Crustacea  
7,5 mg/l/48h Daphnia magna

### 12.2 Persistence and degradability

Information not available

### 12.3 Bioaccumulative potential

Information not available

### 12.4 Mobility in soil

Information not available

### 12.5 Results of PBT and vPvB assessment

This mixture contains no substances evaluated PBT or vPvB

### 12.6 Endocrine disrupting properties

The mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

None

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

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

ADR/RID: -                      IMDG: -                      IATA: -

### 14.2 UN proper shipping name

ADR/RID: not applicable  
IMDG: not applicable  
IATA: not applicable

### 14.3 Transport hazard class(es)

ADR/RID: -                      IMDG: -                      IATA: -

### 14.4 Packaging group

ADR/RID: -                      IMDG: -                      IATA: -

### 14.5 Environmental hazards

ADR/RID: no                      IMDG: no                      IATA: no

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15. REGULATORY INFORMATION

This safety datasheet complies with:

- the requirements of European Parliament and of the Council Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and Commission Regulation (EU) No. 453/2010 amending Commission Regulation (EC) No. 1907/2006.
- the requirements of Commission Regulation EU 2020/878

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

The product is classified, coded and labeled in accordance with EU Regulation on Hazardous Materials.  
The product does not contain any restricted substances – Article XIV & Article XVIII REACH

### 15.2 Chemical Safety Assessment

This product has not been made a chemical safety assessment.

## 16. OTHER INFORMATION

### Text of H code(s) mentioned in Section 3

STOT RE 1, Specific target organ toxicity — repeated exposure (Category 2);  
STOT RE 2, Specific target organ toxicity — repeated exposure (Category 2);  
Aquatic Chronic 3, Chronic toxicity to the aquatic environment (Category 3);  
H372 Causes damage to organs through prolonged or repeated exposure  
H373 Suspected of causing cancer.

### Abbreviations and acronyms

- 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

### Training advice

The product must be used by qualified personnel. It is recommended to provide basic training with regard to safety and health at work to ensure proper handling of the product.

### Further information

The information in this document is based on the present state of our knowledge. The user must ensure the accuracy and completeness of such information in relation to the specific use intended.

Liofilchem® shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.liofilchem.com](http://www.liofilchem.com). for additional terms and conditions of sale.

Previous date: 17.04.2023

Revision date: 09.12.2024

Revision Number: rev. 8

## ENGLISH

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name: Decolourizing Solution  
Product Number: 80293C (Bottle 3)

#### 1.2 Identified uses of the relevant substance or mixture and uses advised against

Identified uses relevant: Professional uses, Health Services, scientific research and development

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

Manufacturer/Supplier: Liofilchem®  
Address: Via Scozia, 64026 - Roseto degli Abruzzi (TE)  
Telephone number: 085/8930745  
Fax number: 085/8930330  
E-mail address: liofilchem@liofilchem.com

#### 1.4 Emergency telephone number

Pavia - National Center for Toxicological Information 0382/24444;  
Milan - Hosp. Niguarda Ca' Granda 02/66101029;  
Bergamo - Hosp. "Pope John XXIII" 800/883300;  
Verona - Hosp. Integrated Verona 800/011858  
Florence - Hosp. "Careggi" U.O. Medical Toxicology 055/7947819;  
Rome - "A. Gemelli" Polyclinic 06/3054343;  
Rome - "Umberto I" Polyclinic 06/49978000;  
Rome - "Bambino Gesù Pediatric Hospital" 06/68593726  
Naples - Hosp. "A. Cardarelli" 081/5453333;  
Foggia - Hosp. University of Foggia 800/183459

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

The product is classified as dangerous pursuant to the provisions of Regulation (EC) 1272/2008 (CLP) (and subsequent amendments and adjustments). The product therefore requires a safety data sheet compliant with the provisions of Regulation (EC) 1907/2006 and subsequent amendments. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

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

Flam. Liq. 2, Flammable liquids (Category 2); H225  
Eye Irrit. 2, Eye irritation (Category 2); H319  
STOT SE 3, Specific target organ toxicity —single exposure (Category 3); H336

#### 2.2 Label elements

##### Labelling according Regulation (EC) No 1272/2008 [CLP]

##### Pictogram



##### Signal word

Danger

##### Hazard statement(s)

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

##### Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray  
P280 Wear protective gloves/ protective clothing / eye protection / face protection.  
P312 Call a POISON CENTER or doctor/physician if you feel unwell.  
P370+P378 In case of fire: use carbon dioxide, foam, chemical powder to extinguish.

**Supplemental Hazard Statements** - none

**2.3 Other hazards** - This substance/mixture does not contain components considered to be both persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher.  
The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

### 3.2 Mixtures:

#### Hazardous substances

CAS n°	EC n°	Index n°	Registration number REACH	Concentration	Classification according Regulation (EC) No 1272/2008
<b>Acetone</b>					
67-64-1	200-662-2	606-001-00-8	01-2119471330-49-XXXX	45.0 – 55.0 %	Flam. Liq. 2 H225, Eye Irrit. 2 H319, STOT SE 3 H336, EUH066
<b>Ethanol</b>					
64-17-5	200-578-6	603-002-00-5	01-2119457610-43-XXXX	45.0 – 50.0 %	Flam. Liq. 2 H225, Eye Irrit. 2 H319
<b>2-Propanol</b>					
67-63-0	200-661-7	603-117-00-0	01-2119457558-25-XXXX	1.0 – 5.0 %	Flam. Liq. 2 H225, Eye Irrit. 2 H319, STOT SE 3 H336

### Additional Information:

For full text of H-statements, see SECTION 16

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:** Consult a physician. Show this safety data sheet to the doctor in attendance.

**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

**INGESTION:** Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

**INHALATION:** Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

For symptoms and effects due to the substances contained, see chap. 11..

#### ETHANOL

Acute dose-dependent effects.

Skin: irritation, delipidization

Nervous system: in case of depression ingestion

Eyes: irritation, corneal damage

Upper airways: irritation

Lungs: irritation

Chronic effects.

Skin: irritation, delipidization

Nervous system: headache, asthenia, depression

Upper airways: irritation

Lungs: irritation.

## 2-PROPANOL

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

No data available

## SECTION 5. FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media

#### SUITABLE EXTINGUISHING EQUIPMENT

The means of extinction are: carbon dioxide, foam, chemical powder. For losses and spills of the product that have not ignited, the water spray can be used to disperse flammable vapors and protect people engaged in stopping the leak.

#### 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.

Ethylene glycol: If possible, move the containers of the substance away from the fire or cool, since if exposed to thermal adiation or if directly involved it can give rise to toxic fumes. Vapors can cause dizziness, fainting or choking.

### 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.

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 uses

Apart from the uses described in section 1.2 are not covered other specific uses.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

- ACETONE**

Threshold Limit Value								
Type	Country	TWA/8h		STEL/15min		Remarks / Observations		
		mg/m3	ppm	mg/m3	ppm			
VLEP	ITA	1210	500					
OEL	EU	1210	500					
TLV-ACGIH		1187	500	1781	750			
Predicted no-effect concentration - PNEC								
Normal value in fresh water				10,6		mg/l		
Normal value in marine water				1,06		mg/l		
Normal value for fresh water sediment				30,4		mg/kg		
Normal value for marine water sediment				3,04		mg/kg		
Normal value for water, intermittent release				21		mg/l		
Normal value of STP microorganisms				100		mg/l		
Normal value for the terrestrial compartment				29,5		mg/kg		
Health - Derived no-effect level - DNEL / DMEL								
		Effects on consumers			Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				62 mg/kg/d				
Inhalation				200 mg/m3	2420 mg/m3	1210 mg/m3		
Skin				62 mg/kg/d				186 mg/kg/d

- ETHANOL**



Threshold Limit Value								
Type	Country	TWA/8h		STEL/15min		Remarks / Observations		
		mg/m3	ppm	mg/m3	ppm			
WEL	GBR	1920	1000					
TLV-ACGIH				1884	1000	(in TRS)		
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		
Normal value for marine water sediment				2.9		mg/kg		
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/d		
Health - Derived no-effect level - DNEL / DMEL								
	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Skin							VND	343 mg/m3
Inhalation				1900 mg/m3		VND	VND	950 mg/m3

• **2-PROPANOL**

Threshold Limit Value						
Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
AGW	DEU	500	200	1000	400	
MAK	DEU	500	200	1000	400	
VLA	ESP	500	200	1000	400	
VLEP	FRA			980	400	
GV/KGV1	HRV	999	400	1250	500	
TLV	ROU	200	81	500	203	
MV	SVN	500	200	1000	400	
WEL	GBR	999	400	1250	500	
TLV-ACGIH		492	200	983	400	
Predicted no-effect concentration - PNEC						

## 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. Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

### HAND PROTECTION

Protect hands with category III work gloves (see standard EN 374).

The following should be considered when choosing work glove material: 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 and type of use.

### SKIN PROTECTION

Wear category II 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.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

Form	Clear Liquid
Color	Colourless

#### Odour

characteristic

#### pH

No data available

#### Melting point/ freezing point

No data available

#### Initial boiling point and boiling range

No data available

#### Evaporation rate

No data available

#### Flammability (solid, gas)

No data available

#### Upper / lower flammability or explosive limits

No data available

#### Flash point

<23°C

#### Auto-ignition temperature

Not applicable

#### Decomposition temperature

Not applicable

#### Vapour pressure

No data available

#### Vapour density

No data available

#### Relative density

No data available

#### Water solubility

Soluble

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

Not applicable

#### Viscosity

No data available

#### Explosive properties

No data available

#### Oxidizing properties

No data available

### 9.2 Other safety information

VOC (Directive 2010/75/EU) 48,01 % - 379,28 g/litre

VOC (volatile carbon) 24,88 % - 196,51 g/litre

Explosive properties Not applicable (absence of chemical groups associated with explosive properties in accordance with the provisions of Annex I, Part 2, Chapter 2.1.4.3 of Reg. (EC) 1272/2008 - CLP).

## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

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

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

The vapours may also form explosive mixtures with the air.

#### ETHANOL

Forms explosive mixtures with air (Pohanish, 2009).

It can react violently with strong oxidants and strong acids; bases, strong peroxides; acetic anhydride, acetyl bromide, acetyl chloride, aliphatic amines, bromine pentafluoride, calcium oxide (quicklime), cesium oxide, chloryl perchlorate, disulphoryl difluoride, ethylene glycol methyl ether, iodine heptafluoride, isocyanates, nitrosyl perchlorate, platinum ally black diplomat; potassium-tert-butoxide, potassium, potassium oxide, potassium peroxide, potassium superoxide; phosphorus (III) oxide, silver nitrate, silver oxide, sulfuric acid, oleum, sodium, sodium hydrazide, sodium peroxide, sulfinyl yanamide, tetrachlorosilane, s-triazine-2,4,6-triol, triethoxy aluminum tribromide, triethylaluminium, uranium fluoride, xenon tetrafluoride (Pohanish, 2009).

The mixture with concentrated hydrogen peroxide forms powerful explosives. The mixture with mercury nitrate (II) forms explosive fulminate mercury. Forms explosive complexes with perchlorates, magnesium perchlorate (form ethyl perchlorate), silver perchlorate (Pohanish, 2009).

Reacts with hypochlorous acid or chlorine to form explosive and heat sensitive ethyl hypochlorite (which can decompose when cold) (Pohanish, 2009).

#### 2-PROPANOL

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

#### ACETONE

Risk of explosion on contact with: bromine trifluoride, fluorine dioxide, hydrogen peroxide, nitrosyl chloride, 2-methyl-1,3 butadiene, nitromethane, nitrosyl perchlorate.

May react dangerously with: potassium tert-butoxide, alkaline hydroxides, bromine, bromoform, isoprene, sodium, sulphur dioxide, chromyl chloride, nitric acid, chloroform, peroxy monosulphuric acid, phosphoryl oxychloride, chromosulphuric acid, fluorine, strong oxidising agents, strong reducing agents.

### 10.4 Conditions to avoid

#### ETHANOL

Flow or agitation of the substance can generate electrostatic charges due to low conductivity (Pohanish, 2009).

Heating, open flames and sparks.

No ventilation.

Exposure to air.

Containers not properly closed.

#### 2-PROPANOL

Exposure to sunlight. Heating and open flames. No ventilation. Exposure to air.

#### ACETONE

Avoid exposure to: sources of heat, naked flames.

### 10.5 Incompatible materials

#### ETHANOL

Strong oxidants. Perchlorates, peroxides, silver oxide, hydrogen peroxide, potassium, sodium, chlorine, permanganate or chromate in acid solutions, ruthenium oxide, uranium hexafluoride, iodine or bromine pentafluoride, chromyl chloride, iodine heptafluoride, bromide or chloride of acetyl, disulphuryl difluoride, platinum, nitric acid, peroxides, calcium hypochlorite, chlorine oxides, silver nitrate, dipotassium dioxide, hexoxide tetraphosphorus, chromium trioxide, fluorine nitrate, strong oxidants.

#### 2-PROPANOL

Aluminum and oxidants. Plastic and rubbers.

#### ACETONE

Acids, oxidising substances.

### 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.

**SECTION 11. TOXICOLOGICAL INFORMATION****11.1 Information on toxicological effects****ETHANOL**Metabolism, kinetics, mechanism of action and other information

It is rapidly absorbed by ingestion and by inhalation, poorly by skin contact. It is distributed throughout the body's tissues and fluids, especially the brain, lungs and liver. About 90-98% of the ingested amount is metabolized in the liver to acetaldehyde and then to acetic acid. Acetaldehyde is rapidly metabolised to acetic acid by liver aldehyde dehydrogenase. The acetic acid is subsequently oxidized in the peripheral tissues to carbon dioxide and water. A small amount of ethanol is excreted unchanged in urine, sweat and exhaled air. Its effects are due to the inhibition of synaptic transmission in the brain.

It also has an action on lipid metabolism.

Acute toxicity

Rat LD50 (oral): 7060 mg / kg

Rabbit LD50 (cutaneous): > 20000 mg / kg

Rat LC50-10 hours (by inhalation): 20000 ppm

Skin corrosion / irritation

The substance is not irritating.

Corrosion to the respiratory tract

Date not available.

Serious eye damage / eye irritation

The substance is irritating to the eyes, but resolution is generally quick and complete.

The substance causes pain, tearing, corneal epithelial lesions and conjunctival hyperemia.

Germ cell mutagenicity

In vitro it leads to increased sister chromatid exchanges in hamster or hamster ovary cell cultures

human lymphocytes. In vivo, increased sister chromatid exchanges are observed in rats and mice exposed orally to massive doses of ethanol for several weeks. It also determines dominant lethal mutations in rats and mice exposed orally at 1240 mg / kg / day for 3 days and the formation of micronuclei in bone marrow erythrocytes in mice starting at doses of 620 mg / kg intraperitoneally.

Chromosomal aberration assays were negative.

Carcinogenicity

Alcohol consumption can cause cancer of the oral cavity, pharynx, larynx, esophagus, colorectal, liver (hepatocellular carcinoma) and, in women, breast cancer. There has also been 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 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 (known Carcinogen to humans) based on evidence of sufficient carcinogenicity in both humans (regarding alcohol consumption) and in laboratory animals (regarding ethanol) (IARC, 2012)

Reproductive toxicity

- Adverse Effects on Sexual Function and Fertility:

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

In women there are alterations in the menstrual cycle. A decrease in the incidence of conception per cycle is also reported in cases of substance consumption in quantities of 5 glasses per week.

- Adverse effects on development:

The consumption of alcohol causes multiple congenital anomalies: growth retardation, CNS alterations, external malformations. The frequency of these anomalies depends on the daily dose of alcohol absorbed.

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

- Effects on or through lactation: 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.

Specific target organ toxicity (STOT) - single exposure

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

Specific target organ toxicity (STOT) - repeated exposure

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

Aspiration hazard

Date not available.

Likely routes of exposure

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

**Delayed, immediate and chronic effects from short and long term exposure**

Acute toxicity is mild both by ingestion and by inhalation. Through the skin it is minimal.

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

The chronic effects of alcoholism by ingestion are: neuropsychic (polyneuritis, cerebellar atrophy, memory disorders), digestive (fatty liver and cirrhosis of the liver, chronic gastritis, pancreatitis), cardiovascular (myocardiopathy, arterial hypertension) and haematological.

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

In case of repeated inhalation of ethanol vapors there is irritation of the eyes, upper airways, headaches, fatigue, decreased ability to concentrate and alertness.

Studies show that excessive alcohol consumption is a factor that causes arteriosclerosis, while moderate consumption has a protective power. At the skin level, repeated contact can cause erythema and edema in particular if there is an occlusion that determines evaporation.

**2-PROPANOL****ACUTE TOXICITY**

LD50 (Cutaneous): 12870 mg/kg rabbit (INRS, 2009)

LD50 (Oral): > 4396 mg/kg rat (INRS, 2009) 4396-5500 mg/kg

LC50 (Vapour inhalation): 72600 mg/m3 rat (INRS, 2009)

LC50 (inhalation): 27200 mg/m3/4h Mouse (INRS, 2009)

**SKIN CORROSION / SKIN IRRITATION.**

It is scarcely irritating to intact or abraded skin of rabbits and guinea pigs (INRS, 2009).

**SERIOUS EYE DAMAGE / EYE IRRITATION.**

In humans, exposure to isopropanol vapors (3 minutes of exposure at 400 ppm) caused mild eye irritation (INRS, 2009).

In rabbit eyes a 70% solution (0.1 ml) caused moderate to severe reversible irritation in 14 days; an instillation of the substance can induce ocular lesions

that persist for more than 21 days (INRS, 2009).

**RESPIRATORY OR SKIN SENSITIZATION.**

It does not meet the classification criteria for this hazard class.

**MUTAGENICITY ON GERMINAL CELLS.**

It does not meet the classification criteria for this hazard class.

**CARCINOGENICITY.**

Suspected of causing cancer.

**REPRODUCTION TOXICITY.**

It does not meet the classification criteria for this hazard class.

**SPECIFIC TOXICITY FOR TARGET ORGANS (STOT) - SINGLE EXPOSURE.**

It is irritating to the respiratory system. In high concentrations it causes CNS depression with narcosis.

**SPECIFIC TARGET ORGAN TOXICITY (STOT) - REPEATED EXPOSURE.**

The liquid has degreasing characteristics of the skin. In rats, long-term inhalation and / or digestive exposure essentially causes CNS depression and kidney injury.

**DANGER IN CASE OF SUCTION.**

It does not meet the classification criteria for this hazard class.

**11.2 Other informations**

Endocrine disrupting properties: The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 of the Commission at levels of 0.1% or higher

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### ETHANOL

EC50 - Crustaceans. > 10 mg / l / 48h

EC50 - Algae / Aquatic Plants. > 10 mg / l / 72h

EC10 Algae / Aquatic Plants. > 11 mg / l / 72h

Chronic NOEC for Pisces. 12.34 mg / l

Chronic NOEC for Algae / Aquatic Plants. > 3 mg / l

Short-term effects

Fish (*Pimephales promelas*) LC50-96 hours > 100 mg / l (OECD, 2004);

Crustaceans (*Artemia salina*) LC50-24 hours: 1833 mg / l (OECD, 2004);

Crustaceans (*Paramecium caudatum*) 4-hour LC50: 5980 mg / l (OECD, 2004);

Algae (*Chlorella vulgaris*) EC50-96 hours: 1000 mg / l (growth inhibition) (OECD, 2004).

Long-term effects

Crustaceans (*Ceriodaphnia* sp.) NOEC-10 days: 9.6 mg / l (effects on reproduction) (OECD, 2004)

Algae (*Lemna gibba*) NOEC-7 days: 280 mg / l (OECD, 2004).

#### 2-PROPANOL

LC50 - for Fish 1400 mg/l/96h *Lepomis macrochirus* (HSDB, 2015)

EC50 - for Crustacea 1400 mg/l/48h *Crangon crangon* (HSDB, 2015; OECD, 1997)

EC50 - for Algae / Aquatic Plants > 1000 mg/l/72h *Scenedesmus subspicatus*

LC10 for Fish 1500 mg/l/96h *Rasbora heteromorpha*

Chronic NOEC for Crustacea 141 mg/l/16d *Daphnia* (crescita)

Terrestrial plant (*Lactuca sativa*) EC50-3 days : 2100 mg/l

NOEC-21 days : 30 mg/L (OECD, 1997)

#### ACETONE

LC50 - for Fish 5540 mg/l/96h *Lepomis*

EC50 - for Crustacea 8800 mg/l/48h *Daphnia magna*

Chronic NOEC for Crustacea 2212 mg/l *Daphnia magna*

### 12.2 Persistence and degradability

#### ETHANOL

The vapor pressure (7906 Pa at 25 ° C) indicates that when released into the atmosphere, ethanol exists only as vapor in the atmosphere where it degrades by reaction with photochemically produced hydroxyl radicals; for this reaction in air is Estimated to have a half-life of 36 hours (HSDB, 2015).

Ethanol does not contain chromophores that absorb wavelengths at > 290 nm, and therefore it is not expected to be susceptible to direct photolysis by solar radiation (HSDB, 2015).

Hydrolysis is not expected to be an important environmental fate process since ethanol is devoid of functional groups which hydrolyze in environmental conditions (pH 5 to 9) (HSDB, 2015).

Ethanol was biodegraded with half-lives of the order of a few days using microcosms built with soil sandy with low organic content and groundwater, this indicates that biodegradation is a process of important environmental fate in soil and water (HSDB, 2015).

### 12.3 Bioaccumulative potential

#### ETHANOL

An estimated BCF value of 3 suggests low bioconcentration potential in aquatic organisms (HSDB, 2015).

### 12.4 Mobility in soil

#### ETHANOL

Ethanol is not persistent in the environment. The fugacity model (level III) shows that, released in the environment it is mainly distributed in air and water. The relative distributions between the sub-funds are 57% in air, 34% in water and 9% in soil. This prediction is supported by the limited data available on prevailing concentrations, which show that ethanol has been detected in outdoor air and river water (OECD, 2004). The Koc of 2.75 (determined by the log Kow of 0.44) indicates that if released to the ground, ethanol has much mobility high and, if released in water, it does not adsorb to suspended solids and sediments (HSDB, 2015).

The Henry's law constant of  $5 \times 10^{-6}$  atm-m<sup>3</sup> / mole indicates that the volatilization is from surfaces of moist soil that from water surfaces is an important fate process (for a model river and a lake model were estimated volatilization half-lives, respectively, of 5 and 39 days) (HSDB, 2015). The vapor pressure indicates that ethanol can volatilize from dry soil surfaces



(HSDB, 2015).

## 12.5 Results of PBT and vPvB assessment

This mixture contains no substances evaluated PBT or vPvB

## 12.6 Endocrine disrupting properties

The mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

None

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

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

ADR/RID: 1993                      IMDG: 1993                      IATA: 1993

### 14.2 UN proper shipping name

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

IMDG: FLAMMABLE LIQUID, N.O.S. (ETHANOL, ACETONE)

IATA: FLAMMABLE LIQUID, N.O.S. (ETHANOL, ACETONE)

### 14.3 Transport hazard class(es)

ADR/RID: 3                      IMDG: 3                      IATA: 3

### 14.4 Packaging group

ADR/RID: II                      IMDG: II                      IATA: II

### 14.5 Environmental hazards

ADR/RID: no                      IMDG: no                      IATA: no

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15. REGULATORY INFORMATION

This safety datasheet complies with:

- the requirements of European Parliament and of the Council Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and Commission Regulation (EU) No. 453/2010 amending Commission Regulation (EC) No. 1907/2006.
- the requirements of Commission Regulation EU 2020/878

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

The product is classified, coded and labeled in accordance with EU Regulation on Hazardous Materials.

The product does not contain any restricted substances – Article XIV & Article XVIII REACH

### 15.2 Chemical Safety Assessment

This product has not been made a chemical safety assessment.

## 16. OTHER INFORMATION

### Text of H code(s) mentioned in Section 3

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.

### Abbreviations and acronyms

- 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

### Training advice

The product must be used by qualified personnel. It is recommended to provide basic training with regard to safety and health at work to ensure proper handling of the product.

### Further information

The information in this document is based on the present state of our knowledge. The user must ensure the accuracy and completeness of such information in relation to the specific use intended.

Liofilchem® shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.liofilchem.com](http://www.liofilchem.com). for additional terms and conditions of sale.

Previous date: 17.04.2023

Revision date: 09.12.2024

Revision Number: rev. 10

## ENGLISH

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name: Safranin Solution  
Product Number: 80293D (Bottle 1)

#### 1.2 Identified uses of the relevant substance or mixture and uses advised against

Identified uses relevant: Professional uses, Health Services, scientific research and development

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

Manufacturer/Supplier: Liofilchem®  
Address: Via Scozia, 64026 - Roseto degli Abruzzi (TE)  
Telephone number: 085/8930745  
Fax number: 085/8930330  
E-mail address: liofilchem@liofilchem.com

#### 1.4 Emergency telephone number

Poison control centers  
Pavia - 038224444;  
Milano - 0266101029;  
Bergamo - 800883300;  
Verona - 800011858;  
Firenze - 0557947819;  
Roma - Gemelli 063054343;  
Roma - Umberto I 0649978000;  
Roma - Bambino Gesù 0668593726;  
Napoli - 0815453333;  
Foggia - 800183459.

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

The product is not classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP). However, since the product contains hazardous substances in concentrations such as to be declared in section no. 3, it requires a safety data sheet with appropriate information, compliant to (EU) Regulation 2020/878.  
Hazard classification and indication

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP] –**

#### 2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008 [CLP]**

**Pictogram** -

**Signal word** -

**Hazard statement(s)** -

**Precautionary statement(s)** -

**Supplemental Hazard Statements** - none

**2.3 Other hazards** - This substance/mixture does not contain components considered to be both persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at concentrations of 0.1% or higher.  
The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

#### 3.2 Mixtures:

##### Hazardous substances

CAS n°	EC n°	Index n°	Registration number REACH	Concentration	Classification according Regulation (EC) No 1272/2008
<b>Ethylene glycol</b>					
107-21-1	203-473-3	603-027-00-1	01-2119456816-28-XXXX	1.0 – 5.0 %	Acute Tox. 4 H302, STOT RE 2 H373

Ethanol					
64-17-5	200-578-6	603-002-00-5	01-2119457610-43-XXXX	5.0 – 10.0 %	Flam. Liq. 2 H225, Eye Irrit. 2 H319

**Additional Information:**

For full text of H-statements, see SECTION 16

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:** The product is not dangerous and does not require special first aid measures; however, as a precaution, the following measures must be observed.

**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

**INGESTION:** Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

**INHALATION:** Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

For symptoms and effects due to the substances contained, see chap. 11..

#### ETHYLENE GLYCOL

Signs and symptoms of poisoning include anion deficiency in metabolic acidosis, central nervous system depression, kidney damage and possible late stage cranial nerve involvement. Respiratory symptoms may occur, including edema pulmonary, with delayed effect. People who are subjected to significant exposure should be kept under observation for 24-48 hours, in case of any breathing problems. In case of severe poisoning, support may be required mechanical ventilation with positive expiratory pressure. Maintain an adequate level of ventilation and oxygen supply to the patient. If gastric lavage is performed, endotracheal and / or esophageal control is suggested. Dangers from pulmonary aspiration must be evaluated for toxicity when gastric lavage is considered. If there is a burn, treat as thermal burn, after decontamination. Treatment in the event of exposure should be aimed at symptom control and treatment/clinical condition of the patient.

#### ETHANOL

Acute dose-dependent effects.

Skin: irritation, delipidization

Nervous system: in case of depression ingestion

Eyes: irritation, corneal damage

Upper airways: irritation

Lungs: irritation

Chronic effects.

Skin: irritation, delipidization

Nervous system: headache, asthenia, depression

Upper airways: irritation

Lungs: irritation.

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

#### ETHYLENE GLYCOL

If a quantity of ethylene glycol of about 60 - 100 ml has been ingested, the rapid administration of ethanol can counteract the toxic effects (metabolic acidosis, kidney damage). Consider hemodialysis or peritoneal dialysis and administration of thiamine 100 mg e pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range 100-150 mg / dl can be achieved with a rapid attack dose followed by continuous intravenous infusion. Consult the literature available for treatment details. 4-methyl pyrazole is an effective alcoholic dehydrogenase blocker and is available as Fomepizole (Antizol (R)) and should be used in the treatment, if available, of poisoning by mono-, di- or tri-ethylene glycol, methanol and ethylene glycol butyl ether. Fomepizole protocol (Brent J. et al., New EngJ Med, Feb 8 2001 244: 6, p 424-9): attack dose 15 mg / kg for intravenously, followed by a maintenance dose of 10 mg / kg every 12 hours. After 48 hours increase the dose to 15 mg / kg every 12 hours. Continue administration of Fomepizole until serum from methanol, mono, di or triethylene glycol is no longer present.

## SECTION 5. FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media

**SUITABLE EXTINGUISHING EQUIPMENT**

CO<sub>2</sub>, foam, chemical powder for flammable liquids.

**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.

Ethylene glycol: If possible, move the containers of the substance away from the fire or cool, since if exposed to thermal adiation or if directly involved it can give rise to toxic fumes. Vapors can cause dizziness, fainting or choking.

**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.

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 uses**

Apart from the uses described in section 1.2 are not covered other specific uses.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

- **ETHYLENE GLYCOL**

- **ETHANOL**

### 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. Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

#### HAND PROTECTION

Protect hands with category III work gloves (see standard EN 374).

The following should be considered when choosing work glove material: 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 and type of use.

#### SKIN PROTECTION

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Wear category II 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.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

Form	Clear Liquid
Color	Red

#### Odour

characteristic

#### pH

No data available

#### Melting point/ freezing point

No data available

#### Initial boiling point and boiling range

No data available

#### Evaporation rate

No data available

#### Flammability (solid, gas)

No data available

#### Upper / lower flammability or explosive limits

No data available

#### Flash point

<60°C

#### Auto-ignition temperature

Not applicable

#### Decomposition temperature

Not applicable

#### Vapour pressure

No data available

#### Vapour density

No data available

#### Relative density

No data available

#### Water solubility

Soluble

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

Not applicable

#### Viscosity

No data available

#### Explosive properties

No data available

#### Oxidizing properties

No data available

### 9.2 Other safety information

None

## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

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

#### ETHYLENE GLYCOL

Reacts violently with chlorosulfonic acid, oleum, perchloric acid, P2S5.

### 10.2 Chemical stability

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

#### ETHYLENE GLYCOL

It is very hygroscopic.

### 10.3 Possibility of hazardous reactions



The vapours may also form explosive mixtures with the air.

#### ETHANOL

Forms explosive mixtures with air (Pohanish, 2009).

It can react violently with strong oxidants and strong acids; bases, strong peroxides; acetic anhydride, acetyl bromide, acetyl chloride, aliphatic amines, bromine pentafluoride, calcium oxide (quicklime), cesium oxide, chloryl perchlorate, disulphoryl difluoride, ethylene glycol methyl ether, iodine heptafluoride, isocyanates, nitrosyl perchlorate, platinum ally black diplomat; potassium-tert-butoxide, potassium, potassium oxide, potassium peroxide, potassium superoxide; phosphorus (III) oxide, silver nitrate, silver oxide, sulfuric acid, oleum, sodium, sodium hydrazide, sodium peroxide, sulfinyl yanamide, tetrachlorosilane, s-triazine-2,4,6-triol, triethoxy aluminum tribromide, triethylaluminium, uranium fluoride, xenon tetrafluoride (Pohanish, 2009).

The mixture with concentrated hydrogen peroxide forms powerful explosives. The mixture with mercury nitrate (II) forms explosive fulminate mercury. Forms explosive complexes with perchlorates, magnesium perchlorate (form ethyl perchlorate), silver perchlorate (Pohanish, 2009).

Reacts with hypochlorous acid or chlorine to form explosive and heat sensitive ethyl hypochlorite (which can decompose when cold) (Pohanish, 2009).

#### 10.4 Conditions to avoid

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

Ethylene glycol

No ventilation. Heating and open flames. Avoid build-up of static electricity

#### ETHANOL

Flow or agitation of the substance can generate electrostatic charges due to low conductivity (Pohanish, 2009).

Heating, open flames and sparks.

No ventilation.

Exposure to air.

Containers not properly closed.

#### 10.5 Incompatible materials

##### ETHYLENE GLYCOL

Strong oxidants. Strong bases

##### ETHANOL

Strong oxidants. Perchlorates, peroxides, silver oxide, hydrogen peroxide, potassium, sodium, chlorine, permanganate or chromate in acid solutions, ruthenium oxide, uranium hexafluoride, iodine or bromine pentafluoride, chromyl chloride, iodine heptafluoride, bromide or chloride of acetyl, disulfuryl difluoride, platinum, nitric acid, peroxides, calcium hypochlorite, chlorine oxides, silver nitrate, dipotassium dioxide, hexoxide tetraphosphorus, chromium trioxide, fluorine nitrate, strong oxidants.

#### 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.

Ethylene glycol

Possible decomposition products: carbonyl compounds, dioxolane derivatives.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### ETHYLENE GLYCOL

##### Metabolism, kinetics, mechanism of action and other information

The substance is rapidly absorbed orally and inhaled, distributed in the body and metabolized. In rats and dogs, approximately 20-30% of the absorbed dose is excreted by the kidneys. Metabolism occurs in the kidneys and liver 2-4 hours after exposure and metabolites appear in the urine within 24-48 hours. In man it is initially metabolized by alcohol dehydrogenase into glycoaldehyde and then into glycolic acid which subsequently undergoes conversion into oxalic acid by glycolic acid oxidase. The toxic action of the substance, especially in the kidney, is attributed to its metabolites, in particular glycolic acid and oxalate. The neurotoxicity of the substance is probably caused by the formation of calcium oxalate crystals, which can lead to a disturbance of intracellular calcium homeostasis with membrane abnormalities, associated with cell damage and even cell death.

##### Acute toxicity

LD50 (Oral). 7712 mg / kg rat

LD50 (Dermal). > 3500 mg / kg mouse

LC50 (Inhalation). > 2.5 mg / l / 6h rat (aerosol)

##### Skin corrosion / irritation

It has a mild skin irritant effect.

##### Corrosion to the respiratory tract

Date not available.

##### Serious eye damage / eye irritation

In volunteers, exposure to vapors and aerosols of substance equal to 137 mg / m3 caused irritation of the ocular mucous

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membranes. Above 200 mg / m3 the intensity of the irritation made it impossible to continue the exposure. In rabbits, instillation of a 0.4% isotonic solution has no effect. 4% solutions are moderately irritating. Higher concentrations cause caustic lesions.

### Germ cell mutagenicity

The available studies do not show mutagenic power.

### Carcinogenicity

Available studies have not shown carcinogenic potential. In a two-year NTP carcinogenicity study in which ethylene glycol as administered in the feed, "no evidence of carcinogenic activity" was observed in male and female B6C3F1 mice (NTP, 1993).

### Reproductive toxicity

- Adverse Effects on Sexual Function and Fertility: Animal studies have not shown reproductive toxicity.

- Adverse Developmental Effects: Studies in rats and mice have shown teratogenic effects with skeletal abnormalities and external malformations.

- Effects on lactation or through lactation: Data not available.

### Specific target organ toxicity (STOT) - single exposure

The vapors and aerosol of the substance are strongly irritating to the respiratory system. In volunteers, exposure to vapors and aerosols of the substance equal to 137 mg / m3 caused irritation of the upper airways. Above 200 mg / m3 the intensity of the irritation made it impossible to continue the exposure.

Available studies indicate the kidney as a target organ in acute poisoning.

### Specific target organ toxicity (STOT) - repeated exposure

The available data are insufficient to pronounce on the possibility of neurological or immunological effects due to long-term exposure.

### Aspiration hazard

Date not available.

### Likely routes of exposure

The main routes of occupational exposure are inhalation and skin contact. The general population may be exposed by inhalation from ambient air or by skin contact with products containing the substance.

### Delayed, immediate and chronic effects from short and long term exposure

The digestive substance is more toxic to humans than animals. The clinical symptomatology develops in 4 phases. In the 1st phase (30 minutes-12 hours after ingestion) there is nausea, vomiting, agitation, stupor, inhibition of reflexes, epileptic seizures and convulsions. Cause of death at this stage can be central respiratory paralysis, coma and cardiocirculatory arrest. Other symptoms are: acute gastritis, meningoencephalitis, metabolic acidosis, leukocytosis, proteinuria. Ocular level shows: nystagmus, ophthalmoplegia, papilledema and optic atrophy. In the 2nd phase (12-24 hours) the main symptoms are affecting the cardio-respiratory system: tachycardia, tachypnea, bronchopneumonia, pulmonary edema and respiratory arrest within 72 hours. In the 3rd phase (24-72 hours) renal damage occurs mainly: initially polyuria followed by oliguria and anuria. Kidney changes usually subside within 50 days. In one case, chronic renal failure was observed. In the 4th phase (6-14 days) there are symptoms of CNS degeneration: facial paralysis, dysphagia, hyperreflexia, ataxia, cerebral edema and calcium oxalate deposits in the brain tissue. Hepatic necrosis is also reported. The available data are not sufficient to pronounce on the possibility of effect

## **ETHANOL**

### Metabolism, kinetics, mechanism of action and other information

It is rapidly absorbed by ingestion and by inhalation, poorly by skin contact. It is distributed throughout the body's tissues and fluids, especially the brain, lungs and liver. About 90-98% of the ingested amount is metabolized in the liver to acetaldehyde and then to acetic acid. Acetaldehyde is rapidly metabolised to acetic acid by liver aldehyde dehydrogenase. The acetic acid is subsequently oxidized in the peripheral tissues to carbon dioxide and water. A small amount of ethanol is excreted unchanged in urine, sweat and exhaled air. Its effects are due to the inhibition of synaptic transmission in the brain.

It also has an action on lipid metabolism.

### Acute toxicity

Rat LD50 (oral): 7060 mg / kg

Rabbit LD50 (cutaneous): > 20000 mg / kg

Rat LC50-10 hours (by inhalation): 20000 ppm

### Skin corrosion / irritation

The substance is not irritating.

### Corrosion to the respiratory tract

Date not available.

### Serious eye damage / eye irritation

The substance is irritating to the eyes, but resolution is generally quick and complete.

The substance causes pain, tearing, corneal epithelial lesions and conjunctival hyperemia.

### Germ cell mutagenicity

In vitro it leads to increased sister chromatid exchanges in hamster or hamster ovary cell cultures

human lymphocytes. In vivo, increased sister chromatid exchanges are observed in rats and mice exposed orally to massive doses of ethanol for several weeks. It also determines dominant lethal mutations in rats and mice exposed orally at 1240 mg / kg / day for 3 days and the formation of micronuclei in bone marrow erythrocytes in mice starting at doses of 620 mg / kg intraperitoneally.

Chromosomal aberration assays were negative.

### Carcinogenicity

Alcohol consumption can cause cancer of the oral cavity, pharynx, larynx, esophagus, colorectal, liver (hepatocellular carcinoma) and, in women, breast cancer. There has also been 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 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 (known Carcinogen to humans) based on evidence of sufficient carcinogenicity in both humans (regarding alcohol consumption) and in laboratory animals (regarding ethanol) (IARC, 2012)

#### Reproductive toxicity

- Adverse Effects on Sexual Function and Fertility:

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

In women there are alterations in the menstrual cycle. A decrease in the incidence of conception per cycle is also reported in cases of substance consumption in quantities of 5 glasses per week.

- Adverse effects on development:

The consumption of alcohol causes multiple congenital anomalies: growth retardation, CNS alterations, external malformations. The frequency of these anomalies depends on the daily dose of alcohol absorbed.

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

- Effects on or through lactation: 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.

#### Specific target organ toxicity (STOT) - single exposure

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

#### Specific target organ toxicity (STOT) - repeated exposure

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

#### Aspiration hazard

Date not available.

#### Likely routes of exposure

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

#### Delayed, immediate and chronic effects from short and long term exposure

Acute toxicity is mild both by ingestion and by inhalation. Through the skin it is minimal.

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

The chronic effects of alcoholism by ingestion are: neuropsychic (polyneuritis, cerebellar atrophy, memory disorders), digestive (fatty liver and cirrhosis of the liver, chronic gastritis, pancreatitis), cardiovascular (myocardiopathy, arterial hypertension) and haematological.

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

In case of repeated inhalation of ethanol vapors there is irritation of the eyes, upper airways, headaches, fatigue, decreased ability to concentrate and alertness.

Studies show that excessive alcohol consumption is a factor that causes arteriosclerosis, while moderate consumption has a protective power. At the skin level, repeated contact can cause erythema and edema in particular if there is an occlusion that determines evaporation.

## 11.2 Other informations

Endocrine disrupting properties: The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with Article 57(f) of REACH or Commission Delegated Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 of the Commission at levels of 0.1% or higher

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### **ETHANOL**

EC50 - Crustaceans. > 10 mg / l / 48h

EC50 - Algae / Aquatic Plants. > 10 mg / l / 72h

EC10 Algae / Aquatic Plants. > 11 mg / l / 72h

Chronic NOEC for Pisces. 12.34 mg / l

Chronic NOEC for Algae / Aquatic Plants. > 3 mg / l

Short-term effects

Fish (Pimephales promelas) LC50-96 hours > 100 mg / l (OECD, 2004);  
Crustaceans (Artemia salina) LC50-24 hours: 1833 mg / l (OECD, 2004);  
Crustaceans (Paramecium caudatum) 4-hour LC50: 5980 mg / l (OECD, 2004);  
Algae (Chlorella vulgaris) EC50-96 hours: 1000 mg / l (growth inhibition) (OECD, 2004).  
Long-term effects  
Crustaceans (Ceriodaphnia sp.) NOEC-10 days: 9.6 mg / l (effects on reproduction) (OECD, 2004)  
Algae (Lemna gibba) NOEC-7 days: 280 mg / l (OECD, 2004).

**ETHYLENE GLYCOL**

LC50 - Pisces.  
72860 mg / l / 96h Pimepales promelas  
EC50 - Crustaceans.  
> 100 mg / l / 48h Daphnia magna  
Chronic NOEC for Pisces.  
15830 mg / l Pimephales promelas (7 days)

**12.2 Persistence and degradability****ETHYLENE GLYCOL**

Biodegrades to the soil. In water it biodegrades both aerobically and anaerobically. Photodegrades in the air.

**ETHANOL**

The vapor pressure (7906 Pa at 25 ° C) indicates that when released into the atmosphere, ethanol exists only as vapor in the atmosphere where it degrades by reaction with photochemically produced hydroxyl radicals; for this reaction in air is Estimated to have a half-life of 36 hours (HSDB, 2015).

Ethanol does not contain chromophores that absorb wavelengths at > 290 nm, and therefore it is not expected to be susceptible to direct photolysis by solar radiation (HSDB, 2015).

Hydrolysis is not expected to be an important environmental fate process since ethanol is devoid of functional groups which hydrolyze in environmental conditions (pH 5 to 9) (HSDB, 2015).

Ethanol was biodegraded with half-lives of the order of a few days using microcosms built with soil sandy with low organic content and groundwater, this indicates that biodegradation is a process of important environmental fate in soil and water (HSDB, 2015).

**12.3 Bioaccumulative potential****ETHANOL**

An estimated BCF value of 3 suggests low bioconcentration potential in aquatic organisms (HSDB, 2015).

**12.4 Mobility in soil****ETHYLENE GLYCOL**

High mobility on the ground. Volatilization from wet surfaces and water is not significant; it does not adsorb to sediments and suspended solids. In the atmosphere it exists in the vapor phase.

**ETHANOL**

Ethanol is not persistent in the environment. The fugacity model (level III) shows that, released in the environment it is mainly distributed in air and water. The relative distributions between the sub-funds are 57% in air, 34% in water and 9% in soil. This prediction is supported by the limited data available on prevailing concentrations, which show that ethanol has been detected in outdoor air and river water (OECD, 2004). The Koc of 2.75 (determined by the log Kow of 0.44) indicates that if released to the ground, ethanol has much mobility high and, if released in water, it does not adsorb to suspended solids and sediments (HSDB, 2015).

The Henry's law constant of  $5 \times 10^{-6}$  atm-m<sup>3</sup> / mole indicates that the volatilization is from surfaces of moist soil that from water surfaces is an important fate process (for a model river and a lake model were estimated volatilization half-lives, respectively, of 5 and 39 days) (HSDB, 2015). The vapor pressure indicates that ethanol can volatilize from dry soil surfaces (HSDB, 2015).

**12.5 Results of PBT and vPvB assessment**

This mixture contains no substances evaluated PBT or vPvB

**12.6 Endocrine disrupting properties**

(According to Regulation EC n° 1907/2006 and to  
Commission Regulation EU 2020/878)  
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**12.7 Other adverse effects**  
None

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## SAFETY DATA SHEET

(According to Regulation EC n° 1907/2006 and to  
Commission Regulation EU 2020/878)  
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H225	Highly flammable liquid and vapour
H302	Harmful if swallowed
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

### Abbreviations and acronyms

- 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

### Training advice

The product must be used by qualified personnel. It is recommended to provide basic training with regard to safety and health at work to ensure proper handling of the product.

### Further information

The information in this document is based on the present state of our knowledge. The user must ensure the accuracy and completeness of such information in relation to the specific use intended.

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Previous date: 17.04.2023

Revision date: 09.12.2024

Revision Number: rev. 7