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	<b>AD7071</b> <b>3.5M KCl with AgCl Reference Electrolyte</b>	

## Safety data sheet according to Regulation (EC) No. 1907/2006

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

#### 1.1. Product identifier.

Code.	AD7071
Product name.	3.5M KCl with AgCl Reference Electrolyte
Additional product Codes.	AD7071S

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

Intended use.	Reference Electrolyte Solution for pH and Redox.
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#### 1.3. Details of the supplier of the safety data sheet.

Name.	Adwa Hungary Kft.
Full address:	Alsó-kikötő sor 11.C
District and Country:	H6726, Szeged, Hungary
Phone:	+36-62-317-878
Fax:	+36-62-550-610
e-mail:	support@adwainstruments.com

e-mail address of the competent person responsible for the Safety Data Sheet.

support@adwainstruments.com

#### 1.4. Emergency telephone number.

For urgent inquiries refer to.

Austria tel.: +431 406 43 43 - Belgium tel.: 070/245.245 - Bulgaria tel.: +359 2 9154 409 - Czech Republic tel.: +420 224 919 293, +420 224 915 402 - Denmark tel.: 82 12 12 12 - Estonia tel.: 112 - Finland tel.: (09) 471 977 (direct) or (09) 4711 (exchange) - France tel. ORFILA (INRS) : + 33 (0)1 45 42 59 59 - Ireland tel.: 01 809 2166 - Hungary tel.: +36 80 20-11-99 (ETTSZ) - Lithuania tel.: +370 5 236 20 52, +370 687 53378 - Malta tel: 2545 0000, Medicines & Poisons Info Office tel.: 2545 6504 - Norway tel.:22 59 13 00 - Portugal tel.: 808250 143 - Romania tel. 021.318.36.06 (8:00 – 15:00) - Slovakia tel.: +421 2 5477 4166 - Spain tel.: + 34 91 562 04 20 - Sweden tel.: 112; 08- 331231 (9:00-17:00)

### SECTION 2. Hazards identification.

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


The product is classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC Regulation 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.

Hazard classification and indication:

Hazardous to the aquatic environment, acute toxicity, category 1	H400	Very toxic to aquatic life.
Hazardous to the aquatic environment, chronic toxicity, category 2	H411	Toxic to aquatic life with long lasting effects.

#### 2.2. Label elements.

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

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Hazard pictograms:



Signal words:                      Warning

Hazard statements:

**H400**                      Very toxic to aquatic life.  
**H411**                      Toxic to aquatic life with long lasting effects.

Precautionary statements:

**P273**                      Avoid release to the environment.  
**P391**                      Collect spillage.

**2.3. Other hazards.**

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

**SECTION 3. Composition/information on ingredients.**

**3.1. Substances.**

Information not relevant.

**3.2. Mixtures.**

Contains:

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

<b>Identification.</b>	<b>x = Conc. %.</b>	<b>Classification 1272/2008 (CLP).</b>
<b>SILVER NITRATE</b>		
CAS. 7761-88-8	$0,025 \leq x < 0,25$	Ox. Sol. 2 H272, Met. Corr. 1 H290, Skin Corr. 1B H314, Aquatic Acute 1 H400 M=1000, Aquatic Chronic 1 H410 M=100
EC. 231-853-9		
INDEX. -		


**SECTION 4. First aid measures.**

**4.1. Description of first aid measures.**

Not specifically necessary. Observance of good industrial hygiene is recommended.

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

No episodes of damage to health ascribable to the product have been reported.

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#### SILVER NITRATE

Irritation and corrosion, Cough, Shortness of breath, Dizziness, Unconsciousness, Diarrhoea, gastric spasms, Vomiting, death, Risk of permanent damage due to staining of the cornea. Risk of blindness! The following applies to soluble silver compounds: only slightly absorbed via the gastrointestinal tract. Strong irritations after contact with eyes and skin.

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

Information not available.

## SECTION 5. Firefighting measures.

### 5.1. Extinguishing media.

#### SUITABLE EXTINGUISHING EQUIPMENT

Extinguishing substances are: carbon dioxide and chemical powder. For product loss or leakage that has not caught fire, water spray can be used to disperse flammable vapours and protect those trying to stem 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

If large quantities of the product are involved in a fire, they can make it considerably worse. Do not breathe combustion products.

#### SILVER NITRATE

Not combustible. Has a fire-promoting effect due to release of oxygen. Ambient fire may liberate hazardous vapours. Fire may cause evolution of: nitrogen oxides.

### 5.3. Advice for firefighters.

#### GENERAL INFORMATION

In the case of fire, use jets of water to cool the containers to prevent the risk of explosions (product decomposition and excess pressure) and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Remove all containers containing the product from the fire, if it is safe to do so.

#### 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. If the product is flammable, use explosion-proof equipment. 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.

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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.

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

Keep the product in clearly labelled containers. Keep containers away from any incompatible materials, see section 10 for details.

### 7.3. Specific end use(s).

Information not available.

## SECTION 8. Exposure controls/personal protection.

### 8.1. Control parameters.

Regulatory References:

DEU	Deutschland	MAK-und BAT-Werte-Liste 2012
ESP	España	INSHT - Límites de exposición profesional para agentes químicos en España 2015
FRA	France	JORF n°0109 du 10 mai 2012 page 8773 texte n° 102
GBR	United Kingdom	EH40/2005 Workplace exposure limits
HUN	Magyarország	50/2011. (XII. 22.) NGM rendelet a munkahelyek kémiai biztonságáról
ROU	România	Monitorul Oficial al României 44; 2012-01-19
EU	OEL EU	Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC.
	TLV-ACGIH	ACGIH 2016


### SILVER NITRATE

#### Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
AGW	DEU	0,01				Ag compound
VLA	ESP	0,01				Ag compound
VLEP	FRA	0,01				Ag compound
WEL	GBR	0,01				Ag compound
AK	HUN	0,01				Ag compound
TLV	ROU	0,01				Ag compound
OEL	EU	0,01				Ag compound
TLV-ACGIH		0,01				Ag compound

#### Predicted no-effect concentration - PNEC.

Normal value in fresh water	0,00004	mg/l
Normal value in marine water	0,00086	mg/l
Normal value for fresh water sediment	438	mg/kg/d
Normal value for marine water sediment	438	mg/kg/d
Normal value of STP microorganisms	0,025	mg/l
Normal value for the terrestrial compartment	0,794	mg/kg/d

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Legend:

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

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

## 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.

### 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 I professional long-sleeved overalls and safety footwear (see Directive 89/686/EEC and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

### 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 B 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	liquid
Colour	colourless
Odour	odourless
Odour threshold.	Not available.
pH.	6,3
Melting point / freezing point.	Not available.
Initial boiling point.	Not available.
Boiling range.	Not available.
Flash point.	> 60 °C.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Lower inflammability limit.	Not available.
Upper inflammability limit.	Not available.
Lower explosive limit.	Not available.
Upper explosive limit.	Not available.



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Vapour pressure.	Not available.
Vapour density	Not available.
Relative density.	1,500
Solubility	soluble in water
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature.	Not available.
Decomposition temperature.	Not available.
Viscosity	Not available.
Explosive properties	Not available.
Oxidising properties	Not available.

### 9.2. Other information.

Total solids (250°C / 482°F)	22,63 %
VOC (Directive 2010/75/EC) :	0
VOC (volatile carbon) :	0

## SECTION 10. Stability and reactivity.

### 10.1. Reactivity.

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

SILVER NITRATE  
Has a corrosive effect.

### 10.2. Chemical stability.

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

SILVER NITRATE  
Sensitivity to light.

### 10.3. Possibility of hazardous reactions.

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

SILVER NITRATE  
Exothermic reaction with: Risk of ignition or formation of inflammable gases or vapours with: Alcohols, arsenic, halogen-halogen compounds, nonmetals, organic nitro compounds, Sodium hydroxide, magnesium, acetylidene, hydrazine and derivatives, carbides, azides, ammonium hydroxide, ethanol, Ammonia, Nitriles, Acetylene, Aldehydes, oxidisable substances, combustible substances.

### 10.4. Conditions to avoid.


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

SILVER NITRATE  
Strong heating (decomposition). Exposure to light.

### 10.5. Incompatible materials.

SILVER NITRATE  
Aluminium, Mild steel.

### 10.6. Hazardous decomposition products.

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Information not available.

## SECTION 11. Toxicological information.

### 11.1. Information on toxicological effects.

SILVER NITRATE Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Acute inhalation toxicity, Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract - Skin irritation, In vitro study, Result: Corrosive, Causes burns - Eye irritation rabbit, Result: Causes burns, Causes serious eye damage. Risk of permanent damage due to staining of the cornea. Risk of blindness!.

ACUTE TOXICITY.

LC50 (Inhalation - vapours) of the mixture: Not classified (no significant component).  
 LC50 (Inhalation - mists / powders) of the mixture: Not classified (no significant component).  
 LD50 (Oral) of the mixture: Not classified (no significant component).  
 LD50 (Dermal) of the mixture: Not classified (no significant component).

SILVER NITRATE  
 LD50 (Oral). 1173 mg/kg Rat

SKIN CORROSION / IRRITATION.

Does not meet the classification criteria for this hazard class.

SERIOUS EYE DAMAGE / IRRITATION.

Does not meet the classification criteria for this hazard class.

RESPIRATORY OR SKIN SENSITISATION.

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.

STOT - SINGLE EXPOSURE.

Does not meet the classification criteria for this hazard class.

STOT - REPEATED EXPOSURE.

Does not meet the classification criteria for this hazard class.

ASPIRATION HAZARD.

Does not meet the classification criteria for this hazard class.

## SECTION 12. Ecological information.

This product is dangerous for the environment and highly toxic for aquatic organisms.

This product is dangerous for the environment and is toxic for aquatic organisms. In the long term, it has negative effects on the aquatic environment.

### 12.1. Toxicity.

SILVER NITRATE

LC50 - for Fish. 0,0067 mg/l/96h Pimephales promelas


EC50 - for Crustacea. 0,0006 mg/l/48h Daphnia magna

Chronic NOEC for Fish. 0,011 mg/l Leuciscus idus

### 12.2. Persistence and degradability.

Information not available.

### 12.3. Bioaccumulative potential.

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SILVER NITRATE

Partition coefficient: n-octanol/water.

5 Log Kow

**12.4. Mobility in soil.**

Information not available.

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

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

**12.6. Other adverse effects.**

SILVER NITRATE

Forms corrosive mixtures with water even if diluted. Discharge into the environment must be avoided.

**SECTION 13. Disposal considerations.**

**13.1. Waste treatment methods.**

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

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

Waste transportation may be subject to ADR restrictions.

**CONTAMINATED PACKAGING**

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

**SECTION 14. Transport information.**

**14.1. UN number.**

ADR / RID, IMDG, 3082

IATA:

ADR / RID: In accordance with Special Provision 375, this product, when is packed in receptacles of a capacity ≤ 5Kg or 5L, is not submitted to ADR provisions.

IMDG: In accordance with Section 2.10.2.7 of IMDG Code, this product, when is packed in receptacles of a capacity ≤ 5Kg or 5L, is not submitted to IMDG Code provisions.

IATA: In accordance with SP A197, this product, when is packed in receptacles of a capacity ≤ 5Kg or 5L, is not submitted to IATA dangerous goods regulations.


**14.2. UN proper shipping name.**

ADR / RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SILVER NITRATE MIXTURE)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SILVER NITRATE MIXTURE)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (SILVER NITRATE MIXTURE)



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**14.3. Transport hazard class(es).**

ADR / RID:	Class: 9	Label: 9
IMDG:	Class: 9	Label: 9
IATA:	Class: 9	Label: 9



**14.4. Packing group.**

ADR / RID, IMDG, IATA: III

**14.5. Environmental hazards.**

ADR / RID:	Environmentally Hazardous.
IMDG:	Marine Pollutant.
IATA:	Environmentally Hazardous.



**14.6. Special precautions for user.**

ADR / RID:	HIN - Kemler: 90	Limited Quantities: 5 L	Tunnel restriction code: (E)
	Special Provision: -		
IMDG:	EMS: F-A, S-F	Limited Quantities: 5 L	
IATA:	Cargo:	Maximum quantity: 450 L	Packaging instructions: 964
	Pass.:	Maximum quantity: 450 L	Packaging instructions: 964
	Special Instructions:	A97, A158, A197	

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

Information not relevant.

**SECTION 15. Regulatory information.**


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

Seveso Category - Directive 2012/18/EC: E1

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

Product  
Point. 3

Substances in Candidate List (Art. 59 REACH).

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

Substances subject to authorisation (Annex XIV REACH).

None.

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:

None.

Substances subject to the Rotterdam Convention:

None.

Substances subject to the Stockholm Convention:

None.

Healthcare controls.

Information not available.

WGK 1: Low hazard to waters


#### 15.2. Chemical safety assessment.

No chemical safety assessment has been processed for the mixture and the substances it contains.

### SECTION 16. Other information.

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

<b>Ox. Sol. 2</b>	Oxidising solid, category 2
<b>Met. Corr. 1</b>	Substance or mixture corrosive to metals, category 1
<b>Skin Corr. 1B</b>	Skin corrosion, category 1B
<b>Skin Corr. 1C</b>	Skin corrosion, category 1C
<b>Eye Dam. 1</b>	Serious eye damage, category 1
<b>Eye Irrit. 2</b>	Eye irritation, category 2
<b>Skin Irrit. 2</b>	Skin irritation, category 2
<b>Aquatic Acute 1</b>	Hazardous to the aquatic environment, acute toxicity, category 1
<b>Aquatic Chronic 1</b>	Hazardous to the aquatic environment, chronic toxicity, category 1
<b>Aquatic Chronic 2</b>	Hazardous to the aquatic environment, chronic toxicity, category 2
<b>Aquatic Chronic 3</b>	Hazardous to the aquatic environment, chronic toxicity, category 3
<b>Aquatic Chronic 4</b>	Hazardous to the aquatic environment, chronic toxicity, category 4
<b>H272</b>	May intensify fire; oxidiser.
<b>H290</b>	May be corrosive to metals.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H318</b>	Causes serious eye damage.
<b>H319</b>	Causes serious eye irritation.

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<b>H315</b>	Causes skin irritation.
<b>H400</b>	Very toxic to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H411</b>	Toxic to aquatic life with long lasting effects.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>H413</b>	May cause long lasting harmful effects to aquatic life.

#### LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 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 NUMBER: 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: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

#### GENERAL BIBLIOGRAPHY

1. Regulation (EU) 1907/2006 (REACH) of the European Parliament
  2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
  3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
  4. Regulation (EU) 2015/830 of the European Parliament
  5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
  6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
  7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
  8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
  9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
  10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
- The Merck Index. - 10th Edition
  - Handling Chemical Safety
  - INRS - Fiche Toxicologique (toxicological sheet)
  - Patty - Industrial Hygiene and Toxicology
  - N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
  - ECHA website

#### Note for users:

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

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

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

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