

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 31.07.2018

Version 14.5

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

### 1.1 Product identifier

Catalogue No. 101512

Product name Silver nitrate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

REACH Registration Number 01-2119513705-43-XXXX 05-2114751442-53-0000

CAS-No. 7761-88-8

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

Identified uses Reagent for analysis  
For additional information on uses please refer to the Merck Chemicals portal ([www.merckgroup.com](http://www.merckgroup.com)).

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

Company Merck KGaA \* 64271 Darmstadt \* Germany \* Phone:+49 6151 72-0

Responsible Department LS-QHC \* e-mail: [prodsafe@merckgroup.com](mailto:prodsafe@merckgroup.com)

1.4 Emergency telephone number Please contact the regional company representation in your country.

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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing solid, Category 2, H272

Skin corrosion, Category 1B, H314

Acute aquatic toxicity, Category 1, H400

Chronic aquatic toxicity, Category 1, H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### *Hazard pictograms*



#### *Signal word*

Danger

#### *Hazard statements*

H272 May intensify fire; oxidizer.

H314 Causes severe skin burns and eye damage.

H410 Very toxic to aquatic life with long lasting effects.

#### *Precautionary statements*

##### Prevention

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

##### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

#### **Reduced labelling (≤125 ml)**

##### *Hazard pictograms*



##### *Signal word*

Danger

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## *Hazard statements*

H314 Causes severe skin burns and eye damage.

## *Precautionary statements*

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

*Index-No.* 047-001-00-2

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	AgNO <sub>3</sub>	AgNO <sub>3</sub> (Hill)
Index-No.	047-001-00-2	
EC-No.	231-853-9	
Molar mass	169,87 g/mol	

### Hazardous components (REGULATION (EC) No 1272/2008)

#### *Chemical name (Concentration)*

CAS-No.	Registration number	Classification
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Silver nitrate (>= 80 % - <= 100 % )

7761-88-8	01-2119513705-43-	
	XXXX 05-	Oxidizing solid, Category 2, H272
	2114751442-53-0000	Skin corrosion, Category 1B, H314
		Acute aquatic toxicity, Category 1, H400
		Chronic aquatic toxicity, Category 1, H410
		M-Factor: 100

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 3.2 Mixture

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Not applicable

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

#### *General advice*

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

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

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

No information available.

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

#### *Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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## 5.2 Special hazards arising from the substance or mixture

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

*Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6. Accidental release measures

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

Advice for non-emergency personnel: Avoid substance contact. Avoid inhalation of dusts. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

### 6.2 Environmental precautions

Do not empty into drains.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Pick up when dry. Conduct recycling. Clean up affected area. Avoid dust formation.

### 6.4 Reference to other sections

Indications about waste treatment see section 13.

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## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

#### *Advice on safe handling*

Observe label precautions.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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

#### *Storage conditions*

Tightly closed. Dry. Protected from light. Do not store near combustible materials.

Recommended storage temperature see product label.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### **Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

#### **Individual protection measures**

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Tightly fitting safety goggles

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## *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

## *Other protective equipment*

protective clothing

## *Respiratory protection*

required when dusts are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

## **Environmental exposure controls**

Do not empty into drains.

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## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form	crystals
Colour	colourless
Odour	odourless
Odour Threshold	Not applicable
pH	5,4 - 6,4 at 100 g/l 20 °C
Melting point	212 °C
Boiling point/boiling range	444 °C at 1.013 hPa (decomposition)
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	Not applicable



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Relative vapour density	No information available.
Density	4,35 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	2.160 g/l at 20 °C
Partition coefficient: n-octanol/water	No information available.
Auto-ignition temperature	No information available.
Decomposition temperature	> 444 °C
Viscosity, dynamic	Not applicable
Explosive properties	Not classified as explosive.
Oxidizing properties	The substance or mixture is classified as oxidizing with the category 2.

## 9.2 Other data

Ignition temperature	Not applicable
Bulk density	ca.2.350 kg/m <sup>3</sup>

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

has a corrosive effect

### 10.2 Chemical stability

Sensitivity to light

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## 10.3 Possibility of hazardous reactions

Risk of explosion with:

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

Strong heating (decomposition).

Exposure to light.

## 10.5 Incompatible materials

Aluminium, Mild steel

## 10.6 Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

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

#### *Acute dermal toxicity*

This information is not available.

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## *Skin irritation*

In vitro study

Result: Corrosive

OECD Test Guideline 431

Causes burns.

## *Eye irritation*

Rabbit

Result: Causes burns.

(External MSDS)

Causes serious eye damage. Risk of permanent damage due to staining of the cornea.

Risk of blindness!

## *Sensitisation*

This information is not available.

## *Germ cell mutagenicity*

### *Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

(External MSDS)

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

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## *Aspiration hazard*

This information is not available.

## **11.2 Further information**

After uptake of large quantities:

Vomiting, gastric spasms, Diarrhoea, Dizziness, Unconsciousness, death

The following applies to soluble silver compounds: only slightly absorbed via the gastrointestinal tract. Strong irritations after contact with eyes and skin.

Handle in accordance with good industrial hygiene and safety practice.

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## **SECTION 12. Ecological information**

### **12.1 Toxicity**

#### *Toxicity to fish*

NOEC *Leuciscus idus* (Golden orfe): 0,011 mg/l; 96 h

OECD Test Guideline 203

flow-through test LC50 *Pimephales promelas* (fathead minnow): 0,0067 mg/l; 96 h

Analytical monitoring: yes

US-EPA

#### *Toxicity to daphnia and other aquatic invertebrates*

semi-static test LC50 *Daphnia magna* (Water flea): 0,0069 - 0,0082 mg/l; 48 h

Analytical monitoring: yes

OECD Test Guideline 202

#### *Toxicity to algae*

IC50 *Desmodesmus subspicatus* (green algae): 0,008 mg/l; 8 d

(External MSDS)

semi-static test *Pseudokirchneriella subcapitata* (green algae): 0,19 mg/l; 96 h

US-EPA

#### *Toxicity to bacteria*

EC10 *Pseudomonas putida*: 0,006 mg/l; 16 h

(External MSDS)

### **12.2 Persistence and degradability**

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## *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

### **12.3 Bioaccumulative potential**

No information available.

### **12.4 Mobility in soil**

No information available.

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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

### **12.6 Other adverse effects**

#### *Additional ecological information*

Biological effects:

Forms corrosive mixtures with water even if diluted.

Discharge into the environment must be avoided.

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## **SECTION 13. Disposal considerations**

### *Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## **SECTION 14. Transport information**

### **Land transport (ADR/RID)**

<b>14.1 UN number</b>	UN 1493
<b>14.2 Proper shipping name</b>	SILVER NITRATE
<b>14.3 Class</b>	5.1
<b>14.4 Packing group</b>	II
<b>14.5 Environmentally hazardous</b>	yes
<b>14.6 Special precautions for user</b>	yes
<b>Tunnel restriction code</b>	E

### **Inland waterway transport (ADN)**

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Not relevant

## Air transport (IATA)

14.1 UN number	UN 1493
14.2 Proper shipping name	SILVER NITRATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	no

## Sea transport (IMDG)

14.1 UN number	UN 1493
14.2 Proper shipping name	SILVER NITRATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	yes

EmS F-A S-Q

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

Not relevant

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## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard	SEVESO III
Legislation	OXIDIZING LIQUIDS AND SOLIDS P8 Quantity 1: 50 t Quantity 2: 200 t

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SEVESO III

ENVIRONMENTAL HAZARDS

E1

Quantity 1: 100 t

Quantity 2: 200 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1\%$  (w/w).

*National legislation*

Storage class 5.1B

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

H272	May intensify fire; oxidizer.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H272 May intensify fire; oxidizer.  
H314 Causes severe skin burns and eye damage.  
H410 Very toxic to aquatic life with long lasting effects.

*Precautionary statements*

Prevention

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.



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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

## Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

## Regional representation

This information is given on the authorised Safety Data Sheet for your country.

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*