



# ID Card

## Silver nitrate

Version 4 July 2023

### Notes:

- This ID card is used to support the substance sameness discussions and to describe the substance to the best of the members' knowledge.
- It aims at grouping communications relevant to the request of available data or information
- It is the responsibility of each individual registrant to identify their substance and to report company-specific identity in their Registration Dossier (section 1 of IUCLID).

### **DISCLAIMER**

All data and information contained in this document shall be treated by the receiving party (i) in full confidence with the adequate respect of any confidential and/or proprietary nature of such information and (ii) only in the framework of the purpose of agreeing on substance sameness, Lead Registrant and overall REACH Strategy for the concerned Substance under REACH (the 'Purpose').

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## 1. Identification of the substance

**Table 1. Identification of the substance**

	<b>Original (in EC inventory)</b>
<b>Name</b>	Silver nitrate
<b>EC number</b>	231-853-9
<b>CAS number</b>	7761-88-8
<b>Description</b>	Not available
<b>Composition type</b>	Mono-constituent substance

## 2. Synonyms and other identifiers of the substance

**Table 2. Synonyms and other identifiers of the substance**

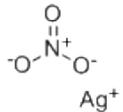
<b>IUPAC name</b>	Silver(1+) nitrate
<b>CAS name</b>	Silver nitrate
<b>Abbreviations</b>	None
<b>Other commercial, brand or international names</b>	Nitric acid silver(1+) salt Silver mononitrate Silver(I) nitrate
<b>Other identity codes</b>	None

### 3. Substances (with core identifiers) also falling under this substance (with justification)

None

### 4. Information related to molecular and structural formula of the substance

**Table 3. Information related to molecular and structural formula of the substance**

<b>Molecular formula</b>	AgNO <sub>3</sub>
<b>Structural formula</b>	
<b>Smiles notation</b>	[N+](=O)([O-])[O-].[Ag+]
<b>Optical activity</b>	
<b>Typical ratio of (stereo) isomers</b>	Not applicable
<b>Molecular Weight / Molecular Weight range</b>	169,87 g/mol

### 5. Typical composition of the substance

Silver nitrate is marketed in the form of crystals (varying particle sizes which may influence the extent of oxidising properties) or aqueous solutions (varying concentrations which may influence the skin corrosivity and/or eye damage potential). All forms will be addressed in the same Registration Dossier but are reported individually in IUCLID section 1.2 and linked to the appropriate classification.

#### 5.1 Silver nitrate - Solid, D10 < 250 µm – Ox. Sol. Cat. 1

**Table 4. Typical composition**

	<b>Name</b>	<b>Symbol / Formula</b>	<b>Typical concentration (range) (%)</b>
<b>Main constituent(s)*</b>	Silver nitrate	AgNO <sub>3</sub>	≥ 99,0
<b>Impurity(ies)#</b>	Chlorides	Cl	< 1
	Sulphates	SO <sub>4</sub>	< 1
	Copper	Cu	< 1
	Iron	Fe	< 1
	Lead	Pb	< 1
	Other	N/A	< 1

\* ≥ 80 % (w/w) for mono-constituent substances; ≥ 10 % (w/w) and < 80 % (w/w) for multi-constituent substances.

# An impurity is an unintended constituent present in a substance, as produced. It may originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While impurities are present in the final substance, they were not intentionally added.

The composition given above is typical and should therefore represent the majority of Silver nitrate - Solid, D10 < 250 µm as manufactured and/or imported in the EEA market. Silver nitrate - Solid, D10 < 250 µm containing less than 99 % Silver nitrate may still be considered to be the same for the purpose of registration under REACH and may be referred to as impure Silver nitrate - Solid, D10 < 250 µm to distinguish it from the typically pure Silver nitrate - Solid, D10 < 250 µm.

## 5.2 Silver nitrate – Solid, D10 > 250 µm – Ox. Sol. Cat. 2

**Table 5. Typical composition**

	Name	Symbol / Formula	Typical concentration (range) (%)
<b>Main constituent(s)*</b>	Silver nitrate	AgNO <sub>3</sub>	≥ 99,0
<b>Impurity(ies)#</b>	Chlorides	Cl	< 1
	Sulphates	SO <sub>4</sub>	< 1
	Copper	Cu	< 1
	Iron	Fe	< 1
	Lead	Pb	< 1
	Other	N/A	< 1

\* ≥ 80 % (w/w) for mono-constituent substances; ≥ 10 % (w/w) and < 80 % (w/w) for multi-constituent substances.

# An impurity is an unintended constituent present in a substance, as produced. It may originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While impurities are present in the final substance, they were not intentionally added.

The composition given above is typical and should therefore represent the majority of Silver nitrate – Solid, D10 > 250 µm as manufactured and/or imported in the EEA market. Silver nitrate – Solid, D10 > 250 µm containing less than 99 % Silver nitrate may still be considered to be the same for the purpose of registration under REACH and may be referred to as impure Silver nitrate – Solid, D10 > 250 µm to distinguish it from the typically pure Silver nitrate – Solid, D10 > 250 µm.

## 6. Information on appearance, physical state and properties of the substance

**Table 6. Appearance / physical state / properties of the solid substance**

<b>Physical state</b>	Solid
<b>Physical form*</b>	Crystalline
<b>Appearance</b>	Colourless to white crystals
<b>Particle size**</b>	Coarse powder
<b>Does the substance contain 'bound water'?#</b>	No
<b>Does the substance contain 'crystallisation water'?#</b>	No
<b>Does the solid hydrolyse?##</b>	No
<b>Is the solid hygroscopic?§</b>	Yes



\* Crystalline form: solid material whose constituent atoms, molecules, or ions are arranged in an ordered pattern extending in all three spatial dimensions. Amorphous form: solid material whose constituent atoms, molecules, or ions are randomly arranged.

\*\* Nanoform: particles in the size range 1 - 100 nm (for full definition of a nanomaterial, see <http://ec.europa.eu/environment/chemicals/nanotech/index.htm#definition>). Fine powder: particles in the size range 100 – 2.500 nm. Coarse powder: particles in the size range 2.500 nm – 1 mm. Massive object: particles in the size range > 1 mm.

# 'Bound water': water molecules that are coordinated as bound ligands. 'Crystallisation water' or hydration water: water that occurs in crystals (necessary for the maintenance of crystalline properties) but which is not directly bound to the metal ion (a hydrate contains a definite % of crystallisation water e.g.  $\text{CuSO}_4 \times 5 \text{H}_2\text{O}$ , an anhydride does not contain any water)

## Hydrolysis: decomposition (cleavage of chemical bonds) by the addition of water.

§ Hygroscopic substance: readily attracts moisture from its surroundings in open air, through either absorption or adsorption. Cf. also water/moisture content under section 5.

**Table 7. Appearance / physical state / properties of the substance in solution\***

<b>Physical state</b>	Solution
<b>Solvent</b>	Water
<b>Concentration range of substance in solution</b>	Varies
<b>pH (range) of the solution</b>	Depending on the concentration of the substance in solution (3,5 - 5,5 for a 10% solution)
<b>Excess acid</b>	Depending on the concentration of the substance in solution (< 0,1 % $\text{HNO}_3$ for a 10% solution)

\* For liquid substances (solvent cannot be separated from substance without changing the identity of the substance) and not for mixtures, suspensions, and other non-substance forms in which the substance is manufactured and/or imported under REACH.

## 7. Analytical data

Annex VI of REACH requires the registrant to describe the analytical methods and/or to provide the bibliographical references for the methods used for identification of the substance and, where appropriate, for the identification of impurities and additives. This information should be sufficient to allow the methods to be reproduced.

**Table 8. Analytical methods for identification of the substance**

Parameter / Method	Recommended for substance identification and sameness check	Applicable	Not applicable or not recommended
<b>Elemental analysis</b>			
ICP (ICP-MS or ICP-OES)	X		
Atomic absorption spectroscopy (AAS)			
Glow discharge mass spectrometry (GDMS)			
<b>Molecular analysis</b>			
Infrared (IR) spectroscopy	X		
Raman spectroscopy	X		
<b>Mineralogical analysis</b>			
X-Ray Fluorescence (XRF)			



X-Ray Diffraction (XRD)	X		
<b>Morphology and particle sizing</b>			
Electron microscopy (SEM, TEM, REM)*#			
Laser diffraction*#	X		
Particle size by other means (e.g. sieve analysis)#			
Surface area by N-BET*#			
<b>Other</b>			

\* Analytical techniques particularly (but not exclusively) relevant for nanomaterials.

# The choice of the technique for particle size depends on the size of the material as manufactured/imported/placed on the market/used.

## 8. Lead Registrant

Ames Goldsmith Netherlands B.V. is the Lead Registrant for Silver nitrate. The EPMF will provide support to the Lead Registrant as laid down in the EPMF Agreement.

## 9. Scope of the Registration Dossier

The uses included in this Registration Dossier are listed on the [EPMF website](#).