

**Safety Data Sheet**  
**according to Regulation (EC) No 1907/2006 (REACH)**

**ProforNano**

Trade name: ProNanoAg (silver nano)  
Version: 1.0 / EN

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Print date: 28.08.2020  
Revision date: 28.08.2020

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product identifier:** ProNanoAg (silver nano)

**1.2. Relevant identified uses of the mixture and uses advised against**

Disinfection of surfaces, materials, equipment and furniture that do not come into contact with food or animal feed.

**1.3 Details of the supplier of the safety data sheet:**

MB Pro for Nano  
Mokyklos g. 5-5, Vilnius, LT-08413, Lithuania  
Email : [info@profornano.com](mailto:info@profornano.com)

**1.4 EMERGENCY TELEPHONE NUMBER:**

+370 694 73130, From Monday to Friday 9 am to 6 pm.

**SECTION 2: Hazards identification**

**2.1. Classification of the mixture:**

Classification according to Regulation 1272/2008/EC (CLP):

Aerosol 1 H222-H229 Extremely flammable aerosol. Pressurised container: Heating may cause an explosion.

Warning H statements:

H222– Extremely flammable aerosol.

H229 – Pressurised container: Heating may cause an explosion.

**2.2 Label elements**

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

**Hazard pictograms**



**GHS02**

**Signal word:**

***Danger***

Hazard statements:

H222 – Extremely flammable aerosol.

H229 – Pressurised container: Heating may cause an explosion.

Precautionary statements:

P102 – Keep out of reach of children.

P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. — No smoking.

P211 – Do not spray on an open flame or other ignition source.

P251 – Do not pierce or burn, even after use.

P410+P412 – Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.

P501 – Dispose of contents / container to an authorized company in accordance with national regulations.

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Note:

The label shall contain the following information clearly legible and indelible: This product contains a nanomaterial: silver (nano).

## 2.3 Other hazards

The product does not contain components meeting the PBT or vPvB criteria in accordance with Annex XIII of the REACH Regulation.

## SECTION 3. Composition/information on ingredients

### 3.1 Substances

Not applicable

### 3.2 Mixture

Description: the mixture is an aqueous dispersion and contains nanosilver (spherical, <100nm). Mechanical treatment like grinding or polishing does not release free nanosilver particles from cured films.

#### Hazardous ingredients

Substance name	CAS No.	EC No.	REACH reg. nr	Concentration by mass	Classification according Regulation (EC) No. 1272 [CLP]		
					Hazard pictogram	Pavojaus kategorijos	Pavojingumo frazė
Silver (nano), */**	7440-22-4	231-131-3	-	0.003%	GHS09 Warning	Aquatic Acute 1 M-factor=10 Aquatic Chronic 1 M-factor=10	H400 H410
Ethanol	7440-22-4	200-578-6	01-2119555 669-XXXX	≤64%	GHS02 Danger	Flam.liquid 2	H225

\*: Substance classified by the manufacturer or substance which has no obligatory classification according to EU regulations.

\*\* : Substance with workplace exposure limits

For the full text of H phrases: see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

GENERAL INFORMATION:

Consult a physician; Show this safety data sheet to the attending physician.

IN CASE OF INGESTION:

Measures:

Exposure by this route usually does not occur.  
Wash out mouth. Drink plenty of water.

Do not induce vomiting.  
Do not give the victim anything orally if the victim is unconscious.  
In case of complaints, obtain medical help.

**IN CASE OF INHALATION:**

Measures:

Remove the victim into fresh air.  
In case of complaints, obtain medical help.

**IN CASE OF SKIN CONTACT:**

Measures:

Remove contaminated clothes.  
Wash skin surface with plenty of water.  
In case of complaints, obtain medical help.

**IN CASE OF EYE CONTACT:**

Measures:

Consult an ophthalmologist if disturbing symptoms appear.  
Protect the non-irritated eye, remove contact lenses.  
Wash the contaminated eyes with water for at least 15 minutes.  
Avoid strong stream of water – risk of damage to the cornea.

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

Eye contact: possible redness, tearing, burning sensation.  
After inhalation: possible coughing, respiratory problems, dizziness and central nervous system disorders.  
After swallowing: possible irritation of mouth, throat and stomach.

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

The decision on the method of rescue proceedings is made by the doctor after a thorough assessment of the condition of the injured party. Treat symptomatically.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

Suitable extinguishing media: carbon dioxide, extinguishing powder, alcohol-resistant foam, water spray,  
Unsuitable extinguishing media: strong stream of water – danger of fire spreading.

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

Harmful gases can be formed during combustion that contain carbon oxides and other unidentified pyrolysis products. Avoid inhalation of combustion products and may pose a health hazard.

**5.3 Advice for fire-fighters**

Extremely flammable aerosol. Pressurised container, heating may cause an explosion. Wear general protective equipment typical in case of fire. Do not stay in a fire-endangered area without proper chemical-resistant clothing and self-contained breathing apparatus. Vapours may accumulate near the surface of the ground and move over long distances, creating the danger of fire or explosion. Cooldown fire-endangered container at a safe distance with a water spray. Pressurised container – danger of leakage or even explosion at high temperature. Collect used extinguishing media. Do not allow fire extinguishing water to leak into drains, surface water or groundwater.

**SECTION 6: Accidental release measures**

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

Limit the access for the outsiders into the breakdown area, until the suitable cleaning operations are completed. Ensure that the recovery of the failure and its effects are performed by trained personnel only. In the case of large releases, isolate the exposed area. Avoid contact with skin and eyes. Ensure adequate ventilation. Do not breathe vapours. Impose a ban on smoking and on use of open flame and sparking tools. Wear personal protective equipment.

**6.2 Environmental precautions**

In case of a release of large amounts of the product, it is necessary to take appropriate steps to prevent it from spreading into the environment. Notify the appropriate emergency services.

**6.3 Methods and material for containment and cleaning up**

Collect the damaged packaging mechanically. Embank the larger leakage and pump it out, collect the smaller leakage with non-flammable liquid-absorbing materials (e.g. sand, soil, vermiculite) and place it in properly labelled containers. Dispose of the collected material as waste. Clean the contaminated place. Do not use sparking tools.

**6.4 Reference to other sections**

For further and detailed information see section 8 and 13.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

Observe conventional hygiene precautions. Wash your hands thoroughly after handling the product.  
Do not eat, drink or smoke when using the product.  
Wear personal protective equipment.  
Avoid contact with eyes and skin.  
Avoid aerosol inhalation.  
Eliminate ignition sources – do not use open fire, do not smoke, do not use sparking tools and clothing made of fabrics susceptible to static charge.  
Protect from heat.  
Avoid static charge accumulation.  
Do not spray over an open flame or glowing material.  
Technical measures:  
Ensure adequate ventilation.  
Keep container tightly closed.

Precautions against fire and explosion:

Dried product can ignite spontaneously, treat endangered areas with water spray.

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

Store in a dry and cool place only.  
Keep away from sources of ignition and heat.  
On the premises of the warehouse, observe the ban on smoking and on use of open flame and sparking tools.  
Avoid direct sunlight.  
Do not pierce or burn containers, even after use.  
Keep away from food, foodstuffs and animal feeds and incompatible materials (see subsection 10.5).  
Keep out of the reach of children and pets.

**7.3 Specific end uses**

No specific instructions available.

## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

Occupational exposure limit values (Directive 2000/39/EC): Silver, metallic (CAS: 7440-22-4): long term (8 hours): 0,1 mg/m<sup>3</sup>

#### **DNEL**

<u>Ethanol (CAS: 64-17-5):</u>	<u>DNEL</u>	<u>Scope</u>	<u>Exposure</u>
Inhalation	1900 mg/m <sup>3</sup>	worker	acute
Dermal	343 mg/kg/d.	worker	chronic

<u>Silver (CAS: 7440-22-4):</u>	<u>DNEL</u>	<u>Scope</u>	<u>Exposure</u>
Inhalation	0.1 mg/m <sup>3</sup>	worker	chronic
Inhalation	0.04 mg/m <sup>3</sup>	user	chronic
Ingestion	1.2 mg/kg	user	chronic

#### **PNEC**

<u>Ethanol (CAS: 64-17-5):</u>	<u>PNEC</u>
Fresh water	0.96 mg/L
Sea water	0.79 mg/L
Sea water sediment	3.6 mg/kg
Soil	0.63 mg/kg
Sewage treatment plant	580 mg/L

<u>Silver (CAS: 7440-22-4):</u>	<u>PNEC</u>
Fresh water	0.04 mg/L
Sea water	0.86 mg/L
Sea water sediment	438.13 mg/kg
Fresh water sediment	438.13 mg/kg
Soil	1.41 mg/kg
Sewage treatment plant	0.025 mg/L

### **8.2 Exposure controls**

In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers. Do not eat, drink or smoke while working. Before break and after work, wash hands carefully. If during operations, there is a risk of the employees' clothes igniting, no more than 20 m in the horizontal line from the workstations where these operations are carried out, rescue showers (safety showers) for washing the whole body and separate showers for washing the eyes should be installed.

#### **Appropriate engineering controls**

In pursuance of work is proper foresight needed to avoid leaking onto clothes and floors and to avoid contact with eyes and skin. Do not eat, drink or smoke during work. Preventive skin protection.

#### **Personal protective equipment**

1. Eye/face protection: use appropriate protective glasses (EN 166).
2. Skin protection:
  - 2.1. Hand protection: use appropriate nitrile rubber protective gloves (EN 374). Recommended material: nitrile, neoprene, butyl rubber > 0.5 mm thick and breakthrough time > 480 minutes. In case of splashing, use polychloroprene gloves > 0.65 mm thick and a breakthrough time > 120 minutes.
  - 2.2. Other: use appropriate fireproof protective clothes.

3. Respiratory protection: It is not required under normal conditions of use. In case of high gas/vapour concentrations, use respiratory protective equipment with type A filter. Where the oxygen concentration is  $\leq 19\%$  and/or the maximum concentration of the toxic substance in the air is  $\geq 1,0\%$  by volume, use insulating equipment.

The personal protective equipment used must meet the requirements of Regulation (EU) 2016/425. The employer is obliged to provide protective equipment appropriate to the activities performed and meeting all quality requirements, including their maintenance and cleaning.

### 8.2.3 Environmental exposure controls:

Avoid release to the environment, do not discharge into drains, soil, sewage or watercourses. Possible emissions from ventilation systems and process equipment should be checked to determine their compliance with the requirements of environmental laws.

## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance:	Liquid in aerosol container, transparent.
Odour:	ethanol
Odour threshold:	no data available
pH value:	<4
Melting point/ freezing point:	no data available
Initial boiling point/boiling range:	>35 °C
Flash point:	<20 °C
Evaporation rate:	no data available
Flammability:	no data available
Upper/lower flammability or explosive limits:	no data available
Vapour pressure:	no data available
12 Vapour density:	no data available
Density:	0.81 g/ml
Solubility(ies):	soluble in pure water in any proportion
Partition coefficient: n-octanol/water:	no data available
Self-ignition temperature:	no data available
Degradation temperature:	no data available
Viscosity:	no data available
Explosive properties:	May form explosive mixture with air.
Oxidizing properties:	no data available

### 9.2 Other information:

Included nanomaterials: Silver (spherical, <100 nm).

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Product is reactive. Product vapours may form explosive mixtures with air. More information in subsections:10.3-10.5.

### 10.2 Chemical stability

Product is stable when used and stored properly.

### 10.3 Possibility of hazardous reactions

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None known.

### 10.4 Conditions to avoid:

Avoid heat and fire sources, direct sunlight, temperatures above 50 °C, static electricity, sparks, hot surfaces.

### 10.5 Incompatible materials:

Strong oxidants, reducing agents, strong acids, strong bases, acid chlorides, ammonia.

### 10.6 Hazardous decomposition products:

Only in case of fire, see section 5.2.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Toxicity of components:

##### Ethanol (CAS: 64-17-5)

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LC50 (inhalation, rat): 20000 ppm / 10 h

LC50 (inhalation, mouse): 39 mg/m<sup>3</sup>

LD50 (ingestion, rat): 7060 mg/kg

LD50 (ingestion, mouse): 3450 mg/kg

LD50 (ingestion, rabbit): 6300 mg/kg

##### Silver (CAS: 7440-22-4)

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LC50 (ingestion, rat): 3731 mg/kg

LC50 (ingestion, mouse): 1027 mg/kg

LC50 (inhalation, rat): >5.16 mg/L

LD50 (dermal, mouse): >2000 mg/kg

LD50 (dermal, guinea pig): <348 mg/kg

#### Toxicity of mixture:

Information on toxicological effects: Acute toxicity: none known.

Skin corrosion/irritation: none known.

Serious eye damage/eye irritation: none known.

Respiratory or skin sensitisation: none known.

Germ cell mutagenicity: none known.

Carcinogenicity: none known.

Reproductive toxicity: none known.

STOT-single exposure: none known.

STOT-repeated exposure: none known.

Aspiration hazard: none known.

For substances subject to registration, brief summaries of the information derived from the test conducted:

No data available.

Relevant toxicological properties of the hazardous substances:

Information about the ingredients:

Spherical nanosilver (CAS number: 7440-22-4):

LD50 Oral (rat): > 2000 mg/kg (OECD 423)

LD50 Dermal (Rat): > 2000 mg/kg (OECD 402)

Skin irritation - non-irritating (rabbit, OECD 404)

Eye irritation - non-irritating (rabbit, OECD 405)

Information on likely routes of exposure:

Ingestion, inhalation, skin contact, eye contact.

Symptoms related to the physical, chemical and toxicological characteristics:

No data available.  
Delayed and immediate effects as well as chronic effects from short and long-term exposure:  
No data available.  
Interactive effects:  
No data available.  
Absence of specific data:  
No information.  
Other information:  
No data available.

## SECTION 12: Ecological information

### 12.1 Toxicity:

#### Toxicity by components:

##### Ethanol (CAS: 64-17-5):

LC50 (fish)	8140 mg/L/48 h	<i>Leuciscus idus</i>
EC50 (daphnia)	12340 mg/L/48h	<i>Daphnia magna</i>
IC50 (alga)	5000 mg/L/7d.	<i>Scendesmus quadricauda</i>
EC50 (bacteria)	6500 mg/L/16h	<i>Pseudomonas putida</i>

##### Silver (CAS: 7440-22-4)

LC50 (fish)	1.2 µg/L/96h	<i>Pimephales promelas</i>
	10.2 µg/L/96h	<i>Oncorhynchus mykiss</i>
	139 µg/L/96h	<i>Orzyias latipes</i>
NOEC (fish)	130 µg/L/28d.	<i>Menidia berylline</i>
	0.351 µg/L/28d.	<i>Pimephales promelas</i>
EC10 (fish)	0.44 µg/L/32d.	<i>Pimephales promelas</i>
LC50 (invertebrate)	0.22 µg/L/48h	<i>Daphnia magna</i>
EC10 (invertebrate)	2.48 µg/L/7d	<i>Ceriodaphnia dubia</i>
EC10 (alga)	0.16 µg/L/15d	<i>Nostoc muscorum</i>
EC10 (alga)	0.41 µg/L/24h	<i>Pseudokirchneriella subcapitata</i>
EC10 (aquatic plants)	14.8 µg/L/3 sav.	<i>Salvinia natans</i>

#### Toxicity of mixture:

The product is not classified as hazardous to the aquatic environment.

### 12.2 Persistence and degradability

ethanol [CAS 64-17-5]

The substance is biodegradable.

### 12.3 Bioaccumulative potential

Data for components:

Ethanol [CAS 64-17-5] Bioaccumulation is not to be expected.

Silver [CAS 7440-22-4] BCF: 4.59

### 12.4 Mobility in soil

Gaseous components spread rapidly in the air. Mobility of the mixture components depends on their hydrophilic and hydrophobic properties as well as the abiotic and biotic conditions of the soil, including its structure, climatic conditions, season and soil organisms.

### 12.5 Results of PBT and vPvB assessment



The product does not contain components meeting the PBT or vPvB criteria in accordance with Annex XIII of the REACH Regulation.

**12.6 Other adverse effects:**

The mixture is not classified as hazardous to the ozone layer. Other harmful effects of the mixture components on the environment (e.g. endocrine-disrupting properties, global warming potential) should be considered.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

Disposal according to the local regulations.

Information regarding the disposal of the product:

If recycling is not possible, waste must be disposed of in accordance with local regulations.

Do not empty into drains.

Proposed waste code: 16 05 04\* (Gases in pressure containers (including halons) containing hazardous substances).

Information regarding the disposal of the packaging:

the classification of this waste meets the requirements for hazardous waste. Send the packaging to an authorised company. Do not mix with other waste. Do not burn or pierce an empty packaging.

The waste code should be assigned at the place of its production.

Physical/chemical properties that may affect waste treatment options shall be specified:

None known.

Sewage disposal:

Do not allow product to reach ground water, water course or sewage system.

Special precautions for any recommended waste treatment:

No data available.

EU legislation: Directives of the European Parliament and of the Council: 2008/98/EC as amended, and 94/62/EC, as amended as well as national legislation.

**SECTION 14: Transport information**

**14.1 Un Number:**

1950

**14.2 Un proper shipping name:**

AEROSOLS, flammable

**14.3 Transport hazard class(es)**

2 (label 2.1)

**14.4 Packaging group**

Not applicable.

**14.5 Environmental hazard**

The mixture does not pose a risk to the environment according to the criteria of the transport regulations.

**14.6 Special precautions for user**

Avoid sources of ignition and fire. Items of the consignment should not be dropped or exposed to impacts. Dishes shall be placed on the vehicle or in the container in such a way that they cannot tip over or fall. If the

pallets loaded with items have been stacked, each layer of pallets should be evenly distributed over the preceding layer and, if necessary, pads of sufficiently strong material should be used.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**  
Not applicable.

**SECTION 15: Regulatory information**

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

REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives (as amended).

REGULATION (EU) No 528/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2012 concerning the making available on the market and use of biocidal products

Biocidal Regulation (EU) No 528/2012.

**15.2 Chemical Safety Assessment**

The mixture was not subject to safety assessment.

**SECTION 16: Other information**

Information regarding the revision of the safety data sheet: none.

Full text of the abbreviations in the safety data sheet:

DNEL: Derived no effect level.

PNEC: Predicted no effect concentration.

CMR effects: carcinogenicity, mutagenicity and toxicity for reproduction.

PBT: Persistent, bioaccumulative and toxic.

vPvB: Very Persistent, Very Bioaccumulative.

n.d.: not defined.

n.a.: not applicable.

Methods used for the classification according to Regulation 1272/2008/EC.

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Relevant H-Phrases (number and full text) of Section 2 and 3:

Hazard statements:

H222 – Extremely flammable aerosol.

H229 – Pressurised container: Heating may cause an explosion.

Precautionary statements:

P102 – Keep out of reach of children..

P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. — No smoking.

P211 – Do not spray on an open flame or other ignition source.

P251 – Do not pierce or burn, even after use.

P410+P412 – Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.

P501 – Dispose of contents / container to an authorized company in accordance with national regulations.

#### Training

Before commencing working with the product, the user should learn the Health & Safety regulations, regarding handling chemicals, and in particular, undergo proper workplace training. Persons involved in the transport of hazardous materials under the ADR Agreement should be adequately trained in their duties (general, workplace and safety training).

This safety data sheet is developed on basis of the valid EU regulations. This SDS supersedes previous versions of the document. It shows the present state of the knowledge and is no contractual warranty of quality properties of the product. These statements may not be changed or transferred to other products. Duplication in unchanged state is permitted. They are neither a quality description of the product nor a guarantee of particular features. They are to be treated as an aid to safety in transport, storage and usage of the product. That does not free the user from the responsibility of improper usage of the information above and also of improper compliance with the law norms in the field.