

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Silver Nanowires A30, Research Grade**

Catalog Number: NovaWire-Ag-A30

Formula: Ag

Diameter: ~ 30 nm

Length: ~ 30 micron

Supplier: Novarials Corporation  
19 Crosby Drive, Suite 290  
Bedford, MA 01730

Email: [info@novarials.com](mailto:info@novarials.com)  
Telephone: +1 617-276-5642

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## 2. HAZARDS IDENTIFICATION

### Emergency Overview

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**  
Flammable liquids (Category 2), H225

**GHS Label elements, including precautionary statements**



Pictogram

Signal word      Danger

Hazard statement(s)  
H225      Highly flammable liquid and vapor.

Precautionary statement(s)

|                |                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------|
| P210           | Keep away from heat/sparks/open flames/hot surfaces. - No smoking.                                         |
| P233           | Keep container tightly closed.                                                                             |
| P240           | Ground/bond container and receiving equipment.                                                             |
| P241           | Use explosion-proof electrical/ventilating/lighting/equipment.                                             |
| P242           | Use only non-sparking tools.                                                                               |
| P243           | Take precautionary measures against static discharge.                                                      |
| P280           | Wear protective gloves/protective clothing/eye protection/face protection.                                 |
| P303+P361+P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P370 + P378    | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.                      |

P403 + P235  
P501

Store in a well-ventilated place. Keep cool.  
Dispose of contents/container to an approved waste disposal plant.

#### HMIS Ratings

Health Hazard: 2  
Chronic Health Hazard: \*  
Flammability: 3  
Physical Hazard: 0

#### NFPA Ratings

Health Hazard: 2  
Fire Hazard: 3  
Reactivity Hazard: 0

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Silver  
Formula: Ag  
Molecular Weight: 107.87 g/mol

| Component      |           | Concentration |
|----------------|-----------|---------------|
| <b>Silver</b>  |           |               |
| CAS-No.        | 7440-22-4 |               |
| EC-No.         | 231-131-3 |               |
| <b>Ethanol</b> |           |               |
| CAS-No.        | 64-17-5   |               |
| EC-No.         | 200-578-6 |               |

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### 4. FIRST AID MEASURES

#### General advice

Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Rinse thoroughly with plenty of water and consult a physician.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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### 5. FIREFIGHTING MEASURES

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Special protective equipment for firefighters

Wear self contained breathing apparatus for firefighting if necessary.

#### **Hazardous combustion products**

Hazardous decomposition products formed under fire conditions – Carbon oxides

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## **6. ACCIDENTAL RELEASE MEASURES**

### **Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

### **Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

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## **7. HANDLING AND STORAGE**

### **Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapor, mist or dust.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. Provide appropriate exhaust ventilation at places where dust is formed.

### **Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hygroscopic.

Air and light sensitive.

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## **8. PERSONAL PROTECTION**

### **Personal protective equipment**

#### **Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### **Hand protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### **Eye protection**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Body protection**

Impervious clothing. Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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**9. PHYSICAL AND CHEMICAL PROPERTIES****APPEARANCE**

|       |            |
|-------|------------|
| Form  | suspension |
| Color | grey       |

**Safety data**

|                                        |                   |
|----------------------------------------|-------------------|
| pH                                     | no data available |
| Melting point/freezing point           | no data available |
| Boiling point                          | no data available |
| Flash point                            | no data available |
| Ignition temperature                   | no data available |
| Auto ignition temperature              | no data available |
| Lower explosion limit                  | no data available |
| Upper explosion limit                  | no data available |
| Vapour pressure                        | no data available |
| Water solubility                       | no data available |
| Partition coefficient: n-octanol/water | no data available |
| Relative vapour density                | no data available |
| Odour                                  | no data available |
| Odour Threshold                        | no data available |
| Evaporation rate                       | no data available |

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**10. STABILITY AND REACTIVITY****Reactivity**

no data available

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Vapors may form explosive mixture with air.

**Conditions to avoid**

Heat, flames and sparks. Extremes of temperature and direct sunlight.

**Materials to avoid**

Alkali metals, Ammonia, Oxidizing agents, Peroxides

**Hazardous decomposition products**

Other decomposition products - no data available

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

no data available

#### Inhalation LC50

no data available

#### Dermal LD50

no data available

#### Other information on acute toxicity

no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/eye irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

|       |                                                                                                                                                         |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| IARC: | No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| NTP:  | No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.                 |
| OSHA: | No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.             |

### Reproductive toxicity

no data available

### Teratogenicity

no data available

### Specific target organ toxicity -single exposure (Globally Harmonized System)

No data available

### Specific target organ toxicity -repeated exposure (Globally Harmonized System)

No data available

#### Aspiration hazard

no data available

### Signs and Symptoms of Exposure

May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver).

**Synergistic effects**

no data available

**Additional Information**

RTECS: KQ6300000

Central nervous system depression, narcosis, Damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**12. ECOLOGICAL INFORMATION****Toxicity**

no data available

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

no data available

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**13. DISPOSAL CONSIDERATIONS****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

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**14. TRANSPORT INFORMATION****DOT (US)**

UN number: 1170      Class: 3      Packing group: II

Proper shipping name: Ethanol

Reportable Quantity (RQ):

Marine pollutant: No

Poison Inhalation Hazard: No

**IMDG**

UN number: 1170      Class: 3      Packing group: II EMS-No: F-E, S-D

Proper shipping name: Ethanol

Marine pollutant: No

**IATA**

UN number: 1170      Class: 3      Packing group: II  
Proper shipping name: Ethanol

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## 15. REGULATORY INFORMATION

### **SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### **SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:  
Silver      CAS-No. 7440-22-4

### **SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard, Chronic Health Hazard.

### **Massachusetts Right To Know Components**

Silver      CAS-No. 7440-22-4  
Ethanol      CAS-No. 64-17-5

### **Pennsylvania Right To Know Components**

Silver      CAS-No. 7440-22-4  
Ethanol      CAS-No. 64-17-5

### **New Jersey Right To Know Components**

Silver      CAS-No. 7440-22-4  
Ethanol      CAS-No. 64-17-5

### **California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## 16. DISCLAIMER

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