

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Silver Nanowires A20, Research Grade**

Catalog Number: NovaWire-Ag-A20

Formula: Ag

Diameter: ~ 20 nm

Length: ~ 25 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

Eye irritation (Category 2A), H319

Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

#### GHS Label elements, including precautionary statements



Pictogram

Signal word      Danger

#### Hazard statement(s)

H225      Highly flammable liquid and vapor.

H319      Causes serious eye irritation.

H336      May cause drowsiness or dizziness.

#### 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.

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| P261           | Avoid breathing dust/fume/gas/mist/vapors/spray.                                                                                 |
| P264           | Wash skin thoroughly after handling.                                                                                             |
| P271           | Use only outdoors or in a well-ventilated area.                                                                                  |
| 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.                       |
| P304+P340      | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                 |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P312           | Call a POISON CENTER or doctor/physician if you feel unwell.                                                                     |
| P337 + P313    | If eye irritation persists: Get medical advice/attention.                                                                        |
| P370 + P378    | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.                                            |
| P403 + P233    | Store in a well-ventilated place. Keep container tightly closed.                                                                 |
| P403 + P235    | Store in a well-ventilated place. Keep cool.                                                                                     |
| P405           | Store locked up.                                                                                                                 |
| P501           | 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 |

Hazards not otherwise classified (HNOC) or not covered by GHS - none

### 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>2-Propanol</b> |               |
| CAS-No.           | 67-63-0       |
| EC-No.            | 200-661-7     |
| Index-No.         | 603-117-00-0  |

### 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**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

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

no data available

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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 breathing vapors, mist or gas. Ensure adequate ventilation. 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 or mist. Ensure adequate ventilation. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

**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.  
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 AXBEK (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.

#### Control of environmental exposure

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

#### 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**

Vapours may form explosive mixture with air.

### **Conditions to avoid**

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

### **Materials to avoid**

Oxidizing agents, Acid anhydrides, Aluminium, Halogenated compounds, Acids

### **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

### **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: | 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2-Propanol)                                                              |
| 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

**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

**Additional Information**

RTECS: Not available

Central nervous system depression, prolonged or repeated exposure can cause: Nausea, Headache, Vomiting, narcosis, Drowsiness. Overexposure may cause mild, reversible liver effects.

Kidney - Irregularities - Based on Human Evidence

Kidney - Irregularities - Based on Human Evidence

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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**

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

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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: 1219                      Class: 3                      Packing group: II

Proper shipping name: Isopropanol solution

Reportable Quantity (RQ): 20 lbs

Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1219      Class: 3      Packing group: II      EMS-No: F-E, S-D  
Proper shipping name: Isopropanol solution  
Marine pollutant: No

**IATA**

UN number: 1219      Class: 3      Packing group: II  
Proper shipping name: Isopropanol solution

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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:

|            |                   |
|------------|-------------------|
| 2-Propanol | CAS-No. 67-63-0   |
| Silver     | CAS-No. 7440-22-4 |

**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard, Chronic Health Hazard.

**Massachusetts Right To Know Components**

|            |                   |
|------------|-------------------|
| 2-Propanol | CAS-No. 67-63-0   |
| Silver     | CAS-No. 7440-22-4 |

**Pennsylvania Right To Know Components**

|            |                   |
|------------|-------------------|
| 2-Propanol | CAS-No. 67-63-0   |
| Silver     | CAS-No. 7440-22-4 |

**New Jersey Right To Know Components**

|            |                   |
|------------|-------------------|
| 2-Propanol | CAS-No. 67-63-0   |
| Silver     | CAS-No. 7440-22-4 |

**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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