

### SECTION 1: Identification

#### 1.1. Identification

Product form : Mixture  
Product name : Metalon® JS-A010ET Silver ink

#### 1.2. Recommended use and restrictions on use

No additional information available

#### 1.3. Supplier

NCC Nano LLC dba NovaCentrix  
400 Parker Dr, Suite 1110  
Austin, TX 78728  
T 512-491-9500

#### 1.4. Emergency telephone number

Emergency number : Chem Tel, Inc. 1-800-255-3924 (US, Canada, Puerto Rico, US Virgin Islands)  
24/7

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Acute Tox. 4 (Oral) H302  
STOT RE 2 H373  
Aquatic Acute 1 H400  
Aquatic Chronic 1 H410

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labelling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning  
Hazard statements (GHS US) : H302 - Harmful if swallowed.  
H373 - May cause damage to organs through prolonged or repeated exposure.  
H400 - Very toxic to aquatic life.  
H410 - Very toxic to aquatic life with long lasting effects.  
Precautionary statements (GHS US) : P260 - Do not breathe dust/fume/gas/mist/vapors/spray.  
P264 - Wash hands, forearms and face thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P273 - Avoid release to the environment.  
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell.  
P314 - Get medical advice/attention if you feel unwell.  
P330 - Rinse mouth.  
P391 - Collect spillage.  
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

#### 2.3. Other hazards which do not result in classification

No additional information available

#### 2.4. Unknown acute toxicity (GHS US)

Not applicable

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Not applicable

#### 3.2. Mixtures

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| Name              | Product identifier  | %       |
|-------------------|---------------------|---------|
| Silver            | (CAS-No.) 7440-22-4 | 30 – 60 |
| Ethylene Glycol   | (CAS-No.) 107-21-1  | 15– 40  |
| Diethylene glycol | (CAS-No.) 111-46-6  | 5 – 10  |

\*In accordance with paragraph (i) of the OSHA Hazard Communication Standard (29 CFR §1910.1200), the specific chemical identity or exact weight % has been withheld as a trade secret.

### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

- First-aid measures general : If exposed or concerned, get medical attention/advice. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use. Never give anything to an unconscious person.
- First-aid measures after inhalation : IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if breathing is affected. If breathing is difficult, supply oxygen.
- First-aid measures after skin contact : IF ON SKIN (or clothing): Remove affected clothing and wash all exposed skin with water for at least 15 minutes. If irritation develops or persists, get medical attention.
- First-aid measures after eye contact : IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do so. Continue rinsing if pain, blinking, or irritation develops or persists, get medical attention. Continue rinsing.
- First-aid measures after ingestion : IF SWALLOWED: rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Get medical attention if you feel unwell.

#### 4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects : May cause damage to organs through prolonged or repeated exposure. Harmful if swallowed.
- Symptoms/effects after inhalation : May cause respiratory irritation.
- Symptoms/effects after skin contact : May cause skin irritation.
- Symptoms/effects after eye contact : Direct contact with eyes is likely to be irritating.
- Symptoms/effects after ingestion : Harmful if swallowed.
- Chronic symptoms : May cause damage to organs through prolonged or repeated exposure.

#### 4.3. Immediate medical attention and special treatment, if necessary

No additional information available

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Carbon dioxide. Dry powder. Water spray.

#### 5.2. Specific hazards arising from the chemical

- Fire hazard : Not expected to be a fire/explosion hazard under normal conditions of use.
- Explosion hazard : Product is not explosive.
- Reactivity : No dangerous reactions known under normal conditions of use.

#### 5.3. Special protective equipment and precautions for fire-fighters

- Precautionary measures fire : Eliminate all ignition sources if safe to do so.
- Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray or fog for cooling exposed containers. Do not dispose of fire-fighting water in the environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Self-contained breathing apparatus.
- Other information : Under fire conditions closed containers may rupture or explode.

### SECTION 6: Accidental release measures

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

General measures : Evacuate area. Ventilate area. Keep upwind. Spill should be handled by trained cleaning personnel properly equipped with respiratory and eye protection.

##### 6.1.1. For non-emergency personnel

- Protective equipment : Wear Protective equipment as described in Section 8.
- Emergency procedures : Evacuate unnecessary personnel.

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### 6.1.2. For emergency responders

Protective equipment : Wear suitable protective clothing, gloves and eye or face protection. Approved supplied-air respirator, in case of emergency.

### 6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

### 6.3. Methods and material for containment and cleaning up

For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Prevent entry to sewers and public waters.

Methods for cleaning up : Use only non-sparking tools. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. This material and its container must be disposed of in a safe way, and as per local legislation.

### 6.4. Reference to other sections

See Sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container closed when not in use. Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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

Storage conditions : Store in original container. Keep container closed when not in use. Containers which are opened should be properly resealed and kept upright to prevent leakage. Store in a dry, cool and well-ventilated place.

Incompatible materials : No data available.

Heat and ignition sources : Avoid ignition sources.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| Ethylene Glycol (107-21-1) |                      |   |
|----------------------------|----------------------|---|
| ACGIH                      | ACGIH OEL TWA [ppm]  | 25 ppm (vapor fraction)   |
| ACGIH                      | ACGIH OEL STEL       | 10 mg/m <sup>3</sup> (inhalable particulate matter, aerosol only)           |
| ACGIH                      | ACGIH OEL STEL [ppm] | 50 ppm (vapor fraction)   |
| ACGIH                      | ACGIH OEL C          | 100 mg/m <sup>3</sup> (aerosol only)  |
| ACGIH                      | Remark (ACGIH)       | TLV® Basis: URT irr. Notations: A4 (Not classifiable as a Human Carcinogen) |
| ACGIH                      | Regulatory reference | ACGIH 2023  |
| OSHA                       | OSHA PEL C           | 125 mg/m <sup>3</sup> Vacated   |
| OSHA                       | OSHA PEL C [ppm]     | 50 ppm Vacated  |

| Diethylene glycol (111-46-6) |                |                      |
|------------------------------|----------------|----------------------|
| ACGIH                        | Remark (ACGIH) | OELs not established |
| OSHA                         | Remark (OSHA)  | OELs not established |
| AIHA                         | WEEL TWA       | 10 mg/m <sup>3</sup> |

| Silver (7440-22-4) |                                |                                       |
|--------------------|--------------------------------|---------------------------------------|
| ACGIH              | ACGIH OEL TWA                  | 0.1 mg/m <sup>3</sup> (dust and fume) |
| ACGIH              | Remark (ACGIH)                 | TLV® Basis: Argyria                   |
| ACGIH              | Regulatory reference           | ACGIH 2023                            |
| OSHA               | OSHA PEL TWA [1]               | 0.01 mg/m <sup>3</sup>                |
| OSHA               | Regulatory reference (US-OSHA) | OSHA Annotated Table Z-1              |
| IDLH               | IDLH                           | 10 mg/m <sup>3</sup> (dust)           |

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| Silver (7440-22-4) |               |  |
|--------------------|---------------|--|
| NIOSH              | NIOSH REL TWA | 0.01 mg/m <sup>3</sup> (dust)<br>0.9 µg/m <sup>3</sup> (nanoparticles <100 nm) |

### 8.2. Appropriate engineering controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment with flammable materials. Ensure adequate ventilation, especially in confined areas.

### 8.3. Individual protection measures/Personal protective equipment

Personal protective equipment symbol(s):



Personal protective equipment:

Gloves. Protective goggles. Protective clothing.

#### Hand protection:

Use gloves chemically resistant to this material when prolonged or repeated contact could occur. Gloves should be classified under Standard EN 374 or ASTM F1296. Suggested glove materials are: Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, PVC or vinyl. Suitable gloves for this specific application can be recommended by the glove supplier.

#### Eye protection:

Wear eye protection, including chemical splash goggles and a face shield when possibility exists for eye contact due to spraying liquid or airborne particles.

#### Skin and body protection:

Wear long sleeves, and chemically impervious PPE/coveralls to minimize bodily exposure.

#### Respiratory protection:

Use NIOSH (or other equivalent national standard) -approved dust/particulate respirator. Where vapor, mist, or dust exceed PELs or other applicable OELs, use NIOSH-approved respiratory protective equipment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|   |                               |
|---|-------------------------------|
| Physical state                                  | : Liquid                      |
| Color   | : Light gray to dark gray     |
| Odor  | : Characteristic glycol ether |
| Odor threshold                                  | : No data available           |
| pH  | : 5 - 8                       |
| Melting point                                   | : No data available           |
| Freezing point                                  | : No data available           |
| Boiling point                                   | : No data available           |
| Flash point                                     | : No data available           |
| Relative evaporation rate (butylacetate=1)      | : No data available           |
| Flammability (solid, gas)                       | : No data available           |
| Vapor pressure                                  | : No data available           |
| Relative vapor density at 20°C                  | : No data available           |
| Relative density                                | : No data available           |
| Density   | : 1.3 – 1.5 g/cm <sup>3</sup> |
| Solubility                                      | : No data available           |
| Partition coefficient n-octanol/water (Log Pow) | : No data available           |
| Auto-ignition temperature                       | : No data available           |

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|                           |                     |
|---------------------------|---------------------|
| Decomposition temperature | : No data available |
| Viscosity, kinematic      | : Not applicable    |
| Viscosity, dynamic        | : No data available |
| Explosive limits          | : No data available |
| Explosive properties      | : No data available |
| Oxidising properties      | : No data available |

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No dangerous reactions known under normal conditions of use.

### 10.2. Chemical stability

Stable under recommended handling and storage conditions (see section 7).

### 10.3. Possibility of hazardous reactions

None under normal use.

### 10.4. Conditions to avoid

None under normal use.

### 10.5. Incompatible materials

None known.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

|                             |                         |
|-----------------------------|-------------------------|
| Acute toxicity (oral)       | : Harmful if swallowed. |
| Acute toxicity (dermal)     | : Not classified        |
| Acute toxicity (inhalation) | : Not classified        |

#### Ethylene Glycol (107-21-1)

|                       |  |
|-----------------------|--|
| LD50 oral rat         | 4700 mg/kg (Source: NLM_CIP)                     |
| LD50 oral human       | 1.4 mL/kg (1330 mg/kg bw) (ATSDR, 2010)          |
| LD50 dermal rat       | 10600 mg/kg (Source: JAPAN_GHS)                  |
| LD50 dermal rabbit    | 10600 mg/kg                                      |
| LC50 Inhalation - Rat | > 2.5 mg/l (Exposure time: 6 h Source: ECHA_API) |

#### Diethylene glycol (111-46-6)

|                       |  |
|-----------------------|--|
| LD50 oral rat         | 12565 mg/kg (Source: NLM_CIP)                                |
| LD50 oral human       | 0.014 mg/kg bw (ECHA Dossier)                                |
| LD50 dermal rabbit    | 11890 mg/kg  |
| LC50 Inhalation - Rat | > 4600 mg/m <sup>3</sup> (Exposure time: 4 h Source: NICNAS) |

|                                   |                  |
|-----------------------------------|------------------|
| Skin corrosion/irritation         | : Not classified |
| Serious eye damage/irritation     | : Not classified |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity            | : Not classified |
| Carcinogenicity                   | : Not classified |

#### Diethylene glycol (111-46-6)

|   |  |
|---|--|
| NOAEL (chronic, oral, animal/male, 2 years)   | 1210 mg/kg bodyweight Animal: rat, Animal sex: male, Remarks on results: other:Effect type: carcinogenicity (migrated information)   |
| NOAEL (chronic, oral, animal/female, 2 years) | 1160 mg/kg bodyweight Animal: rat, Animal sex: female, Remarks on results: other:Effect type: carcinogenicity (migrated information) |

|                       |                  |
|-----------------------|------------------|
| Reproductive toxicity | : Not classified |
| STOT-single exposure  | : Not classified |

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STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

### Diethylene glycol (111-46-6)

LOAEL (oral, rat, 90 days) : 40000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity in Rodents)

### Silver (7440-22-4)

LOAEL (oral, rat, 90 days) : 125 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Aspiration hazard : Not classified  
Viscosity, kinematic : Not applicable  
Symptoms/effects : May cause damage to organs through prolonged or repeated exposure. Harmful if swallowed.  
Symptoms/effects after inhalation : May cause respiratory irritation.  
Symptoms/effects after skin contact : May cause skin irritation.  
Symptoms/effects after eye contact : Direct contact with eyes is likely to be irritating.  
Symptoms/effects after ingestion : Harmful if swallowed.  
Chronic symptoms : May cause damage to organs through prolonged or repeated exposure.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.

### Silver (7440-22-4)

LC50 - Fish [1] : 0.00155 – 0.00293 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static] Source: EPA)

EC50 - Crustacea [1] : 0.00024 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

LC50 - Fish [2] : 0.0062 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through] Source: EPA)

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

### Ethylene Glycol (107-21-1)

Partition coefficient n-octanol/water (Log Pow) : -1.36

### Diethylene glycol (111-46-6)

BCF - Fish [1] : 100 – 180

Partition coefficient n-octanol/water (Log Pow) : -1.98 (at 25 °C)

### 12.4. Mobility in soil

### Ethylene Glycol (107-21-1)

Mobility in soil : 0.2 Source: HSDB

### 12.5. Other adverse effects

Other adverse effects : No data available.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods : Do not discharge to public wastewater systems without permit of pollution control authorities. No discharge to surface waters is allowed without a permit.

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Do not allow the product to be released into the environment.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT

Not regulated for transport

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### Transport by sea (IMDG)

|                                       |  |
|---------------------------------------|--|
| Transport document description (IMDG) | : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains: Silver), 9, III |
| UN-No. (IMDG)                         | : 3082   |
| Proper Shipping Name (IMDG)           | : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.                                    |
| Class (IMDG)                          | : 9 - Miscellaneous dangerous substances and articles                                    |
| Packing group (IMDG)                  | : III - substances presenting low danger   |
| Limited quantities (IMDG)             | : 5 L  |
| Marine pollutant                      | : Yes  |



### Air transport (IATA)

|                                       |  |
|---------------------------------------|--|
| Transport document description (IATA) | : UN 3082 Environmentally hazardous substance, liquid, n.o.s. (contains: Silver), 9, III |
| UN-No. (IATA)                         | : 3082   |
| Proper Shipping Name (IATA)           | : Environmentally hazardous substance, liquid, n.o.s.                                    |
| Class (IATA)                          | : 9 - Miscellaneous Dangerous Substances and Articles                                    |
| Packing group (IATA)                  | : III - Low danger   |

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### Metalon® JS-A191-NZ6-B

All chemical substances in this product are listed as "Active" in the EPA (Environmental Protection Agency) "TSCA Inventory Notification (Active-Inactive) Requirements Rule" ("the Final Rule") of Feb. 2019, as amended Feb. 2021, or are otherwise exempt or regulated by other agencies such as FDA or FIFRA

|                                     |   |
|-------------------------------------|---|
| SARA Section 311/312 Hazard Classes | Health hazard - Specific target organ toxicity (single or repeated exposure)<br>Health hazard - Acute Toxicity (Oral) |
|-------------------------------------|---|

#### Ethylene Glycol (107-21-1)

Subject to reporting requirements of United States SARA Section 313

|           |         |
|-----------|---------|
| CERCLA RQ | 5000 lb |
|-----------|---------|

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

Subject to reporting requirements of United States SARA Section 313

|           |         |
|-----------|---------|
| CERCLA RQ | 1000 lb |
|-----------|---------|

### 15.2. International regulations

No additional information available

### 15.3. US State regulations

**⚠ WARNING:** This product can expose you to Ethylene Glycol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

| Component                 | Carcinogenicity | Developmental toxicity | Reproductive toxicity male | Reproductive toxicity female | No significant risk level (NSRL) | Maximum allowable dose level (MADL) |
|---------------------------|-----------------|------------------------|----------------------------|------------------------------|----------------------------------|-------------------------------------|
| Ethylene Glycol(107-21-1) |                 | X                      |                            |                              |                                  | 8700 µg/day (oral)                  |

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| Component                   | State or local regulations   |
|-----------------------------|--|
| Ethylene Glycol(107-21-1)   | U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List |
| Glycerol(56-81-5)           | U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List  |
| Triethanolamine(102-71-6)   | U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List  |
| Silver(7440-22-4)           | U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Massachusetts - Right To Know List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List   |
| Diethylene glycol(111-46-6) | U.S. - Pennsylvania - RTK (Right to Know) List   |

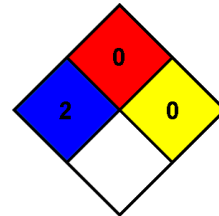
### SECTION 16: Other information

Other information : Author: SS.

NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



#### HMIS Hazard Rating

Health : 2  
Health \* - Chronic (long-term) health effects may result from repeated overexposure  
Flammability : 0  
Physical : 0

#### Indication of changes:

Revision 1.0: New SDS Created.

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*