Section 1: Chemical Product and Company Identification

Product Name: ClearOhm™, Ink-N AQ (R&D Use Only)
Synonym: Conductive Ink

Contact Information:
Cambrios Technologies Corp.
930 East Arques Avenue
Sunnyvale, Ca, USA
Emergency Assistance
Chemtrec
Phone: 1-800-424-9300
International: 1-703-527-3887
For non-emergency assistance,
Phone: 408-738-7400
Fax: 408-245-2220

Section 2: Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>CAS#:</th>
<th>EC NUMBER (EINECS):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additives</td>
<td>0-10</td>
<td>Proprietary</td>
<td>Not available</td>
</tr>
<tr>
<td>Silver</td>
<td>&lt; 4</td>
<td>7440-22-4</td>
<td>231-131-3</td>
</tr>
<tr>
<td>Water</td>
<td>85-99</td>
<td>7732-18-5</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

Section 3: Hazards Identification

Potential Health Effects:
- **Skin contact:** Acute Exposure: May cause skin irritation.
  Chronic Exposure: No information available.
- **Eye contact:** Acute Exposure: Eye irritation.
  Chronic Exposure: Eye irritation.
- **Ingestion:** Acute Exposure: No information available.
  Chronic Exposure: No information available.
- **Inhalation:** Acute Exposure: irritation, nausea, headache, drowsiness, dizziness, loss of coordination.
  Chronic Exposure: No information available.

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

NFPA RATINGS (SCALE 0-4): HEALTH=2  FIRE=1  REACTIVITY=0

Section 4: First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact:** Flush with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion: If conscious, wash out mouth with water. Seek medical attention immediately.

Section 5: Fire Fighting Measures

Flammability of the Product: Non Flammable
Flash Points: NA
Lower Flammable Limit: NA
Upper Flammable Limit: NA
Flammability Class (OSHA): NA
Fire Fighting Media and Instructions: Use regular dry chemical, carbon dioxide, water, regular foam

Section 6: Accidental Release Measures

Use appropriate protective equipment and methods to clean up spilled substances promptly. Absorb spill onto an appropriate material. Collect and dispose of all waste in accordance with applicable laws.

Large Spill/Small Spill: For indoor spills, provide increased ventilation as required to minimize exposure. Cleanup the spill as indicated in the appropriate land or water section below. Dispose of absorbent and other waste in an appropriate chemical waste container. Wear proper personal protective equipment. Wash thoroughly after handling.

Land Spill: Sweep spilled material and transfer to D.O.T. container for disposal. Avoid raising dust.

Water Spill: Do not allow release to water. Remove from water by skimming.

Section 7: Handling and Storage

Precautions:
Wear suitable protective clothing. Use material in a well ventilated area. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Storage Temperature: 5-10°C (41 to 50°F)

Section 8: Exposure Controls/Personal Protection

ENGINEERING CONTROLS:
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION
SKIN PROTECTION:
Wear impermeable gloves and clothing during activities where there is potential for direct skin contact with chemical.

EYE PROTECTION:
Wear primary eye protection such as splash resistant safety goggles with a secondary protection faceshield. Provide an emergency eye wash station and quick drench shower in the immediate work area.
EXPOSURE GUIDELINE (S):
OSHA HAZARDS (29 CFR 1910.1200) Exposure Limits 8 hrs. TWA (ppm)

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additive</td>
<td>not established</td>
<td>not established</td>
</tr>
<tr>
<td>Silver</td>
<td>0.01 mg/m^3</td>
<td>0.1 mg/m^3</td>
</tr>
<tr>
<td>Water</td>
<td>not established</td>
<td>not established</td>
</tr>
</tbody>
</table>

Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid
**Odor:** Odorless.
**Molecular Weight:** NA
**Color:** Gray
**pH:** NA
**Boiling Point:** NA
**Melting Point:** NA
**Specific Gravity:** NA
**Vapor Pressure:** Not applicable.
**Solubility:** acetone, benzene, carbon tetrachloride, ether, methanol, organic solvents

Section 10: Stability and Reactivity Data

**Stability:** Stable under ordinary conditions of use and storage.
**Instability Temperature:** Not available.
**Hazardous Polymerization:** Will not occur.
**Conditions of Instability:** Excess heat, incompatible materials
**Incompatibility with various substances:** Strong oxidizing agents.
**Corrosivity:** None.
**Special Remarks on Reactivity:** Not available.
**Special Remarks on Corrosivity:** Not available.

Section 11: Toxicological Information

**Routes of Entry:** Inhalation, Ingestion.
**Toxicity to Animals:**
- **Silver**
  - Acute Toxicity:
    - Oral LD
    - Oral LD50
    - Guinea pig
    - Rat
    - 5 gm/kg
    - 20 gm/kg

**Additives:** No information available

**Chronic Effects on Humans:** Not available.
**Other Toxic Effects on Humans:** May be harmful if inhaled. May be harmful if swallowed.
**Special Remarks on Chronic Effects on Humans:** Not available.
**Special Remarks on other Toxic Effects on Humans:** Acute Potential Health Effects:
- **Skin:** May cause skin irritation.
- **Eyes:** May cause mechanical eye irritation.
Inhalation: May cause respiratory tract irritation.
Ingestion: May be harmful if swallowed.

Section 12: Ecological Information

ECOTOXICITY DATA:
Silver
ECOTOXICITY DATA:
FISH TOXICITY: 58000 ug/L 96 hour(s) LC50 (Mortality) Sheepshead minnow (Cyprinodon variegatus) INVERTEBRATE TOXICITY: 0.24 ug/L 48 hour(s) EC50 (Mortality) Water flea (Daphnia magna) ALGAL TOXICITY: 170 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom keletonema costatum
FATE AND TRANSPORT: BIOCONCENTRATION: 10250 ug/L 14 hour(s) BCF (Residue) Pacific oyster (Crassostrea gigas) 20 ug/L

Additives: No information available.

Section 13: Disposal Considerations

Waste Disposal:
The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all applicable federal, state and/or local laws and regulations.

Section 14: Transport Information

Package and transport in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
DOT Classification: No classification assigned.
IATA: No classification assigned.
Identification Number: Not applicable
Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200: Ensure that the hazards associated with this product are transmitted to employees by means of a hazard communications program, in accordance with federal and state Occupational Safety and Health Administration (OSHA) regulations.

CERCLA/SUPERFUND HAZARD CATEGORY: At the time of this document's preparation, one of the ingredients of this product was listed in 40 CFR 302.4. The list should be periodically checked for applicable updates. SILVER, METAL (as Ag): 1000 LBS RQ

SARA 313 INFORMATION: At the time of this document's preparation, none of the ingredients of this product were listed in 40 CFR 372. The list should be periodically checked for applicable updates.

TOXIC SUBSTANCES CONTROL ACT (TSCA) All of the compounds in this product are on the
TSCA inventory and/or are subject to a Low Volume Exemption. In particular, this material shall not be distributed to any person, other than for disposal, until after it has been completely reacted on integrated circuits or similar media. This material shall be used for research and development only. All users must utilize the worker protection measures and environmental release controls specified in this Material Safety Data Sheet and in EPA and OSHA regulations. Acknowledgment of receipt of this Material Safety Data Sheet shall be considered acknowledgment that the user will comply with these requirements.

CALIFORNIA PROPOSITION 65: At the time of this document's preparation, none of the ingredients of this product were included on the California Proposition 65 list of chemicals known to cause cancer or reproductive toxicity. The list should periodically be checked for applicable updates.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Maximum Limit (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>1000</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Biphenyls</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Diphenyl Ethers (PBDE)</td>
<td>1000</td>
</tr>
</tbody>
</table>

EC RISK AND SAFETY PHRASES:
GERMAN REGULATIONS: Not determined

Section 16: Other Information

Created: 04/13/2009

The above information has been compiled from sources we believe to be reliable and, to our knowledge, is accurate. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Cambrios Technologies Corp be liable for any claims, losses, or damages or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, resulting from any use of the above information even if Cambrios Technologies Corp has been advised of the possibility of such damages.
# ClearOhm™, Overcoat-P PGME TH (R&D Use Only)

## Section 1: Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Product Name: ClearOhm™, Overcoat-P PGME TH (R&amp;D Use Only)</th>
<th>Synonym: Solvent-based Ink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Information: Cambrios Technologies Corp.</td>
<td></td>
</tr>
<tr>
<td>Address: 930 East Arques Avenue Sunnyvale, CA USA</td>
<td></td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>Emergency Assistance</td>
</tr>
<tr>
<td>Chemtrec Phone: 1-800-424-9300 International: 1-703-527-3887</td>
<td>For non-emergency assistance, Phone: 408-738-7400 Fax: 408-245-2220</td>
</tr>
</tbody>
</table>

## Section 2: Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>CAS#</th>
<th>EC NUMBER (EINECS):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol Monomethyl Ether (PGME)</td>
<td>&gt; 90%</td>
<td>107-98-2</td>
<td>203-539-1</td>
</tr>
<tr>
<td>Additives</td>
<td>&lt; 10%</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

## Section 3: Hazards Identification

**MAJOR HEALTH HAZARDS:** respiratory tract irritation, skin irritation, eye irritation

**PHYSICAL HAZARDS:** Flammable liquid and vapor. Vapor may cause flash fire.

**Potential Health Effects:**
- **Skin contact:** Acute Exposure: May cause skin irritation. Chronic Exposure: No information available.
- **Eye contact:** Acute Exposure: Eye irritation. Chronic Exposure: Eye irritation.
- **Ingestion:** Acute Exposure: No information available. Chronic Exposure: No information available.
- **Inhalation:** Acute Exposure: irritation, nausea, headache, drowsiness, dizziness, loss of coordination. Chronic Exposure: No information available.

**CARCINOGEN STATUS:**
- OSHA: No
- NTP: No
- IARC: No

**NFPA RATINGS (SCALE 0-4):** HEALTH=2 FIRE=3 REACTIVITY=0

## Section 4: First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes

Cambrios Technologies
Material Safety Data Sheet
ClearOhm™, Overcoat-P PGME TH (R&D Use Only)
with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact:** Flush with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:** If conscious, wash out mouth with water. Seek medical attention immediately.

### Section 5: Fire Fighting Measures

- **Flash Points:** 93 F (34 C) (PGME)
- **Lower Flammable Limit:** 1.6% (PGME)
- **Upper Flammable Limit:** 13.8% (PGME)
- **Flammability Class (OSHA):** 1C (PGME)
- **Fire Fighting Media and Instructions:** Use regular dry chemical, carbon dioxide, water, regular foam

### Section 6: Accidental Release Measures

Use appropriate protective equipment and methods to clean up spilled substances promptly. Absorb spill onto an appropriate material. Collect and dispose of all waste in accordance with applicable laws.

**Large Spill/Small Spill:** For indoor spills, provide increased ventilation as required to minimize exposure. Cleanup the spill as indicated in the appropriate land or water section below. Dispose of absorbent and other waste in an appropriate chemical waste container. Wear proper personal protective equipment. Wash thoroughly after handling.

**Land Spill:** Sweep spilled material and transfer to D.O.T. container for disposal. Avoid raising dust.

**Water Spill:** Do not allow release to water. Remove from water by skimming.

### Section 7: Handling and Storage

**Precautions:**
Wear suitable protective clothing. Use material in a well ventilated area. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

**Storage:**
Keep container tightly closed. Keep container in a cool, well-ventilated area. Storage Temperature recommended is 15 - 27°C (59 - 81F).

### Section 8: Exposure Controls/Personal Protection

**ENGINEERING CONTROLS:**
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces. Use explosion-proof ventilation equipment.

**PERSONAL PROTECTION**

**RESPIRATORY PROTECTION:**
Under conditions of frequent use or heavy exposure, Respiratory protection may be needed. Respiratory protection is ranked in order from minimum to...
maximum. Consider warning properties before use.
Any chemical cartridge respirator with organic vapor cartridge(s).
Any chemical cartridge respirator with a full facepiece and organic Vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic Vapor canister.
For Unknown Concentrations or Immediately Dangerous to Life or Health.
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SKIN PROTECTION:
Wear impermeable gloves and clothing during activities where there is potential for direct skin contact with chemical.

EYE PROTECTION:
Wear primary eye protection such as splash resistant safety goggles with a secondary protection faceshield. Provide an emergency eye wash station and quick drench shower in the immediate work area.

EXPOSURE GUIDELINE (S):
OSHA HAZARDS (29 CFR 1910.1200) Exposure Limits 8 hrs. TWA (ppm)

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>OSHA PEL</th>
<th>ACGIH STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA</td>
<td>400 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>DAA</td>
<td>50 ppm</td>
<td>50 ppm</td>
</tr>
<tr>
<td>Silver</td>
<td>0.01 mg/m3</td>
<td>0.1 mg/m3</td>
</tr>
<tr>
<td>Additive</td>
<td>not established</td>
<td>not established</td>
</tr>
</tbody>
</table>

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid
Odor: Aromatic odor
Molecular Weight: NA
Color: Transparent
pH: NA
Boiling Point: NA
Melting Point: NA
Specific Gravity: NA
Vapor Pressure: NA
Solubility: acetone, benzene, carbon tetrachloride, ether, methanol, organic solvents

Section 10: Stability and Reactivity Data

Stability: Stable under ordinary conditions of use and storage.
Instability Temperature: Not available.
Hazardous Polymerization: Will not occur.
Conditions of Instability: Excess heat, incompatible materials
Incompatibility with various substances: Strong oxidizing agents.
Corrosivity: None.
Special Remarks on Reactivity: Not available.
Special Remarks on Corrosivity: Not available.
Section 11: Toxicological Information

Routes of Entry: Inhalation, Ingestion.
Toxicity to Animals:

Solvent PGME

<table>
<thead>
<tr>
<th>Acute Toxicity</th>
<th>LD50</th>
<th>Species</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>Mouse</td>
<td>11,700 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>Rabbit</td>
<td>5,700 mg/kg</td>
</tr>
</tbody>
</table>

Additive: No Information available.

Chronic Effects on Humans: Not available.
Other Toxic Effects on Humans: May be harmful if inhaled. May be harmful if swallowed.
Special Remarks on Chronic Effects on Humans: Not available.
Special Remarks on other Toxic Effects on Humans: Acute Potential Health Effects:
- Skin: May cause skin irritation.
- Eyes: May cause mechanical eye irritation.
- Inhalation: May cause respiratory tract irritation.
- Ingestion: May be harmful if swallowed.

Section 12: Ecological Information

Solvent PGME:
ECOTOXICITY DATA:
FISH TOXICITY: 5000 µg/L 24 year(s) (Stress) Sea lamprey (Psetrormyzonmarinus)

Additive: No information available.

Section 13: Disposal Considerations

Waste Disposal:
The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all applicable federal, state and/or local laws and regulations.

Section 14: Transport Information

Package and transport in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

DOT Classification: Resin solution, 3, UN1866, III (Propylene Glycol Monomethyl Ether)
IATA: Resin Solution
Identification Number: UN1866
Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200: Ensure that the hazards associated with this product are transmitted to employees by means of a hazard communications
program, in accordance with federal and state Occupational Safety and Health Administration (OSHA) regulations.

CERCLA/SUPERFUND HAZARD CATEGORY: At the time of this document's preparation, none of the ingredients of this product were listed in 40 CFR 302.4. The list should be periodically checked for applicable updates.

SARA 313 INFORMATION: At the time of this document's preparation, none of the ingredients of this product were listed in 40 CFR 372. The list should be periodically checked for applicable updates.

TOXIC SUBSTANCES CONTROL ACT (TSCA) All of the compounds in this product are on the TSCA Inventory and/or are subject to a Low Volume Exemption. The material shall be used as research and development only. All users must utilize the worker protection measures and environmental release controls specified in this Material Safety Data Sheet and in EPA and OSHA regulations. Acknowledgment of receipt of this Material Safety Data Sheet shall be considered acknowledgment that the user will comply with these requirements.

CALIFORNIA PROPOSITION 65: At the time of this document's preparation, none of the ingredients of this product were included on the California Proposition 65 list of chemicals known to cause cancer or reproductive toxicity. The list should periodically be checked for applicable updates.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:
EC CLASSIFICATION (ASSIGNED): Flammable
EC Classification may be inconsistent with independently-researched data.


<table>
<thead>
<tr>
<th>Substance</th>
<th>Maximum Limit (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>1000</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Biphenyls</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Diphenyl Ethers (PBDE)</td>
<td>1000</td>
</tr>
</tbody>
</table>

EC RISK AND SAFETY PHRASES:
R 10 Flammable.
R37 Irritating to respiratory system
R51/53 Toxic to aquatic organisms, may cause long term effects in aquatic environment
S 2 Keep out of the reach of children.
S 24 Avoid contact with skin.

GERMAN REGULATIONS:
WATER HAZARD CLASS (WGK):
STATE OF CLASSIFICATION: Annex 3
CLASSIFICATION UNDER HAZARD TO WATER: 1

Cambrios Technologies
Material Safety Data Sheet
ClearOhm™, Overcoat-P PGME TH (R&D Use Only)
MSDS-054, Rev. 00
Page 5 of 6
Section 16: Other Information

Created: 04/21/2009

The above information has been compiled from sources we believe to be reliable and, to our knowledge, is accurate. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Cambrios Technologies Corp be liable for any claims, losses, or damages or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, resulting from any use of the above information even if Cambrios Technologies Corp has been advised of the possibility of such damages.
Section 1: Chemical Product and Company Identification

Product Name: ClearOhm™, Overcoat-G IPA-DAA (R&D Use Only)

Synonym: Solvent-based Ink

Contact Information:
Cambrios Technologies Corp.
930 East Arques Avenue
Sunnyvale, Ca, USA
Emergency Assistance
Chemtrec
Phone: 1-800-424-9300
International: 1-703-527-3887
For non-emergency assistance,
Phone: 408-738-7400
Fax: 408-245-2220

Section 2: Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>CAS#:</th>
<th>EC NUMBER (EINECS):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso-Propyl alcohol (IPA)</td>
<td>45-55</td>
<td>67-63-0</td>
<td>203-528-1</td>
</tr>
<tr>
<td>Diacetone alcohol (DAA)</td>
<td>45-55</td>
<td>123-42-2</td>
<td>204-626-7</td>
</tr>
<tr>
<td>Silver</td>
<td>&lt; 1</td>
<td>7440-22-4</td>
<td>231-131-3</td>
</tr>
<tr>
<td>Additive</td>
<td>1-10</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Section 3: Hazards Identification

MAJOR HEALTH HAZARDS: Respiratory tract irritation, skin irritation, eye irritation

PHYSICAL HAZARDS: Flammable liquid and vapor. Vapor may cause flash fire.

Potential Health Effects:

Skin contact: Acute Exposure: May cause skin irritation.
Chronic Exposure: No information available.

Eye contact: Acute Exposure: Eye irritation.
Chronic Exposure: Eye irritation.

Ingestion: Acute Exposure: No information available.
Chronic Exposure: No information available.

Inhalation: Acute Exposure: irritation, nausea, headache, drowsiness, dizziness, loss of coordination.
Chronic Exposure: No information available.

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=3 REACTIVITY=0

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes.
with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact:** Flush with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:** If conscious, wash out mouth with water. Seek medical attention immediately.

### Section 5: Fire Fighting Measures

**Flash Points:** 12°C
**Lower Flammable Limit:** NA
**Upper Flammable Limit:** NA
**Flammability Class (OSHA):** NA
**Fire Fighting Media and Instructions:** Use regular dry chemical, carbon dioxide, water, regular foam

### Section 6: Accidental Release Measures

Use appropriate protective equipment and methods to clean up spilled substances promptly. Absorb spill onto an appropriate material. Collect and dispose of all waste in accordance with applicable laws.

**Large Spill/Small Spill:** For indoor spills, provide increased ventilation as required to minimize exposure. Cleanup the spill as indicated in the appropriate land or water section below. Dispose of absorbent and other waste in an appropriate chemical waste container. Wear proper personal protective equipment. Wash thoroughly after handling.

**Land Spill:** Sweep spilled material and transfer to D.O.T. container for disposal. Avoid raising dust.

**Water Spill:** Do not allow release to water. Remove from water by skimming.

### Section 7: Handling and Storage

**Precautions:**
Wear suitable protective clothing. Use material in a well ventilated area. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

**Storage:**
Keep container tightly closed. Keep container in a cool, well-ventilated area. Storage Temperature recommended is 15 - 27°C (59 - 81°F).

### Section 8: Exposure Controls/Personal Protection

**ENGINEERING CONTROLS:**
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces. Use explosion-proof ventilation equipment.

**PERSONAL PROTECTION**

**RESPIRATORY PROTECTION:**
Under conditions of frequent use or heavy exposure, Respiratory protection may be needed. Respiratory protection is ranked in order from minimum to
maximum. Consider warning properties before use.  
Any chemical cartridge respirator with organic vapor cartridge(s).  
Any chemical cartridge respirator with a full facepiece and organic 
Vapor cartridge(s).  
Any air-purifying respirator with a full facepiece and an organic 
Vapor canister.  
For Unknown Concentrations or Immediately Dangerous to Life or Health.  
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate 
escape supply.  
Any self-contained breathing apparatus with a full facepiece.  

SKIN PROTECTION:  
Wear impermeable gloves and clothing during activities where there is 
potential for direct skin contact with chemical.  

EYE PROTECTION:  
Wear primary eye protection such as splash resistant safety goggles with a 
secondary protection faceshield. Provide an emergency eye wash station 
and quick drench shower in the immediate work area.

EXPOSURE GUIDELINE (S):  
OSHA HAZARDS (29 CFR 1910.1200) Exposure Limits 8 hrs.  TWA (ppm)

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>OSHA PEL</th>
<th>ACGIH STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA</td>
<td>400 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>DAA</td>
<td>50 ppm</td>
<td>50 ppm</td>
</tr>
<tr>
<td>Silver</td>
<td>0.01 mg/m3</td>
<td>0.1 mg/m3</td>
</tr>
<tr>
<td>Additive</td>
<td>not established</td>
<td>not established</td>
</tr>
</tbody>
</table>

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid  
Odor: Aromatic odor  
Molecular Weight: NA  
Color: Transparent  
pH: NA  
Boiling Point: NA  
Melting Point: NA  
Specific Gravity: NA  
Vapor Pressure: NA  
Solubility: acetone, benzene, carbon tetrachloride, ether, methanol, organic solvents

Section 10: Stability and Reactivity Data

Stability: Stable under ordinary conditions of use and storage.  
Instability Temperature: Not available.  
Hazardous Polymerization: Will not occur.  
Conditions of Instability: Excess heat, incompatible materials  
Incompatibility with various substances: Strong oxidizing agents.  
Corrosivity: None.  
Special Remarks on Reactivity: Not available.  
Special Remarks on Corrosivity: Not available.
**Section 11: Toxicological Information**

<table>
<thead>
<tr>
<th>Routes of Entry: Inhalation, Ingestion.</th>
<th>Toxicity to Animals:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solvent IPA</strong></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity:</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td>Skin</td>
<td>LD50</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td><strong>Solvent DAA</strong></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity:</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td>Skin</td>
<td>LD50</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td><strong>Silver</strong></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity:</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>LD</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
</tbody>
</table>

**Additive:** No information available

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** May be harmful if inhaled. May be harmful if swallowed.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on Other Toxic Effects on Humans:** Acute Potential Health Effects:

- Skin: May cause skin irritation.
- Eyes: May cause mechanical eye irritation.
- Inhalation: May cause respiratory tract irritation.
- Ingestion: May be harmful if swallowed.

---

**Section 12: Ecological Information**

**Solvent IPA**

**ECOTOXICITY DATA:**

- **FISH TOXICITY:** 730 ug/L 96 hour(s) LC50 (Mortality) Brook trout (Salvelinus fontinalis)
- **INVERTEBRATE TOXICITY:** 3142000 ug/L 48 hour(s) EC20 (Biomass) Ciliate Protozoa (Tetrahymena thermophila)
- **ALGAL TOXICITY:** 2200 ug/L 96 hour(s) EC50 (Growth) Green algae (Chlorella pyrenoidosa)

**FATE AND TRANSPORT:**

- **BIOCONCENTRATION:** 0.38 ug/L 15 hour(s) BCF (Residue) Red swamp crayfish (Procambarus clarki) 10 ug/L

**ENVIRONMENTAL SUMMARY:** Highly toxic to aquatic life.

**Solvent DAA**

**ECOTOXICITY DATA:**

- **FISH TOXICITY:** 420000 ug/L 96 hour(s) LC50 (Mortality) Inland silverside (Mendia beryllina)
- **INVERTEBRATE TOXICITY:** 10 g/L 24 hour(s) EC100 (Abundance) Water flea (Daphnia magna)
ALGAL TOXICITY: 1887000 ug/L 48 hour(s) (Population Growth) Cryptomonad (Chilomonas paramecium)

Silver
ECOTOXICITY DATA:
FISH TOXICITY: 55000 ug/L 96 hour(s) LC50 (Mortality) Sheepshead minnow (Cyprinodon variegatus) INVERTEBRATE TOXICITY: 0.24 ug/L 48 hour(s) EC50 (Mortality) Water flea (Daphnia magna)
ALGAL TOXICITY: 170 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom keltonema costatum
FATE AND TRANSPORT: BIOCONCENTRATION: 10250 ug/L 14 hour(s) BCF (Residue) Pacific oyster (Crassostrea gigas) 20 ug/L

Additive: No information available

Section 13: Disposal Considerations

Waste Disposal:
The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all applicable federal, state and/or local laws and regulations.

Section 14: Transport Information

Package and transport in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
DOT Classification: Resin solution, 3, UN1866, II (Isopropyl alcohol)
IATA: Resin Solution
Identification Number: UN1866
Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200: Ensure that the hazards associated with this product are transmitted to employees by means of a hazard communications program, in accordance with federal and state Occupational Safety and Health Administration (OSHA) regulations.

CERCLA/SUPERFUND HAZARD CATEGORY: At the time of this document’s preparation, one of the ingredients of this product were listed in 40 CFR 302.4. The list should be periodically checked for applicable updates. SILVER, METAL (as Ag): 1000 LBS RQ

SARA 313 INFORMATION: At the time of this document’s preparation, none of the ingredients of this product were listed in 40 CFR 372. The list should be periodically checked for applicable updates.

TOXIC SUBSTANCES CONTROL ACT (TSCA) All of the compounds in this product are on the TSCA Inventory and/or are subject to a Low Volume Exemption. The product is intended for research & development use only. All users must utilize the worker protection measures and environmental release controls specified in this Material Safety Data Sheet and in EPA and
OSHA regulations. Acknowledgment of receipt of this Material Safety Data Sheet shall be considered acknowledgment that the user will comply with these requirements.

CALIFORNIA PROPOSITION 65: At the time of this document’s preparation, none of the ingredients of this product were included on the California Proposition 65 list of chemicals known to cause cancer or reproductive toxicity. The list should periodically be checked for applicable updates.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Maximum Limit (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>1000</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Biphenyis</td>
<td>1000</td>
</tr>
<tr>
<td>Poly Brominated Diphenyl Ethers (PBDE)</td>
<td>1000</td>
</tr>
</tbody>
</table>

EC CLASSIFICATION (CALCULATED):
F  Highly Flammable
Xi  Irritant

DANGER/HAZARD SYMBOL:
F  Highly Flammable
Xi  Irritant
Xn  Harmful

EC RISK AND SAFETY PHRASES:
R 11  Highly flammable.
R 22  Harmful if swallowed.
R 36  Irritating to eyes.
R 37  Irritating to respiratory system.
S 2   Keep out of the reach of children.
S 13  Keep away from food, drink and animal feedingstuffs.
S 24  Avoid contact with skin.
S 25  Avoid contact with eyes.
S 26  In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36  Wear suitable protective clothing.
S 46  If swallowed, seek medical advice immediately and show this container or label.

GERMAN REGULATIONS:
WATER HAZARD CLASS (WGK):
STATE OF CLASSIFICATION: \( \text{WvWvS} \)
CLASSIFICATION UNDER HAZARD TO WATER: 1
The above information has been compiled from sources we believe to be reliable and, to our knowledge, is accurate. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Cambrios Technologies Corp be liable for any claims, losses, or damages or any special, indirect, incidental, consequential or exemplary damages, however arising, resulting from any use of the above information even if Cambrios Technologies Corp has been advised of the possibility of such damages.