

First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier

Product name: Experimental Ink EXP001
Synonyms: Experimental Conductive Ink

1.2 Relevant identified uses of the substance or mixture and uses advised against

Intended use: Commercial Ink

1.3 Supplier's Details

Supplier Name: Voltera Inc.
Supplier Address 1: 100-113 Breithaupt St.
City: Kitchener
Province: Ontario
Postal Code: N2H5G9
Country: Canada
Business Phone: 1-888-381-3332

1.4 Emergency Phone Number

Emergency Phone: CANUTEC 1+ 613-996-6666

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Class Phrases: H319: Serious Eye Damage/Irritation, Category 2A
H400: Hazardous to the aquatic environment - Acute Hazard, Category 1

Full text of H statements: see section 16

2.2 Label Elements

Hazard Pictograms (GHS-US):



Signal Words:
Hazard Statements:

Warning.
H319: Causes serious eye irritation.
H400: Very toxic to aquatic life.
P260: Do not breathe dust, mist, spray, vapors, gas, fume
P264: Wash hands thoroughly after handling.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 - Get medical advice/attention if you feel unwell.
P337+P313: If eye irritation persists: Get medical advice/attention.
P391: Collect spillage.
P501: Dispose of contents/container in accordance with Local, State, Federal and Provincial regulations.

Precautionary Statements:

2.3 Other Hazards

Other Potential Health Effects: No additional information available.

2.4 Unknown acute toxicity (GHS US)

Not applicable

First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixture

Component	CAS	% by Weight	GHS-US Classification
Diethylene glycol monobutyl ether	112-34-5	15-35	Eye Irrit. 2. H319
Silver	7440-22-4	65-90	Not classified

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

First-Aid General:	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If exposed or concerned: Get medical advice/attention.
First-Aid after Eye Contact:	Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice and attention.
First-Aid after Skin Contact:	Remove/take off immediately all contaminated clothing. Rinse and then wash skin thoroughly with water and soap. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.
First-Aid after Inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If exposure symptoms persist: seek medical advice.
First-Aid after Ingestion:	If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek immediate medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/Injuries after Eye Contact:	Causes eye irritation.
Symptoms/Injuries after Skin Contact:	May cause slight irritation to the skin. Silver may result in darkening of skin and cornea of eye (gray-blue patches or darkening) where the metal has contact; prolonged and heavy exposure may also affect lung function and may be manifested as mild of chronic bronchitis.
Symptoms/Injuries after Inhalation:	Inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.
Symptoms/Injuries after Ingestion:	May cause irritation to the digestive tract.
Chronic symptoms:	May cause damage to organs through prolonged or repeated exposure.

4.3 Indication of immediate medical attention and special treatment needed

Note to Physicians: Provide general supportive measures and treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media: Foam, Dry powder, Carbon dioxide, Water spray.
Unsuitable Extinguishing Media: Do not use a heavy water stream.

5.2 Special Hazards arising from the substance or mixture

Fire hazard:	Combustion generates smoke fumes, carbon monoxide and dioxide and various hydrocarbon compounds.
Explosion Hazard:	Prolonged exposure to fire may cause containers to rupture/explode.
Reactivity:	This product is non-reactive under normal conditions of use, storage, and transport.

First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

5.3 Advice for firefighters

Protective Equipment: Wear Self-Contained Breathing Apparatus (SCBA), chemically protective clothing. Do not attempt to take action without suitable protective equipment.

Firefighting instructions: In case of fire: Wear self-contained breathing apparatus. Wear proper protective equipment. Evacuate personnel to a safe area. Do not allow run-off from firefighting to enter drains or water courses. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Other information On heating, there is a risk of bursting due to internal pressure build-up. Cool down the containers exposed to heat with a water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

General measures: Stop leak if safe to do so. Ensure adequate air ventilation.

6.1.1 For non-emergency personnel:

Emergency procedures: Ventilate spillage area. Avoid contact with skin and eyes. Avoid breathing mist or vapor.

6.1.2 For emergency responders:

Emergency procedures: Evacuate unnecessary personnel. Ventilate area.
Protective equipment: Do not attempt to take action without suitable protective equipment. Avoid breathing dust, mist, or spray. Wear suitable protective clothing, gloves, and eye/face protection. For further information refer to section 8: Exposure-controls/personal protection.

6.2 Environmental precautions

Environmental precautions: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Collect in closed containers for disposal. Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.3 Methods and materials for containment and cleaning up

Methods for Containment: Stop leak, if possible without risk. Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Collect spillage. Put into a labeled container and provide safe disposal.

Methods for Cleanup: Take up liquid spill into absorbent material. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect all waste in suitable and labeled containers and dispose according to local legislation. Wear suitable protective clothing. Notify authorities if product enters sewers or public waters.

Other information: Dispose of materials or solid residues at an authorized site.

6.4 Reference to other sections

For further information refer to section 8: Exposure-controls/personal protection. For disposal of residues refer to section 13: Disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Handling: Obtain special instructions before use. Ensure good ventilation of the work station. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. Avoid contact with skin and eyes. Avoid breathing mist or vapor.

SAFETY DATA SHEET

Experimental Ink EXP001



First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

Hygiene Practices: Separate working clothes from town clothes. Launder separately. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink, or smoke when using this product. Always wash hands after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Storage: Store in well-ventilated area. Keep cool. Long-term storage in closed containers.
Incompatible materials: Strong oxidizing agents. Light metals.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Guidelines – Ingredient Based:

Diethylene glycol monobutyl ether (112-32-5):

ACDIH: ACDIH TWA (ppm): 10 ppm (inhalable fraction and vapour)

Silver (7440-22-4):

ACGIH: ACGIH TWA (mg/m3) : 0.1 mg/m3 (dust and fume)
OSHA: OSHA PEL-TWA (mg/m3) : 0.01 mg/m3
IDLH: US IDLH (mg/m3) : 10 mg/m3 (dust)
NIOSH: NIOSH REL (TWA) (mg/m3) : 0.01 mg/m3 (dust)

8.2 Exposure Controls

Appropriate Engineering Controls: Provide local exhaust or general room ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure good ventilation of the work station.

Personal protective equipment: Avoid all unnecessary exposure. Glove. Protective goggles. Protective clothing. Personal protective equipment should be selected based on the conditions under which this product is handled or used.

Eye Protection: Chemical goggles or safety glasses.

Hand Protection: Wear impermeable protective gloves. It is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin and body protection: Wear suitable protective clothing.

Respiratory protection: Wear appropriate mask. Avoid breathing dust/fume/gas/mist/vapors/spray. Wear respiratory protection.

Environmental exposure controls: Avoid release to the environment.

Other information: Do not eat, drink or smoke during use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Colour: Gray
Physical state: Viscous liquid

First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

Odour:	Alcohol odour
Odour threshold:	No data available
pH-value:	No data available
Melting Temperature:	No data available
Freezing Point:	< 0°C
Boiling Temperature:	> 100°C
Flash point:	No data available
Flammability (solid, gas):	Non-flammable
Explosive Limits:	No data available
Oxidizing Properties:	No data available
Auto-Ignition temperature:	No data available
Vapour Pressure:	No data available
Relative Vapour Density @ 20°C:	> 1
Relative Density:	2.5-3.5 (@25°C)
Solubility:	Water. Not dispersible.
Log POW:	No data available.
Relative Evaporation rate (butyl acetate = 1):	<= 1
Decomposition temperature:	No data available.
Viscosity:	No data available.
Viscosity, kinematic:	No data available.
Viscosity, dynamic:	No data available.

9.2 Other information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

This product is non-reactive under normal conditions of use, storage, and transport.

10.2 Chemical Stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use. Hazardous polymerization does not occur.

10.4 Conditions to avoid

High temperatures. Open flame. Sparks. Incompatible materials.

10.5 Incompatible materials

Strong oxidizing agents. Light metals.

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. During a fire, carbon monoxide and various hydrocarbon components may be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Silver (7440-22-4):

LD50 Oral Rat: >2000 mg/kg.

Diethylene glycol monobutyl ether (112-34-5):

LD50 Oral Rat: 7291 mg/kg

LD50 Dermal Rabbit: 2764 mg/kg

First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

Acute toxicity: Not classified
(Based on available data, the classification criteria are not met)

Likely Route of Exposure: Ingestion, Oral; Skin and Eye contact.

Skin corrosion/irritation: Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation: Causes serious eye irritation.

Respiratory or skin sensitization: Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity: Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity: Not classified
(Based on available data, the classification criteria are not met)

Reproductive toxicity: Not classified
(Based on available data, the classification criteria are not met)

Specific target organ toxicity (single exposure): Not classified
(Based on available data, the classification criteria are not met)

Specific organ toxicity (repeated exposure): Not classified
(Based on available data, the classification criteria are not met)

Aspiration hazard: Not classified
(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation: Inhalation of airborne droplets or aerosols may cause irritation to the respiratory tract.

Symptoms/injuries after skin contact: May cause slight irritation to skin.

Symptoms/injuries after eye contact: Causes serious eye irritation.

Symptoms/injuries after ingestion: May cause irritation to the digestive tract.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Ecology - general: Very toxic to aquatic life.

Silver (7440-22-4):

LC50 Fish 1: 0.00155 – 0.00293 mg/l (Exposure time: 96 h – Species: Pimephales promelas [static])
EC50 Daphnia 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])

Diethylene glycol monobutyl ether (112-34-5):

LC50 Fish 1: 1300 mg/l (Exposure time: 96 h – Species: Lepomis macrochirus [static])
EC50 Daphnia 1: > 100 mg/l (Exposure time: 48 h – Species: Daphnia magna)

12.2 Persistence and degradability

Not established.

12.3 Bioaccumulative potential

EXP001 Experimental Ink:

Not established

Diethylene glycol monobutyl ether (112-34-5):

BCF Fish 1: No bioconcentration expected.

12.4 Mobility in soil

No data available.

SAFETY DATA SHEET

Experimental Ink EXP001



First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

12.5 Other adverse effects

Effect on the global warming:
Other information:

No additional information available.
Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste treatment methods: Dispose of contents / container in accordance with licensed collector's sorting instructions.
Waste disposal recommendations: Dispose of in a safe manner in accordance with local/national regulations.
Ecology – waste materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

Department of Transportation (DOT): In accordance with DOT
Not regulated for transport.

Transport by sea:
UM-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
MFAG-No.: 171

TDG:: Not regulated for transport.

Transport by air:
UN-No (IATA): 3082
Proper Shipping Name (IATA): Environmentally hazardous substance, liquid N.O.S
Class (IATA): 9 – Miscellaneous Dangerous Goods
Packing Group (IATA): III – Minor danger

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Component	CAS	% by Weight
Diethylene glycol monobutyl ether	112-34-5	15-35
Silver	7440-22-4	65-90

Regulatory – Ingredient Based:

Silver (7440-22-4):
RQ (reportable quantity, section 304 of EPA's List of Lists): 1000 lbs
SARA Section 313 – Emission Reporting 1.0 %
Diethylene glycol monobutyl ether (112-34-5):
Sara Section 313 – Emission Reporting 1.0 %

15.2 International Regulations

SAFETY DATA SHEET

Experimental Ink EXP001



First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

CANADA

Silver (7440-22-4):

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification: Uncontrolled product according to WHMIS classification criteria.

Diethylene glycol monobutyl ether (112-34-5):

Listed on the Canadian DSL (Domestic Substances List).

WHMIS Classification: Class B Division 3 – Combustible liquid : Flash point of 37.8 – 93.3°C
Class D Division 2 Subdivision B – Toxic material causing other toxic effects.

EU-Regulations

Silver (7440-22-4):

Listed on the EEC Inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) Aquatic Acute 1 H400

No. 1272/2008 [CLP]:

Diethylene glycol monobutyl ether (112-34-5):

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations:

Silver (7440-22-4):

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on CICR (Turkish Inventory and Control of Chemicals)

Diethylene glycol monobutyl ether (112-34-5):

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3 US State Regulations

California Proposition 65 – This product does not contain any substance(s) known to the state of California to cause cancer, developmental and/or reproductive harm.

SECTION 16: Additional Information

Revision Date: 2018-07-25

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Additionally, Voltera Inc. assumes no responsibility for injury to the end user proximately caused by the material even if reasonable safety procedures are followed. The end user assumes the risk in their use of this material.

Abbreviations and Acronyms:

IARC (International Agency for Research on Cancer).

ACGIH (American conference of Government Industrial Hygienists),

TWA – Time Weighted Average.

IDLH – Immediately Dangerous to Life or Health.

NIOSH (National Institute for Occupational Safety and Health).

REL – Recommended exposure limit.

OSHA – Occupational Safety and Health Administration.

SAFETY DATA SHEET

Experimental Ink EXP001



First issue: 2018-07-25
Revision date: 2018-07-25
Version: 1.0

WHMIS – Workplace Hazardous Materials Information System.

Full text of H-statements:

Eye irrit. 2	Serious eye damage/eye irritation, Category 2
H319	Causes serious eye irritation
H400	Very toxic to aquatic life