Carestream

SAFETY DATA SHEET

Issuing date 2014-05-05 **Revision Date** 2014-05-05 **Version** 1

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product name: AgNW Solution v10.57

Product code: 000573

Supplier Carestream Health, Inc., 150 Verona Street, Rochester, New York 14608

Emergency telephone number
CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

For other information contact: 800-328-2910

Product Use: Laboratory chemicals.

2. HAZARDS IDENTIFICATION

Classification

Acute Toxicity - Oral	Category 4
Serious eye damage/eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 2
Flammable liquids	Category 2

Label elements

Emergency Overview

Signal word **Danger**

hazard statements
Harmful if swallowed
Causes serious eye irritation
May cause damage to organs
May cause drowsiness or dizziness
Highly flammable liquid and vapor

Contains Methanol

Appearance No information available **Physical state** liquid **Odor** No information available

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/ other /equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement - Response
IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Skin
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction.

Precautionary Statement - Storage
Store in a closed container.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC)
• Not applicable

Other Information
May cause respiratory irritation. Prolonged skin contact may defat the skin and produce dermatitis. Very toxic to aquatic life with long lasting effects. The toxicological properties of silver nanowires have not been fully investigated. Some studies suggest that exposure to some engineered nanoparticles can cause adverse health effects in lab animals. Silver nanoparticles may cause pulmonary inflammation and may be a weak skin sensitizer. Take precautions to prevent exposure.
8.6% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade Secret
Isopropyl alcohol 67-63-0	67-63-0	60-100	*
Ethyl alcohol 64-17-5	64-17-5	5-15	*
Methanol 67-56-1	67-56-1	1-5	*
Silver 7440-22-4	7440-22-4	0.1-2	*

*The exact percentages (concentrations) have been withheld as trade secrets.

4. FIRST AID MEASURES

First Aid Measures

General advice — Call 911 or emergency medical service. Remove and isolate contaminated clothing and shoes.

Eye contact — In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Skin contact Wash skin with soap and water.

Inhalation Move victim to fresh air. Apply artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.

Ingestion Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention. Rinse mouth.

Protection of First-aiders Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Most important symptoms and effects, both acute and delayed

Main Symptoms May cause drowsiness or dizziness. Irritation. Central nervous system depression.

Indication of any immediate medical attention and special treatment needed

Notes to physician Keep victim warm and quiet.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical, CO_2, water spray or regular foam. Water spray, fog or regular foam. Use water spray or fog; do not use straight streams. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media
CAUTION: All these products have a very low flash point. Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical
Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a "P" may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Substance may be transported hot.

Hazardous Combustion Products
Carbon oxides.

Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge Yes.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk.

Other information Water spray may reduce vapor; but may not prevent ignition in closed spaces.

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for Containment A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use clean non-sparking tools to collect absorbed material.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only in an area containing flame proof equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Use only in area provided with appropriate exhaust ventilation. Wear personal protective equipment. Prevent the formation of vapors, mists and aerosols. There is a hazard associated with rags, paper or any other material used to remove spills which become soaked with product. Avoid accumulation of these: they are to be disposed of safely after use.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible products Strong oxidizing agents. Strong acids. Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	AIHA - Workplace Environmental Exposure Levels (WEELs) - TWAs	OSHA PEL	Advisory OEL
Isopropyl alcohol 67-63-0	STEL 400 ppm TWA: 200 ppm		TWA: 400 ppm TWA: 980 mg/m^3	
Ethyl alcohol 64-17-5	STEL 1000 ppm		TWA: 1000 ppm TWA: 1900 mg/m^3	
Methanol 67-56-1	S* STEL 250 ppm TWA: 200 ppm		TWA: 200 ppm TWA: 260 mg/m^3	
Silver 7440-22-4	TWA: 0.1 mg/m^3		TWA: 0.01 mg/m^3	

Appropriate engineering controls

Engineering Measures Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Tightly fitting safety goggles.

Skin and body protection Wear protective gloves/clothing. Skin contact should be prevented through use of suitable protective clothing, gloves, and footwear, selected with regard of use conditions and exposure potential.

Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Provide regular cleaning of equipment, work area and clothing. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid		
Appearance	No information available	**Odor**	No information available
Color	No information available	**Odor Threshold**	No information available

Property	**Values**	**Remarks/ • Method**
ph		No information available
Melting point/range:		No information available
Boiling point/boiling range		No information available
Flash Point	12 °C (Isopropanol)	No information available.
Evaporation rate		No information available
Flammability (solid, gas)		
upper flammability limit		
lower flammability limit		
Vapor pressure		No information available
Vapor density		No information available
Specific Gravity		No information available
Water Solubility		No information available
Solubility in other solvents		No information available
Partition coefficient: n-octanol/water		No information available
Autoignition temperature		No information available
Decomposition temperature		No information available
Viscosity, kinematic		No information available
Viscosity, dynamic		No information available
Explosive properties	No information available	
Oxidizing Properties	No information available	

Other information

Softening point	No information available
Density VALUE	No information available
Bulk Density VALUE	No information available

10. STABILITY AND REACTIVITY

Reactivity
None under normal use conditions.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to Avoid
Heat, flames and sparks.

Incompatible Materials
Strong oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information The toxicological properties of silver nanowires have not been fully investigated. Some studies suggest that exposure to some engineered nanoparticles can cause adverse health effects in lab animals. Silver nanoparticles may cause pulmonary inflammation and may be a weak skin sensitizer. Take precautions to prevent exposure.

Inhalation May cause irritation of respiratory tract. May cause drowsiness and dizziness. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye irritation. Avoid contact with eyes. Causes eye irritation.

Skin contact Repeated exposure may cause skin dryness or cracking. May cause skin irritation and/or dermatitis.

Ingestion May cause additional effects as listed under "Inhalation". Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

Toxicology data for the components

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Isopropyl alcohol 67-63-0	4396 mg/kg (Rat) Oral LD50 Rat 4396 mg/kg (Source: IUCLID)	12800 mg/kg (Rabbit) Dermal LD50 Rabbit 12800 mg/kg (Source: NLM_CIP)	16000 ppm (Rat) 8 h Inhalation LC50 Rat 16000 ppm 8 h
Ethyl alcohol 64-17-5	-	-	124.7 mg/L (Rat) 4 h Inhalation LC50 Rat 124.7 mg/L 4 h
Methanol 67-56-1	5628 mg/kg (Rat) Oral LD50 Rat 5628 mg/kg (Source: NLM_CIP)	-	83.2 mg/L (Rat) 4 h Inhalation LC50 Rat 83.2 mg/L 4 h (Source: IUCLID)
Silver 7440-22-4	2000 mg/kg (Rat) Oral LD50 Rat >2000 mg/kg (Source: IUCLID)	-	-

Chemical Name	Other applicable information
Isopropyl alcohol	Ingestion of large amounts of isopropyl alcohol may cause headache, dizziness, incoordination, vomiting, confusion, kidney injury, coma and death. Prolonged exposure to high vapour concentrations may cause irritation of the eyes, nose, and throat and narcosis. Can cause CNS effects.
Ethyl alcohol	Ethanol is a developmental toxin by ingestion of moderate amounts.
Silver	Excessive absorption of silver compounds from chronic overexposure may result in argyria, a bluish-gray discoloration of the skin, eyes, and mucous membranes.

Information on toxicological effects

Symptoms Vapors may cause drowsiness and dizziness. Irritant.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.
mutagenic effects No information available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Ethyl alcohol 64-17-5	A3	1		X

Reproductive toxicity No information available.
Developmental Toxicity Ethanol has been shown to be a reproductive toxin only when consumed as an alcoholic beverage.
STOT - single exposure May cause drowsiness and dizziness. May cause disorder and damage to the: Central nervous system, Ocular nerve
STOT - repeated exposure No information available
Chronic toxicity Prolonged skin contact may defat the skin and produce dermatitis.
Target Organ Effects Central nervous system, Respiratory system, Eyes.
Aspiration Hazard May be fatal if swallowed and enters airways.

Numerical measures of toxicity - Product Information

Unknown acute toxicity 8.6% of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document .
ATEmix (oral) 1963 mg/kg
ATEmix (dermal) 5820 mg/kg
ATEmix (inhalation-gas) 36571 ppm
ATEmix (inhalation-dust/mist) 13.6 mg/L
ATEmix (inhalation-vapor) 45 mg/L

12. ECOLOGICAL INFORMATION

Ecotoxicity

12.625% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
Isopropyl alcohol 67-63-0	1000: 96 h Desmodesmus subspicatus mg/L EC50 1000: 72 h Desmodesmus subspicatus mg/L EC50	9640: 96 h Pimephales promelas mg/L LC50 flow-through 11130: 96 h Pimephales promelas mg/L LC50 static 1400000: 96 h Lepomis macrochirus µg/L LC50		13299: 48 h Daphnia magna mg/L EC50
Ethyl alcohol 64-17-5		12.0 - 16.0: 96 h Oncorhynchus mykiss mL/L LC50 static 13400 - 15100: 96 h Pimephales promelas mg/L LC50 flow-through 100: 96 h Pimephales promelas mg/L LC50 static		9268 - 14221: 48 h Daphnia magna mg/L LC50 2: 48 h Daphnia magna mg/L EC50 Static
Methanol 67-56-1		13500 - 17600: 96 h Lepomis macrochirus mg/L LC50 flow-through 18 - 20: 96 h Oncorhynchus mykiss mL/L LC50 static 19500 - 20700: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 28200: 96 h Pimephales promelas mg/L LC50 flow-through 100: 96 h Pimephales promelas mg/L LC50 static		

Silver 7440-22-4		0.00155 - 0.00293: 96 h Pimephales promelas mg/L LC50 static 0.0062: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.064: 96 h Lepomis macrochirus mg/L LC50 static		0.00024: 48 h Daphnia magna mg/L EC50 Static

Persistence and degradability
No information available.

Bioaccumulation:
Most components of this material are unlikely to bioaccumulate but some have not been tested.

Chemical Name	log Pow
Isopropyl alcohol 67-63-0	0.05
Ethyl alcohol 64-17-5	-0.32
Methanol 67-56-1	-0.77

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Methods This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Recover silver before disposal.

Contaminated packaging Do not re-use empty containers. Dispose of in accordance with local regulations.
US EPA Waste Number D001

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Methanol 67-56-1		Included in waste stream: F039		Ignitable waste
Silver 7440-22-4		Included in waste stream: F039	5.0 mg/L regulatory level	

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Isopropyl alcohol 67-63-0	Toxic Ignitable
Ethyl alcohol 64-17-5	Toxic Ignitable
Methanol 67-56-1	Toxic Ignitable
Silver 7440-22-4	Toxic

14. TRANSPORT INFORMATION

The information given below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions. Please consult the product packaging for further details.

DOT
UN/ID No UN1993

Proper Shipping Name	Flammable liquid, n.o.s.
Technical Name	Isopropyl alcohol, Ethyl alcohol
Hazard class	3
Packing Group	II
Special Provisions	IB2, T7, TP1, TP8, TP28
Emergency Response Guide Number	128

TDG

UN/ID No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Technical Name	Isopropyl alcohol, Ethyl alcohol
Hazard class	3
Packing Group	II

ICAO/IATA

UN/ID No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Technical Name	Isopropyl alcohol, Ethyl alcohol
Hazard class	3
Packing Group	II
ERG Code	3H
Special Provisions	A3

IMDG/IMO

UN/ID No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s.
Technical Name	Isopropyl alcohol, Ethyl alcohol
Hazard class	3
Packing Group	II
EmS No.	F-E, S-E
Special Provisions	274
Marine pollutant	Silver (nanowires)

For transportation information, go to: http://ship.carestreamhealth.com.

15. REGULATORY INFORMATION

"Does not comply" indicates a component is either not on the public inventory or is subject to exemption requirements. If additional information is needed contact Carestream Health.

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not comply
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
NZIoC	Complies

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	SARA 313 - Threshold Values %
Isopropyl alcohol - 67-63-0	1.0
Methanol - 67-56-1	1.0
Silver - 7440-22-4	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Silver		X	X	

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

Chemical Name	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Methanol - 67-56-1		Group IV		

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	SARA Product RQ
Methanol	5000 lb		
Silver	1000 lb		

TSCA

Component	U.S. - TSCA (Toxic Substances Control Act) - Section 4 - Chemical Test Rules (40 CFR 799)	U.S. - TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)
Isopropyl alcohol 67-63-0 (60-100)	40 CFR 799.2325	

Component	U.S. - TSCA (Toxic Substances Control Act) - Section 8(d) - 716.120(a) - Health and Safety Reporting - List of Substances
Isopropyl alcohol 67-63-0 (60-100)	12/15/1986

U.S. State Regulations

California Proposition 65

Ethyl alcohol is only a considered a Proposition 65 developmental hazard when it is ingested as an alcoholic beverage.

Chemical Name	California Prop. 65
Ethyl alcohol	Carcinogen Developmental
Methanol	Developmental
Methyl isobutyl ketone	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Isopropyl alcohol	X	X	X		X
Ethyl alcohol	X	X	X	X	X
Methanol	X	X	X	X	
Silver	X	X	X		X

International Regulations

Mexico - Grade Serious risk, Grade 3

Chemical Name	Carcinogen Status	Exposure Limits
Isopropyl alcohol		Mexico: TWA 400 ppm Mexico: TWA 980 mg/m³ Mexico: STEL 500 ppm Mexico: STEL 1225 mg/m³
Ethyl alcohol		Mexico: TWA 1000 ppm Mexico: TWA 1900 mg/m³
Methanol		Mexico: S* Mexico: TWA 200 ppm Mexico: TWA 260 mg/m³ Mexico: STEL 250 ppm Mexico: STEL 310 mg/m³
Silver		Mexico: TWA 0.1 mg/m³

16. OTHER INFORMATION

NFPA **Health Hazard** 2 **Flammability** 3 **Instability** 0

HMIS **Health Hazard** 2* **Flammability** 3 **Physical Hazard** 0

Chronic Hazard Star Legend **Indicates a chronic health hazard.*

Revision Date 2014-05-05

Revision Note Initial Release

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet