

## SAFETY DATA SHEET

**Issuing date** 2014-08-21

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**Version** 2

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

**Product name:** FLEXX 100S/L5CA 406X100

**Product code:** 1015601

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

Emergency telephone number

CHEMREC: +1-703-527-3887 (INTERNATIONAL)  
1-800-424-9300 (NORTH AMERICA)

For other information contact: 800-328-2910

**Product Use:** Conductive Film.

### 2. HAZARDS IDENTIFICATION

#### Classification

This product is a PET based conductive film with a coating that is comprised of silver nanowires and polymers. The product meets the definition as an article per the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Not classified

#### Label elements

##### Emergency Overview

**Appearance** Film

**Physical state** Solid

**Odor** None

#### Hazards not otherwise classified (HNOC)

- Not applicable

#### Other 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.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade Secret
Polyethylene terephthalate 25038-59-9	25038-59-9	50-100	*
Blend of HDPE and EVA MIXTURE	MIXTURE	15-40	*
Acrylic Polymers PROPRIETARY	PROPRIETARY	1-5	*
Binder PROPRIETARY	PROPRIETARY	<1	*
Silver 7440-22-4	7440-22-4	<0.1	*
Additives, Residuals, and Impurities MIXTURE	MIXTURE	<0.01	*

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

## 4. FIRST AID MEASURES

### First Aid Measures

<b>General advice</b>	This product is not expected to cause any health or safety hazards when used as intended.
<b>Eye contact</b>	Not an expected route of exposure.
<b>Skin contact</b>	Wash hands thoroughly after handling.
<b>Inhalation</b>	Not an expected route of exposure.
<b>Ingestion</b>	Not an expected route of exposure.

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

<b>Main Symptoms</b>	None known.
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### Indication of any immediate medical attention and special treatment needed

<b>Notes to physician</b>	Treat symptomatically.
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## 5. FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Water spray. Dry chemical. Carbon dioxide (CO<sub>2</sub>).

### Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

### Specific hazards arising from the chemical

Although the film base is a combustible material, it is not easily flammable. Considerable heating above ambient conditions is required before ignition and combustion can occur. The products of combustion depend on the burning conditions and are likely to include carbon monoxide, oxides of nitrogen and oxides of sulfur.

### Hazardous Combustion Products

Carbon oxides. Sulfur oxides. Nitrogen oxides (NO<sub>x</sub>).

### Explosion Data

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

**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** Use personal protective equipment. For personal protection see section 8. During unexpected circumstances and elevated temperatures such as a fire, evacuate personnel to safe areas and use personal protective equipment to prevent exposure to volatiles.

**Environmental precautions**

**Environmental precautions** No special environmental precautions required. Do not allow material to contaminate ground water system.

**Methods and material for containment and cleaning up**

**Methods for Containment** No special requirements.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

## **7. HANDLING AND STORAGE**

**Precautions for safe handling**

**Advice on safe handling** Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

**Technical measures/Storage conditions** Keep in a dry, cool and well-ventilated place.

**Incompatible products** None known.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters****Exposure Guidelines**

Chemical Name	ACGIH TLV	AIHA - Workplace Environmental Exposure Levels (WEELs) - TWAs	OSHA PEL	Advisory OEL
Silver 7440-22-4	TWA: 0.1 mg/m <sup>3</sup>		TWA: 0.01 mg/m <sup>3</sup>	

**Appropriate engineering controls**

**Engineering Measures** Ensure adequate ventilation. Apply technical measures to comply with the occupational exposure limits. Showers. Eyewash stations.

**Individual protection measures, such as personal protective equipment**

**Eye/Face Protection** No special protective equipment required.

**Skin and body protection** Protective gloves.

<b>Respiratory protection</b>	None required under normal usage.
<b>Hygiene measures</b>	Handle in accordance with good industrial hygiene and safety practice.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### **PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical state</b>	Solid	<b>Odor</b> <b>Odor Threshold</b>	None No information available	
<b>Appearance</b>	Film			
<b>Color</b>	Clear			
<b>Property</b>	<b>Values</b>	<b>Remarks/ • Method</b>		
ph		No information available		
<b>Melting point/range:</b>		No information available		
<b>Boiling point/boiling range</b>		No information available		
<b>Flash Point</b>		No information available.		
<b>Evaporation rate</b>		No information available		
<b>Flammability (solid, gas)</b>		No information available		
upper flammability limit		No information available		
lower flammability limit		No information available		
<b>Vapor pressure</b>		No information available		
<b>Vapor density</b>		No information available		
<b>Specific Gravity</b>		No information available		
<b>Water Solubility</b>		No information available		
<b>Solubility in other solvents</b>		No information available		
<b>Partition coefficient: n-octanol/water</b>		No information available		
<b>Autoignition temperature</b>		No information available		
<b>Decomposition temperature</b>		No information available		
<b>Viscosity, kinematic</b>		No information available		
<b>Viscosity, dynamic</b>		No information available		
<b>Explosive properties</b>	No information available	No information available		
<b>Oxidizing Properties</b>	Not applicable	No information available		
<b>Other information</b>		<b>Softening point</b>	No information available	
<b>Molecular Weight</b>		<b>Density VALUE</b>	No information available	
<b>Bulk Density VALUE</b>	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**

None known.

**Hazardous Decomposition Products**

Carbon oxides. Nitrogen oxides (NOx). Sulfur 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**

Not an expected route of exposure.

**Eye contact**

Not an expected route of exposure.

**Skin contact**

Expected to be a low hazard for recommended handling.

**Ingestion**

Not an expected route of exposure. Do not taste or swallow.

**Toxicology data for the components**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Silver 7440-22-4	2000 mg/kg ( Rat ) Oral LD50 Rat >2000 mg/kg (Source: IUCLID)	-	-

Chemical Name	Other applicable information
Silver	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.

**Information on toxicological effects**

**Symptoms** None known.

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

<b>Sensitization</b>	No information available.
<b>mutagenic effects</b>	No information available.
<b>Carcinogenicity</b>	Contains no ingredient listed as a carcinogen.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available
<b>STOT - repeated exposure</b>	No information available
<b>Chronic toxicity</b>	Excessive absorption of silver compounds from chronic overexposure may result in argyria, a bluish-gray discoloration of the skin, eyes, and mucous membranes.
<b>Aspiration Hazard</b>	No information available.

**Numerical measures of toxicity - Product Information****Unknown acute toxicity**

The following values are calculated based on chapter 3.1 of the GHS document Not applicable.

## **12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

Contains materials that are very toxic to aquatic organisms. However, the environmental impact of the product in its intended form has not been fully investigated.

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia and other aquatic invertebrates
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:**

No information available.

### **13. DISPOSAL CONSIDERATIONS**

#### **Waste treatment methods**

#### **Waste Disposal Methods**

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements. Dispose of in accordance with local regulations. Can be landfilled or incinerated, when in compliance with local regulations.

#### **Contaminated packaging**

Do not re-use empty containers. Dispose of in accordance with local regulations.

Chemical Name	California Hazardous Waste Status
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** Not regulated

**TDG** Not regulated

**ICAO/IATA** Not regulated

**IMDG/IMO** Not regulated

For transportation information, go to: <http://ship.carestream.com>

### **15. REGULATORY INFORMATION**

Product is an article. "Complies" indicates that the product, as an article, is not subject to chemical notification requirements.

### International Inventories

<b>TSCA</b>	Complies
<b>DSL/NDSL</b>	Complies
<b>EINECS/ELINCS</b>	Complies
<b>ENCS</b>	Complies
<b>IECSC</b>	Complies
<b>KECL</b>	Complies
<b>PICCS</b>	Complies
<b>AICS</b>	Complies
<b>NZIoC</b>	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 does not contain any 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 %
Silver - 7440-22-4	1.0

#### **SARA 311/312 Hazard Categories**

<b>Acute Health Hazard</b>	No
<b>Chronic Health Hazard</b>	No
<b>Fire Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	No
<b>Reactive Hazard</b>	No

#### **Clean Water Act**

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)**

This product does not contain any substances regulated as hazardous air pollutants (HAPs) under Section 112 of the Clean Air Act Amendments of 1990.

#### **CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

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

**TSCA**

This product does not contain any chemicals regulated under TSCA Section 4, Section 5(a), Section 8(a) or Section 8(d).

**U.S. State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Silver	X	X	X		

**International Regulations****Mexico - Grade**

Minimum risk, Grade 0

Chemical Name	Carcinogen Status	Exposure Limits
Silver		Mexico: TWA 0.1 mg/m <sup>3</sup>

**16. OTHER INFORMATION****NFPA**  
**HMIS**

Health Hazard 0  
Health Hazard 0

Flammability 0  
Flammability 0

Instability 0  
Physical Hazard 0

**Revision Date**

2014-08-21

**Revision Note**

(M)SDS sections updated

**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**