

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKINGIdentification of the substance or mixture

Product name: FLEXX 100S/M5CA 406X100
Product code: 1015569

Use of the Substance/Mixture

Product Use: Conductive Film.

Company/Undertaking Identification

Supplier: Carestream Health Taiwan Limited, 4F-1, No. 129, Sec.2, Zhongshan N. Rd., Zhongshan Dist., Taipei, 10448, Taiwan R.O.C.

For further information, please contact:

E-mail Address - For environment, health and safety information, email: WW-EHS@carestreamhealth.com

Emergency telephone

00801-14-8954

2. HAZARDS IDENTIFICATIONClassification of the substance or mixture

This material is not classified as hazardous according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

GHS Label elements, including precautionary statements

This material is not classified as hazardous according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Other hazards which do not result in classification

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

Proprietary film comprised of a transparent polyester film base with a conductive coating and hard coat.

Chemical Name	Weight %
Mylar	50-100
Blend of HDPE and EVA	15-40
Acrylic Polymers	1-5
Binder	<1
Silver Nanomaterial	<0.1

Additives, Residuals, and Impurities	<0.01
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4. FIRST AID MEASURES

Description of necessary first-aid measures

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

Most important symptoms/effects, acute and delayed

Skin contact	No known hazard in contact with skin.
Eye contact	Not an expected route of exposure.
Inhalation	Not an expected route of exposure.
Ingestion	Not an expected route of exposure. Do not taste or swallow.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media	Water spray. Dry chemical. Carbon dioxide (CO ₂).
Extinguishing media which shall not be used for safety reasons	Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Special Hazard	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.
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Special protective actions for fire-fighters

Special protective equipment for fire-fighters	Wear self-contained breathing apparatus and protective suit.
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Other information

Other information

None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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.

Advice for emergency responders

For personal protection see section 8

Environmental precautions

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

Methods and materials for containment and cleaning up

No special requirements.

Pick up and transfer to properly labeled containers.

Other information

See Section 12 for additional Ecological information.

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.

Materials to Avoid

None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits

Chemical Name	Taiwan	China	ACGIH TLV	European Union
Silver Nanomaterial	STEL 0.03 mg/m ³		TWA: 0.1 mg/m ³	TWA 0.1 mg/m ³

Appropriate engineering controls

Engineering Measures Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Individual protection measures, such as personal protective equipment (PPE)

Personal Protective Equipment

General Information	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
Respiratory protection	None under normal use conditions.
Eye Protection	No special protective equipment required.
Skin and body protection	No special protective equipment required.
Hand Protection	Protective gloves.

Hygiene measures When using, do not eat, drink or smoke. Wear suitable gloves and eye/face protection. Wash hands before breaks and at the end of workday. Wash hands with water as a precaution. Regular cleaning of equipment, work area and clothing is recommended. Avoid breathing vapors, mist or gas.

9. PHYSICAL AND CHEMICAL PROPERTIES
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Physical state Solid	Odor No information available
ph No information available	Color No information available
Flash point: No information available	Autoignition temperature: No information available
Boiling point/boiling range No information available	
Vapor Pressure	
Vapor density No information available	
Density No information available	
Water Solubility No information available	
Melting point/range: No information available	
Specific Gravity No information available	
Bulk Density: No information available	

10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Conditions to Avoid

Heat, flames and sparks.

Materials to Avoid

None known.

Hazardous Decomposition Products

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity Product Information.

Skin contact	No known hazard in contact with skin.
Eye contact	Not an expected route of exposure.
Inhalation	Not an expected route of exposure.
Ingestion	Not an expected route of exposure. Do not taste or swallow.
Oral	No information available
Dermal	No information available
Inhalation	
Gas	No information available
Mist	No information available
Vapor	No information available

Acute toxicity - Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Silver Nanomaterial	2000 mg/kg (Rat) Oral LD50 Rat >2000 mg/kg (Source: IUCLID)		

Aggravated Medical Conditions None known.

Subchronic toxicity

no data available

Chronic toxicity

Chronic toxicity	Excessive absorption of silver compounds from chronic overexposure may result in argyria, a bluish-gray discoloration of the skin, eyes, and mucous membranes.
Sensitization	No information available.
Neurological effects	No information available.
Target Organ Effects	No information available.

CMR Effects

Carcinogenicity Contains no ingredient listed as a carcinogen.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity Product Information

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.

Acute aquatic toxicity Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Silver Nanomaterial		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

Bioaccumulative potential

No information available

Mobility in soil

No information available

13. DISPOSAL CONSIDERATIONS

Waste from Residues / Unused Products

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.

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.

ADR/RID Not regulated

IMDG/IMO Not regulated

ICAO/IATA Not regulated

ADN Not regulated

TDG Not regulated

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

15. REGULATORY INFORMATION

International Inventories

"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 manufacturer listed in Section 1.

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

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

16. OTHER INFORMATION

Revision Date	2014-05-29
Revision Note	Initial Release

Disclaimer

The information provided on this MSDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text

End of Safety Data Sheet