



# SAFETY DATA SHEET

## SPECIALTY ELECTRONIC MATERIALS UK LIMITED

Safety Data Sheet according to Regulation (EC) No 1907/2006 - Annex II

**Product name:** MOLYKOTE® HSC Plus Paste

**Revision Date:** 20.09.2022

**Katun PN 56200**

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SPECIALTY ELECTRONIC MATERIALS UK LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

**Product name:** MOLYKOTE® HSC Plus Paste

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

**Identified uses:** Lubricants and lubricant additives

### 1.3 Details of the supplier of the safety data sheet

#### COMPANY IDENTIFICATION

SPECIALTY ELECTRONIC MATERIALS UK  
LIMITED  
KINGS COURT, LONDON ROAD  
STEVENAGE  
England  
SG1 2NG  
UNITED KINGDOM

#### Manufacturer

DuPont Specialty Products GmbH & Co. KG

#### Customer Information Number:

00800-3876-6838

SDSQuestion-EU@dupont.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(44)-870-8200418

**Local Emergency Contact:** +(44)-870-8200418

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008:

Short-term (acute) aquatic hazard - Category 1 - H400

Long-term (chronic) aquatic hazard - Category 2 - H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

### Hazard pictograms



Signal word: **WARNING**

### Hazard statements

H410 Very toxic to aquatic life with long lasting effects.

### Precautionary statements

P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/ container to an approved waste disposal plant.

## 2.3 Other hazards

Endocrine disrupting properties (human health):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine disrupting properties (environment):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

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**Chemical nature:** Inorganic and organic compounds, Mixture

### 3.2 Mixtures

This product is a mixture.

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
<b>CASRN</b> 7440-50-8 <b>EC-No.</b> 231-159-6 <b>Index-No.</b> – <b>REACH No</b> –	Copper metal powder	Aquatic Acute 1 - H400 Aquatic Chronic 3 - H412	M-Factor: 1[Acute]  Oral ATE: 500 mg/kg  Inhalation ATE: 0.733 mg/l (dust/mist)  Dermal ATE: > 2,000 mg/kg	>= 20.0 - < 25.0 %
<b>CASRN</b> 8012-95-1 <b>EC-No.</b> 232-384-2 <b>Index-No.</b> – <b>REACH No</b> –	Paraffin oils	Asp. Tox. 1 - H304	Oral ATE: > 5,000 mg/kg  Inhalation ATE: > 5 mg/l (dust/mist)  Dermal ATE: > 5,000 mg/kg	>= 20.0 - < 30.0 %
<b>CASRN</b> 7440-22-4 <b>EC-No.</b> 231-131-3 <b>Index-No.</b> – <b>REACH No</b> –	Silver	Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	M-Factor: 10[Acute] 10[Chronic]  Oral ATE: > 5,000 mg/kg  Inhalation ATE: > 5.16 mg/l (dust/mist)  Dermal ATE: > 2,000 mg/kg	>= 0.25 - < 1.0 %

## Substances with a workplace exposure limit

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	Specific Concentration Limits/ M-Factors/ Acute Toxicity Estimate	%
<b>CASRN</b> 7440-31-5 <b>EC-No.</b> 231-141-8 <b>Index-No.</b> – <b>REACH No</b> –	Tin	Not classified	Oral ATE: > 2,000 mg/kg  Inhalation ATE: > 4.75 mg/l (dust/mist)  Dermal ATE: > 2,000 mg/kg	>= 10.0 - < 20.0 %
<b>CASRN</b> 1317-33-5 <b>EC-No.</b> 215-263-9 <b>Index-No.</b> – <b>REACH No</b> –	Molybdenum disulfide	Not classified	Oral ATE: > 2,000 mg/kg  Dermal ATE: > 2,000 mg/kg	>= 1.0 - < 10.0 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: FIRST AID MEASURES

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### 4.1 Description of first aid measures

**General advice:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin contact:** Wash off with plenty of water.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

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

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Notes to physician:** No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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## SECTION 5: FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Water spray Alcohol-resistant foam Carbon dioxide (CO<sub>2</sub>) Dry chemical

**Unsuitable extinguishing media:** None known.

### 5.2 Special hazards arising from the substance or mixture

**Hazardous combustion products:** Nitrogen oxides (NO<sub>x</sub>) Oxides of phosphorus Sulphur oxides  
Metal oxides Carbon oxides

**Unusual Fire and Explosion Hazards:** Exposure to combustion products may be a hazard to health.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Follow safe handling advice and personal protective equipment recommendations.

**6.2 Environmental precautions:** Do not release the product to the aquatic environment above defined regulatory levels. Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and materials for containment and cleaning up:** Wipe up or scrape up and contain for salvage or disposal. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

**6.4 Reference to other sections:**

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Take care to prevent spills, waste and minimize release to the environment. Handle in accordance with good industrial hygiene and safety practice. Use only with adequate ventilation. See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

**Advice on general occupational hygiene**

Handle in accordance with good industrial hygiene and safety practice. Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

**7.2 Conditions for safe storage, including any incompatibilities:** Keep in properly labelled containers. Store in accordance with the particular national regulations.

Do not store with the following product types: Strong oxidizing agents.  
Unsuitable materials for containers: None known.

**7.3 Specific end use(s):** Information on specific end use(s) of this product may be provided in a technical data sheet/annex to the SDS (if available).

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Copper metal powder	ACGIH	TWA Dust and mist	1 mg/m <sup>3</sup> , Copper
	ACGIH	TWA Fumes	0.2 mg/m <sup>3</sup> , Copper
	GB EH40	TWA	1 mg/m <sup>3</sup> , Copper
	GB EH40	STEL	2 mg/m <sup>3</sup> , Copper
	GB EH40	TWA	0.2 mg/m <sup>3</sup> , Copper
	Further information: 48: The word 'fume' is often used to include gases and vapours. This is not the case for exposure limits where 'fume' should normally be applied to solid particles generated by chemical reactions or condensed from the gaseous state, usually after volatilisation from melted substances. The generation of fume is often accompanied by a chemical reaction such as oxidation or thermal breakdown.; 2: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used		
	GB EH40	TWA Fumes	0.2 mg/m <sup>3</sup> , Copper
	GB EH40	TWA Dusts and mists	1 mg/m <sup>3</sup> , Copper
	GB EH40	STEL Dusts and mists	2 mg/m <sup>3</sup> , Copper
Paraffin oils	ACGIH		See Further information
	Further information: URT irr: Upper Respiratory Tract irritation; *: 2022 Adoption; L: Exposure by all routes should be carefully controlled to levels as low as possible.; A2: Suspected human carcinogen		
	ACGIH	TWA Inhalable particulate matter	5 mg/m <sup>3</sup>
	Further information: URT irr: Upper Respiratory Tract irritation; A4: Not classifiable as a human carcinogen		
Silver	ACGIH	TWA Dust and fume	0.1 mg/m <sup>3</sup>
	Further information: argyria: Argyria		
	2000/39/EC	TWA	0.1 mg/m <sup>3</sup>
	Further information: Indicative		
	GB EH40	TWA	0.1 mg/m <sup>3</sup>
	Further information: 2: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used		
	2006/15/EC	TWA	0.01 mg/m <sup>3</sup> , Silver
	Further information: Indicative		
Tin	ACGIH	TWA Inhalable fraction	2 mg/m <sup>3</sup>
	Further information: pneumoconiosis (or stannosis): Pneumoconiosis (or Stannosis); (): Adopted values or notations enclosed are those for which changes are proposed in the NIC; See Notice of Intended Changes (NIC)		
	91/322/EEC	TWA	2 mg/m <sup>3</sup> , Tin
	Further information: 6: Existing scientific data on health effects appear to be particularly limited; Indicative		
	GB EH40	TWA	2 mg/m <sup>3</sup> , Tin
	GB EH40	STEL	4 mg/m <sup>3</sup> , Tin
	91/322/EEC	TWA	2 mg/m <sup>3</sup> , Tin
	Further information: Indicative		
	GB EH40	TWA	2 mg/m <sup>3</sup> , Tin
	GB EH40	STEL	4 mg/m <sup>3</sup> , Tin

Molybdenum disulfide	ACGIH	TWA Inhalable particulate matter	10 mg/m3 , Molybdenum
	ACGIH	TWA Respirable particulate matter	3 mg/m3 , Molybdenum
	GB EH40	TWA	10 mg/m3 , Molybdenum
	GB EH40	STEL	20 mg/m3 , Molybdenum

**Derived No Effect Level**

Copper metal powder

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
273 mg/kg bw/day	20 mg/m3	n.a.	n.a.	137 mg/kg bw/day	n.a.	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
137 mg/kg bw/day	20 mg/m3	n.a.	n.a.	n.a.	137 mg/kg bw/day	n.a.	0.041 mg/kg bw/day	n.a.	n.a.

Paraffin oils

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	5 mg/m3	n.a.	5 mg/m3	n.a.	5 mg/m3

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Silver

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	0.1 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation

n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.04 mg/m3	1.2 mg/kg bw/day	n.a.	n.a.
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Tin

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
133.3 mg/kg bw/day	11.75 mg/m3	n.a.	n.a.	133.3 mg/kg bw/day	11.75 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
80 mg/kg bw/day	3.476 mg/m3	80 mg/kg bw/day	n.a.	n.a.	80 mg/kg bw/day	3.476 mg/m3	80 mg/kg bw/day	n.a.	n.a.

**Predicted No Effect Concentration**

Copper metal powder

Compartment	PNEC
Fresh water	7.8 µg/l
Marine water	5.2 µg/l
Sewage treatment plant	230 µg/l
Fresh water sediment	87 mg/kg
Marine sediment	676 mg/kg
Soil	65 mg/kg

Silver

Compartment	PNEC
Fresh water	0.04 µg/l
Sewage treatment plant	0.025 mg/l
Marine water	0.86 µg/l
Fresh water sediment	438.13 mg/kg
Marine sediment	438.13 mg/kg
Soil	0.794 mg/kg

**8.2 Exposure controls**

**Engineering controls:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

**Individual protection measures**

**Eye/face protection:** Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

**Skin protection**



**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process.

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

Physical state	solid (20 °C, )
	<b>Form</b> paste
Colour	bronze
Odour	none
	<b>Odour Threshold</b> No data available
Melting point/freezing point	Melting point/range: No data available
Boiling point or initial boiling point and boiling range	Boiling point/boiling range: Not applicable
Flammability	<b>Gases/Solids</b> Not classified as a flammability hazard
	<b>Liquids</b> No data available
Lower explosion limit and upper explosion limit / flammability limit	<b>Lower explosion limit / Lower flammability limit</b> No data available
	<b>Upper explosion limit / Upper flammability limit</b> No data available

<b>Flash point</b>	Not applicable
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	<b>Thermal decomposition</b> No data available
<b>pH</b>	Not applicable
<b>Viscosity</b>	<b>Viscosity, kinematic</b> Not applicable <b>Viscosity, dynamic</b> Not applicable
<b>Solubility(ies)</b>	<b>Water solubility</b> No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Vapour pressure</b>	Not applicable
<b>Density and / or relative density</b>	<b>Relative density</b> 1.30
<b>Relative vapour density</b>	No data available
<b>Particle characteristics</b>	<b>Particle size</b> No data available

## 9.2 Other information

<b>Oxidizing properties</b>	The substance or mixture is not classified as oxidizing.
<b>Substances and mixtures, which in contact with water, emit flammable gases</b>	The substance or mixture does not emit flammable gases in contact with water.
<b>Evaporation rate</b>	Not applicable
<b>Molecular weight</b>	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** Not classified as a reactivity hazard.

**10.2 Chemical stability:** Stable under normal conditions.

**10.3 Possibility of hazardous reactions:** Can react with strong oxidizing agents. When heated to temperatures above 150 °C (300 °F) in the presence of air, product can form formaldehyde vapours. Safe handling conditions may be maintained by keeping vapour concentrations within the occupational exposure limit for formaldehyde.

**10.4 Conditions to avoid:** None known.

**10.5 Incompatible materials:** Oxidizing agents

**10.6 Hazardous decomposition products:** 1-Butene.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

##### Acute toxicity (Acute oral toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute dermal toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute inhalation toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

#### Skin corrosion/irritation

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for

classification.

Product test data not available. Refer to component data.

**Serious eye damage/eye irritation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Respiratory or skin sensitisation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Germ cell mutagenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Carcinogenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Reproductive toxicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Toxicity to reproduction assessment :

Product test data not available. Refer to component data.

Assessment Teratogenicity:

Product test data not available. Refer to component data.

**STOT - single exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**STOT - repeated exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for

classification.

Product test data not available. Refer to component data.

#### **Aspiration Hazard**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

#### **COMPONENTS INFLUENCING TOXICOLOGY:**

##### **Copper metal powder**

###### **Acute toxicity (Acute oral toxicity)**

Acute toxicity estimate, 500 mg/kg Acute toxicity estimate according to Regulation (EC) No. 1272/2008

LD50, Rat, > 2,500 mg/kg OECD Test Guideline 423 No deaths occurred at this concentration.

###### **Acute toxicity (Acute dermal toxicity)**

LD50, Rat, > 2,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

###### **Acute toxicity (Acute inhalation toxicity)**

Acute toxicity estimate, dust/mist, 0.733 mg/l Acute toxicity estimate according to Regulation (EC) No. 1272/2008

LC50, Rat, 4 Hour, dust/mist, > 5.11 mg/l OECD Test Guideline 436 No deaths occurred at this concentration.

###### **Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

###### **Serious eye damage/eye irritation**

May cause slight eye irritation.  
May cause slight corneal injury.

###### **Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

###### **Germ cell mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

###### **Carcinogenicity**

No relevant data found.

###### **Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Assessment Teratogenicity:**

Did not cause birth defects or any other fetal effects in laboratory animals.

**STOT - single exposure**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Aspiration Hazard**

No aspiration toxicity classification

**Paraffin oils**

**Acute toxicity (Acute oral toxicity)**

May cause abdominal discomfort or diarrhea.

For similar material(s): LD50, Rat, > 5,000 mg/kg OECD Test Guideline 401

**Acute toxicity (Acute dermal toxicity)**

For similar material(s): LD50, Rabbit, > 5,000 mg/kg OECD Test Guideline 402

**Acute toxicity (Acute inhalation toxicity)**

Vapors are unlikely due to physical properties. Excessive exposure to mineral oil mist may cause lung injury (lipoid pneumonia).

Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

For similar material(s): LC50, Rat, 4 Hour, dust/mist, > 5 mg/l OECD Test Guideline 403

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause skin irritation with local redness.

Repeated contact may cause skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause slight eye irritation.

May cause slight temporary corneal injury.

**Respiratory or skin sensitisation**

One type of mineral oil (CAS 8042-47-5) has caused skin sensitization in guinea pigs.

Did not cause allergic skin reactions when tested in guinea pigs.

**Germ cell mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative.

**Carcinogenicity**

Did not cause cancer in laboratory animals.

Available data are inadequate to evaluate carcinogenicity. IARC has classified untreated and mildly-treated mineral oils as Group 1 (sufficient evidence for carcinogenicity in humans) and highly refined oils as Group 3 (not classifiable as to its carcinogenicity).

**Reproductive toxicity**

Toxicity to reproduction assessment :

Relevant data not available.

Assessment Teratogenicity:

Relevant data not available.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

In animals, effects have been reported on the following organs after ingestion:

Kidney.

Liver.

Spleen.

Excessive repeated exposure to mineral oil mist may produce lung injury.

**Aspiration Hazard**

May be fatal if swallowed and enters airways.

**Silver****Acute toxicity (Acute oral toxicity)**

For similar material(s): LD50, Rat, > 5,000 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute inhalation toxicity)**

No adverse effects are anticipated from single exposure to dust.

LC50, Rat, 4 Hour, dust/mist, > 5.16 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

**Respiratory or skin sensitisation**

Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

No relevant data found.

**Carcinogenicity**

Available data are inadequate to evaluate carcinogenicity.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

Silver may cause the local or generalized discoloration of skin, mucous membranes, and eyes, called argyria.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Tin**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, female, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, male and female, 4 Hour, dust/mist, > 4.75 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**

Essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight eye irritation.

May cause slight corneal injury.

**Respiratory or skin sensitisation**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :



In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Did not cause birth defects or any other fetal effects in laboratory animals.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Molybdenum disulfide**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Respiratory or skin sensitisation**

For skin sensitization:

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**11.2. Information on other hazards****Endocrine disrupting properties**

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**Further information**

No data available

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**SECTION 12: ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*

**12.1 Toxicity****Copper metal powder****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 0.792 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Chlorella vulgaris (Fresh water algae), 72 Hour, 0.333 mg/l, OECD Test Guideline 201

**Paraffin oils****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Pimephales promelas (fathead minnow), > 100 mg/l

LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, > 10,000 mg/l

**Acute toxicity to aquatic invertebrates**

For similar material(s):

EL50, Daphnia magna (Water flea), 48 Hour, 1,000 - 10,000 mg/l

**Acute toxicity to algae/aquatic plants**

For similar material(s):

EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 100 mg/l

**Silver****Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, Cyprinodon variegatus (sheepshead minnow), 96 Hour, 58 mg/l, Method Not Specified.

LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, 0.064 mg/l, Method Not Specified.

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.0062 - 0.401 mg/l, Method Not Specified.

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 0.0092 mg/l, Method Not Specified.

**Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, 0.0184 mg/l

**Chronic toxicity to fish**

NOEC, Danio rerio (zebra fish), 35 d, 0.0059 mg/l

**Chronic toxicity to aquatic invertebrates**

Based on data from similar materials

EC10, Daphnia magna (Water flea), 21 d, 0.00214 mg/l

**Tin****Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms.

**Toxicity to bacteria**

Based on data from similar materials

EC50, 3 Hour, > 511 mg/l, OECD Test Guideline 209

**Chronic toxicity to aquatic invertebrates**

No toxicity at the limit of solubility

Based on data from similar materials

NOEC, Ceriodaphnia dubia (water flea), 7 d, 100 µg/l

**Molybdenum disulfide****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

For similar material(s):

LC50, Fish, 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**

Based on data from similar materials

EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l

**Acute toxicity to algae/aquatic plants**

Based on data from similar materials

ErC50, algae, 72 Hour, Growth rate, > 100 mg/l

**Toxicity to bacteria**

EC50, 30 Hour, Respiration rates., > 100 mg/l

**Chronic toxicity to fish**

Based on data from similar materials  
NOEC, Fish, 34 d, > 10 mg/l

**Chronic toxicity to aquatic invertebrates**

Based on data from similar materials  
NOEC, Daphnia magna, 21 d, > 10 mg/l

**12.2 Persistence and degradability**

**Copper metal powder**

**Biodegradability:** Biodegradability is not applicable to inorganic substances.

**Paraffin oils**

**Biodegradability:** Material is expected to be readily biodegradable.

10-day Window: Pass

**Biodegradation:** 82 %

**Exposure time:** 24 d

**Method:** OECD Test Guideline 301F

**Silver**

**Biodegradability:** Biodegradation is not applicable.

**Tin**

**Biodegradability:** Biodegradation is not applicable.

**Molybdenum disulfide**

**Biodegradability:** Biodegradability is not applicable to inorganic substances.

**12.3 Bioaccumulative potential**

**Copper metal powder**

**Bioaccumulation:** No relevant data found.

**Paraffin oils**

**Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

**Partition coefficient: n-octanol/water(log Pow):** > 3.5 Estimated.

**Silver**

**Bioaccumulation:** Not applicable

**Bioconcentration factor (BCF):** 70 Cyprinus carpio (Carp) 14 d

**Tin**

**Bioaccumulation:** No relevant data found.

**Molybdenum disulfide**

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

## 12.4 Mobility in soil

### Copper metal powder

No relevant data found.

### Paraffin oils

Expected to be relatively immobile in soil ( $K_{oc} > 5000$ ).

**Partition coefficient ( $K_{oc}$ ):** > 5000 Estimated.

### Silver

No relevant data found.

### Tin

No relevant data found.

### Molybdenum disulfide

No relevant data found.

## 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### Copper metal powder

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

### Paraffin oils

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

### Silver

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

### Tin

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

### Molybdenum disulfide

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

## 12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

### Copper metal powder

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

### Paraffin oils

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Silver**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Tin**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Molybdenum disulfide**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

Do not dump into any sewers, on the ground, or into any body of water. This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

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**SECTION 14: TRANSPORT INFORMATION**

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**Classification for ROAD and Rail transport (ADR/RID):**

14.1	UN number or ID number	UN 3077
14.2	UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Silver)
14.3	Transport hazard class(es)	9
14.4	Packing group	III
14.5	Environmental hazards	Silver
14.6	Special precautions for user	Hazard Identification Number: 90

**Classification for SEA transport (IMO-IMDG):**

14.1	UN number or ID number	UN 3077
14.2	UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Silver)
14.3	Transport hazard class(es)	9
14.4	Packing group	III
14.5	Environmental hazards	Silver
14.6	Special precautions for user	EmS: F-A, S-F
14.7	Maritime transport in bulk according to IMO	Consult IMO regulations before transporting ocean bulk

**instruments****Classification for AIR transport (IATA/ICAO):**

<b>14.1 UN number or ID number</b>	UN 3077
<b>14.2 UN proper shipping name</b>	Environmentally hazardous substance, solid, n.o.s.(Silver)
<b>14.3 Transport hazard class(es)</b>	9
<b>14.4 Packing group</b>	III
<b>14.5 Environmental hazards</b>	Not applicable
<b>14.6 Special precautions for user</b>	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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**SECTION 15: REGULATORY INFORMATION**

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct. Polymers are exempted from registration under REACH. All relevant starting materials and additives have been either registered, or are exempt from registration according to Regulation (EC) No. 1907/2006 (REACH).

**Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.**

Listed in Regulation: ENVIRONMENTAL HAZARDS

Number in Regulation: E1

100 t

200 t

**15.2 Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture.

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**SECTION 16: OTHER INFORMATION**

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**Full text of H-Statements referred to under sections 2 and 3.**

H304	May be fatal if swallowed and enters airways.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008**

Aquatic Acute - 1 - H400 - Calculation method

Aquatic Chronic - 2 - H411 - Calculation method

**Revision**

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

2000/39/EC	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2006/15/EC	Europe. Indicative occupational exposure limit values
91/322/EEC	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
GB EH40	UK. EH40 WEL - Workplace Exposure Limits
STEL	Short-term exposure limit (15-minute reference period)
TWA	Limit Value - eight hours
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard

**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population



(Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

SPECIALTY ELECTRONIC MATERIALS UK LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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