



SAFETY DATA SHEET

SPECIALTY ELECTRONIC MATERIALS SWITZERLAND GMBH

Product name: MOLYKOTE® HSC Plus Paste

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SPECIALTY ELECTRONIC MATERIALS SWITZERLAND GMBH 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.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: MOLYKOTE® HSC Plus Paste

Recommended use of the chemical and restrictions on use

Identified uses: Lubricants and lubricant additives

COMPANY IDENTIFICATION

SPECIALTY ELECTRONIC MATERIALS
SWITZERLAND GMBH
GROSSMATTE 4
6014 LUZERN
SWITZERLAND

Customer Information Number:

00800-3876-6838

SDSQuestion-EU@dupont.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: +(41)- 435082011

Local Emergency Contact: +1 703-741-5970

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Acute toxicity - Category 4 - Inhalation - H332

Eye irritation - Category 2 - H319

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

Long-term (chronic) aquatic hazard - Category 1 - H410

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

Label elements

Hazard pictograms



Signal word: WARNING

Hazard statements

H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

P261 Avoid breathing dust.
P273 Avoid release to the environment.
P280 Wear eye protection/ face protection.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a
+ P312 POISON CENTER/ doctor if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P391 Collect spillage.

Contains Copper flakes

Other hazards

This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Inorganic and organic compounds, Mixture

This product is a mixture.

CASRN / EC-No. / Index-No.	Concentration	Component	Classification
CASRN - EC-No. - Index-No. 029-019-01-X	>= 20.0 - < 25.0 %	Copper flakes	Acute Tox. - 4 - H302 Acute Tox. - 3 - H331 Eye Irrit. - 2 - H319 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
CASRN 8012-95-1 EC-No. 232-384-2 Index-No. -	>= 10.0 - < 20.0 %	Paraffin oils	Asp. Tox. - 1 - H304
CASRN 7440-31-5 EC-No.	>= 10.0 - < 20.0 %	Tin	Not classified

231-141-8 Index-No. —			
CASRN 64742-56-9 EC-No. 265-159-2 Index-No. 649-469-00-9	>= 10.0 - < 20.0 %	Distillates, petroleum, solvent-dewaxed light paraffinic	Not classified
CASRN 64742-65-0 EC-No. 265-169-7 Index-No. 649-474-00-6	>= 10.0 - < 20.0 %	Solvent dewaxed heavy paraffinic distillates	Not classified
CASRN 1317-33-5 EC-No. 215-263-9 Index-No. —	>= 1.0 - < 10.0 %	Molybdenum disulfide	Not classified

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

Note

Distillates, petroleum, solvent-dewaxed light paraffinic:

The classification as a carcinogen need not to apply because the substance contains less than 3% DMSO extract as measured by IP 346. Note L of Annex VI to Regulation (EC) 1272/2008.

Note

Solvent dewaxed heavy paraffinic distillates:

The classification as a carcinogen need not to apply because the substance contains less than 3% DMSO extract as measured by IP 346. Note L of Annex VI to Regulation (EC) 1272/2008.

4. FIRST AID MEASURES

Description of first aid measures

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash with soap and plenty of water. Warm water is preferable if readily available.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek medical attention immediately.

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.

Indication of any immediate medical attention and special treatment needed

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

5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Water spray. Alcohol-resistant foam. Carbon dioxide (CO₂). Dry chemical.

Unsuitable extinguishing media: None known..

Special hazards arising from the substance or mixture

Hazardous combustion products: Nitrogen oxides (NO_x). Oxides of phosphorus. Sulphur oxides. Metal oxides. Carbon oxides.

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

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..

6. ACCIDENTAL RELEASE MEASURES

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

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.

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

7. HANDLING AND STORAGE

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.

Conditions for safe storage: 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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
Paraffin oils	ACGIH		See Further information
	Further information: URT irr: Upper Respiratory Tract irritation; *: 2023 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/m3
	Further information: A4: Not classifiable as a human carcinogen		
Tin	ACGIH	TWA Inhalable fraction	2 mg/m3
	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/m3 , Tin
	Further information: 6: Existing scientific data on health effects appear to be particularly limited; Indicative		
	91/322/EEC	TWA	2 mg/m3 , Tin
	Further information: Indicative		
Distillates, petroleum, solvent-dewaxed light paraffinic	ACGIH	TWA Inhalable particulate matter	5 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	ARE OEL	TWA Mist	0.2 mg/m3
Solvent dewaxed heavy paraffinic distillates	ACGIH	TWA Inhalable particulate matter	5 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	ARE OEL	TWA Mist	0.2 mg/m3

Molybdenum disulfide	ACGIH	TWA Inhalable particulate matter	10 mg/m3 , Molybdenum
	ACGIH	TWA Respirable particulate matter	3 mg/m3 , Molybdenum
	ARE OEL	TWA Respirable dust	3 mg/m3 , Molybdenum
	ARE OEL	TWA Measured as inhalable fraction of the aerosol.	10 mg/m3 , Molybdenum

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eyeface protection: Use chemical goggles.

Eyeface 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: No precautions other than clean body-covering clothing should be needed.

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. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state

paste

Color

bronze

Odor

none

Odor Threshold

No data available

pH

Not applicable

Melting point/range

No data available

Freezing point

No data available

Boiling point (760 mmHg)

Not applicable

Flash point	Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	Not classified as a flammability hazard
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	1.30
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	Not applicable
Explosive properties	Not explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing.
Molecular weight	No data available
Particle size	No data available

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

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

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.

Conditions to avoid: None known.

Incompatible materials: Oxidizing agents

Hazardous decomposition products:

Decomposition products can include and are not limited to: 1-Butene.

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Acute oral toxicity

Acute toxicity estimate. > 2,000 mg/kg Calculation method

Acute dermal toxicity

Product test data not available. Refer to component data.

Acute inhalation toxicity

Acute toxicity estimate. 4 Hour. dust/mist. 3.35 mg/l Calculation method

Skin corrosion/irritation

Product test data not available. Refer to component data.

Serious eye damage/eye irritation

Product test data not available. Refer to component data.

Sensitization

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Product test data not available. Refer to component data.

Carcinogenicity

Product test data not available. Refer to component data.

Teratogenicity

Product test data not available. Refer to component data.

Reproductive toxicity

Product test data not available. Refer to component data.

Mutagenicity

Product test data not available. Refer to component data.

Aspiration Hazard

Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:**Copper flakes****Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

May cause moderate eye irritation.

Sensitization

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

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Specific Target Organ Systemic Toxicity (Repeated Exposure)

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

Information given is based on data obtained from similar substances.

Carcinogenicity

Animal testing did not show any carcinogenic effects.

Teratogenicity

Did not cause birth defects in laboratory animals.

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

Animal genetic toxicity studies were negative. This material was not mutagenic in an Ames bacterial assay.

Aspiration Hazard

No aspiration toxicity classification

Paraffin oils**Acute dermal toxicity**

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

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.

Sensitization

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.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Specific Target Organ Systemic Toxicity (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.

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).

Teratogenicity

Relevant data not available.

Reproductive toxicity

Relevant data not available.

Mutagenicity

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

Aspiration Hazard

May be fatal if swallowed and enters airways.

Tin**Acute dermal toxicity**

LD50. Rat. male and female. > 2,000 mg/kg 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.

Sensitization

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Specific Target Organ Systemic Toxicity (Repeated Exposure)

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

Carcinogenicity

No relevant data found.

Teratogenicity

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

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

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

Distillates, petroleum, solvent-dewaxed light paraffinic

Acute dermal toxicity

LD50. Rabbit. > 5,000 mg/kg OECD Test Guideline 402

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation

Essentially nonirritating to eyes.

Sensitization

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

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on information for a similar material:

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

Lung.

Carcinogenicity

Did not cause cancer in laboratory animals.

Teratogenicity

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

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

Based on information for a similar material: In vitro genetic toxicity studies were negative.

Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on available information, aspiration hazard could not be determined.

Solvent dewaxed heavy paraffinic distillates

Acute dermal toxicity

Typical for this family of materials. LD50. Rabbit. > 2,000 mg/kg

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation

May cause slight eye irritation.

Corneal injury is unlikely.

Sensitization

For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For this family of materials:
In animals, effects have been reported on the following organs:
Liver.

Carcinogenicity

For this family of materials: Did not cause cancer in animal skin painting studies.

Teratogenicity

Typical for this family of materials. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive toxicity

Typical for this family of materials. Limited data in laboratory animals suggest that the material does not affect reproduction.

Mutagenicity

Typical for this family of materials. In vitro genetic toxicity studies were predominantly negative.

Aspiration Hazard

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

Molybdenum disulfide**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.

Sensitization

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

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Specific Target Organ Systemic Toxicity (Repeated Exposure)

No relevant data found.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

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

Aspiration Hazard

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

12. ECOLOGICAL INFORMATION

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

Toxicity**Copper flakes****Acute toxicity to fish**

LC50. Oncorhynchus mykiss (rainbow trout). 96 Hour. 0.068 mg/l

Acute toxicity to aquatic invertebrates

EC50. Daphnia magna (Water flea). 48 Hour. 0.034 mg/l. OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

Information given is based on data obtained from similar substances.

EC50. Pseudokirchneriella subcapitata (green algae). 72 Hour. 0.03 mg/l. OECD Test Guideline 201

NOEC. Algae. 10 d. 0.022 mg/l. OECD Test Guideline 201

Chronic toxicity to fish

NOEC. Oncorhynchus mykiss (rainbow trout). 61 d. 0.024 mg/l

Chronic toxicity to aquatic invertebrates

NOEC. Daphnia magna (Water flea). 21 d. 0.0368 mg/l

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

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

Distillates, petroleum, solvent-dewaxed light paraffinic

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).

Based on data from similar materials

LC50. Pimephales promelas (fathead minnow). 96 Hour. > 100 mg/l. OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

Based on data from similar materials

EC50. Daphnia magna (Water flea). 48 Hour. > 10,000 mg/l. OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

Based on data from similar materials

EC50. Pseudokirchneriella subcapitata (green algae). 72 Hour. > 100 mg/l. OECD Test Guideline 201

Toxicity to bacteria

Based on data from similar materials

NOEC. 10 min. > 1.93 mg/l. DIN 38 412 Part 8

Chronic toxicity to aquatic invertebrates

Based on data from similar materials

NOEC. Daphnia magna (Water flea). 21 d. 10 mg/l

Solvent dewaxed heavy paraffinic distillates

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).

LL50. Pimephales promelas (fathead minnow). static test. 96 Hour. > 100 mg/l

Acute toxicity to aquatic invertebrates

EL50. Daphnia magna (Water flea). static test. 48 Hour. > 10,000 mg/l

Acute toxicity to algae/aquatic plants

NOEC. Pseudokirchneriella subcapitata (green algae). static test. 72 Hour. Growth rate. > 100 mg/l

Toxicity to bacteria

Based on data from similar materials

NOEC. 10 min. > 1.93 mg/l. DIN 38 412 Part 8

Chronic toxicity to aquatic invertebrates

Based on data from similar materials

NOEC. Daphnia magna (Water flea). 21 d. 10 mg/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

Persistence and degradability**Copper flakes**

Biodegradability: Biodegradation is not applicable.

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

Tin

Biodegradability: Biodegradation is not applicable.

Distillates, petroleum, solvent-dewaxed light paraffinic

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

Biodegradation: 2 - 4 %

Exposure time: 28 d

Method: OECD Test Guideline 301B

Solvent dewaxed heavy paraffinic distillates

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

10-day Window: Fail

Biodegradation: 2 %

Exposure time: 28 d

Method: OECD Test Guideline 301B

Molybdenum disulfide

Biodegradability: Biodegradability is not applicable to inorganic substances.

Bioaccumulative potential**Copper flakes**

Bioaccumulation: Not applicable

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.

Tin

Bioaccumulation: No relevant data found.

Distillates, petroleum, solvent-dewaxed light paraffinic

Bioaccumulation: No relevant data found.

Solvent dewaxed heavy paraffinic distillates

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Partition coefficient: n-octanol/water(log Pow): 3.9 - 6 Estimated.

Molybdenum disulfide

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

Mobility in soil**Paraffin oils**

Expected to be relatively immobile in soil (Koc > 5000).

Partition coefficient (Koc): > 5000 Estimated.

Tin

No relevant data found.

Distillates, petroleum, solvent-dewaxed light paraffinic

No relevant data found.

Solvent dewaxed heavy paraffinic distillates

No relevant data found.

Molybdenum disulfide

No relevant data found.

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.

Other adverse effects**Copper flakes**

No data available

Paraffin oils

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.

Distillates, petroleum, solvent-dewaxed light paraffinic

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

Solvent dewaxed heavy paraffinic distillates

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.

13. DISPOSAL CONSIDERATIONS

Disposal 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.

14. TRANSPORT INFORMATION

Classification for ROAD and Rail transport:

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Copper flakes)
UN number	UN 3077
Class	9
Packing group	III
Environmental hazards	Copper flakes

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Copper flakes)
UN number	UN 3077
Class	9
Packing group	III
Marine pollutant	Copper flakes
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.(Copper flakes)
UN number	UN 3077
Class	9
Packing group	III

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.

15. REGULATORY INFORMATION

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

Classification and labeling have been performed according to Regulation (EC) No 1272/2008.

16. OTHER INFORMATION

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

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Revision

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

Legend

91/322/EEC	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ARE OEL	Abu Dhabi Emirate - EHSMS Manual, Volume 2, Environment, Health and Safety Protection Policies, Section 2, Part I: EEPP Air Quality Standards
TWA	Limit Value - eight hours
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Eye Irrit.	Eye irritation

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; AIIIC - 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; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; 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 SWITZERLAND GMBH 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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