SAFETY DATA SHEET

SPECIALTY ELECTRONIC MATERIALS SWITZERLAND GMBH

Product name: MOLYKOTE® DX 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® DX 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
Short-term (acute) aquatic hazard - Category 1 - H400
Long-term (chronic) aquatic hazard - Category 3 - H412
For the full text of the H-Statements mentioned in this Section, see Section 16.

Label elements

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.
P370 + P261	In case of fire: Avoid breathing fume.
P391	Collect spillage.
P501	Dispose of contents/ container to an approved waste disposal plant.

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 64742-52-5 **EC-No.** 265-155-0 **Index-No.** 649-465-00-7	>= 40.0 - < 50.0 %	Distillates (petroleum), hydrotreated heavy naphthenic	Asp. Tox. - 1 - H304
CASRN 61791-53-5 **EC-No.** 263-186-4 **Index-No.** –	>= 2.5 - < 10.0 %	N-Tallow Alkyltrimethylenediamine Oleate	Skin Irrit. - 2 - H315 Eye Irrit. - 2 - H319 STOT RE - 2 - H373 Aquatic Acute - 1 - H400 Aquatic Chronic - 2 - H411
CASRN 64742-54-7 **EC-No.** 265-157-1 **Index-No.** 649-467-00-8	>= 1.0 - < 10.0 %	Petroleum Distillates, Hydrotreated, Heavy Paraffinic	Asp. Tox. - 1 - H304
CASRN 1314-13-2 **EC-No.** 215-222-5	>= 1.0 - < 2.5 %	Zinc Oxide	Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410

Index-No. 030-013-00-7			
CASRN 64742-65-0 **EC-No.** 265-169-7 **Index-No.** 649-474-00-6	>= 1.0 - < 10.0 %	Solvent dewaxed heavy paraffinic distillates	Not classified
CASRN 7620-77-1 **EC-No.** 231-536-5 **Index-No.** –	>= 1.0 - < 10.0 %	Lithium 12-hydroxyoctadecanoate	Not classified

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

Note
Distillates (petroleum), hydrotreated heavy naphthenic:
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
Petroleum Distillates, Hydrotreated, Heavy 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
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. Suitable emergency safety shower facility should be available in work area.

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: No emergency medical treatment necessary.

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: 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: Carbon oxides. Oxides of phosphorus. Fluorine compounds. Nitrogen oxides (NOx).

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

Advice for firefighters

Fire Fighting Procedures: Collect contaminated fire extinguishing water separately. This must not be discharged into drains.. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.. 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: In the event of fire, wear self-contained breathing apparatus.. Use personal protective equipment.. Wear neoprene gloves to prevent contact with hydrofluoric acid..

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. 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: Do not get on skin or clothing. Do not swallow. Avoid contact with eyes. 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
Distillates (petroleum), hydrotreated heavy naphthenic	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
	ARE OEL	TWA Measured as inhalable fraction of the aerosol.	5 mg/m3
	Further information: A4: Not Classifiable as a Human Carcinogen		
Petroleum Distillates, Hydrotreated, Heavy Paraffinic	ACGIH	TWA Inhalable particulate matter	5 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	ARE OEL	TWA Measured as inhalable fraction of the aerosol.	5 mg/m3
	Further information: A4: Not Classifiable as a Human Carcinogen		
	ARE OEL	TWA Mist	0.2 mg/m3
Zinc Oxide	ACGIH	TWA Respirable particulate matter	2 mg/m3
	ACGIH	STEL Respirable particulate matter	10 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
Lithium 12-hydroxyoctadecanoate	ACGIH	TWA Inhalable particulate matter	10 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	ACGIH	TWA Respirable particulate matter	3 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	ARE OEL	TWA	10 mg/m3
	Further information: A4: Not Classifiable as a Human Carcinogen; (J): Does not include stearates of toxic metals.		

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. Local exhaust ventilation may be necessary for some 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, use an approved 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	white
Odor	slight
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	**closed cup** >200 °C

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)	1.14
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.

Conditions to avoid: None known.

Incompatible materials: Oxidizing agents

Hazardous decomposition products:
Decomposition products can include and are not limited to: Hexafluoroethane. Hydrogen Fluoride. 1,1,1,3,3,3-Hexafluoro-2-propanone. Carbonic difluoride. Carbon monoxide. Fluorinated hydrocarbons.

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Acute oral toxicity
Product test data not available. Refer to component data.

Acute dermal toxicity
Product test data not available. Refer to component data.

Acute inhalation toxicity
Product test data not available. Refer to component data.

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:

Distillates (petroleum), hydrotreated heavy naphthenic

Acute oral toxicity
LD50. Rat. > 5,000 mg/kg OECD Test Guideline 401

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

Acute inhalation toxicity
LC50. Rat. 4 Hour. dust/mist. > 5.53 mg/l OECD Test Guideline 403

Skin corrosion/irritation
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 (Repeated Exposure)
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity
No relevant data found.

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

Aspiration Hazard
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

N-Tallow Alkyltrimethylenediamine Oleate

Acute oral toxicity
LD50. Rat. > 5,000 mg/kg

Acute dermal toxicity
Based on data from similar materials LD50. Rat. > 2,000 mg/kg OECD Test Guideline 402

Skin corrosion/irritation
Based on data from similar materials

Serious eye damage/eye irritation
Based on data from similar materials

Sensitization
Based on data from similar materials

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Based on data from similar materials

Petroleum Distillates, Hydrotreated, Heavy Paraffinic

Acute oral toxicity
Typical for this family of materials. Rat. > 5,000 mg/kg

Acute dermal toxicity

Typical for this family of materials. 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 this family of materials, sensitization studies done in guinea pigs have been negative.

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

Carcinogenicity
Typical 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. For this family of materials: Animal genetic toxicity studies were negative.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Zinc Oxide

Acute oral toxicity
LD50. Rat. > 5,000 mg/kg

Acute dermal toxicity
LD50. Rabbit. > 2,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
Exposure to metal oxide fumes may cause metal fume fever, characterized by influenza-like symptoms. Dust may cause irritation to upper respiratory tract (nose and throat).

LC50. Rat. 4 Hour. dust/mist. > 5.7 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged contact is essentially nonirritating to skin.

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)
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.

Carcinogenicity
Available data are inadequate to evaluate carcinogenicity.

Teratogenicity
Did not cause birth defects in laboratory animals.

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

Mutagenicity
In vitro genetic toxicity studies were negative in some cases and positive in other cases.

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

Solvent dewaxed heavy paraffinic distillates

Acute oral toxicity
Information given is based on data obtained from similar substances. LD50. Rat. > 2,000 mg/kg OECD Test Guideline 401

Acute dermal toxicity
Information given is based on data obtained from similar substances. LD50. Rabbit. > 5,000 mg/kg OECD Test Guideline 402

Acute inhalation toxicity
LC50. Rat. 4 Hour. dust/mist. > 5.53 mg/l

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation

May cause slight temporary 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)
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Carcinogenicity
Animal testing did not show any carcinogenic effects.

Mutagenicity
In vitro genetic toxicity studies were negative in some cases and positive in other cases.
Animal genetic toxicity studies were negative.

Aspiration Hazard
No aspiration toxicity classification

Lithium 12-hydroxyoctadecanoate

Acute oral toxicity
LD50. Rat. female. > 2,000 mg/kg OECD Test Guideline 420 No deaths occurred at this concentration.

Acute dermal toxicity
LD50. Rat. male and female. > 2,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute inhalation toxicity
The LC50 has not been determined.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause slight eye irritation.

Sensitization
Did not demonstrate the potential for contact allergy in mice.

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 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.

12. ECOLOGICAL INFORMATION

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

Toxicity

Distillates (petroleum), hydrotreated heavy naphthenic

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). 96 Hour. > 100 mg/l. OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EL50. Daphnia magna (Water flea). 48 Hour. > 10,000 mg/l

Acute toxicity to algae/aquatic plants
EL50. Pseudokirchneriella subcapitata (green algae). 72 Hour. > 100 mg/l. OECD Test Guideline 201
NOELR. Pseudokirchneriella subcapitata (green algae). 72 Hour. 100 mg/l. OECD Test Guideline 201

Toxicity to bacteria
NOEC. 10 min. >= 1.93 mg/l

Chronic toxicity to aquatic invertebrates
NOELR. Daphnia magna (Water flea). 21 d. 10 mg/l

N-Tallow Alkyltrimethylenediamine Oleate

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

Acute toxicity to aquatic invertebrates
Based on data from similar materials
EC50. Daphnia magna (Water flea). 48 Hour. > 0.1 - 1 mg/l

Acute toxicity to algae/aquatic plants
Based on data from similar materials
EC50. 72 Hour. > 0.01 - 0.1 mg/l. OECD Test Guideline 201
Based on data from similar materials
NOEC. 72 Hour. > 0.01 - 0.1 mg/l. OECD Test Guideline 201

Chronic toxicity to aquatic invertebrates
Based on data from similar materials
EC10. Daphnia (water flea). > 1 mg/l

Petroleum Distillates, Hydrotreated, Heavy Paraffinic

Acute toxicity to fish
Typical for this family of materials.
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).
For this family of materials:
LC50. Oncorhynchus mykiss (rainbow trout). semi-static test. 96 Hour. > 100 mg/l

Acute toxicity to aquatic invertebrates
For this family of materials:
EC50. Daphnia magna (Water flea). semi-static test. 48 Hour. > 100 mg/l

Acute toxicity to algae/aquatic plants
NOELR. Pseudokirchneriella subcapitata (green algae). 72 Hour. >100. OECD Test Guideline 201
ErC50. Pseudokirchneriella subcapitata (green algae). 72 Hour. >100. 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
NOEC. Daphnia magna (Water flea). semi-static test. 21 d. number of offspring. 10 mg/l

Zinc Oxide

Acute toxicity to fish
Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).
LC50. Danio rerio (zebra fish). static test. 96 Hour. 1.55 mg/l

Acute toxicity to aquatic invertebrates
EC50. Daphnia magna (Water flea). 48 Hour. 0.481 mg/l

Acute toxicity to algae/aquatic plants
IC50. Pseudokirchneriella subcapitata (green algae). 72 Hour. Growth rate. 0.136 mg/l
NOEC. Pseudokirchneriella subcapitata (green algae). 72 Hour. 0.024 mg/l

Chronic toxicity to fish
NOEC. Danio rerio (zebra fish). 32 d. mortality. >= 0.540 mg/l

Chronic toxicity to aquatic invertebrates
NOEC. Daphnia magna (Water flea). 21 d. number of offspring. 0.058 mg/l

Solvent dewaxed heavy paraffinic distillates

Acute toxicity to fish
Information given is based on data obtained from similar substances.
LC50. Pimephales promelas (fathead minnow). > 100 mg/l. OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
Information given is based on data obtained from similar substances.
LL50. Daphnia magna (Water flea). > 10,000 mg/l. OECD Test Guideline 202

Toxicity to bacteria
Based on data from similar materials
NOEC. 10 min. > 1.93 mg/l. DIN 38 412 Part 8

Chronic toxicity to fish
NOEC. Oncorhynchus mykiss (rainbow trout). 14 d. >= 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC. Daphnia magna (Water flea). 21 d. 10 mg/l

Lithium 12-hydroxyoctadecanoate

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. Oncorhynchus mykiss (rainbow trout). semi-static test. 96 Hour. > 100 mg/l. OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50. Daphnia magna (Water flea). static test. 48 Hour. > 100 mg/l. OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
EC50. Pseudokirchneriella subcapitata (green algae). static test. 72 Hour. Growth rate. > 160 mg/l. OECD Test Guideline 201

Persistence and degradability

Distillates (petroleum), hydrotreated heavy naphthenic

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: 31 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

N-Tallow Alkyltrimethylenediamine Oleate

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
Based on data from similar materials 10-day Window: Pass
Biodegradation: 65 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Petroleum Distillates, Hydrotreated, Heavy Paraffinic

Biodegradability: For this family of materials: 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: 1.5 - 29 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Zinc Oxide
Biodegradability: Biodegradation is not applicable.

Solvent dewaxed heavy paraffinic distillates
Biodegradability: Inherently biodegradable.
Biodegradation: 31 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Lithium 12-hydroxyoctadecanoate
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 78 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Bioaccumulative potential

Distillates (petroleum), hydrotreated heavy naphthenic
Partition coefficient: n-octanol/water(log Pow): 1.99 - 18.02

N-Tallow Alkyltrimethylenediamine Oleate
Bioaccumulation: No relevant data found.

Petroleum Distillates, Hydrotreated, Heavy Paraffinic
Partition coefficient: n-octanol/water(log Pow): 1.99 - 18.02

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

Solvent dewaxed heavy paraffinic distillates
Bioaccumulation: Bioaccumulation is unlikely. Not applicable

Lithium 12-hydroxyoctadecanoate
Partition coefficient: n-octanol/water(log Pow): > 0.915 at 25 °C OECD Test Guideline 123

Mobility in soil

N-Tallow Alkyltrimethylenediamine Oleate
No relevant data found.

Zinc Oxide
No data available.

Solvent dewaxed heavy paraffinic distillates

Substance is very mobile in soil (Log Koc < 2).

Lithium 12-hydroxyoctadecanoate
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

Distillates (petroleum), hydrotreated heavy naphthenic
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

N-Tallow Alkyltrimethylenediamine Oleate
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Petroleum Distillates, Hydrotreated, Heavy Paraffinic
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Zinc Oxide
No data available

Solvent dewaxed heavy paraffinic distillates
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Lithium 12-hydroxyoctadecanoate
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.(N-Tallow Alkyltrimethylenediamine Oleate, Zinc oxide)
UN number	UN 3077
Class	9
Packing group	III
Environmental hazards	N-Tallow Alkyltrimethylenediamine Oleate, Zinc oxide

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(N-Tallow Alkyltrimethylenediamine Oleate, Zinc oxide)
UN number	UN 3077
Class	9
Packing group	III
Marine pollutant	N-Tallow Alkyltrimethylenediamine Oleate, Zinc oxide
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.(N-Tallow Alkyltrimethylenediamine Oleate, Zinc oxide)
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.

H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
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.

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

Legend

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
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Eye Irrit.	Eye irritation
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure

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; 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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