



SAFETY DATA SHEET

DDP SPECIALTY ELECTRONIC MATERIALS US 9, LLC

Product name: MOLYKOTE® Metal Protector Plus

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DDP SPECIALTY ELECTRONIC MATERIALS US 9, LLC 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. IDENTIFICATION

Product name: MOLYKOTE® Metal Protector Plus

Recommended use of the chemical and restrictions on use

Identified uses: Corrosion inhibitors

COMPANY IDENTIFICATION

DDP SPECIALTY ELECTRONIC MATERIALS

US 9, LLC

974 Centre Road

Wilmington DE 19805

UNITED STATES

Customer Information Number:

833-338-7668

SDSQuestion-NA@dupont.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: +1 800-424-9300

Local Emergency Contact: +1 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids - Category 3

Skin sensitisation - Category 1

Specific target organ toxicity - repeated exposure - Category 1

Aspiration hazard - Category 1

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Flammable liquid and vapour.

May be fatal if swallowed and enters airways.

May cause an allergic skin reaction.

Causes damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary statements

Prevention

Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ ventilating/ lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe mist or vapours.

Do not breathe spray.

Wash skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace.

Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Get medical advice/ attention if you feel unwell.

Do NOT induce vomiting.

If skin irritation or rash occurs: Get medical advice/ attention.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage

Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal

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

Other hazards

Static-accumulating flammable liquid.

Further information

The values listed below represent the percentages of ingredients of unknown toxicity.
The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 6 %

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Organic compound in solvent

This product is a mixture.

Component	CASRN	Concentration
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics	64742-48-9	>= 40.0 - < 50.0 %
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	>= 10.0 - < 20.0 %
SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS	61789-86-4	>= 5.0 - < 10.0 %
Aromatic hydrocarbons (mainly C9)	64742-95-6	>= 1.0 - < 5.0 %
Paraffin/Hydrocarbon waxes	8002-74-2	>= 1.0 - < 5.0 %

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: Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. 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

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

Unsuitable extinguishing media: High volume water jet Do not use direct water stream.

Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon oxides Sulphur oxides Metal oxides

Unusual Fire and Explosion Hazards: Flash back possible over considerable distance. Exposure to combustion products may be a hazard to health. Vapours may form explosive mixtures with air.

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 water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use a solid water stream as it may scatter and spread fire.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Remove all sources of ignition. 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. Prevent spreading over a wide area (e.g. by containment or oil barriers). 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: Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbant. 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 breathe vapours or spray mist. Do not swallow. Avoid contact with eyes. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity. Ground and bond container and receiving equipment.

Advice on general occupational hygiene

Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Ensure that eye flushing systems and safety showers are located close to the working place.

Conditions for safe storage: Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Do not store with the following product types: Strong oxidizing agents. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives. Gases. 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
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Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics	DUPONT AEL	AEL *	50 ppm
	DUPONT AEL	STEL	150 ppm
	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
Naphtha (petroleum), hydrodesulfurized heavy	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	OSHA P0	TWA	1,600 mg/m3 400 ppm
Aromatic hydrocarbons (mainly C9)	DUPONT AEL	AEL *	20 ppm
	DUPONT AEL	STEL	60 ppm
	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
	Further information: A3: Confirmed animal carcinogen with unknown relevance to humans; Skin: Danger of cutaneous absorption		
Paraffin/Hydrocarbon waxes	ACGIH	TWA	2 mg/m3
	Further information: URT irr: Upper Respiratory Tract irritation; nausea: Nausea		
	OSHA P0	TWA	2 mg/m3
	ACGIH	TWA Fumes	2 mg/m3
	CAL PEL	PEL Fumes	2 mg/m3
	OSHA P0	TWA Fumes	2 mg/m3
	NIOSH REL	TWA Fumes	2 mg/m3

Exposure controls

Engineering measures: 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.

Hygiene measures: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Ensure that eye flushing systems and safety showers are located close to the working place.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material. 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. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	liquid
Color	Straw-coloured
Odor	solvent-like
Odor Threshold	No data available
pH	Substance/mixture is non-soluble (in water). Substance/mixture is non-soluble (in water).
Melting point/ range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	> 35 °C (> 95 °F)
Flash point	closed cup 24 °C (75 °F)
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	Not applicable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	0.87
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Kinematic Viscosity	16 mm ² /s at 25 °C (77 °F)
Explosive properties	Not explosive
 Oxidizing properties	 The substance or mixture is not classified as oxidizing.
Molecular weight	No data available
Particle size	Not applicable

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. Vapours may form explosive mixture with air. Flammable liquid and vapour.

Conditions to avoid: Heat, flames and sparks.

Incompatible materials: Oxidizing agents

Hazardous decomposition products

No hazardous decomposition products are known.

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:**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics****Acute oral toxicity**

Very low toxicity if swallowed.

Typical for this family of materials. LD50, Rat, male and female, > 5,000 mg/kg

Acute dermal toxicity

Typical for this family of materials. LD50, Rabbit, > 3,160 mg/kg

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. Vapor may cause irritation of the upper respiratory tract (nose and throat). Excessive exposure may cause headache, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death.

Typical for this family of materials. LC50, Rat, 4 Hour, vapour, > 6.25 mg/l

Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness.

May cause drying and flaking of the skin.

May cause more severe response on covered skin (under clothing, gloves).

A single application to rabbit skin produced mild irritation.

Serious eye damage/eye irritation

Typical for this family of materials.

May cause slight temporary eye irritation.

Corneal injury is unlikely.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Single application to the rabbit eye produced minimal conjunctival irritation.

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)

For similar material(s):

Kidney effects and/or tumors have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans.

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

Liver.

Carcinogenicity

For this family of materials: Available data are inadequate to evaluate carcinogenicity.

Teratogenicity

For this family of materials: Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

Typical for this family of materials. In animal studies, did not interfere with reproduction in males.

Mutagenicity

For this family of materials: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

May be fatal if swallowed and enters airways.

Naphtha (petroleum), hydrodesulfurized heavy**Acute oral toxicity**

Based on data from similar materials LD50, Rat, male and female, > 5,000 mg/kg

Acute dermal toxicity

Based on data from similar materials LD50, Rat, male and female, > 4,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity

Based on data from similar materials LC50, Rat, 4 Hour, vapour, > 13.1 mg/l

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Prolonged or repeated skin contact can cause the following:

May cause drying and flaking of the skin.

Serious eye damage/eye irritation

May cause slight temporary eye irritation.

Corneal injury is unlikely.

Sensitization

For skin sensitization:
For similar material(s):
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)

May cause drowsiness or dizziness.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For similar material(s):
In humans, effects have been reported on the following organs:
Central nervous system.

Carcinogenicity

No relevant data found.

Teratogenicity

For similar material(s): Has caused birth defects in laboratory animals only at doses toxic to the mother. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive toxicity

For similar material(s): In animal studies, did not interfere with fertility.

Mutagenicity

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

Aspiration Hazard

May be fatal if swallowed and enters airways.

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS

Acute oral toxicity

LD50, Rat, male and female, > 5,000 mg/kg OECD Test Guideline 401

Acute dermal toxicity

LD50, Rabbit, male and female, > 4,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute inhalation toxicity

Based on data from similar materials LC50, Rat, 4 Hour, dust/mist, > 1.9 mg/l

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

Essentially nonirritating to eyes.

Sensitization

Has caused 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)

For similar material(s):
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

In animal studies, did not interfere with reproduction.

Mutagenicity

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

Aspiration Hazard

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

Aromatic hydrocarbons (mainly C9)

Acute oral toxicity

LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity

LD50, Rabbit, > 5,000 mg/kg

Acute inhalation toxicity

No deaths occurred at this concentration. LC50, Rat, 4 Hour, vapour, > 5 mg/l

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.
May cause drying and flaking of the skin.
Repeated contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause slight eye irritation.
Corneal injury is unlikely.

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)

May cause respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

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

Kidney.

Eye.

Carcinogenicity

No relevant data found.

Teratogenicity

No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity

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

Aspiration Hazard

May be fatal if swallowed and enters airways.

Paraffin/Hydrocarbon waxes

Acute oral toxicity

LD50, Rat, > 5,000 mg/kg OECD Test Guideline 401

Acute dermal toxicity

LD50, Rat, > 2,000 mg/kg OECD Test Guideline 402

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 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)

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 or any other fetal effects in laboratory animals. Information given is based on data obtained from similar substances.

Reproductive toxicity

In animal studies, did not interfere with reproduction. Information given is based on data obtained from similar substances.

Mutagenicity

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. Information given is based on data obtained from similar substances.

Aspiration Hazard

No aspiration toxicity classification

Carcinogenicity**Component****List****Classification**

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics

IARC

Group 2B: Possibly carcinogenic to humans

Naphtha (petroleum), hydrodesulfurized heavy

IARC

Group 2B: Possibly carcinogenic to humans

Aromatic hydrocarbons (mainly C9)

ACGIH

A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

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

Toxicity**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics****Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Pimephales promelas (fathead minnow), 96 Hour, 2,200 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna, 48 Hour, 400 mg/l

Naphtha (petroleum), hydrodesulfurized heavy**Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Based on data from similar materials

LL50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 10 - 30 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

Based on data from similar materials

EL50, Daphnia magna (Water flea), 48 Hour, 10 - 22 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

Based on data from similar materials

EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 4.6 - 10 mg/l, OECD Test Guideline 201

Based on data from similar materials

NOELR, Pseudokirchneriella subcapitata (green algae), 72 Hour, 0.22 mg/l, OECD Test Guideline 201

Chronic toxicity to aquatic invertebrates

Based on data from similar materials

NOELR, Daphnia magna (Water flea), 21 d, 0.097 mg/l

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS**Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LL50, Cyprinodon variegatus (sheepshead minnow), 96 Hour, > 10,000 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

Based on data from similar materials

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

Acute toxicity to algae/aquatic plants

Based on data from similar materials

EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 1,000 mg/l

Based on data from similar materials

NOELR, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1,000 mg/l

Toxicity to bacteria

EC50, 3 Hour, > 10,000 mg/l, OECD Test Guideline 209

Aromatic hydrocarbons (mainly C9)**Acute toxicity to fish**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50, 96 Hour, > 10 - 100 mg/l, OECD Test Guideline 203 or Equivalent

Paraffin/Hydrocarbon waxes**Acute toxicity to fish**

Information given is based on data obtained from similar substances.

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

Acute toxicity to aquatic invertebrates

Information given is based on data obtained from similar substances.

LC50, Daphnia magna (Water flea), 48 Hour, > 10,000 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

EC50, Raphidocelis subcapitata (freshwater green alga), 72 Hour, > 1,000 mg/l

Information given is based on data obtained from similar substances.

NOEC, Raphidocelis subcapitata (freshwater green alga), 72 Hour, >= 100 mg/l, OECD Test Guideline 201

Chronic toxicity to fish

NOEC, Oncorhynchus mykiss (rainbow trout), 28 d, >= 1,000 mg/l

Chronic toxicity to aquatic invertebrates

Information given is based on data obtained from similar product.

NOEC, Daphnia magna, 21 d, 10 mg/l

Persistence and degradability

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics

Biodegradability: Material is expected to be readily biodegradable.

Biodegradation: 80 %

Exposure time: 28 d

10-day Window: Fail

Biodegradation: 10 %

Exposure time: 28 d

Method: OECD Test Guideline 301D or Equivalent

Naphtha (petroleum), hydrodesulfurized heavy

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Based on data from similar materials 10-day Window: Pass

Biodegradation: 74.7 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS

Biodegradability: For similar material(s): 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: 8.6 %

Exposure time: 28 d

Method: OECD Test Guideline 301D

Aromatic hydrocarbons (mainly C9)

Biodegradability: No appreciable biodegradation is expected.

Paraffin/Hydrocarbon waxes

Biodegradability: Readily biodegradable.

Biodegradation: 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics

Bioaccumulation: For this family of materials: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Partition coefficient: n-octanol/water(log Pow): 2.1 - 6 Estimated.

Naphtha (petroleum), hydrodesulfurized heavy

Partition coefficient: n-octanol/water(log Pow): 1.99 - 18.02 at 20 °C

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): > 4.46

Bioconcentration factor (BCF): 70.79 Estimated.

Aromatic hydrocarbons (mainly C9)

Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Paraffin/Hydrocarbon waxes

Bioaccumulation: Not applicable

Partition coefficient: n-octanol/water(log Pow): 3.17 - 18.02

Mobility in soil

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2% aromatics

No relevant data found.

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS

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

Partition coefficient (Koc): > 10000 Estimated.

Aromatic hydrocarbons (mainly C9)

For the major component(s):

Potential for mobility in soil is low (Koc between 500 and 2000).

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR

SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. For additional information, refer to: Handling & Storage Information, MSDS Section 7 Stability & Reactivity Information, MSDS Section 10 Regulatory Information, MSDS Section 15

Treatment and disposal methods of used packaging: Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re-use containers for any purpose.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Coating solution
UN number	UN 1139
Class	3
Packing group	III
Marine pollutant	Naphtha (petroleum), hydrodesulfurized heavy, (Z)-N-9-Octadecenylpropane-1,3-diamine

Classification for SEA transport (IMO-IMDG):

Proper shipping name	COATING SOLUTION
UN number	UN 1139
Class	3
Packing group	III
Marine pollutant	Naphtha (petroleum), hydrodesulfurized heavy, (Z)-N-9-Octadecenylpropane-1,3-diamine
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	Coating solution
UN number	UN 1139
Class	3
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

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Flammable (gases, aerosols, liquids, or solids)

Hazard not otherwise classified (physical hazards)

Respiratory or skin sensitisation

Specific target organ toxicity (single or repeated exposure)

Aspiration hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2%
aromatics

Alkyd resins

Naphtha (petroleum), hydrodesulfurized heavy

SULFONIC ACIDS, PETROLEUM, CALCIUM SALTS

Aromatic hydrocarbons (mainly C9)

Paraffin waxes and Hydrocarbon waxes, microcryst.

Paraffin/Hydrocarbon waxes

Ethene, homopolymer, oxidized

CASRN

64742-48-9

Not Assigned

64742-82-1

61789-86-4

64742-95-6

63231-60-7

8002-74-2

68441-17-8

United States TSCA Inventory (TSCA)

All components of this product are in compliance with the Active inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Flammability	Instability
2	3	0

HMIS

Health	Flammability	Physical Hazard
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3*	3	0
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* = Chronic Effects (See Hazards Identification)

Revision

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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)
AEL *	8 & 12 hr. TWA
CAL PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
DUPONT AEL	DuPont AEL (Acceptable Exposure Limit)
NIOSH REL	USA. NIOSH Recommended Exposure Limits
OSHA P0	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
PEL	Permissible exposure limit
STEL	Short-term exposure limit
TWA	8-hour time weighted average

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; 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 Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; 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.

DDP SPECIALTY ELECTRONIC MATERIALS US 9, LLC 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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