



# SAFETY DATA SHEET

DSP SINGAPORE HOLDINGS PTE. LTD.

**Product name:** MOLYKOTE® Metal Protector Plus Coating Spray

**Issue Date:** 16.10.2023

**Print Date:** 13.03.2024

DSP SINGAPORE HOLDINGS PTE. LTD. 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 OF THE HAZARDOUS CHEMICAL AND OF THE SUPPLIER

**Product name:** MOLYKOTE® Metal Protector Plus Coating Spray

**Recommended use of the chemical and restrictions on use**

**Identified uses:** Corrosion inhibitors

### COMPANY IDENTIFICATION

DSP SINGAPORE HOLDINGS PTE. LTD.  
260 ORCHARD ROAD  
#18-01 THE HEEREN  
SINGAPORE 238855  
SINGAPORE

**Customer Information Number:**

+65-6586-3688  
SDSQuestion-AP@dupont.com

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** 800 101 2201

**Local Emergency Contact:** 1 800 815 308 / (60) 3921 25794

## 2. HAZARDS IDENTIFICATION

### GHS Classification

Classified as hazardous according to regulatory criteria.

|                                                       |                                       |
|-------------------------------------------------------|---------------------------------------|
| Flammable aerosols                                    | : Category 1                          |
| Gases under pressure                                  | : Dissolved gas                       |
| Skin sensitisation                                    | : Category 1                          |
| Specific target organ toxicity - single exposure      | : Category 3 (Central nervous system) |
| Specific target organ toxicity - repeated exposure    | : Category 1 (Central nervous system) |
| Hazardous to the aquatic environment - chronic hazard | : Category 3                          |

### GHS label elements

**Hazard pictograms**



Signal word: **DANGER!**

#### Hazard statements

Extremely flammable aerosol.

Contains gas under pressure; may explode if heated.

May cause an allergic skin reaction.

May cause drowsiness or dizziness.

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

Harmful to aquatic life with long lasting effects.

#### Precautionary statements

##### Prevention

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

Do not spray on an open flame or other ignition source.

Pressurized container: Do not pierce or burn, even after use.

Do not breathe spray.

Use only outdoors or in a well-ventilated area.

Avoid release to the environment.

Wear protective gloves.

##### Response

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.

Get medical advice/ attention if you feel unwell.

##### Storage

Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F.

#### Other hazards

No data available

---

### 3. COMPOSITION AND INFORMATION OF THE INGREDIENTS OF THE HAZARDOUS CHEMICAL

---

This product is a mixture.

| Component                             | CASRN    | Concentration      |
|---------------------------------------|----------|--------------------|
| Butane (containing < 0.1% butadiene ) | 106-97-8 | >= 30.0 - < 50.0 % |

|                                                                     |            |                    |
|---------------------------------------------------------------------|------------|--------------------|
| Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | 64742-49-0 | >= 10.0 - < 20.0 % |
| Propane                                                             | 74-98-6    | >= 10.0 - < 20.0 % |
| Naphtha (petroleum), hydrodesulfurized heavy                        | 64742-82-1 | >= 10.0 - < 20.0 % |
| Calcium salts of petroleum sulfonate                                | 68783-96-0 | >= 1.0 - < 10.0 %  |
| Distillates (petroleum), hydrotreated light                         | 64742-47-8 | >= 1.0 - < 10.0 %  |
| (Z)-N-9-Octadecenylpropane-1,3-diamine                              | 7173-62-8  | >= 0.1 - < 0.25 %  |

---

## 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 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:** 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:** Maintain adequate ventilation and oxygenation of the patient. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine

unless absolutely necessary. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Skin contact may aggravate preexisting dermatitis.

---

## **5. FIREFIGHTING MEASURES**

---

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

**Unsuitable extinguishing media:** 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. May form explosive mixtures in air. Exposure to combustion products may be a hazard to health. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure. 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. **EXPLOSION HAZARD.** Fight advanced fires from a protected location. 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. Fight fire remotely due to the risk of explosion. 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 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. Close valve after each use and when empty. Do NOT change or force fit connections. Open the valves slowly to prevent pressure surges. Handle in accordance with good industrial hygiene and safety practice. Do not spray on an open flame or other ignition source. Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

**Conditions for safe storage:** Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Keep away from direct sunlight. Store in accordance with the particular national regulations. Do not pierce or burn, even after use. Keep cool. Protect from sunlight.

Do not store with the following product types: Self-reactive substances and mixtures. 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. 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                               |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|
| Butane (containing < 0.1% butadiene )       | ACGIH                                                                                                                                                                                                                                                                                                                                                                        | STEL            | 1,000 ppm                           |
|                                             | Further information: EX: Explosion hazard: the substance is a flammable asphyxiant or excursions above the TLV® could approach 10% of the lower explosive limit.; CNS impair: Central Nervous System impairment                                                                                                                                                              |                 |                                     |
|                                             | MY PEL                                                                                                                                                                                                                                                                                                                                                                       | TWA             | 1,900 mg/m3 800 ppm                 |
| Propane                                     | ACGIH                                                                                                                                                                                                                                                                                                                                                                        |                 | See Further information             |
|                                             | Further information: See Appendix F: Minimal Oxygen Content; EX: Explosion hazard: the substance is a flammable asphyxiant or excursions above the TLV® could approach 10% of the lower explosive limit.; asphyxia: Asphyxia; D: Simple asphyxiant; see discussion covering Minimal Oxygen Content found in the 'Definitions and Notations' section following the NIC tables |                 |                                     |
|                                             | MY PEL                                                                                                                                                                                                                                                                                                                                                                       | TWA             | 2,500 ppm                           |
| Distillates (petroleum), hydrotreated light | ACGIH                                                                                                                                                                                                                                                                                                                                                                        | TWA             | 200 mg/m3 , total hydrocarbon vapor |
|                                             | Further information: A3: Confirmed animal carcinogen with unknown relevance to humans; Skin: Danger of cutaneous absorption                                                                                                                                                                                                                                                  |                 |                                     |

This material contains a simple asphyxiant which may displace oxygen. Insure adequate ventilation to prevent an oxygen deficient atmosphere.

The minimum requirement of 19.5% oxygen at sea level (148 torr O<sub>2</sub>, dry air) provides an adequate amount of oxygen for most work assignments.

### 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 in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

### Individual protection measures

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

#### Skin protection

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). 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. When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

---

### Appearance

|                                      |                                    |
|--------------------------------------|------------------------------------|
| Physical state                       | Aerosol containing a dissolved gas |
| Color                                | white translucent                  |
| Odor                                 | solvent-like                       |
| 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)            | Extremely flammable aerosol.       |

|                                        |                   |
|----------------------------------------|-------------------|
| 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 |
| 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        | 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. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure. Vapours may form explosive mixture with air. Extremely flammable aerosol.

**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**

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):  
LD50, Rat, > 5,000 mg/kg Estimated.

**Acute dermal toxicity**

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):  
LD50, Rat, > 2,000 mg/kg Estimated.

**Acute inhalation toxicity**

In confined or poorly ventilated areas, vapor can easily accumulate and can cause unconsciousness and death due to displacement of oxygen. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats). Excessive exposure may cause headache, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death.

As product: The LC50 has not been determined.

**Skin corrosion/irritation**

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

**Serious eye damage/eye irritation**

May cause slight eye irritation.  
Corneal injury is unlikely.

**Sensitization**

For skin sensitization:  
Contains component(s) which have demonstrated the potential for contact allergy in mice.

For respiratory sensitization:  
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Contains component(s) which are classified as specific target organ toxicant, single exposure, category 3.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Contains component(s) which have been reported to cause effects on the following organs in humans:  
Central nervous system.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

Contains component(s) which caused birth defects in laboratory animals only at doses toxic to the mother. Contains component(s) which, in laboratory animals, have been toxic to the fetus only at doses toxic to the mother.

**Reproductive toxicity**

Contains component(s) which did not interfere with reproduction in animal studies.

**Mutagenicity**

Contains a component(s) which were negative in in vitro genetic toxicity studies. Contains component(s) which were negative in animal genetic toxicity studies.

**Aspiration Hazard**

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

**COMPONENTS INFLUENCING TOXICOLOGY:****Butane (containing < 0.1% butadiene )****Acute inhalation toxicity**

LC50, Rat, 4 Hour, vapour, 658 mg/l

**Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics****Acute inhalation toxicity**

Based on data from similar materials LC50, Rat, 4 Hour, vapour, > 4,951 mg/m3

**Propane****Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, vapour, > 425000 ppm

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

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

**Calcium salts of petroleum sulfonate****Acute inhalation toxicity**

For similar material(s): LC50, Rat, 4 Hour, dust/mist, > 1.9 mg/l

**Distillates (petroleum), hydrotreated light****Acute inhalation toxicity**

Prolonged exposure is not expected to cause adverse effects.

Based on data from similar materials LC50, Rat, 4 Hour, dust/mist, > 5.3 mg/l

**(Z)-N-9-Octadecenylpropane-1,3-diamine****Acute inhalation toxicity**

The LC50 has not been determined.

---

**12. ECOLOGICAL INFORMATION**

---

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

**Ecotoxicity****Butane (containing < 0.1% butadiene )****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).

**Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics**

**Acute toxicity to fish**

Based on data from similar materials

LL50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 10 - 30 mg/l, OECD Test Guideline 203, Test substance: Water Accommodated Fraction

**Acute toxicity to aquatic invertebrates**

Based on data from similar materials

EL50, Daphnia magna (Water flea), 48 Hour, > 22 - 46 mg/l, OECD Test Guideline 202, Test substance: Water Accommodated Fraction

**Acute toxicity to algae/aquatic plants**

Based on data from similar materials

EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 1,000 mg/l, OECD Test Guideline 201, Test substance: Water Accommodated Fraction

Based on data from similar materials

NOELR, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1 mg/l, OECD Test Guideline 201, Test substance: Water Accommodated Fraction

**Propane**

**Acute toxicity to fish**

No relevant data found.

**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

**Calcium salts of petroleum sulfonate**

**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).

Based on data from similar materials

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

NOELR, *Pseudokirchneriella subcapitata* (green algae), 96 Hour, 1,000 mg/l

**Toxicity to bacteria**

Based on data from similar materials

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

**Distillates (petroleum), hydrotreated light**

**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, *Danio rerio* (zebra fish), 96 Hour, > 250 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

EL50, *Acartia tonsa*, 48 Hour, > 3,193 mg/l

**Acute toxicity to algae/aquatic plants**

EL50, *Skeletonema costatum* (marine diatom), 72 Hour, > 3,200 mg/l

NOELR, *Skeletonema costatum* (marine diatom), 72 Hour, 993 mg/l

**Chronic toxicity to aquatic invertebrates**

NOELR, *Ceriodaphnia dubia* (water flea), 8 d, > 70 mg/l

**(Z)-N-9-Octadecenylpropane-1,3-diamine**

**Acute toxicity to fish**

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

LC50, Fish, 96 Hour, 0.08 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, 0.013 - 0.025 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**

ErC50, *Desmodesmus subspicatus* (green algae), 72 Hour, 0.507 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

EC50, 3 Hour, 66 mg/l, OECD Test Guideline 209

**Chronic toxicity to aquatic invertebrates**

NOEC, water flea *Daphnia magna*, 21 d, 0.1 mg/l

**Persistence and degradability**

**Butane (containing < 0.1% butadiene )**

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

**Theoretical Oxygen Demand:** 3.58 mg/mg

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)

**Sensitization:** OH radicals

**Atmospheric half-life:** 49 Hour

**Method:** Estimated.

**Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics**

**Biodegradability:** Based on data from similar materials

**Biodegradation:** 89 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F

**Propane**

**Biodegradability:** No relevant data found.

**Theoretical Oxygen Demand:** 3.64 mg/mg

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)

**Sensitization:** OH radicals

**Atmospheric half-life:** 8.4 d

**Method:** Estimated.

**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

**Calcium salts of petroleum sulfonate**

**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.

**Biodegradation:** 8.6 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D

**Distillates (petroleum), hydrotreated light**

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

10-day Window: Pass

**Biodegradation:** 82 %

**Exposure time:** 24 d

**Method:** OECD Test Guideline 301F

**Bioaccumulative potential**

**Butane (containing < 0.1% butadiene )**

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

**Partition coefficient: n-octanol/water(log Pow):** 2.89 Measured

**Propane**

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

**Partition coefficient: n-octanol/water(log Pow):** 2.36 Measured

**Naphtha (petroleum), hydrodesulfurized heavy**

**Bioaccumulation:** Based on data from similar materials

**Partition coefficient: n-octanol/water(log Pow):** > 4

**Calcium salts of petroleum sulfonate**

**Bioaccumulation:** No relevant data found.

**Distillates (petroleum), hydrotreated light**

**Bioaccumulation:** No relevant data found.

**(Z)-N-9-Octadecenylpropane-1,3-diamine**

**Bioaccumulation:** Based on data from similar materials Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7). Expected to be relatively immobile in soil (Koc > 5000).

**Partition coefficient: n-octanol/water(log Pow):** 0.03 Estimated.

**Bioconcentration factor (BCF):** > 500 Fish

**Mobility in Soil**

**Butane (containing < 0.1% butadiene )**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 44 - 900 Estimated.

**Propane**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 24 - 460 Estimated.

**Naphtha (petroleum), hydrodesulfurized heavy**

No relevant data found.

**Calcium salts of petroleum sulfonate**

No relevant data found.

**Distillates (petroleum), hydrotreated light**

No relevant data found.

**(Z)-N-9-Octadecenylpropane-1,3-diamine**

**Partition coefficient (Koc):** > 5000 Estimated.

**Results of PBT and vPvB assessment**

**Butane (containing < 0.1% butadiene )**

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

**Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics**

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

**Propane**

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

**Naphtha (petroleum), hydrodesulfurized heavy**

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

**Calcium salts of petroleum sulfonate**

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

**Distillates (petroleum), hydrotreated light**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).  
This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**(Z)-N-9-Octadecenylpropane-1,3-diamine**

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

**Other adverse effects****Butane (containing < 0.1% butadiene )**

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

**Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics**

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

**Propane**

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

**Naphtha (petroleum), hydrodesulfurized heavy**

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

**Calcium salts of petroleum sulfonate**

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

**Distillates (petroleum), hydrotreated light**

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

**(Z)-N-9-Octadecenylpropane-1,3-diamine**

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

---

---

**13. DISPOSAL INFORMATION**

---

**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. TRANSPORTATION INFORMATION

---

### Classification for ROAD and Rail transport:

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Proper shipping name  | AEROSOLS                                                                        |
| UN number             | UN 1950                                                                         |
| Class                 | 2.1                                                                             |
| Packing group         |                                                                                 |
| Environmental hazards | (Z)-N-9-Octadecenylpropane-1,3-diamine, Naphtha (petroleum), hydrotreated light |

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

|                                                                                      |                                                                                 |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Proper shipping name                                                                 | AEROSOLS                                                                        |
| UN number                                                                            | UN 1950                                                                         |
| Class                                                                                | 2.1                                                                             |
| Packing group                                                                        |                                                                                 |
| Marine pollutant                                                                     | (Z)-N-9-Octadecenylpropane-1,3-diamine, Naphtha (petroleum), hydrotreated light |
| 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 | Aerosols, flammable |
| UN number            | UN 1950             |
| Class                | 2.1                 |
| Packing group        |                     |

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

---

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.

Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

---

## 16. OTHER INFORMATION

---

### Revision

Identification Number: 4045672 / A761 / Issue Date: 16.10.2023 / Version: 7.0

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)                                                                                     |
| MY PEL | Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000. |
| STEL   | Short-term exposure limit                                                                                                   |
| TWA    | 8-hour, time-weighted average                                                                                               |

### Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); 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; ERG - Emergency Response Guide; 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; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; 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; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

DSP SINGAPORE HOLDINGS PTE. LTD. 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.

MY