



# SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** EcoSense™ APP-5000 Formulation Aid

**Issue Date:** 08/16/2024

**Print Date:** 08/17/2024

THE DOW CHEMICAL COMPANY 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.

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## 1. IDENTIFICATION

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**Product name:** EcoSense™ APP-5000 Formulation Aid

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

**Identified uses:** Emulsifier.

### COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY  
2211 H.H. DOW WAY  
MIDLAND MI 48674  
UNITED STATES

**Customer Information Number:**

800-258-2436  
SDSQuestion@dow.com

### EMERGENCY TELEPHONE NUMBER

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

**Local Emergency Contact:** 800-424-9300

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## 2. HAZARDS IDENTIFICATION

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### Hazard classification

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Eye irritation - Category 2A

### Label elements

**Hazard pictograms**



Signal word: **WARNING!**

**Hazards**

Causes serious eye irritation.

**Precautionary statements****Prevention**

Wash skin thoroughly after handling.

Wear eye protection and/or face protection.

**Response**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice and/or attention.

**Other hazards**

No data available

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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**Synonyms:** D-pentose, oligomeric, C14 and C18 alkyl glycosides

This product is a substance.

**Substance name:** D-pentose, oligomeric, C14 and C18 alkyl glycosides

**CASRN:** 2918304-17-1

| Component                                           | CASRN        | Concentration       |
|-----------------------------------------------------|--------------|---------------------|
| D-pentose, oligomeric, C14 and C18 alkyl glycosides | 2918304-17-1 | > 50.0 - <= 60.0 %  |
| Tetradecanol                                        | 112-72-1     | >= 20.0 - <= 30.0 % |
| Octadecanol                                         | 112-92-5     | >= 10.0 - <= 20.0 % |

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**4. FIRST AID MEASURES**

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**Description of first aid measures****General advice:**

If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air and keep comfortable for breathing; consult a physician.

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

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

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

**Most important symptoms and effects, both acute and delayed:**

Causes serious eye irritation.

**Indication of any immediate medical attention and special treatment needed**

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

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**5. FIREFIGHTING MEASURES**

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**Extinguishing media**

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

**Unsuitable extinguishing media:** None known..

**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** No data available

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

**Advice for firefighters**

**Fire Fighting Procedures:** Use water spray to cool unopened containers.. Evacuate area.. 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..

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Remove undamaged containers from fire area if it is safe to do so.

**Special protective equipment for firefighters:** In the event of fire, wear self-contained breathing apparatus.. Use personal protective equipment..

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**6. ACCIDENTAL RELEASE MEASURES**

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

**Environmental precautions:** Discharge into the environment must be avoided. 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:** Soak up with inert absorbent material. 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, store recovered material in appropriate container.  
See sections: 7, 8, 11, 12 and 13.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Avoid inhalation of vapour or mist. Do not swallow. Do not get in eyes. Avoid prolonged or repeated contact with skin. Take care to prevent spills, waste and minimize release to the environment. Handle in accordance with good industrial hygiene and safety practice. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.  
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.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### Control parameters

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

### Exposure controls

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

### Individual protection measures

**Eye/face protection:** Use chemical goggles.

#### Skin protection

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). 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:** Wear clean, body-covering clothing.

**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. The following should be effective types of air-purifying respirators: Particulate filter.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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|                                        |                                                            |
|----------------------------------------|------------------------------------------------------------|
| <b>Appearance</b>                      |                                                            |
| Physical state                         | flakes                                                     |
| Color                                  | light brown                                                |
| Odor                                   | characteristic                                             |
| Odor Threshold                         | No data available                                          |
| pH                                     | 4.5 - 6.5                                                  |
| Melting point/ range                   | 60 - 65 °C ( 140 - 149 °F)                                 |
| Freezing point                         | No data available.                                         |
| Boiling point (760 mmHg)               | 247 °C ( 477 °F)                                           |
| Flash point                            | <b>closed cup</b> > 150 °C ( > 302 °F)                     |
| Evaporation Rate (Butyl Acetate = 1)   | No data available                                          |
| Flammability (solid, gas)              | Non-flammable                                              |
| Flammability (liquids)                 | Not expected to be a static-accumulating flammable liquid. |
| Lower explosion limit                  | <i>Not applicable</i>                                      |
| Upper explosion limit                  | <i>Not applicable</i>                                      |
| Vapor Pressure                         | No data available                                          |
| Relative Vapor Density (air = 1)       | Not applicable                                             |
| Relative Density (water = 1)           | 0.45 - 0.50                                                |
| Water solubility                       | insoluble                                                  |
| Partition coefficient: n-octanol/water | No data available                                          |
| Auto-ignition temperature              | > 500 °C (> 932 °F)                                        |
| Decomposition temperature              | No data available                                          |
| Kinematic Viscosity                    | No data available                                          |
| Explosive properties                   | No data available                                          |
| Oxidizing properties                   | No data available                                          |
| Molecular weight                       | Not reported                                               |

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

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## 10. STABILITY AND REACTIVITY

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**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:** Avoid contact with oxidizing materials.

**Hazardous decomposition products**

No hazardous decomposition products are known.

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## 11. TOXICOLOGICAL INFORMATION

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

**Information on likely routes of exposure**

Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

**Acute Toxicity Endpoints:**

Not classified based on available information.

**Acute oral toxicity**

**Information for the Product:**

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Based on information for component(s):

LD50, Rat, male and female, > 2,000 mg/kg OECD Test Guideline 423 No deaths occurred at this concentration.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

LD50, Rat, male and female, > 2,000 mg/kg OECD Test Guideline 423 No deaths occurred at this concentration.

**Tetradecanol**

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

**Octadecanol**

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

**Acute dermal toxicity**

**Information for the Product:**

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

Based on information for component(s):

LD50, > 5,000 mg/kg

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

The dermal LD50 has not been determined.

**Tetradecanol**

LD50, Rabbit, male and female, > 8,000 mg/kg

**Octadecanol**

LD50, Rat, > 5,000 mg/kg Estimated.

**Acute inhalation toxicity**

**Information for the Product:**

No adverse effects expected from single exposure.

The LC50 has not been determined.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

The LC50 has not been determined.

**Tetradecanol**

LC50, Rat, male and female, 1 Hour, vapour, > 1.5 mg/l No deaths occurred at this concentration.

**Octadecanol**

At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. No adverse effects are anticipated from single exposure to mist.

The LC50 has not been determined.

**Skin corrosion/irritation**

Not classified based on available information.

**Information for the Product:**

Based on information for component(s):

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

For similar material(s):

Prolonged contact is essentially nonirritating to skin.

**Tetradecanol**

Brief contact is essentially nonirritating to skin.

**Octadecanol**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Information for the Product:**

Based on information for component(s):

May cause moderate eye irritation.

May cause slight corneal injury.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

For similar material(s):

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Tetradecanol**

May cause moderate eye irritation.

May cause slight corneal injury.

**Octadecanol**

May cause slight temporary eye irritation.

May cause slight temporary corneal injury.

**Sensitization**

**For skin sensitization:**

Not classified based on available information.

**For respiratory sensitization:**

Not classified based on available information.

**Information for the Product:**

For skin sensitization:

Based on information for component(s):

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

For skin sensitization:

Based on product testing:

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:  
No relevant data found.

**Tetradecanol**

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

For respiratory sensitization:  
No relevant data found.

**Octadecanol**

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)**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:****D-pentose, oligomeric, C14 and C18 alkyl glycosides**

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

**Tetradecanol**

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

**Octadecanol**

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

**Aspiration Hazard**

Not classified based on available information.

**Information for the Product:**

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

**Information for components:****D-pentose, oligomeric, C14 and C18 alkyl glycosides**

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

**Tetradecanol**

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

**Octadecanol**

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

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

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

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

No relevant data found.

**Tetradecanol**

For similar material(s):

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

**Octadecanol**

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

**Carcinogenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

No relevant data found.

**Tetradecanol**

No relevant data found.

**Octadecanol**

No relevant data found.

**Teratogenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

No relevant data found.

**Tetradecanol**

For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Octadecanol**

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

**Reproductive toxicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

No relevant data found.

**Tetradecanol**

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

**Octadecanol**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**D-pentose, oligomeric, C14 and C18 alkyl glycosides**

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

**Tetradecanol**

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

**Octadecanol**

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

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## 12. ECOLOGICAL INFORMATION

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

## Toxicity

### D-pentose, oligomeric, C14 and C18 alkyl glycosides

#### **Acute toxicity to fish**

No data available for assessment due to technical difficulties with testing.

### Tetradecanol

#### **Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms.

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.0016 mg/l

#### **Toxicity to soil-dwelling organisms**

Eisenia fetida (earthworms), 7 d, mortality, > 1,000 mg/kg

### Octadecanol

#### **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, Danio rerio (zebra fish), semi-static test, 96 Hour, > 9,950 mg/l

#### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 48 Hour, 1,666 mg/l

#### **Acute toxicity to algae/aquatic plants**

ErC50, Algae (Scenedesmus subspicatus), 96 Hour, Growth rate inhibition, 240 mg/l  
EbC50, alga Scenedesmus sp., 96 Hour, Biomass, 235 mg/l

#### **Toxicity to bacteria**

EC50, Bacteria, 30 min, > 9,950 mg/l

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.98 mg/l  
LOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 2.94 mg/l  
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 1.70 mg/l

## Persistence and degradability

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

Based on product testing:

**Biodegradation:** 74.6 %

**Exposure time:** 28 d

## Bioaccumulative potential

### D-pentose, oligomeric, C14 and C18 alkyl glycosides

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

**Partition coefficient: n-octanol/water(log Pow):** > 4.5 - 5.5 Estimated by Structure-Activity Relationship (SAR).

### Tetradecanol

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

**Partition coefficient: n-octanol/water(log Pow):** 5.5 Measured

#### Octadecanol

**Bioaccumulation:** Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7).

**Partition coefficient: n-octanol/water(log Pow):** 7.19 Measured

**Bioconcentration factor (BCF):** 231 Fish Estimated.

#### **Mobility in soil**

#### D-pentose, oligomeric, C14 and C18 alkyl glycosides

No relevant data found.

#### Tetradecanol

**Partition coefficient (Koc):** > 5000 OECD Test Guideline 121

#### Octadecanol

**Partition coefficient (Koc):** > 10000

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### 13. DISPOSAL CONSIDERATIONS

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**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 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 SDS SECTION 1: Identified Uses. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device. Landfill.

**Contaminated packaging:** Empty containers may retain product residues and should be disposed of by an approved waste management facility. Label warnings should be followed even after container is emptied. Improper disposal or reuse of this container may be dangerous and illegal. Consult with the respective regulating authorities to determine the available treatment and disposal facilities. All disposal practices must be in compliance with Federal, State/Provincial and local regulations.

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### 14. TRANSPORT INFORMATION

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#### **DOT**

Not regulated for transport

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

##### **Proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,  
N.O.S.(Tetradecanol)

|                                                                                               |                                                        |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------|
| UN number                                                                                     | UN 3077                                                |
| Class                                                                                         | 9                                                      |
| Packing group                                                                                 | III                                                    |
| Marine pollutant                                                                              | Tetradecanol                                           |
| Transport in bulk<br>according to Annex I or II<br>of MARPOL 73/78 and the<br>IBC or IGC Code | Consult IMO regulations before transporting ocean bulk |

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

|                      |                                                                     |
|----------------------|---------------------------------------------------------------------|
| Proper shipping name | Environmentally hazardous substance, solid,<br>n.o.s.(Tetradecanol) |
| 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.

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## 15. REGULATORY INFORMATION

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

Serious eye damage or eye irritation

**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 Worker and Community Right-To-Know Act:**

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**California Prop. 65**

This product contains a chemical that is at or below California Propositions 65's "safe harbor level" as determined via a risk assessment. Therefore, the chemical is not required to be listed as a Prop 65 chemical on the SDS or label.

**United States TSCA Inventory (TSCA)**

The product is used in a food, drug or cosmetic application and is subject to the applicable regulation. The product may only be used in the exempt application.

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## 16. OTHER INFORMATION

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### Revision

Identification Number: 99198884 / A001 / Issue Date: 08/16/2024 / Version: 2.0

In case this version of the SDS contains significant changes from the previous version, they are listed below or noted by bold, double bars in the left-hand margin throughout this document.

Changes encompass identification, hazards, tox/eco-tox information and the addition/removal of the ingredients, and regulatory information, hazard information, uses, risk management measures and other key regulatory changes of the product. Detailed explanation of the changes can be obtained upon request.

### 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 Harmonized 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 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; 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 - 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; 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.

THE DOW CHEMICAL COMPANY 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.

US