



# SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** RHOPLEX™ EC-3814 Emulsion

**Issue Date:** 02/14/2024

**Print Date:** 02/15/2024

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.

## 1. IDENTIFICATION

**Product name:** RHOPLEX™ EC-3814 Emulsion

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

**Identified uses:** Coatings product

### 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

## 2. HAZARDS IDENTIFICATION

### Hazard classification

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

Not a hazardous substance or mixture.

### Other hazards

No data available

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical nature:** Polymers, water based

This product is a mixture.

**Component**

**CASRN**

**Concentration**

|                    |               |                   |
|--------------------|---------------|-------------------|
| Acrylic polymer(s) | Not hazardous | >= 59.0 - 61.0 %  |
| Residual monomers  | Not required  | < 0.075 %         |
| Aqua ammonia       | 1336-21-6     | <= 0.1 %          |
| Diphenyl Ketone    | 119-61-9      | >= 0.1 - <= 0.3 % |
| Water              | 7732-18-5     | >= 39.0 - 41.0 %  |

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## 4. FIRST AID MEASURES

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### 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 and keep comfortable for breathing; consult a physician.

**Skin contact:** Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** Rinse mouth with water. 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.

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## 5. FIREFIGHTING MEASURES

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### Extinguishing media

**Suitable extinguishing media:** To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam..

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

### Special hazards arising from the substance or mixture

**Hazardous combustion products:** Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds.. Combustion products may include and are not limited to:. Carbon dioxide.. Carbon monoxide..

**Unusual Fire and Explosion Hazards:** Material can splatter above 100C/212F.. This material will not burn until the water has evaporated. Residue can burn..

#### Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.. Contain fire water run-off if possible..

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus and protective suit.. If protective equipment is not available or not used, fight fire from a protected location or safe distance..

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## 6. ACCIDENTAL RELEASE MEASURES

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**Personal precautions, protective equipment and emergency procedures:** Use personal protective equipment. Keep people away from and upwind of spill/leak. Material can create slippery conditions.

**Environmental precautions:** CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**Methods and materials for containment and cleaning up:** Contain spills immediately with inert materials (e.g., sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Keep container tightly closed. Do not breathe vapors, mist or gas.

**Conditions for safe storage:** Keep from freezing - product stability may be affected. STIR WELL BEFORE USE.

#### Storage stability

**Storage temperature:** 1 - 49 °C (34 - 120 °F)

Other data: Monomer vapors can be evolved when material is heated during processing operations. See SECTION 8, for types of ventilation required.

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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.

| Component    | Regulation | Type of listing | Value              |
|--------------|------------|-----------------|--------------------|
| Aqua ammonia | Dow IHG    | TWA             | 10 ppm, As Ammonia |
|              | ACGIH      | TWA             | 25 ppm, Ammonia    |
|              | ACGIH      | STEL            | 35 ppm, Ammonia    |

|                 |                                                              |     |                 |
|-----------------|--------------------------------------------------------------|-----|-----------------|
|                 | OSHA Z-1                                                     | TWA | 35 mg/m3 50 ppm |
|                 | Further information: (b): The value in mg/m3 is approximate. |     |                 |
| Diphenyl Ketone | US WEEL                                                      | TWA | 0.5 mg/m3       |

**Exposure controls**

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

**Individual protection measures**

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

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Avoid gloves made of: Polyvinyl alcohol ("PVA"). 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.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance**

|                                      |                              |
|--------------------------------------|------------------------------|
| Physical state                       | liquid Milky                 |
| Color                                | white                        |
| Odor                                 | Ammonia odor                 |
| Odor Threshold                       | No data available            |
| pH                                   | 7.0 - 8.0                    |
| Melting point/range                  | 0 °C ( 32 °F) Water          |
| Freezing point                       | No data available            |
| Boiling point (760 mmHg)             | 100.00 °C ( 212.00 °F) Water |
| Flash point                          | Noncombustible               |
| Evaporation Rate (Butyl Acetate = 1) | <1.00 Water                  |

|                                        |                                      |
|----------------------------------------|--------------------------------------|
| Flammability (solid, gas)              | Not Applicable                       |
| Lower explosion limit                  | Not Applicable                       |
| Upper explosion limit                  | Not Applicable                       |
| Vapor Pressure                         | 17 mmHg at 20.00 °C (68.00 °F) Water |
| Relative Vapor Density (air = 1)       | <1.0000 Water                        |
| Relative Density (water = 1)           | 1.0400                               |
| Water solubility                       | partly miscible                      |
| Partition coefficient: n-octanol/water | No data available                    |
| Auto-ignition temperature              | Not Applicable                       |
| Decomposition temperature              | No data available                    |
| Dynamic Viscosity                      | 1,000.000 mPa.s maximum              |
| Kinematic Viscosity                    | No data available                    |
| Explosive properties                   | No data available                    |
| Oxidizing properties                   | No data available                    |
| Molecular weight                       | No data available                    |
| Percent volatility                     | 39.000 - 40.000 % Water              |

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:** No dangerous reaction known under conditions of normal use.

**Chemical stability:** Stable

**Possibility of hazardous reactions:** Product will not undergo polymerization.

**Conditions to avoid:** No data available

**Incompatible materials:** There are no known materials which are incompatible with this product.

**Hazardous decomposition products:** Thermal decomposition may yield acrylic monomers..

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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:**

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

Based on testing for product(s) in this family of materials:  
LD50, > 5,000 mg/kg

**Information for components:****Acrylic polymer(s)**

Single dose oral LD50 has not been determined.

**Residual monomers**

Single dose oral LD50 has not been determined.

**Aqua ammonia**

Single dose oral LD50 has not been determined.

**Diphenyl Ketone**

LD50, Mouse, 2,895 mg/kg

**Acute dermal toxicity****Information for the Product:**

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

Based on testing for product(s) in this family of materials:  
LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

**Information for components:****Acrylic polymer(s)**

The dermal LD50 has not been determined.

**Residual monomers**

The dermal LD50 has not been determined.

**Aqua ammonia**

The dermal LD50 has not been determined.

**Diphenyl Ketone**

LD50, Rabbit, 3,535 mg/kg

**Acute inhalation toxicity****Information for the Product:**

Brief (minutes) exposure to vapor, mist or dust is not likely to cause adverse effects.

As product: The LC50 has not been determined.

**Information for components:**

**Acrylic polymer(s)**

The LC50 has not been determined.

**Residual monomers**

The LC50 has not been determined.

**Aqua ammonia**

The LC50 has not been determined.

**Diphenyl Ketone**

The LC50 has not been determined.

**Skin corrosion/irritation**

Not classified based on available information.

**Information for the Product:**

Based on testing for product(s) in this family of materials:  
Brief contact may cause slight skin irritation with local redness.

**Information for components:**

**Acrylic polymer(s)**

Essentially nonirritating to skin.

**Residual monomers**

Essentially nonirritating to skin.

**Aqua ammonia**

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Classified as corrosive to the skin according to DOT guidelines.

**Diphenyl Ketone**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause moderate skin irritation with local redness.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Information for the Product:**

Based on testing for product(s) in this family of materials:  
May cause slight eye irritation.  
Corneal injury is unlikely.

**Information for components:**

**Acrylic polymer(s)**

Essentially nonirritating to eyes.

**Residual monomers**

Essentially nonirritating to eyes.

**Aqua ammonia**

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

**Diphenyl Ketone**

Solid or dust may cause irritation or corneal injury due to mechanical action.

**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:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Information for components:**

**Acrylic polymer(s)**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Residual monomers**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Aqua ammonia**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Diphenyl Ketone**

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:

##### Acrylic polymer(s)

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

##### Residual monomers

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

##### Aqua ammonia

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

##### Diphenyl Ketone

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:

##### Acrylic polymer(s)

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

##### Residual monomers

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

##### Aqua ammonia

Aspiration into the respiratory system may occur during ingestion or vomiting. Due to corrosivity, tissue damage or lung injury may occur.

##### Diphenyl Ketone

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:****Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

No relevant data found.

**Diphenyl Ketone**

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

Blood.

Kidney.

Liver.

Bone marrow.

**Carcinogenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:****Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

Did not cause cancer in laboratory animals.

**Diphenyl Ketone**

Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

**Carcinogenicity****Component**

Diphenyl Ketone

**List**

IARC

**Classification**

Group 2B: Possibly carcinogenic to humans

**Teratogenicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

No relevant data found.

**Diphenyl Ketone**

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**Reproductive toxicity**

Not classified based on available information.

**Information for the Product:**

Product test data not available.

**Information for components:**

**Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

No relevant data found.

**Diphenyl Ketone**

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

**Mutagenicity**

Not classified based on available information.

**Information for the Product:**

Based on testing for product(s) in this family of materials: In vitro genetic toxicity studies were negative.

**Information for components:**

**Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

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

**Diphenyl Ketone**

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****Acrylic polymer(s)****Acute toxicity to fish**

No relevant data found.

**Residual monomers****Acute toxicity to fish**

No relevant data found.

**Aqua ammonia****Acute toxicity to fish**

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

May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

LC50, *Lepomis macrochirus* (Bluegill sunfish), 96 Hour, 0.87 mg/l

LC50, *Pimephales promelas* (fathead minnow), 96 Hour, 1.2 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, 0.66 mg/l

**Diphenyl Ketone****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).

LC50, *Fathead minnow* (*Pimephales promelas*), 96 Hour, 14.7 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

EC50, *ceriodaphnia dubia* (water flea), 48 Hour, 7.6 mg/l, Method Not Specified.

EC50, *Daphnia magna* (Water flea), 48 Hour, 6.784 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

EC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth rate, 3.5 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

NOEC, 3 Hour, 31.6 mg/l, OECD Test Guideline 209

**Chronic toxicity to fish**

NOEC, Pimephales promelas (fathead minnow), 7 d, 5.86 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia (water flea), 21 d, 0.20 mg/l

**Persistence and degradability****Acrylic polymer(s)**

**Biodegradability:** No relevant data found.

**Residual monomers**

**Biodegradability:** No relevant data found.

**Aqua ammonia**

**Biodegradability:** Biodegradation may occur under aerobic conditions (in the presence of oxygen). Biodegradation rate may increase in soil and/or water with acclimation.

**Theoretical Oxygen Demand:** 0.76 mg/mg

**Diphenyl Ketone**

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

10-day Window: Pass

**Biodegradation:** 66 - 84 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F

10-day Window: Not applicable

**Biodegradation:** 0 %

**Exposure time:** 14 d

**Method:** OECD Test Guideline 301C or Equivalent

**Theoretical Oxygen Demand:** 2.63 mg/mg

**Photodegradation**

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

**Sensitization:** OH radicals

**Atmospheric half-life:** 3.009 d

**Method:** Estimated.

**Bioaccumulative potential****Acrylic polymer(s)**

**Bioaccumulation:** No relevant data found.

**Residual monomers**

**Bioaccumulation:** No relevant data found.

**Aqua ammonia**

**Bioaccumulation:** No bioconcentration is expected because of the relatively high water solubility.

**Diphenyl Ketone**

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

**Partition coefficient: n-octanol/water(log Pow):** 3.18 Measured

**Bioconcentration factor (BCF):** 3.4 - 9.2 Cyprinus carpio (Carp) 42 d

Measured **Bioconcentration factor (BCF):** 3.4 - 12 Oryzias latipes (Orange-red killifish) 42 d Measured

**Mobility in soil****Acrylic polymer(s)**

No relevant data found.

**Residual monomers**

No relevant data found.

**Aqua ammonia**

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

**Diphenyl Ketone**

**Partition coefficient (Koc):** 430 Measured

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## 13. DISPOSAL CONSIDERATIONS

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**Disposal methods:** Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant and flush to a chemical sewer. For disposal, incinerate or landfill at a permitted facility in accordance with local, state, and federal regulations.

**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):**

Not regulated for transport

**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):**

Not regulated for transport

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**

No SARA Hazards

**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**

Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

**California Prop. 65**

WARNING: This product can expose you to chemicals including Ethyl hexyl acrylate, Diphenyl Ketone, which is/are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**United States TSCA Inventory (TSCA)**

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

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**16. OTHER INFORMATION**

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**Hazard Rating System****HMIS**

| Health | Flammability | Physical Hazard |
|--------|--------------|-----------------|
| 1*     | 0            | 0               |

\* = Chronic Effects (See Hazards Identification)

### Revision

Identification Number: 10299683 / A001 / Issue Date: 02/14/2024 / Version: 5.0

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)                                          |
| Dow IHG  | Dow Industrial Hygiene Guideline                                                 |
| OSHA Z-1 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| STEL     | Short-term exposure limit                                                        |
| TWA      | Time weighted average                                                            |
| US WEEL  | USA. Workplace Environmental Exposure Levels (WEEL)                              |

### 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; TECl - 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