



# SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** DOWFAX™ 2A1 Solution Surfactant

**Issue Date:** 04/07/2020

**Print Date:** 04/08/2020

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:** DOWFAX™ 2A1 Solution Surfactant

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

**Identified uses:** Multi-purpose surfactant.

### 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 29 CFR 1910.1200  
Serious eye damage - Category 1

### Label elements

#### Hazard pictograms



Signal word: **DANGER!**

### Hazards

Causes serious eye damage.

**Precautionary statements****Prevention**

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. Immediately call a POISON CENTER/ doctor.

**Other hazards**

Slipping hazard.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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This product is a mixture.

<b>Component</b>	<b>CASRN</b>	<b>Concentration</b>
Water	7732-18-5	52.0%
Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate	119345-04-9	46.0%
Sulfuric acid disodium salt	7757-82-6	1.0%
2-Methyl-4-isothiazolin-3-one	2682-20-4	140.0PPM

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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.

**Eye contact:** Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, 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:**

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:** Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. 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:** No data available

### **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:.. Sulfur oxides.. Carbon monoxide.. Carbon dioxide..

**Unusual Fire and Explosion Hazards:** 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.. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam..

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. 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:** Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Spilled material may cause a slipping hazard. Only trained and properly protected personnel must be involved in clean-up operations. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Absorb with materials such as: Sawdust. Cob grit. Zorb-all®. Hazorb®. Do not use water for cleanup. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Do not get in eyes. Avoid breathing vapor. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. STIR WELL BEFORE USE. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Product may become a solid at temperatures below 0°C (32°F)

### Storage stability

**Shelf life: Use within**  
18 Month

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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
2-Methyl-4-isothiazolin-3-one	Dow IHG	TWA	1.5 mg/m <sup>3</sup>
	Dow IHG	STEL	4.5 mg/m <sup>3</sup>

### 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 chemical goggles.

#### 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.
Color	Colorless to yellow
Odor	Odorless to mild
Odor Threshold	No test data available
pH	8 - 10.5 <i>Calculated.</i>
Melting point/range	Not applicable to liquids
Freezing point	4 °C ( 39 °F) <i>Calculated.</i>
Boiling point (760 mmHg)	100 °C ( 212 °F) <i>Calculated.</i>
Flash point	<b>closed cup</b> Not applicable
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor Pressure	< 0.01 mmHg at 20 °C (68 °F) <i>Calculated.</i>
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.12 - 1.16 at 25 °C (77 °F) <i>Calculated.</i>
Water solubility	<i>Visual</i> completely miscible completely soluble
Partition coefficient: n-octanol/water	log Pow: -2.68 <i>Estimated.</i>
Auto-ignition temperature	Not applicable
Decomposition temperature	No test data available
Kinematic Viscosity	131.8 cSt at 25 °C (77 °F) <i>Calculated.</i>
Explosive properties	Not explosive
Oxidizing properties	No Oxidizing
Molecular weight	576 g/mol <i>Calculated.</i>

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 data available

**Chemical stability:** Stable at ambient temperatures.

**Possibility of hazardous reactions:** Polymerization will not occur.

**Conditions to avoid:** Active ingredient decomposes at elevated temperatures.

**Incompatible materials:** Avoid contact with: Strong acids.

**Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to: Sulfur oxides..

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## 11. TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is 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 oral toxicity

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 product testing:

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

#### Information for components:

##### **Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

##### **Sulfuric acid disodium salt**

LD50, Rat, female, > 2,000 mg/kg

##### **2-Methyl-4-isothiazolin-3-one**

LD50, Rat, female, 183 mg/kg OECD Test Guideline 401

LD50, Rat, male, 235 mg/kg OECD Test Guideline 401

#### Acute dermal toxicity

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

Based on product testing:

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

#### Information for components:

##### **Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

The dermal LD50 has not been determined.

**2-Methyl-4-isothiazolin-3-one**

LD50, Rat, 242 mg/kg OECD Test Guideline 402

**Acute inhalation toxicity**

At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

As product: The LC50 has not been determined.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

As product: The LC50 has not been determined.

**Sulfuric acid disodium salt**

LC50, Rat, male and female, 4 Hour, dust/mist, > 2.4 mg/l No deaths occurred at this concentration.

**2-Methyl-4-isothiazolin-3-one**

The LC50 has not been determined.

**Skin corrosion/irritation**

Based on product testing:

Prolonged exposure not likely to cause significant skin irritation.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

Prolonged exposure not likely to cause significant skin irritation.

**Sulfuric acid disodium salt**

Prolonged exposure not likely to cause significant skin irritation.

May cause more severe response if skin is abraded (scratched or cut).

**2-Methyl-4-isothiazolin-3-one**

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

**Serious eye damage/eye irritation**

Based on product testing:

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

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

May cause pain disproportionate to the level of irritation to eye tissues.  
May cause slight temporary eye irritation.  
Corneal injury is unlikely.

**2-Methyl-4-isothiazolin-3-one**

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

**Sensitization**

For skin sensitization:

Contains component(s) which did not cause allergic skin sensitization in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

For respiratory sensitization:

No relevant data found.

**Sulfuric acid disodium salt**

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

For respiratory sensitization:

No relevant data found.

**2-Methyl-4-isothiazolin-3-one**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

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

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

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

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

**2-Methyl-4-isothiazolin-3-one**

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

**Aspiration Hazard**

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



**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

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

**2-Methyl-4-isothiazolin-3-one**

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

**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)**

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

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

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

**2-Methyl-4-isothiazolin-3-one**

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

**Carcinogenicity**

Did not cause cancer in laboratory animals.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

Did not cause cancer in laboratory animals.

**Sulfuric acid disodium salt**

Did not cause cancer in laboratory animals.

**2-Methyl-4-isothiazolin-3-one**

Did not cause cancer in laboratory animals.

**Teratogenicity**

For similar material(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

For similar material(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**Sulfuric acid disodium salt**

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

**2-Methyl-4-isothiazolin-3-one**

Did not cause birth defects in laboratory animals.

**Reproductive toxicity**

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

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

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

**Sulfuric acid disodium salt**

In animal studies, did not interfere with reproduction.

**2-Methyl-4-isothiazolin-3-one**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

In vitro genetic toxicity studies were negative. Based on information for a similar material: Animal genetic toxicity studies were negative.

**Information for components:**

**Benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonate**

In vitro genetic toxicity studies were negative. Based on information for a similar material: Animal genetic toxicity studies were negative.

**Sulfuric acid disodium salt**

In vitro genetic toxicity studies were negative.

**2-Methyl-4-isothiazolin-3-one**

Negative in genetic toxicity tests.

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## 12. ECOLOGICAL INFORMATION

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

**Toxicity**

**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, *Oncorhynchus mykiss* (rainbow trout), static test, 96 Hour, 6.2 mg/l

LC50, Lepomis macrochirus (Bluegill sunfish), static test, 96 Hour, 6.81 mg/l

**Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), static test, 48 Hour, 1.64 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 21 d, Growth inhibition (cell density reduction), 100 mg/l

**Toxicity to bacteria**

Based on analogy.

EC50, activated sludge, static test, 0.5 Hour, Respiration rates., > 100 mg/l, activated sludge test (OECD 209)

**Long-term (chronic) aquatic hazard**

**Chronic toxicity to aquatic invertebrates**

NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, survival, 0.65 mg/l

**Toxicity to soil-dwelling organisms**

LC50, Eisenia fetida (earthworms), 28 d, > 1,000 mg/kg

**Persistence and degradability**

**Biodegradability:** Material has inherent, primary biodegradability according to OECD test (s) guidelines (reaches > 20% biodegradation in OECD test(s)). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Not applicable

**Biodegradation:** < 70 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 302B or Equivalent

10-day Window: Not applicable

**Biodegradation:** < 60 %

**Exposure time:** 20 d

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

**Bioaccumulative potential**

**Partition coefficient: n-octanol/water(log Pow):** -2.68 at 20 °C Estimated.

**Mobility in soil**

No relevant data found.

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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 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.

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## 14. TRANSPORT INFORMATION

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### DOT

<b>Proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s.(DODECYL DIPHENYL OXIDE DISULPHONATE)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	DODECYL DIPHENYL OXIDE DISULPHONATE

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

<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(DODECYL DIPHENYL OXIDE DISULPHONATE)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	DODECYL DIPHENYL OXIDE DISULPHONATE
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

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

<b>Proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s.(DODECYL DIPHENYL OXIDE DISULPHONATE)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	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 does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**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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**Product Literature**

Additional information on this and other products may be obtained by visiting our web page. Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

**Hazard Rating System****NFPA**

Health	Flammability	Instability
3	0	0

**Revision**

Identification Number: 39662 / A001 / Issue Date: 04/07/2020 / Version: 15.0

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

**Legend**

Dow IHG	Dow Industrial Hygiene Guideline
STEL	Short term exposure limit
TWA	Time weighted average

**Full text of other abbreviations**

AICS - Australian Inventory of Chemical Substances; 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; 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