



# SAFETY DATA SHEET

DDP SPECIALTY ELECTRONIC MATERIALS US,  
INC.

**Product name:** BIOBAN™ BTCM Antimicrobial

**Issue Date:** 02/12/2020

**Print Date:** 05/29/2020

DDP SPECIALTY ELECTRONIC MATERIALS US, INC. 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:** BIOBAN™ BTCM Antimicrobial

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

**Identified uses:** Biocidal product

### COMPANY IDENTIFICATION

DDP SPECIALTY ELECTRONIC MATERIALS US,  
INC.  
400 ARCOLA ROAD  
COLLEGEVILLE PA 19426-2914  
UNITED STATES

**Customer Information Number:**

833-338-7668

SDSQuestion-NA@dupont.com

### EMERGENCY TELEPHONE NUMBER

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

**Local Emergency Contact:** 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

Skin irritation - Category 2

Serious eye damage - Category 1

Skin sensitisation - Category 1

### Label elements

#### Hazard pictograms



Signal word: **DANGER!**

**Hazards**

Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye damage.

**Precautionary statements****Prevention**

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Contaminated work clothing must not be allowed out of the workplace.  
Wear protective gloves/ eye protection/ face protection.

**Response**

IF ON SKIN: Wash with plenty of soap and water.  
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.  
If skin irritation or rash occurs: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.

**Disposal**

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

**Other hazards**

No data available

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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>
1,2-Benzisothiazolin-3-one	2634-33-5	>= 5.0 - < 10.0 %
5-Chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	>= 0.1 - < 0.6 %
2-Methyl-4-isothiazolin-3-one	2682-20-4	>= 0.1 - < 1.0 %

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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:** No emergency medical treatment necessary.

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

**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:** 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:** 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:** Use extinguishing media appropriate for surrounding fire..

**Unsuitable extinguishing media:** No data available

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

**Hazardous combustion products:** No data available

**Unusual Fire and Explosion Hazards:** Combustion generates toxic fumes of the following: hydrogen chloride. Nitrogen oxides (NOx). sulfur oxides.

**Advice for firefighters**

**Fire Fighting Procedures:** Cool containers/tanks with water spray.. Minimize exposure.. Do not breathe fumes.. Contain run-off..

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus and protective suit..

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## **6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures:** Wear a NIOSH approved (or equivalent) respirator (with organic vapor/acid gas cartridge and a dust/mist filter) during spill clean-ups and deactivation of this material. MATERIAL IS CORROSIVE. Protective clothing, including chemical splash goggles, nitrile or butyl rubber full length gloves, rubber apron, or clothing

made of nitrile or butyl rubber, and rubber overshoes must be worn during spill clean-ups and deactivation of this material. If material comes in contact with the skin during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. See SECTION 4, First Aid Measures, for further information.

**Environmental precautions:** Do not allow material to contaminate ground water system. Prevent product from entering drains.

**Methods and materials for containment and cleaning up:** WARNING: KEEP SPILLS AND CLEAN-UP RESIDUALS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER. Adsorb the spill with spill pillows or inert solids such as clay or vermiculite, and transfer contaminated materials to suitable containers for recovery or disposal. Wipe contaminated area with TEXANOL® (2,2,4-trimethyl-1,3-pentanediol monoisobutyrate) or butyl CARBITOL® (diethylene glycol monobutyl ether) using a clean rag(s) or disposable pad(s) or mop(s). Isopropanol can also be used, but special care should be taken due to the flammability of this solvent. Discard contaminated wiping materials into suitable containers for recovery or disposal. Decontaminate spill area with a freshly prepared aqueous solution of 10% sodium thiosulfate. Let stand for 30 minutes. Rinse decontamination solution to chemical sewer (if in accordance with local procedures, permits and regulations). DO NOT add decontamination solution to the waste pail to deactivate the adsorbed product. See SECTION 13, Disposal Considerations, for information regarding the disposal of contained spills. TEXANOL® is a trademark of Eastman Chemical Co. CARBITOL® is a trademark of Union Carbide Co.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** This material is corrosive. For personal protection see section 8. Do not handle material near food, feed or drinking water.

**Conditions for safe storage:** Keep in a well-ventilated place. The product as supplied may evolve gas (largely carbon dioxide) slowly. To prevent the buildup of pressure the product is packaged in specially vented containers, where necessary. Keep this product in the original container when not in use. Container must be stored and transported in an upright position to prevent spilling the contents through the vent, where fitted. Do not store this material in containers made of the following: steel Do not store this material near food, feed or drinking water.

CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied. Expiration date based only on retention of >95% actives during storage at 20°C-25°C (68°F-77°F).

### Storage stability

**Storage temperature:** 1 - 55 °C (34 - 131 °F)

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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
1,2-Benzisothiazolin-3-one	Dow IHG	TWA	0.06 mg/m <sup>3</sup>
	Dow IHG	STEL	0.1 mg/m <sup>3</sup>
5-Chloro-2-methyl-4-isothiazolin-3-one	Dow IHG	TWA	0.075 mg/m <sup>3</sup>
	Dow IHG	STEL	0.23 mg/m <sup>3</sup>

2-Methyl-4-isothiazolin-3-one	Dow IHG	TWA	1.5 mg/m3
	Dow IHG	STEL	4.5 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.

**Individual protection measures**

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

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material.

**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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance**

<b>Physical state</b>	flowable dispersion
<b>Color</b>	Off-white
<b>Odor</b>	Faint
<b>Odor Threshold</b>	No data available
<b>pH</b>	4.3
<b>Melting point/range</b>	No data available
<b>Freezing point</b>	No data available
<b>Boiling point (760 mmHg)</b>	100 °C ( 212 °F) <i>estimated</i>
<b>Flash point</b>	> 100 °C (> 212 °F)
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No data available
<b>Flammability (solid, gas)</b>	No
<b>Lower explosion limit</b>	Not applicable
<b>Upper explosion limit</b>	Not applicable
<b>Vapor Pressure</b>	No data available
<b>Relative Vapor Density (air = 1)</b>	No data available
<b>Relative Density (water = 1)</b>	1.08
<b>Water solubility</b>	Insoluble in water
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Auto-ignition temperature</b>	No data available

<b>Decomposition temperature</b>	No data available
<b>Dynamic Viscosity</b>	64.75 mPa.s
<b>Kinematic Viscosity</b>	No data available
<b>Explosive properties</b>	No data available
<b>Oxidizing properties</b>	No data available
<b>Liquid Density</b>	1.018 g/cm <sup>3</sup>
<b>Molecular weight</b>	No data available
<b>Percent volatility</b>	Not applicable

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:** No data available

**Possibility of hazardous reactions:** Stable under recommended storage conditions.  
Product will not undergo polymerization.

**Conditions to avoid:** No data available

**Incompatible materials:** Avoid contact with the following: Oxidizing agents Amines Reducing agents Mercaptans.

**Hazardous decomposition products:** Nitrogen oxides (NO<sub>x</sub>). Sulphur oxides. hydrogen chloride.

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## 11. TOXICOLOGICAL INFORMATION

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

### Acute toxicity

#### Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.  
As product: Single dose oral LD<sub>50</sub> has not been determined.

#### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.  
As product: The dermal LD<sub>50</sub> has not been determined.

#### Acute inhalation toxicity

Vapors are primarily water; single exposure is not likely to be hazardous.  
As product: The LC<sub>50</sub> has not been determined.

### Skin corrosion/irritation

Brief contact may cause severe skin irritation with pain and local redness.

**Serious eye damage/eye irritation**

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

**Sensitization**

Based on information for component(s):  
Skin contact may cause an allergic skin reaction.

For respiratory sensitization:  
No relevant data found.

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

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

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

No relevant data found.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

Based on information for component(s): Did not cause birth defects in laboratory animals.

**Reproductive toxicity**

Based on information for component(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Mutagenicity**

Based on information for component(s): Not mutagenic when tested in bacterial or mammalian systems.

**Aspiration Hazard**

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

**COMPONENTS INFLUENCING TOXICOLOGY:**

**1,2-Benzisothiazolin-3-one**

**Acute oral toxicity**  
LD50, Rat, 675.3 mg/kg

**Acute dermal toxicity**  
LD50, Rabbit, > 5,000 mg/kg

**Acute inhalation toxicity**  
The LC50 has not been determined.

**5-Chloro-2-methyl-4-isothiazolin-3-one**

**Acute oral toxicity**  
LD50, Rat, 64 mg/kg

**Acute dermal toxicity**  
LD50, Rabbit, 87.12 mg/kg

**Acute inhalation toxicity**

Prolonged excessive exposure may cause serious adverse effects, even death. Dust may cause severe irritation of the upper respiratory tract (nose and throat) and lungs.

LC50, Rat, 4 Hour, dust/mist, 0.33 mg/l

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

**Acute oral toxicity**

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

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

**Acute dermal toxicity**

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

**Acute inhalation toxicity**

The LC50 has not been determined.,

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**12. ECOLOGICAL INFORMATION**

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

**Toxicity**

**1,2-Benzisothiazolin-3-one**

**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).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 1.9 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), flow-through test, 48 Hour, 3.7 mg/l, OECD Test Guideline 202 or Equivalent

LC50, Mysid shrimp (Mysidopsis bahia), 96 Hour, 1.9 mg/l

**Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate, 0.8 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate, 0.21 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, diatom Skeletonema costatum, static test, 72 Hour, Growth rate, 0.36 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, diatom Skeletonema costatum, static test, 72 Hour, Growth rate, 0.15 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**

EC50, Bacteria (active sludge), Respiration inhibition of activated sludge, 3 Hour, 28.52 mg/l

**5-Chloro-2-methyl-4-isothiazolin-3-one**

**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).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.19 mg/l, OECD Test Guideline 203 or Equivalent  
LC50, Bluegill sunfish (Lepomis macrochirus), 96 Hour, 0.28 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 0.16 mg/l

**Acute toxicity to algae/aquatic plants**

NOEC, Selenastrum capricornutum (green algae), Growth rate, 0.0099 mg/l  
EC50, Algae (Selenastrum capricornutum), 72 Hour, Growth rate, 0.018 mg/l

**Toxicity to bacteria**

EC50, Bacteria, 16 Hour, 5.7 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 0.172000 mg/l  
LOEC, Daphnia magna (Water flea), 21 d, number of offspring, 0.572000 mg/l

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

**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).  
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 4.77 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 48 Hour, 0.93 - 1.9 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Algae (Selenastrum capricornutum), 72 Hour, Growth rate, 0.158 mg/l, OECD Test Guideline 201

**Chronic toxicity to fish**

NOEC, Pimephales promelas (fathead minnow), 33 d, 2.1 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna, 21 d, 0.04 mg/l

**Persistence and degradability**

**1,2-Benzisothiazolin-3-one**

**Biodegradability:** Abiotic degradation: The material is rapidly degradable by abiotic means.

10-day Window: Fail

**Biodegradation:** 24 %

**Exposure time:** 28 d

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

**Theoretical Oxygen Demand:** 2.22 mg/mg

**Photodegradation**

**Sensitization:** OH radicals

**Atmospheric half-life:** 7.6 hrs

**Method:** Estimated.

**5-Chloro-2-methyl-4-isothiazolin-3-one**

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

10-day Window: Not applicable

**Biodegradation:** 98 %

**Exposure time:** 2 d

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

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

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

**Biodegradation:** 98 %

**Exposure time:** 48 d

**Method:** Simulation study

**Bioaccumulative potential****1,2-Benzisothiazolin-3-one**

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

**Partition coefficient: n-octanol/water(log Pow):** 1.19 OECD Test Guideline 117 or Equivalent

**Bioconcentration factor (BCF):** 3.2 Fish Calculated.

**5-Chloro-2-methyl-4-isothiazolin-3-one**

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

**Partition coefficient: n-octanol/water(log Pow):** -0.71 - 0.75 Measured

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

**Bioaccumulation:** Does not bioaccumulate. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** -0.75 Measured

**Mobility in soil****1,2-Benzisothiazolin-3-one**

Potential for mobility in soil is high (Koc between 50 and 150).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

**Partition coefficient (Koc):** 104 Estimated.

**5-Chloro-2-methyl-4-isothiazolin-3-one**

No relevant data found.

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

No relevant data found.

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**13. DISPOSAL CONSIDERATIONS**

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**Disposal methods:**

**Contaminated packaging:** Empty containers retain product residues. Follow label warnings even after container is emptied. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable federal, state 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):**

<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Not regulated for transport Consult IMO regulations before transporting ocean bulk
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**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**

Skin corrosion or irritation  
Serious eye damage or eye irritation  
Respiratory or skin sensitisation

**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.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103**

This material does not contain any components with a CERCLA RQ.

**California Prop. 65**

WARNING: This product can expose you to chemicals including Propylene oxide, Benzene, Ethylene Oxide, 1,4-Dioxane, Formaldehyde, Acetaldehyde, which is/are known to the State of California to cause cancer, and Benzene, Ethylene Oxide, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**United States TSCA Inventory (TSCA)**

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

**Federal Insecticide, Fungicide and Rodenticide Act**

EPA Registration Number: 464-8148

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

Causes irreversible eye damage and skin burns

Harmful if swallowed

May be fatal if inhaled

This chemical is toxic to aquatic plants, fish and aquatic invertebrates.

**16. OTHER INFORMATION****Hazard Rating System****HMIS**

Health	Flammability	Physical Hazard
3	1	1

**Revision**

Identification Number: 12023489 / A749 / Issue Date: 02/12/2020 / Version: 1.1

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.

DDP SPECIALTY ELECTRONIC MATERIALS US, INC. 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