



## SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

**Product name:** BIOBAN\* CS-1246 Antimicrobial

**Issue Date:** 04/27/2015

**Print Date:** 05/14/2015

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:** BIOBAN\* CS-1246 Antimicrobial

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

**Identified uses:** For biocidal applications. For industrial use.

**COMPANY IDENTIFICATION**

THE DOW CHEMICAL COMPANY  
2030 WILLARD H DOW CENTER  
MIDLAND MI 48674-0000  
UNITED STATES

**Customer Information Number:**

800-258-2436

[SDSQuestion@dow.com](mailto:SDSQuestion@dow.com)

**EMERGENCY TELEPHONE NUMBER**

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

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

---

### 2. HAZARDS IDENTIFICATION

---

**Hazard classification**

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Flammable liquids - Category 4

Acute toxicity - Category 4 - Inhalation

Skin irritation - Category 2

Serious eye damage - Category 1

Skin sensitisation - Category 1

**Label elements**

**Hazard pictograms**



Signal word: **DANGER!**

#### Hazards

Combustible liquid.  
Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye damage.  
Harmful if inhaled.

#### Precautionary statements

##### Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Contaminated work clothing should 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 INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
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 or doctor/ physician.  
If skin irritation or rash occurs: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

##### Storage

Store in a well-ventilated place. Keep cool.

##### Disposal

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

#### Other hazards

no data available

---

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

---

**Synonyms:** 7a-ethylidihydro-1H,3H,5H-oxazolo[3,4-c]oxazole

This product is a substance.

Component	CASRN	Concentration
-----------	-------	---------------

7a-Ethylidihydro-1H,3H,5H-oxazolo{3,4-c}oxazole

7747-35-5

>= 95.0 - <= 99.0 %

---

## 4. FIRST AID MEASURES

---

### Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

**Skin contact:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

**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:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

**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. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

---

## 5. FIREFIGHTING MEASURES

---

**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** no data available

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

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

**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). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

---

## **6. ACCIDENTAL RELEASE MEASURES**

---

**Personal precautions, protective equipment and emergency procedures:** Evacuate area. Keep upwind of spill. Refer to section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Ventilate area of leak or spill. No smoking in area. 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. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

---

## **7. HANDLING AND STORAGE**

---

**Precautions for safe handling:** Keep away from heat, sparks and flame. Do not get in eyes. Avoid breathing vapor or mist. Avoid contact with skin and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Recommend storage in a cool, dry place away from high temperatures, hot pipes and direct sunlight. Do not store in: Aluminum. Aluminum alloys. Copper. Copper alloys.

**Storage stability**

Shelf life: Use within 24 Month

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

---

**Control parameters**

Exposure limits are listed below, if they exist.

None established

**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: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Butyl rubber. Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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.

---

**9. PHYSICAL AND CHEMICAL PROPERTIES**

---

**Appearance**

Physical state	Liquid.
Color	Colorless to yellow
Odor	Very slight Amine.
Odor Threshold	No test data available
pH	10.0 1% Literature

<b>Melting point/range</b>	Not applicable
<b>Freezing point</b>	1 °C ( 34 °F) <i>EC Method A1</i>
<b>Boiling point (760 mmHg)</b>	187.0 °C ( 368.6 °F) <i>EC Method A2</i>
<b>Flash point</b>	<b>closed cup</b> 79 °C ( 174 °F) <i>Tag Closed Cup ASTM D56</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammability (solid, gas)</b>	Not applicable to liquids
<b>Lower explosion limit</b>	No test data available
<b>Upper explosion limit</b>	No test data available
<b>Vapor Pressure</b>	0.45 mmHg at 25 °C (77 °F) <i>Literature</i>
<b>Relative Vapor Density (air = 1)</b>	No test data available
<b>Relative Density (water = 1)</b>	1.08 at 20 °C (68 °F) <i>EC Method A3</i>
<b>Water solubility</b>	100 % <i>Visual</i> Miscible with water
<b>Partition coefficient: n-octanol/water</b>	log Pow: -0.32 <i>EC Method A6</i>
<b>Auto-ignition temperature</b>	230 °C (446 °F) <i>EC Method A13</i>
<b>Decomposition temperature</b>	No test data available
<b>Dynamic Viscosity</b>	5.2 cP at 20 °C (68 °F) <i>OECD 114</i>
<b>Kinematic Viscosity</b>	No test data available
<b>Explosive properties</b>	no data available
<b>Oxidizing properties</b>	no data available
<b>Molecular weight</b>	143.19 g/mol <i>Literature</i>
<b>Percent volatility</b>	<= 100 % <i>Literature</i>

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

---

## 10. STABILITY AND REACTIVITY

---

**Reactivity:** no data available

**Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

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

**Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible materials:** Avoid contact with oxidizing materials. Avoid contact with: Halogenated hydrocarbons. Strong acids. Avoid unintended contact with: Acidic pH. Reaction with acid can generate flammable formaldehyde gas.

**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: Formaldehyde. Toxic flammable gases can be released during decomposition.

---

## 11. TOXICOLOGICAL INFORMATION

---

*Toxicological information on this product or its components appear in this section when such data is available.*

### **Acute toxicity**

#### **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.

LD50, Rat, male, > 3,674 mg/kg

Other, Rat, female, 5,249 mg/kg

#### **Acute dermal toxicity**

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

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

#### **Acute inhalation toxicity**

At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material or mist may cause respiratory irritation. Based on the available data, narcotic effects were not observed.

LC50, Rat, 4 Hour, dust/mist, 3.1 mg/l

### **Skin corrosion/irritation**

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause severe skin irritation with local redness and discomfort.

Repeated contact may cause severe skin irritation with local redness and discomfort.

Not classified as corrosive to the skin according to DOT guidelines.

### **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.

Mist may cause eye irritation.

### **Sensitization**

Has caused allergic skin reactions when tested in guinea pigs.

Results from human studies indicate that this material has the potential to cause an allergic skin reaction at high concentrations.

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)**

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

Stomach.

**Carcinogenicity**

No relevant data found.

**Teratogenicity**

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**Reproductive toxicity**

In animal studies, did not interfere with reproduction.

**Mutagenicity**

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

**Aspiration Hazard**

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

---

## 12. ECOLOGICAL INFORMATION

---

*Ecotoxicological information on this product or its components appear in this section when such data is available.*

**Toxicity**

**Acute toxicity to fish**

Material is moderately toxic to fish on an acute basis (LC50 between 1 and 10 mg/L).

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 244 mg/l, OECD Test Guideline 203 or Equivalent

LC50, *Lepomis macrochirus* (Bluegill sunfish), static test, 96 Hour, 130 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), flow-through test, 48 Hour, 16.9 mg/l, OECD Test Guideline 202 or Equivalent

EC50, eastern oyster (*Crassostrea virginica*), flow-through test, 96 Hour, 35 mg/l

LC50, pink shrimp (*Penaeus duorarum*), static test, 96 Hour, 138 mg/l

**Acute toxicity to algae/aquatic plants**

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, Growth rate inhibition, 1.08 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, *Skeletonema costatum*, static test, 96 Hour, Growth rate inhibition, 2.09 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, *Scenedesmus capricornutum* (fresh water algae), semi-static test, 3 d, 0.513 mg/l

**Toxicity to bacteria**

EC50, activated sludge, 3 Hour, Respiration rates., 166 mg/l, OECD 209 Test



**Toxicity to Above Ground Organisms**

dietary LC50, *Colinus virginianus* (Bobwhite quail), 8 d, > 5,000 ppm

dietary LC50, *Anas platyrhynchos* (Mallard duck), 8 d, > 5,000 ppm

oral LD50, *Colinus virginianus* (Bobwhite quail), 1 d, 1,100 mg/kg

**Persistence and degradability**

**Biodegradability:** Abiotic degradation: The material is rapidly degradable by abiotic means.  
This material rapidly hydrolyzes to products that are either readily or ultimately biodegradable.

10-day Window: Not applicable

**Biodegradation:** 14 %

**Exposure time:** 28 d

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

10-day Window: Fail

**Biodegradation:** 19.1 %

**Exposure time:** 28 d

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

**Theoretical Oxygen Demand:** 2.35 mg/mg

**Stability in Water (1/2-life)**

Hydrolyses readily., Hydrolysis, DT50, 0.09 - 9.6 Hour, pH 4 - 9, Half-life Temperature 15 °C,  
OECD Test Guideline 111

Hydrolyses readily., Hydrolysis, DT50, 0.1 - 3.8 Hour, pH 4 - 9, Half-life Temperature 25 °C,  
OECD Test Guideline 111

**Photodegradation**

**Atmospheric half-life:** 1.5 Hour

**Method:** Estimated.

**Bioaccumulative potential**

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

**Partition coefficient: n-octanol/water(log Pow):** -0.32 at 25 °C EC Method A6

**Bioconcentration factor (BCF):** 2 - 3 Fish. Measured

**Mobility in soil**

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

**Partition coefficient(Koc):** 10 Estimated.

---

**13. DISPOSAL CONSIDERATIONS**

---

**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: Landfill. Incinerator or other thermal destruction device.

---

## 14. TRANSPORT INFORMATION

---

### DOT

<b>Proper shipping name</b>	Combustible liquid, n.o.s. (7a-Ethylidihydro-1H,3H,5H-oxazolo{3,4-c}oxazole)
<b>UN number</b>	NA 1993
<b>Class</b>	CBL
<b>Packing group</b>	III

### 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
---	---

### 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.

---

## 15. REGULATORY INFORMATION

---

### OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

Fire Hazard  
Acute Health Hazard

### 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**

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

**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 Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

This product (when prepared in aqueous formulations) contains a chemical known to the State of California to cause cancer.

**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: 464-667

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**

Causes eye damage and skin irritation

Harmful if inhaled or swallowed

May be fatal if absorbed through skin

---

## **16. OTHER INFORMATION**

---

**Revision**

Identification Number: 101189264 / A001 / Issue Date: 04/27/2015 / Version: 4.0

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

**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.