



# Material Safety Data Sheet

The Dow Chemical Company

**Product Name:** AQUICAR™ DB 20 Water Treatment Microbiocide

**Issue Date:** 07/25/2012

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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. Product and Company Identification

### Product Name

AQUICAR™ DB 20 Water Treatment Microbiocide

### COMPANY IDENTIFICATION

The Dow Chemical Company  
2030 Willard H. Dow Center  
Midland, MI 48674  
United States

Customer Information Number:

800-258-2436

SDSQuestion@dow.com

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:**

989-636-4400

**Local Emergency Contact:**

989-636-4400

## 2. Hazards Identification

### Emergency Overview

**Color:** Colorless to brown

**Physical State:** Liquid.

**Odor:** Odorless to mild

**Hazards of product:**

**DANGER!** Keep out of reach of children. Causes severe eye burns. Causes skin burns. May cause allergic skin reaction. May be harmful if swallowed. Evacuate area. Keep upwind of spill. Toxic fumes may be released in fire situations. Avoid temperatures above 70°C (158°F)

### OSHA Hazard Communication Standard

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

**Potential Health Effects**

**Eye Contact:** May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

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

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Skin Sensitization:** For similar material(s): Has caused allergic skin reactions when tested in guinea pigs.

**Inhalation:** Mist may cause irritation of upper respiratory tract (nose and throat).

**Ingestion:** 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.

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

**Effects of Repeated Exposure:** Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses.

**Birth Defects/Developmental Effects:** For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**3. Composition Information**

Component	CAS #	Amount
Polyethylene glycol	25322-68-3	>= 46.5 - <= 54.5 %
2,2-Dibromo-3-nitropropionamide	10222-01-2	20.0 %
Dibromoacetonitrile	3252-43-5	<= 3.0 %
Sodium bromide	7647-15-6	<= 4.0 %

**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 immediately available.

**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), no additional symptoms and effects are anticipated.

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

Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. 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. Fire Fighting Measures****Suitable extinguishing media**

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

**Extinguishing Media to Avoid:** Do not use direct water stream. May spread fire.

**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: Nitrogen oxides. Hydrogen bromide. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** This material will not burn until the water has evaporated. Residue can burn. 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. If product becomes contaminated with water, monitor product for heat generation and/or decomposition. 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. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**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. 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. Attempt to neutralize by adding materials such as Sodium bisulphite. Sodium metabisulfite. Neutralize with approximately 17.2 grams sodium bisulfite (NaHSO<sub>3</sub>) or 15.7 grams sodium meta

bisulphite (Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub>) for every 100 grams biocidal product. Absorb with materials such as: Dirt. Sand. Vermiculite. Zorb-all®. Hazorb®. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

### Handling

**General Handling:** Keep out of reach of children. Do not get in eyes, on skin, on clothing. Avoid breathing mist. Avoid prolonged or repeated contact with skin. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

Store in original container. Keep container tightly closed. Do not store in: Aluminum. Brass. Copper. Copper alloys. Mild steel. Stainless steel.

**Shelf life: Use within** 12 Months

**Storage temperature:** ≤ 35 °C

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Polyethylene glycol	AIHA WEEL	TWA Particulate.	10 mg/m <sup>3</sup>
2,2-Dibromo-3-nitrilopropionamide	Dow IHG	Ceiling	2 mg/m <sup>3</sup>
Dibromoacetonitrile	Dow IHG	Ceiling	0.1 ppm SKIN
Sodium bromide	Dow IHG	TWA	6 mg/m <sup>3</sup>

A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

### Personal Protection

**Eye/Face Protection:** Use chemical goggles.

**Skin 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.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**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. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

### Engineering Controls

**Ventilation:** 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.

## 9. Physical and Chemical Properties

### Appearance

Physical State	Liquid.
Color	Colorless to brown
Odor	Odorless to mild
Odor Threshold	No test data available
pH	1.5 - 5.0 <i>Literature</i>
Melting Point	Not applicable
Freezing Point	< -50 °C (< -58 °F) <i>Literature</i>
Boiling Point (760 mmHg)	> 70 °C (> 158 °F) <i>Literature</i> decomposition.
Flash Point - Closed Cup	<i>Literature</i> none to 100°C (212 °F)
Flash Point - Open Cup	>= 182 °C (>= 360 °F) <i>Cleveland Open Cup</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
Vapor Pressure	18.9 mmHg @ 25 °C <i>Estimated.</i>
Vapor Density (air = 1)	No test data available
Specific Gravity (H <sub>2</sub> O = 1)	1.20 - 1.30 <i>Literature</i>
Solubility in water (by weight)	7.5 % @ 20 °C <i>Literature</i>
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	20 cps @ 25 °C (Brookfield Viscosity - @ 100 rpm, #0 spindle)
Kinematic Viscosity	16 cSt @ 25 °C <i>Calculated</i>
Explosive properties	no data available
Oxidizing properties	no data available
Molecular Weight	No test data available

## 10. Stability and Reactivity

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical stability

Stable under recommended storage conditions. See Storage, Section 7.

### Possibility of hazardous reactions

Polymerization will not occur.

**Conditions to Avoid:** Avoid temperatures above 70°C (158°F) 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: Oxidizers. Strong bases. Avoid contact with metals such as: Aluminum.

#### **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: Carbon dioxide. Bromine. Cyanogen bromide. Dibromoacetonitrile.

## **11. Toxicological Information**

### **Acute Toxicity**

#### **Ingestion**

LD50, rat 510 mg/kg

#### **Dermal**

LD50, rabbit > 2,000 mg/kg

#### **Inhalation**

LC50, 4 h, Aerosol, rat, female 1.25 mg/l

LC50, 4 h, Aerosol, rat, male 1.40 mg/l

#### **Eye damage/eye irritation**

May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

#### **Skin corrosion/irritation**

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

#### **Sensitization**

##### **Skin**

For similar material(s): Has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.

##### **Respiratory**

No relevant information found.

#### **Repeated Dose Toxicity**

Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses.

#### **Chronic Toxicity and Carcinogenicity**

Active ingredient did not cause cancer in laboratory animals.

#### **Developmental Toxicity**

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the active ingredient(s): Did not cause birth defects in laboratory animals.

#### **Reproductive Toxicity**

No relevant data found.

#### **Genetic Toxicology**

For the active ingredient(s): In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

## 12. Ecological Information

### Toxicity

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).

#### Fish Acute & Prolonged Toxicity

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 h: 3.6 mg/l

#### Aquatic Invertebrate Acute Toxicity

EC50, *Daphnia magna* (Water flea), static test, 48 h, immobilization: 2.5 mg/l

#### Aquatic Plant Toxicity

ErC50, *Pseudokirchneriella subcapitata* (green algae), Growth rate inhibition, 72 h: 1.5 mg/l

### Persistence and Degradability

#### Data for Component: Polyethylene glycol

|| Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

##### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
85 %	28 d	OECD 301F Test	pass

|| Theoretical Oxygen Demand: 1.67 mg/mg

#### Data for Component: 2,2-Dibromo-3-nitrilopropionamide

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

##### Stability in Water (1/2-life):

|| 65 h; 25 °C; pH 7

##### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
35 - 78 %	28 d	OECD 301B Test	fail
83.3 %	28 d	OECD 303A Test	Not applicable
17 - 22 %	28 d	OECD 306 Test	Not applicable

##### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.00E-12 cm <sup>3</sup> /s	5.3 d	Estimated.

|| Chemical Oxygen Demand: 0.26 mg/mg

|| Theoretical Oxygen Demand: 0.59 mg/mg

#### Data for Component: Sodium bromide

|| Biodegradation is not applicable.

### Bioaccumulative potential

#### Data for Component: Polyethylene glycol

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

#### Data for Component: 2,2-Dibromo-3-nitrilopropionamide

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

|| **Partition coefficient, n-octanol/water (log Pow):** 0.79 Measured

|| **Bioconcentration Factor (BCF):** 13; Fish; Measured

#### Data for Component: Sodium bromide

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

|| **Bioconcentration Factor (BCF):** < 40; Fish; Measured

### Mobility in soil

#### Data for Component: Polyethylene glycol

|| **Mobility in soil:** No data available.

**Data for Component: 2,2-Dibromo-3-nitrilopropionamide****Mobility in soil:** Potential for mobility in soil is very high (Koc between 0 and 50).**Partition coefficient, soil organic carbon/water (Koc):** 15 Estimated.**Henry's Law Constant (H):** 4.67E-10 atm\*m3/mole; 25 °C Estimated.**Data for Component: Sodium bromide****Mobility in soil:** No relevant data found.

## 13. Disposal Considerations

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.

## 14. Transport Information

**DOT Non-Bulk****Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.**Technical Name:** 2,2-DIBROMO-3-NITRILOPROPIONAMIDE**Hazard Class:** 8 **ID Number:** UN3265 **Packing Group:** PG III**DOT Bulk****Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.**Technical Name:** 2,2-DIBROMO-3-NITRILOPROPIONAMIDE**Hazard Class:** 8 **ID Number:** UN3265 **Packing Group:** PG III**IMDG****Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.**Technical Name:** 2,2-DIBROMO-3-NITRILOPROPIONAMIDE**Hazard Class:** 8 **ID Number:** UN3265 **Packing Group:** PG III**EMS Number:** F-A,S-B**Marine pollutant.:** No**ICAO/IATA****Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.**Technical Name:** 2,2-DIBROMO-3-NITRILOPROPIONAMIDE**Hazard Class:** 8 **ID Number:** UN3265 **Packing Group:** PG III**Cargo Packing Instruction:** 856**Passenger Packing Instruction:** 852

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. 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

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

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): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

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): Pennsylvania Special Hazardous Substances List:

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)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
Dibromoacetonitrile	3252-43-5	<= 3.0 %

### US. Toxic Substances Control Act

This product contains chemical substance(s) exempt from TSCA Inventory requirements. It is sold solely for use as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

## 16. Other Information

### Recommended Uses and Restrictions

#### Identified uses

For biocidal applications. For industrial use. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

#### Revision

Identification Number: 1001399 / 1001 / Issue Date 07/25/2012 / Version: 11.0

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

#### Legend

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N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

*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.*