



AQUCAR™ BP 100 Water Treatment Microbiocide in One-Gallon Dose Jugs

Biocide for the Treatment of Industrial Water Systems

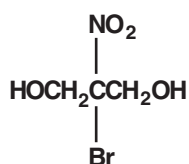
General

AQUCAR™ BP 100 Water Treatment Microbiocide in One-Gallon Dose Jugs is an EPA-registered broad-spectrum bactericide used to control microbial growth and related problems in industrial process systems such as oil and natural gas waters, cooling water, pulp and paper production, and other water-containing systems.

When AQUCAR BP 100 Water Treatment Microbiocide is used in industrial process or as a preservative in water-containing systems, it provides the following benefits:

- Quick kill of aerobic and anaerobic bacteria
- Long-term control of aerobic and anaerobic bacteria
- Low-dusting solid for dose treatments – eliminates splashing from liquids
- Convenient packaging for easy transport and dosing
- Application approvals in numerous international markets

Structure



Physical Properties

The following are typical properties of AQUCAR BP 100 Water Treatment Microbiocide; **they are not to be considered product specifications.**

Appearance	Free Flowing Powder
Purity, % by wt. (min.).....	99
Water content, % by wt. (max.)	0.5
Melting point	~130°C/266°F
Bulk density, g/cm ³	1.2
pH of 1% solution @ 20°C	5-7
Vapor pressure	nil
Flash point.....	does not have a flash point as measured by SETAFASH Closed Cup
Solubility	highly soluble in water and lower alcohols. Generally soluble in glycols and other polyols. Insoluble in aliphatic hydrocarbons.

Antibacterial Activity

AQUCAR BP 100 Water Treatment Microbiocide is effective against a broad array of organisms as determined by agar dilution. The minimum inhibitory concentrations (MIC) listed below illustrate its effectiveness. These data are intended only as an indication of the broad spectrum of activity of AQUCAR BP 100 Water Treatment Microbiocide and should not be interpreted as having relevance to the effectiveness or dosage against specific microorganisms in formulated products.

AQUCAR™ BP 100 Water Treatment Microbiocide has been tested for efficacy against a variety of bacteria and fungi organisms. Please note that approval of this product by United States Environmental Protection Agency limits efficacy claims made for AQUCAR BP 100 Water Treatment Microbiocide to non-pathogenic organisms.

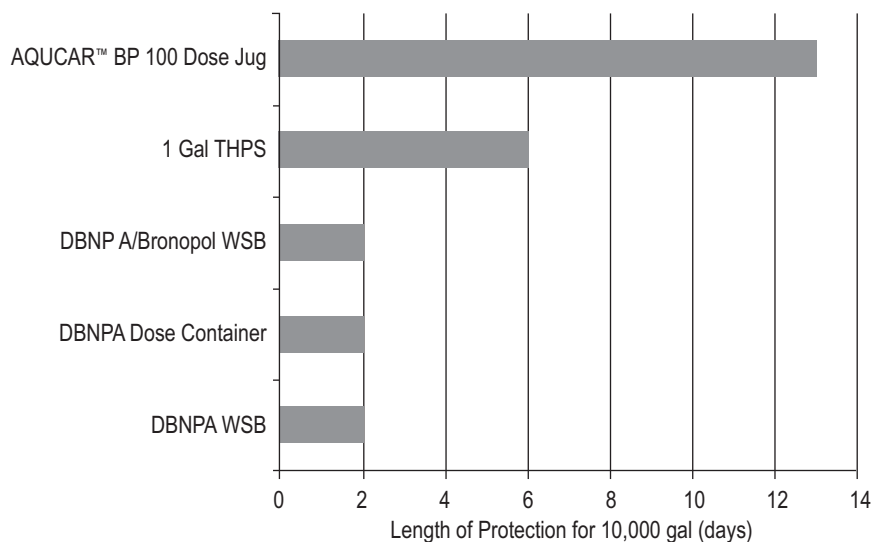
Organism	MIC (ppm)
<i>Escherichia coli</i>	12.5-50
<i>Pseudomonas aeruginosa</i>	12.5-50
<i>Pseudomonas putida</i>	25
<i>Pseudomonas cepacia</i>	25
<i>Pseudomonas stutzeri</i>	25
<i>Pseudomonas fluorescens</i>	25
<i>Klebsiella pneumoniae</i>	25
<i>Enterobacter aerogenes</i>	25
<i>Staphylococcus aureus</i>	12.5-30
<i>Staphylococcus epidermidis</i>	50
<i>Legionella pneumophila serotype</i>	25-50

AQUCAR BP 100 Water Treatment Microbiocide, in contrast to the majority of other antibacterial agents, is markedly inhibitory to *Pseudomonas aeruginosa*. AQUCAR BP 100 Water Treatment Microbiocide acts quickly to kill bacterial contamination in water systems.

Length of Bacterial Control

A longer-lasting biocide means more flexibility for many types of operations. When AQUCAR BP 100 Water Treatment Microbiocide is used, frac tanks are protected even if there are operational delays. Produced water systems remain protected longer without additional doses.

The chart below shows the length of protection offered by popular top-side biocide dosing systems. The testing was performed with reinoculations at 3, 7, and 14 days to simulate a system with a constant source of contamination, as is common in top-side systems.



Formulating Considerations

The active ingredient in AQUCAR BP 100 Water Treatment Microbiocide, bronopol, is compatible with a range of materials used in water treatment, pulp and paper and other process applications. The materials include compounds such as scale inhibitors, function reducing polymers, pitch stabilizers, sizing agents, retention aids, flocculants and other biocides. However, strong reducing agents such as bisulfite (>50 ppm), oxidizing agents

such as free residual chlorine (>5 ppm) and secondary amines should be avoided. It is also recommended that AQUICAR™ BP 100 Water Treatment Microbiocide not be subjected to temperatures greater than 40°C/104°F in order to avoid its decomposition. For formulations that will be repeatedly exposed to microbial challenges during storage and use (user opening and closing product container) the optimum pH range of use is below 8; however, products that are greater than pH 8 can still be preserved with AQUICAR BP 100 Water Treatment Microbiocide. Testing should be performed to confirm that AQUICAR BP 100 Water Treatment Microbiocide meets the preservation requirements outlined for the product.

Applications	Purpose	Suggested Concentrations of AQUICAR™ BP 100 Water Treatment Microbiocide Preservative	How to Apply
Oil and Gas Fluids	To control aerobic and anaerobic bacteria in oil and gas-related production.	25-200 ppm of AQUICAR BP 100 in oil flooding/injection water, enhanced oil recovery fluids, produced water, drilling fluids, workover fluids and completion fluids, well squeeze and fracturing fluids.	Add at any convenient point, in the process.
Oil and Gas Transportation and Storage	For protection against bacterial growth and microbial-induced corrosion in pipelines and water bottoms in tanks.	25-200 ppm of AQUICAR BP 100 for pipeline maintenance. 50-100 ppm in water bottoms of tanks.	Add directly to the water phase.
Water Treatment	To control slime-forming bacteria in recirculating water cooling towers, evaporative condensers, industrial process water, and air scrubber, air conditioner and humidifier systems.	25-100 ppm AQUICAR BP 100.	Add directly into the sump or basin at any point where there is adequate agitation to ensure dissolution.

Applications/ Directions for Use

AQUICAR BP 100 Water Treatment Microbiocide in One-Gallon Jugs may be used in the following end-use applications.

Gas and Oil Production

AQUICAR BP 100 Water Treatment Microbiocide may be used to control aerobic and anaerobic bacteria, especially sulfate-reducing bacteria, in oil and gas-related production. AQUICAR BP 100 Water Treatment Microbiocide may be dosed at any convenient point in the process. The dose rate for oil flooding/injection waters, enhanced oil recovery fluids, produced water, drilling fluids, fracturing fluids and workover and completion fluids is 50-100 ppm AQUICAR BP 100 Water Treatment Microbiocide. The dose rate of active ingredient for well squeeze fluids and fracturing fluids is 25-200 ppm.

Oil and Gas Transportation and Storage

AQUICAR BP 100 Water Treatment Microbiocide may be used to control aerobic and anaerobic bacteria that contribute to corrosion in pipeline maintenance and water bottoms in oil or transportation tanks. The dose range for water bottom in oil or transportation tanks is 50-100 ppm in the aqueous phase. For pipeline maintenance the dose range is 25-200 ppm.

Additional Applications

EPA registrations are currently pending for the use of AQUICAR BP 100 Water Treatment Microbiocide for bacterial control in industrial raw materials and surfactants, consumer, household and institutional products, water-based agricultural pesticide concentrates, and chemical toilets.

Dose Estimation Tables

Use the dosing tables below to estimate the dosage level for the system to be treated. The charts below are for illustration purposes. Always follow the label instructions for dosing.

	10,000 gallons	15,000 gallons	20,000 gallons	35,000 gallons	50,000 gallons	75,000 gallons
1 Jug	100 ppm	67 ppm	50 ppm			
2 Jugs			100 ppm	57 ppm		
3 Jugs				85 ppm	60 ppm	
4 Jugs					80 ppm	53 ppm

	250 barrels	350 barrels	500 barrels	750 barrels	1000 barrels	1500 barrels
1 Jug	95 ppm	68 ppm				
2 Jugs			95 ppm	63 ppm		
3 Jugs				95 ppm	63 ppm	
4 Jugs					95 ppm	63 ppm

2-bromo-2-nitropropane-1,3-diol, the active ingredient in AQUICAR™ BP 100 Water Treatment Microbiocide preservative has been used safely for many years as a preservative for cosmetics, toiletries and pharmaceuticals.

Toxicity

Please refer to the Safety Data Sheet for this product for toxicity information.

First Aid

If swallowed, drink egg whites, gelatin solution, or if these are not available, drink large quantities of water. Call a physician.

If inhaled, remove person to fresh air.

If on skin: Immediately flush skin with plenty of water for 15 minutes.

If in eyes: Immediately flush eyes with plenty of water for 15 minutes. Call a physician.

Please refer to product Safety Data Sheet (SDS).

NOTE TO PHYSICIAN:

Probable mucosal damage may contraindicate the use of gastric lavage.

Precautionary Labeling

Labels for AQUICAR BP 100 Water Treatment Microbiocide preservative bear these caution statements:

DANGER!

CORROSIVE: MAY CAUSE IRREVERSIBLE EYE DAMAGE. MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION. HARMFUL IF INHALED. PROLONGED OR FREQUENTLY REPEATED SKIN CONTACT MAY CAUSE ALLERGIC REACTIONS IN SOME INDIVIDUALS.

Please refer to the SDS for this product for additional precautionary information and required personal protective equipment.

Storage, Handling and Disposal

At normal use rates AQUICAR BP 100 Water Treatment Microbiocide is compatible with a wide range of metals. However, the solid or its concentrated solutions can be corrosive to

some metals if left in contact for prolonged periods. Care must be taken, therefore, to wipe up and/or wash down all spills where these may lead to prolonged contact with metals.

Store the product in its original container, tightly closed in a safe place away from foodstuffs. Wash out the empty container thoroughly and dispose of safely.

Minor spillages may be flushed away with plenty of water. Major spillages must be treated with a suitable absorbent carrier which may then be swept up and contained for disposal in accordance with local requirements. AQUICAR™ BP 100 Water Treatment Microbiocide is classified as a Class 4.1 hazardous material in the U.S. Department of Transportation regulations and in the international regulations for air and open transport.

Shipping and Packaging

The bill of lading description used by Dow is:

2-BROMO-2-NITROPROPANE-1,3-DIOL,4.1,UN3241,III. DISINFECTANT NOI, OTHER THAN MEDICINAL OR TOILET PREPARATIONS. NMFC ITEM 57100 SUB 3 CLASS 60. TRADE NAME = AQUICAR BP 100 Water Treatment Microbiocide

Shipping Containers	Net Wt.
4 x 1 Gallon/box	34.4 lbs./box
Palletized	36 boxes/pallet

Product Stewardship

Dow Microbial Control encourages its customers to review their applications of Dow Microbial Control products from the standpoint of human health and environmental quality. To help ensure that Dow Microbial Control products are not used in ways for which they are not intended or tested, Dow Microbial Control personnel are willing to assist customers in dealing with ecological and product safety considerations. Contact your representative if you need any assistance or information. When considering the use of any Dow product in a particular application, review the latest Safety Data Sheet and country-specific product label to ensure the intended use is within the scope of approved uses and can be accomplished safely. Before handling any of the products mentioned in the text, obtain available product safety information and take necessary steps to ensure safety of use.

For further information visit our website:
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¹except Indonesia and Vietnam

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