



BIOBAN™ DB 20 Antimicrobial

Fast, economical antimicrobial performance in a broad array of applications

General

BIOBAN™ DB 20 Antimicrobial is an effective, fast-acting, non-oxidizing, formaldehyde-free biocide compatible with many applications.

- Private area and public health area disinfectants: (PT 02)
- Food processing containers/surfaces: (PT 04)
- Sugar beet/cane extraction: (PT 04)
- Paper additives (e.g.: fillers and pigments): (PT 06)
- Aqueous coating slurries: (PT 06)
- Paper/cardboard adhesive: (PT 06)
- Inks and printing processing aids: (PT 06)
- Textile and waiving additives: (PT 06)
- Functional fluids and cutting oil emulsions: (PT 13)
- Lubes and hydraulic fluids: (PT 13)

Special Features and Benefits

- Effective broad spectrum antimicrobial
- No odor
- Does not cause foaming
- Effective at alkaline pH
- Limited tolerance by microbes
- Use as a 'knockdown' biocide treatment
- Primary reduction of bioburden
- Enhances efficacy of commonly-used preservatives
- Extremely fast antimicrobial action

Physical Properties

The following are typical properties of BIOBAN™ DB 20 Antimicrobial; **they are not to be considered product specifications.**

Actives: 2,2-dibromo-3-nitropropionamide (DBNPA) 20% solution
 Appearance: Colorless to brown
 Density: 1.28g/mL
 Viscosity (25°C/77°F): 20 cps (Brookfield Viscosity) @ 100 rpm, #0 spindle
 pH (as supplied): 1.5 to 5.0
 Solubility: Totally miscible with water
 Freezing point: ~-50°C/-58°F
 Boiling point: > 70°C/158°F
 Flash point: >182°C (>360°F) *Cleveland Open Cup*
 Thermal stability: Significant decomposition begins above 70°C/158°F
 DBNPA (active) vapor pressure (25°C/77°F): 189 mmHg @ 25°C *Estimated*

Applications

Product-type 2: Disinfectants and algacides not intended for direct application to humans or animals

Products used for the disinfection of surfaces, materials, equipment and furniture which are not used for direct contact with food or feeding stuffs.

Usage areas include, inter alia, swimming pools, aquariums, bathing and other waters; air conditioning systems; and walls and floors in private, public, and industrial areas and in other areas for professional activities.

Products used for disinfection of air, water not used for human or animal consumption, chemical toilets, waste water, hospital waste and soil.

Products used as algacides for treatment of swimming pools, aquariums and other waters and for remedial treatment of construction materials.

Products used to be incorporated in textiles, tissues, masks, paints and other articles or materials with the purpose of producing treated articles with disinfecting properties.

Product-type 4: Food and feed area

Products used for the disinfection of equipment, containers, consumption utensils, surfaces or pipework associated with the production, transport, storage or consumption of food or feed (including drinking water) for humans and animals.

Products used to impregnate materials which may enter into contact with food.

Product-type 6: Preservatives for products during storage

Products used for the preservation of manufactured products, other than foodstuffs, feedingstuffs, cosmetics or medicinal products or medical devices by the control of microbial deterioration to ensure their shelf life.

Products used as preservatives for the storage or use of rodenticide, insecticide or other baits.

Product-type 13: Working or cutting fluid preservatives

Products to control microbial deterioration in fluids used for working or cutting metal, glass or other materials.

Formulation/ Applications/ Guidelines

Solubility: Fully soluble in water and most polar and apolar organic solvents
Recommended use at pH: 7-10
Recommended storage temperature: Below 60°C/140°F

Efficacy

Under normal conditions, BIOBAN™ DB 20 Antimicrobial is added to systems already containing microorganisms, so killing is extremely rapid and effective. In contrast, slower-acting biocides may take 10 to 12 hours to achieve the antimicrobial results attained by BIOBAN DB 20 within 30 minutes of treatment.

In aqueous environments, BIOBAN DB 20 decomposes quickly. The rapid antimicrobial activity of BIOBAN DB 20, combined with quick chemical breakdown, presents one of the most cost-effective ways of eliminating microbiological contamination with minimal effect on the final product. BIOBAN DB 20 typically yields a 99.9 percent microbial kill before it degrades sufficiently to lose effectiveness. The following data from laboratory studies demonstrate this:

Bacteria	ATCC#	MCC (ppm)
<i>Bacillus subtilis</i>	8473	125
<i>Enterobacter aerogenes</i>	13048	125
<i>Escherichia coli</i>	11229	125
<i>Klebsiella pneumonia</i>	8308	125
<i>Proteus vulgaris</i>	881	125
<i>Pseudomonas aeruginosa</i>	10145	125
<i>Pseudomonas aeruginosa PRD10</i>	15442	125
<i>Salmonella choleraesuis</i>	10708	125
<i>Staphylococcus aureus</i>	6538	125
Fungi		
<i>Saccharomyces cerevisiae</i>	4105	500

Safe Use and Handling

Routine Handling and Protective Equipment

Personnel working with this product should be familiar with the hazards and practice good work habits when handling. Studies have shown that enforcement of good work practices prevent skin reactions, respiratory and eye problems which can be attributed to chemical exposure.

Product hazards

Eye: Can cause severe eye irritation and corneal injury.

Skin: Prolonged contact is irritating to the skin. Allergic reactions can occur in some individuals.

Inhalation: Mist from product may cause severe irritation of upper respiratory tract.

Ingestion: Harmful if swallowed.

Handling guidance

- Read the Safety Data Sheet (SDS) and understand the hazards before handling.
- Do not get in eyes.
- Do not swallow.
- Avoid contact with skin and clothing.
- Avoid breathing mists.
- Avoid prolonged or repeated skin contact.
- Use with adequate ventilation to keep atmospheric levels below exposure guidelines.

While there is currently no regulatory occupational exposure guideline developed for DBNPA, Dow has a Dow Industrial Hygiene Guideline for DBNPA which is 2 mg/m³ Ceiling. The term ceiling means that your exposure to DBNPA should never exceed 2 mg/m³ at any time during the day; this is not a time weighted average.

Minimum Personal Protective Equipment (PPE) requirements

Always wear personal protective equipment (PPE) when handling the product. While the selection of PPE depends on the task to be performed, the environment and the engineering controls that are in place, the following is the minimum PPE to be worn when handling containers of the product:

- Splash proof chemical goggles.
- Chemical resistant gloves which extend above the wrist.
- Long sleeve shirt and long pants.
- Socks and chemical resistant footwear.

Storage and Handling

Temperature/decomposition rates

BIOBAN™ DB 20 Antimicrobial is effective and environmentally friendly as a biocide when properly administered. However, the active component, dibromonitropropionamide (DBNPA), is temperature sensitive and will decompose exothermically (liberate heat) at elevated temperatures. In addition, its decomposition rate increases with increasing temperature once the exothermic reaction begins.

If BIOBAN DB 20 is stored under adiabatic conditions, that is, where the heat cannot be removed or dissipated rapidly enough, the liquid temperature in the container will increase with decomposition, and this in turn will increase the decomposition rate.

To ensure safe handling and product quality, it is important to determine which storage systems are nearly adiabatic, and once identified, to monitor the temperature within those storage containers. In relation to tank size, heat transfer from a bulk liquid decreases as its total volume increases. When volume increases relative to a surface area, there is a “self-insulating” effect, allowing temperature to build up within the storage facility.

Product storage guidance

- Product must be stored in closed, but vented, containers in an area with good general ventilation and out of direct sunlight to prevent build up of vapors over time
- Product must not be stored above 35°C
- Avoid adiabatic conditions in pumps due to potential CO₂ evolution and pressure generation/release
- Aqueous solutions in plastic containers should not be left in direct sunlight to prevent photolysis of DBNPA

Packaging

BIOBAN™ DB 20 Antimicrobial is available in 5-gallon pails, 55-gallon drums and one-way tote bins (IBCs).

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including Safety Data Sheets (SDS), should be consulted prior to use of Dow products. Current Safety Data Sheets are available from Dow.

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