



BIOBAN™ IPBC 40 LE Antimicrobial

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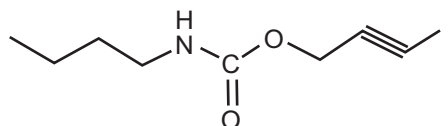
General

BIOBAN™ IPBC 40 LE Antimicrobial is a patent-pending formulation containing 40% w/w 3-Iodo-2-propynylbutylcarbamate (IPBC) as the active ingredient. Depending on the US EPA or European Union definition of a volatile organic compound (VOC), this product contains low to no VOCs. In addition, this product is formulated in solution form and exhibits excellent attributes such as low viscosity, easy pumping, no settling of solids, and low freezing point temperature.

BIOBAN IPBC 40 LE Antimicrobial is a broad spectrum preservative and dry film fungicide effective against a wide range of fungal organisms. It offers excellent dry film fungal protection in interior and exterior paints, coatings, wood protective stains and above ground wood preservatives. This product may also be used as a fungicide in paper coatings, inks, adhesives, sealants and cordage and metalworking fluids.

BIOBAN IPBC 40 LE Antimicrobial does not contain any organo-metallics compounds, and is compatible with both aqueous and solvent based formulations.

Structure



Physical Properties

The following are typical physical properties of BIOBAN IPBC 40 LE Antimicrobial; **they are not to be considered product specifications.**

Appearance: Clear light amber liquid
 Viscosity (20°C/68°F): 70-90 centipoises
 Specific gravity (25°C/77°F): 1.24-1.26 (typical)
 Pounds/gallon: 10.40 -10.50
 Decomposition point: 192°C (377.6°F)

Antimicrobial Activity

The efficacy of the IPBC active has been tested against various microorganisms by the determination of the Minimum Inhibitory Concentration (MIC).

Fungi	MIC (mg/L) of IPBC in nutrient agar
<i>Alternaria alternata</i>	2
<i>Aspergillus niger</i>	2
<i>Aureobasidium pullulans</i>	1
<i>Cephalosporium fragrans</i>	2
<i>Ceratocystis pilifera</i>	1
<i>Chaetomium globosum</i>	5
<i>Cladosporium cladosporioides</i>	2
<i>Gliocladium virens</i>	5
<i>Lentinus tigrinus</i>	2
<i>Penicillium glaucum</i>	1
<i>Phialophora fastigiata</i>	2

<i>Sclerophoma pityophila</i>	1
<i>Trichoderma virens</i>	2
Bacteria & Yeasts	
<i>Escherichia coli</i>	1000
<i>Staphylococcus aureus</i>	200
<i>Rhodotorula rubra</i>	20
<i>Sporobolomyces roseus</i>	7.5

ppm ai = parts per million active ingredient

Reported MIC values shown demonstrate the spectrum of antimicrobial activity of IPBC. The MIC test results only demonstrate the innate activity and should not be used as a guide to determine levels to use in your formulations.

Applications/ Directions for Use

Application	Recommended use level* (% w/w product)	Comments
Adhesives Non-medical, non-food use natural and synthetic adhesive formulations, caulks, patching compounds, sealants, grouts, latexes used in the manufacture of flooring adhesives and carpet backings.	0.05 – 0.63	To be added toward the end of production cycle with good agitation to ensure uniform distribution.
Cordage Aqueous and solvent based process formulations which coat cordage.	0.05 – 2.50	To be added to the process formulation at the end of the production cycle with good agitation to prevent possible mechanical losses and to ensure a uniform distribution.
Textiles Carpet fibers, carpet backing, canvas, cordage, drapes and shower curtains	0.05 – 2.50	For use in both aqueous and solvent-based coatings or dyes which are typical to the textile material processing. The product should be solubilized or stirred in the dye bath or polymer coating to ensure a uniform distribution. Not to be used in fabrics intended for human wear or direct skin contact.
Inks	0.125 - 7.50	To be added at the end of the production cycle with good agitation.
Paints & Coatings, exterior Solvent and waterborne	0.25 - 2.00	To be added at the beginning of the let-down process before any addition of resin or rheology modifier. Not to be added to hot paint. Where mildew growth is a major problem for painted surfaces, use at the higher end of the concentration range.
Paints & Coatings, interior Solvent and waterborne	0.10 - 0.60	
Plastics & Plastics coatings; Shower curtains, wire & cable insulation and sun umbrellas	0.125 – 2.50	To be dispersed in the plasticizer or color concentrate before it is incorporated into the resin to ensure uniform distribution. Not recommended if the heat of processing is above 350°F (177°C) for prolonged periods. Not to be used in plastics that will have contact with food or medical device applications.
Paper Coatings. Paper and cardboard substrates coatings – non-food contact applications only	0.05 – 2.00	To be added at the end of the production cycle and with good agitation to prevent possible mechanical losses and ensure uniform distribution.

Application	Recommended use level* (% w/w product)	Comments
Wood treatment – freshly sawn wood	0.25 - 3.00	For use on wood in above ground application only. Treating solutions may be prepared by diluting this product in alcohols or aromatic solvents or by dispersion in water. Suggested levels depend upon the severity of conditions for end use and the extent of time that protection is required. The treatment can be applied by dip method or spray method. For best results, lumber should be treated within 24 hours of sawing. The lumber should be completely immersed in the treating bath in the dip method, to have required loading of the product and to minimize spillage. The fresh sawn wood can also be treated with spray treatments using various spray technologies such as lateral or in-line spray booths, Flood coaters or electrostatic sprayer.
Wood Preservation – wood based products-engineered wood products and millwork *	0.25 to 2.00	The product may be applied by dipping, brushing, spraying or pressure treatment. A concentration of 0.25% for mildew control and 0.50% for decay control is normally used. However, higher concentration up to 2% is recommended depending on the intended exposure, and length of protection desired.
Wood stains. interior or exterior protective coatings	0.25 –2.00	For use on wood in above-ground applications only.
Preservation of surface and building materials**	0.25 - 1.25	For treatment of tiling joint fillers, grouts, plaster plates applied on buildings (indoor) and surface materials applied on buildings (e.g., cement layer, plaster).
Metalworking fluids. Synthetic, semi-synthetic & soluble Cutting, Cooling & Lubricating Fluids.	≤ 0.25 in the end use diluted MWF.	Only can be used in MWF concentrates. The amount of product required in the concentrate will depend on the end use dilution. Can be added directly to the sump with adequate agitation. Some systems may require a coupling agent.

*These are recommended use levels; laboratory evaluation and field trials are suggested in order to determine the optimum levels and cost effective use for BIOBAN™ IPBC 40 LE Antimicrobial in a given end application. Dow Biocides Technical Laboratories, located in countries around the world, are available to assist in such testing.

**Only for certain countries

Safety & Labeling

Please refer to the Safety Data Sheet and product label.

Handling

Keep away from heat, sparks, and flame. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Use with adequate ventilation. When handling products directly, personal protective equipment, including chemical splash goggles, chemically resistant gloves and apron should be worn.

Storage

Shelf life:	Two years from production date when stored as directed.
Storage:	4°C to 32°C [39°F to 90°F]. Containers should not be exposed to direct sunlight. Do not store with strong oxidizing agents or strong (concentrated) acids.

Product disposal

Do not contaminate water, food or feed by storage or disposal. Excess product and rinse water has to be disposed according to local regulations for disposal. A small quantity of Bioban™ IPBC 40 LE Antimicrobial will likely remain in the container; this container should be triple rinsed and the rinse water should be treated as waste. To ensure that containers are not reused, they should be pierced before disposal.

Spill Handling

Use appropriate safety equipment. Spills can be absorbed by appropriate inert materials such as clay, sand or Vermiculite. Care should be taken to prevent contact with any exposed skin of the personnel conducting the clean up. These materials can be disposed according to local regulations. Refer to the Safety Data Sheet for additional information.

Product Stewardship

Dow Biocides encourages its customers to review their applications of Dow Biocides products from the standpoint of human health and environmental quality. To help ensure that Dow Biocides products are not used in ways for which they are not intended or tested, Dow Biocides 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.

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†except Indonesia and Vietnam

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