

# DENSIL™ DF Antimicrobial Materials Protection

DENSIL DF Antimicrobial is a broad-spectrum fungicide/algacide for the dry film protection of aqueous based surface coatings. DENSIL DF Antimicrobial is an aqueous dispersion of methyl-N-(2-benzimidazolyl) carbamate, N'-3,4-dichlorophenyl)-N,N-dimethylurea and 2-N-octyl-4-isothiazolin-3-one. Applications The product is particularly effective as a single active dry film preservative for Architectural & Industrial Paints & Coatings.

Antimicrobial Properties The levels of DENSIL DF Antimicrobial needed to prevent the growth of problem micro-organisms are listed in Table 1. MIC's do not represent effective use levels but do indicate the broad spectrum of activity of DENSIL DF Antimicrobial.

Table 1 Minimum Inhibitory Concentrations (MIC)

Micro-organism	Strain No	DENSIL DF Antimicrobial (ppm)
<b>Fungi</b>		
<i>Aspergillus brasiliensis</i>	ATCC 9642	5
<i>Aureobasium pullulans</i>	ATCC9348	1.5
<i>Chaetomium globosum</i>	ATCC 6205	1.5
<i>Fusarium solani</i>	IMI 172506	75
<i>Penicillium funiculosum</i>	ATCC 11797	20
<i>Trichoderma viridae</i>	ATCC 9645	5
<b>Algae</b>		
<i>Chlorococcum minutum</i>	CCAP 1459/4	3
<i>Chlorella vulgaris</i>	CCAP 211/11b	1.2
<i>Neosporangium granatum</i>	CCAP 213/a	100
<i>Nostoc muscorum</i>	CCAP 1453/20	0.15
<i>Oscillatoria tenuis</i>	CCAP 1459/4	0.7
<i>Pleurococcus</i> sp	CCAP464/1	0.3
<i>Trentepohlia aurea</i>	CCAP 483/1	<0.15
<b>Yeasts</b>		
<i>Candida albicans</i>	ATCC 10231	23
<i>Saccharomyces cerevisiae</i>	ATCC 9763	19

Table 2 Typical Physical Properties

Composition	3An aqueous dispersion of methyl-N-(2-benzimidazolyl) carbamate (approx. 10%) N'-(3,4-dichlorophenyl)-N,N-dimethylurea (20%) and 2-N-octyl-4-isothiazolin-3-one (approx. 2.8%)
Physical form	White to light brown aqueous dispersion
Total Solids (%w/w)	28 -32
Viscosity at 25°C	300 -2500mPa s
Specific Gravity	1.0-1.2
Boiling Point	100°C
Storage stability	No decomposition if stored and applied as directed.

## Amount to Use

The concentration required to adequately preserve your product depends on several factors. These include the susceptibility of the system to microbiological degradation, the extent to which microorganisms can gain access, the species involved, pH, temperature, and length of time for which protection is required.

Results of initial studies indicate that a concentration of DENSIL DF Antimicrobial in the range 0.5 to 3.0% should be sufficient for most applications. Since the effective concentration can be dependent on several factors we recommend that compatibility/stability trials and microbiological challenge testing should be carried out before use.

DENSIL DF Antimicrobial is not suitable to be incorporated in paint applications that are to be applied to surfaces by high pressure spraying.

## Technical Service

Lonza Microbial Control technical laboratories can assist with the above tests as part of our customer support programme. Please contact your nearest Lonza Microbial Control sales office to take advantage of these customized services.

## Risk Assessment Management

Lonza Microbial Control professionals have a wide expertise in the fields of Safety, Health and the Environment. Lonza is committed to and uses this expertise in understating the suitability of DENSIL DF Antimicrobial for specific applications. Please contact your local Lonza Microbial Control office should you have questions in this area.

## Health And Safety

The DENSIL DF Antimicrobial Material Safety Data Sheet is provided with every sample and product shipment and is also supplied upon request. It should be read and understood by all supervisory personnel and employees before using this product. If there is any doubt please contact your local Lonza Microbial Control sales office for advice.

## Total Quality

Lonza Microbial Control holds a number of ISO 9001 Quality Management registrations covering our product range. The scope of each registration is specific to the location or entity named on the Registration Certificate and our products are supplied to ISO 9001 Standards.

## Regulatory Information

The components of DENSIL DF Antimicrobial are listed on the following inventories:

EINECS	{Europe}
TSCA	{USA}
AICS	{Australia}
ENCS	{Japan}
DSL	{Canada}
KEC	{Korea}
PICCS	{Philippines}
IECSC	{China}

In many countries all the chemical components of a product must be listed on the relevant "inventory" of chemical substances before it can be supplied. However, listing on an inventory does not necessarily permit all uses of a product and it does not imply compliance with local or regional regulations on biocidal products.

In many countries, use as a preservative against spoilage (i.e. in-can preservation) is subject to additional legislation which often requires a specific product registration.

Inquiries for further information and samples should be addressed to your local sales office.

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Use biocides safely. Always read the label and product information before use. The products described herein may not be registered or may be registered only for certain uses in your country.

The product information herein corresponds to our knowledge on the subject at the date of publication and we assume no obligation to update it. It is offered without warranty, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information and is intended for use by persons who are experienced and knowledgeable in the field and capable of determining the suitability of ingredients for their specific applications. Republication of the statements made herein is prohibited. No claims are made herein for any specific end-use application, and use of the information herein is the sole responsibility of the user based on his or her independent evaluation. Any data relating to test organisms included herein relates to standard laboratory test species and is provided for information only. No claim of controlling organisms in public health applications is made by the inclusion of such data nor should any such claim be implied. The user should perform appropriate tests to determine the suitability and efficacy of our products in the user's application and conditions of use. The information we provide is not intended to substitute for such testing. The user assumes all risks of use and handling and accepts full responsibility for compliance with all applicable Federal, state and local laws and regulations. The information we provide is not intended and should not be construed as a license to operate under or a recommendation to infringe any patent or other intellectual property right, and the user should ensure that his or her use does not infringe any such rights. Our products are for industrial use only. WE MAKE NO WARRANTY (INCLUDING AS TO MERCHANTABILITY OR FITNESS FOR PURPOSE) OF ANY KIND, EXPRESS OR IMPLIED, OTHER THAN THAT OUR PRODUCTS CONFORM TO THE APPLICABLE PRODUCT SPECIFICATIONS.

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