

## "FirstStep" Antimicrobial Control Mats

ALMA's biocide-incorporated contamination control mats offer long-lasting protection against the growth of a broad range of organisms. These include molds, mildew, yeasts, fungi and algae. Testing has proven that a typical mat, even without the introduction of contamination from traffic, will support microbial growth.

The additive is proprietary but the active ingredient is "diiodomethyl-p-tolylsulfone".

This ingredient is added to the adhesive in each layer of "First Step" mats. Listed below is information taken directly from the technical data provided by its manufacturer.

### Physical Properties of Additive

Purity, percent by weight of active ingredient	40 (min.)
Appearance	Light gray suspension
ph as Supplied	6.0-8.5
Boiling Point, °C	Approx. 100
Freezing Point, °C	Approx. 0
Viscosity, cp at 25°C(typical)	600-1000
Specific Gravity, 25/25°C	1.32-1.33
Weight per Gallon, pounds at 77°F	11.05

### Antimicrobial Activity

The active ingredient in the additive provides a broad spectrum of antimicrobial activity. The Minimum Inhibitory Concentration (MIC) of diiodomethyl-p-tolylsulfone for various organisms is present in the table below:

#### FUNGI

Alternaria sp.	0.4
Aspergillus niger	0.4
Aspergillus oryzae	1.6
Aspergillus versicolor	0.8
Aureobasidium pullulans	0.4
Chaetomium globosum	0.2
Fusarium oxysporum	6.2
Myrothecium verrucaria	0.8
Penicillium citrinum	0.8

#### BACTERIA

Bacillus subtilis	10
Staphylococcus aureus	6
Streptococcus faecalis	50
Enterobacter aerogenes	>1000
Proteus vulgaris	>1000
Pseudomonas aeruginosa	>1000
Salmonella typhimurium	100

Food Contact Applications

The active ingredient of the additive, diiodomethyl-p-tolylsulfone, has been cleared by the Food and Drug Administration (FDA) for use in food contact applications as indicated below:

- 175.105                    Components of adhesives
- 175.300                    Ingredients in resinous and polymeric coatings  
                                  (can sealants)
- 177.2600                    Ingredients in rubber articles

The inert ingredients in the additive have been selected on the basis of similar FDA approval so that these products may be used in these same food-contact applications.

Use in Latex Caulks and Adhesives

Adhesives and sealants require the incorporation of preservatives to preserve their appearance, to prevent deterioration in-can and in-service, and to prevent the loss of adhesive properties which accompanies such deterioration. Because the preservatives are essentially insoluble in water, they do not leach out of caulks and adhesives, therefore assuring long-lasting broad-spectrum protection.

The preservatives provide superior antifungal protection at levels as low as 0.02% of active ingredient by weight based on the weight of the formulation. Typical applications of the preservatives include products for the lumber, construction, home improvement, textile and automotive industries. They are especially effective in gypsum wallboard joint compounds, ceramic tile adhesives, adhesives of wall coverings, adhesive emulsions and acrylic, polyvinyl acrylic and silicone-based interior and exterior sealants.