

REPLY TO:  
ROHM AND HAAS COMPANY RESEARCH DIVISION  
BIOCIDES DEPT. CUSTOMER SERVICE LABORATORY  
727 NORRISTOWN ROAD  
SPRING HOUSE, PA 19477  
(215) 641-7000



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**The Resistance of Vinyl Flooring for Showers to Mildew**

**LAGUNE KOSTEANTILAN MATTO,  
TESTIRAPORTTI  
MUOVHAKA OY**

Sales Service Report No. PA-05-089

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## The Resistance of Vinyl Flooring for Showers to Mildew

### INTRODUCTION

Muovihaka Oy submitted two pieces of vinyl shower flooring (mats) for the evaluation of resistance to the pink stain *Stv. reticulum* and surface fungal growth. The samples were labeled untreated and treated with Vinyzene™ SB-1

### SUMMARY

The Vinyzene treated sample passed all of the tests performed. However, chemical analysis detected only ~ 50 ppm total As as OBPA\*. The untreated material developed heavy fungal growth and microbial stain.

### COMMENT

For long term protection from attack by mildew it is recommended that a level of 0.6% Vinyzene SB-1 (300 ppm OBPA) be incorporated into the vinyl formulation.

### RESULTS

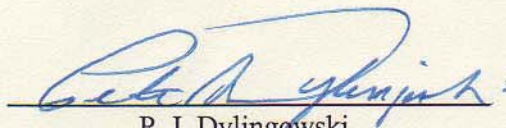
The procedures are described in the appendix.

#### Mildew Resistance

SAMPLE	ZONE OF INHIBITION (mm)/ STAIN Pink Stain Test	ASTM G-21-96 FUNGAL GROWTH
Vinyzene treated	0.5/NS	NG
Untreated	0/HS	HG

Sample	PPM Total As as OBPA by ICP Method
Vinyzene treated	~ 50
Untreated	None Detected

Note: Photographs are enclosed.



P. J. Dylingowski  
Manager, Biocides

PJD/gjb

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## APPENDIX

### Mildew Resistance

#### Pink Stain

The samples were placed on nutrient agar inoculated with the pink staining organism, *Streptovercillium reticulum* ATCC 25607. After 14 days of incubation at 28°C, antifungal activity was evaluated by measuring (in mm) the size of a clear zone of no growth (Zone of Inhibition) around each sample, and visually rating the degree of stain.

Surface stain is rated by the following scale.

No Stain	(NS)
Trace of Stain	(TS)
Light Stain	(LS)
Moderate Stain	(MS)
Heavy Stain	(HS)

## APPENDIX

### ASTM G-21-96

#### Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

The samples were placed on (non-nutrient) mineral salts agar and inoculated with a mixed fungal spore suspension of:

<i>Aspergillus niger</i>	ATCC 9642
<i>Penicillium pinophilum</i>	ATCC 11797
<i>Chaetomium globosum</i>	ATCC 6205
<i>Aureobasidium pullulans</i>	ATCC 15233
<i>Gliocladium virens</i>	ATCC 9645

After 28 days incubation at 28°C, antifungal activity was evaluated by visually rating the degree of fungal growth on the samples.

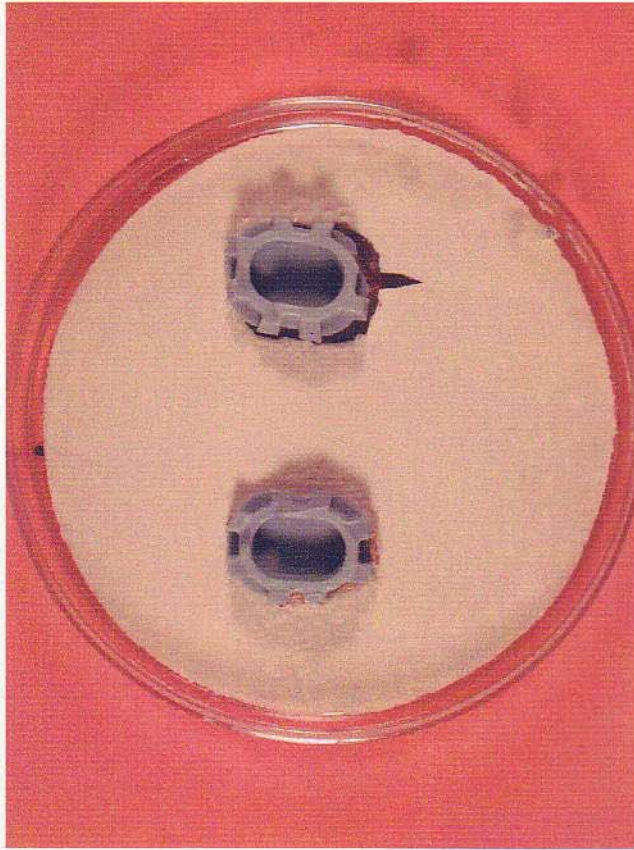
Surface fungal growth is rated by the following scale:

No Growth	(NG)
Traces of Growth (less than 10% coverage)	(TG)
Light Growth (10 to 30% coverage)	(LG)
Medium Growth (30 to 60% coverage)	(MG)
Heavy Growth (60% to complete coverage)	(HG)

TEST NO. 05-089

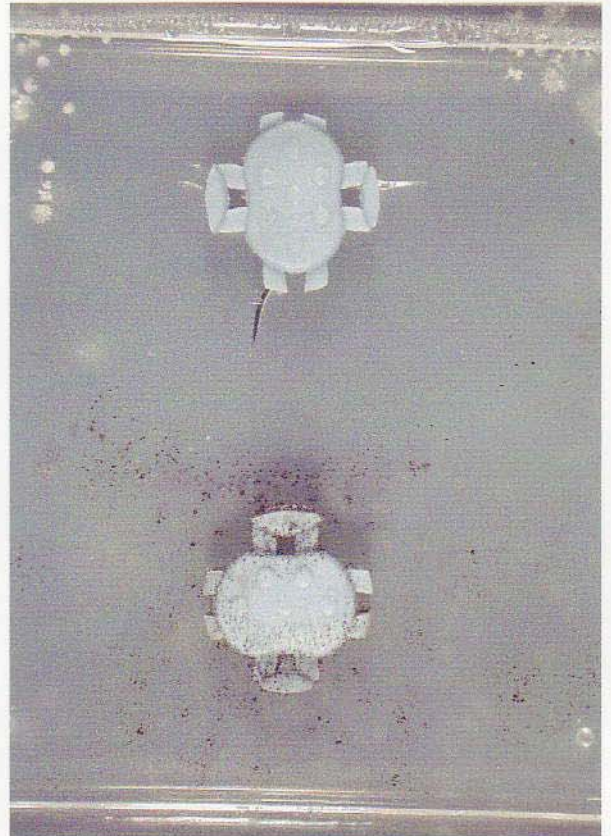
PINK STAIN  
STV. RETICULUM

VINYZENE TREATED



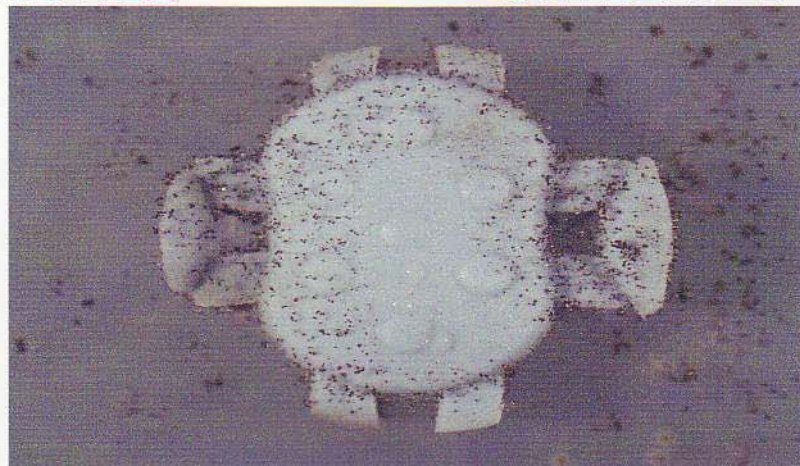
FUNGAL GROWTH  
ASTM G-21-96

VINYZENE TREATED



UNTREATED

UNTREATED



CLOSE UP OF UNTREATED