

# Building materials: analysis of the efficiency of the ammonium quaternary to control Sick Building Syndrome

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## INTRODUCTION

Industrialized countries, people spend more than 90 percent of their lives indoors, and more than half of employed adults work in offices or similar non-industrial environments.

Fungi in humid environments can act as the main biological contaminants. Undesirable aspects such as changes in environmental odor, change in texture and coloring on walls, ceilings, ceramics and tiles may be due to the harmful action of fungi, mould and yeast.

The incorporation of innovative disinfectants (ammonium quaternary) in building materials, bricks, plaster and paint could prevent the development of fungi that deteriorate or cause Sick Building Syndrome.



## OBJECTIVE

To evaluate the antifungal activity of ammonium quaternary (SHINE disinfectant®) incorporated in building materials.

## MATERIAL E METHODS

1- Four different types of bricks

2- The bricks were immersed for 30 minutes in 2% ammonium quaternary (SHINE®)

3- Commercial mortar®, with 2% SHINE disinfectant.



4- White acrylic paint with 2% SHINE disinfectant.

5- Inoculum of *Aspergillus fumigatus* McFarland scale (0,5) 30 ml.

6- Incubation at 30° C

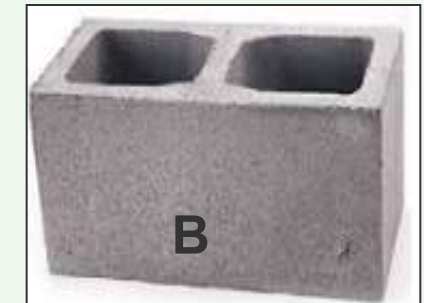
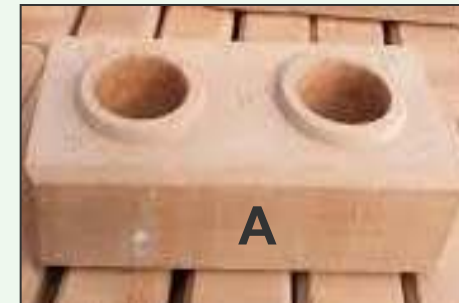


## RESULTS

UFC obtained by Rodac PLATE® on the bricks, mortar and paint treated with 2% SHINE disinfectant was lower (B) or was eradicated (C), in comparison to the control group(A).



The ammonium quaternary incorporated in the ecological bricks (A) presented the best antifungal activity and, the worse, in the concrete bricks (B).



The antifungal activity of disinfectant SHINE incorporated in the building material, paint, bricks and mortar was better when present in the three materials, at the same time, with total microbial inhibition.



## DISCUSSION AND CONCLUSION

Shine disinfectant is a feasible chemical compound to control Sick Building Syndrome, especially when incorporated simultaneously in the bricks, mortar and paints. The inhibitory activity observed was important because *Aspergillus fumigatus* is a fungal difficult to control. Future research with this disinfectant should be done with protocols standard considering time, concentration and the stability of the product.

## REFERENCE

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