

TNO Nutrition and Food Research

Summary of Research



TNO Report V4548/03 (2002)

TNO project 010.52021/01.06

Evaluation of the action of microorganisms on the coating of BioGuard Ceiling Panels according to ISO Method 846 (1997)

Introduction

Armstrong Building Products GmbH, Münster (Germany), developed BioGuard Ceiling Panels, which are provided with a protective coating against microbial attack.

TNO Nutrition and Food Research, Zeist (NL), examined the action of microorganisms on the protective coating of BioGuard Coating Ceiling Panels, using ISO Method 846:1997 "Plastics - Evaluation of the action of microorganisms".

Materials and Methods

Test specimens

Samples of BioGuard Ceiling Panels were provided by Armstrong Building Products GmbH, Münster (Germany) as the test specimens. The samples were received on 28 January 2002 at the TNO facilities in Zeist and registered under the codes M3119/01/0844 BioGuard Plain (Armstrong code B1) and M3119/01/0854 BioGuard Perforated (Armstrong code B2).

Test method

The tests according to ISO Method 846:1997 involved exposure of the protected coating of the test specimens to the action of selected strains of fungal test organisms (*Aspergillus niger*, *Penicillium funiculosum*, *Paecilomyces variotii*, *Gliocladium virens* and *Chaetomium globosum*) and bacteria (*Pseudomonas aeruginosa*) for 4 weeks at 25°C and >95% RH. At the end of the exposure, the protective coating of the test specimens was assessed by visual examination. The test comprised three parts: (1) determination of fungal growth in the presence of a nutritive medium without carbon source, (2) determination of fungistatic effects in the presence of a complete nutritive medium, and (3) determination of bacterial growth in the presence of a nutritive medium without carbon source.

Results and Conclusions

In the fungal growth test (1) fungi did not develop visible mycelia on the protective coating of the test specimens BioGuard Plain and BioGuard Perforated, such demonstrating inherent resistance to fungal attack in the absence of organic matter. In the fungistatic effect test (2) both test specimens showed a distinct fungistatic activity: inhibition of fungal growth was observed on the protective coating, as well as in the growth medium around the test pieces. In the bacterial growth test (3) no growth of *Pseudomonas aeruginosa* bacteria was observed for three weeks, after four weeks some bacterial growth was observed at the edge of part of the test pieces of both test specimens.

The results indicate for the tested BioGuard Plain and BioGuard Perforated Ceiling Panels a distinct resistance of the protective coating against fungi, and a moderate resistance against bacteria.

Signature

TNO Nutrition and Food Research

Dr. Ir. G.N.M. Huijberts
Head, Department of Microbiology

Date: 8/6/04

B.J. Hartog, M.Sc.
Project Manager Microbiology

Date: 8/6/04

Microbiology
Location Zeist
Utrechtseweg 48
P.O. Box 360
3700 AJ Zeist
The Netherlands

www.tno.nl

T +31 30 694 41 444
F +31 30 695 72 24
infofood@voeding.tno

All rights reserved.

No part of this publication may be reproduced and/or published by print, photoprint, microfilm or any other means without the previous written consent of TNO.

In case this report was drafted on instructions, the rights and obligations of contracting parties are subject to either the Standard Conditions for Research Instructions given to TNO, or the relevant agreement concluded between the contracting parties. Submitting the report for inspection to parties who have a direct interest is permitted.