

## Test report

### 1. Subject

Examination of the bio-deterioration of the sample material according to DIN EN ISO 846

### 2. Customer

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### 3. Contractor

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### 4. Material tested

Gulvfugemasse 553\*

**Dimensions of the test material:** 1590 mm<sup>2</sup> x 2 mm

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\* according to the customer

**5. Examination Period** 2002, August**6. Procedures**

The examination of the resistance of the samples to fungi and bacteria was undertaken in accordance with DIN EN ISO 846 "Plastics – Evaluation of the action of microorganisms", method A and C, by visual examination.

The material has been examined to determine whether it remains inert or if it is a nutritious substance for the growth of fungi (method A) or bacteria (method C).

Resistance to fungi (method A)

The samples were placed separately on a medium containing mineral-salt, no carbon and they were then sprayed with a spore suspension of the following fungi:

*Aspergillus niger* DSM 1957

*Penicillium funiculosum* DSM 1944

*Paecilomyces variotii* DSM 1961

*Gliocladium virens* DSM 1963

*Chaetomium globosum* DSM 1962

10 samples were tested, they were incubated for four weeks at  $24\pm 1^\circ\text{C}$  and at a relative humidity of  $> 95\%$ . After periods of two and four weeks they were examined for visible fungal growth to the naked eye and to a stereoscopic microscope (at a magnification of x 50).

Resistance to bacteria (method C)

To determine the resistance of the samples to bacteria, a liquid mineral-salt agar containing no carbon and cooled to  $45^\circ\text{C}$  was mixed with a bacteria cell suspension and placed in sterilised Petri dishes. When the agar had solidified a sample was placed on the culture medium and the bacteria inoculated agar was poured on to the sample to cover it to a depth of 1 mm. For this test *Pseudomonas aeruginosa* was used, 10 samples of the material were tested.

The samples were incubated at 29±1 °C and > 95% relative humidity for four weeks. After two and four weeks the samples were examined with the naked eye and with a stereoscopic microscope (at a magnification of x 50).

**7. Assessment**

The intensity of microbiological growth has been evaluated in table 1:

*Table 1: Evaluation of microbiological growth\*:*

Intensity of growth	Evaluation
0	No growth apparent under the microscope.
1	No growth visible to the naked eye, but clearly visible under the microscope.
2	Growth visible to the naked eye, covering up to 25 % of the test surface (fungi) or the surrounding agar (bacteria).
3	Growth visible to the naked eye, covering up to 50% of the test surface (fungi) or the surrounding agar (bacteria).
4	Considerable growth, covering more than 50% of the test surface (fungi) or the surrounding agar (bacteria).
5	Heavy growth, covering the entire test surface (fungi) or the surrounding agar (bacteria).

\*acc. to chapter 9.1, table 4, ISO 846 (97/06)

The results have been interpreted as shown in table 2:

*Table 2: Interpretation of results\*:*

Intensity of growth	Interpretation
0	The material is not a nutritious medium for micro-organisms (it is inert, fungistatic or bacteriostatic)
1	The material contains nutritious substances or is contaminated to such a small degree that it permits only slight growth
2 to 5	The material is not resistant to fungal or bacterial attack and contains nutritious substances suitable for the development of microorganisms

\*acc. to chapter 10.1, table 4, ISO 846 (97/06)

**8. Results of the examinations**

The results of the examinations are summarised in table 3:

*Table 3: Results of the examinations*

Material tested	Intensity of microbiological growth as shown in table 1	
	<i>Fungi</i>	<i>Bacteria</i>
Gulvfugemasse 553	1	0 - 1

On the surface of material **Gulvfugemasse 553** fungal and bacterial growth was not visible to the naked eye, but was visible under the microscope.

**9. Conclusion**

In accordance with the examination carried out, the test material **Gulvfugemasse 553** fulfils **the requirements** from the VDI 6022, Part 1 (04/2006) **in microbial inertness** and is suitable for use in HVAC-systems relating to this examination of microbial inertness.

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