INSTITUT FÜR LUFTHYGIENE
Luft und Wasser: Planung, Analysen, Sanierungskonzepte

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Test report

1. Subject

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

2. Customer

Dana Lim A/S
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DK-4600 Koge

3. Contractor

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4. Material tested

Gulvfugemasse 553*

Dimensions of the test material: 1590 mm² x 2 mm

* 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±1°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°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 summerised in table 3:

Table 3: Results of the examinations

Material tested	Intensity of microbiological growth as shown in table 1	
	Fungi	***Bacteria***
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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