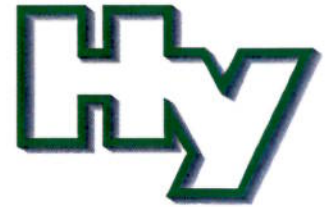


Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie
Direktor: Prof. Dr. rer. nat. L. Dunemann



Hygiene-Institut · Postfach 10 12 55 · 45812 Gelsenkirchen

Fibertex Nonwovens A/S
Svendborgvej 16
9220 AALBORG Øst
DÄNEMARK

Visitors/ postal address:
Rotthaus Str. 21, 45879 Gelsenkirchen,
Germany

Switchboard (0049209) 9242-0
Phone (0049209) 9242-230
Fax (0049209) 9242-222
E-Mail c.schell@hyg.de
Internet www.hyg.de

Reference: W-222427e-12-SI
Responsible: Dr. Ch. Schell

Gelsenkirchen, 06.11.2012

TEST CERTIFICATE

**Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water
Test pursuant to DVGW Technical Standard W 270, November 2007**

Client: Fibertex Nonwovens A/S
Svendborgvej 16
9220 AALBORG Øst
DÄNEMARK

Test material: **Fibertex Formtex[®]**

Test method: Material test

According to test report **W-222427e-12-SI** of **06.11.2012**, the material **Fibertex Formtex[®]** is conform to the requirements for the use in the area of drinking water systems pursuant to DVGW Technical Standard W 270. Details regarding testing procedure and test results are itemized in the test report.

This test certificate is valid from the date of issue and, given that the conditions and requirements remain unaltered, expires on **06.11.2017**. Upon request, the validity may be extended up to another 5 year term provided that the specifications of Technical Standard W 270 are met.

The Director of the Institute
p.p.


Dr. Ch. Schell
Head of Laboratory
Department of Water Hygiene and Environmental Microbiology



The test results and assessments refer exclusively to the examined test specimens and all applicable statutory regulations. The validity of the document expires in case of modifications in the composition of the material or the processing conditions. This present document may only be published and reproduced unabridged and unaltered.

This document is no DVGW certification.



Deutsche
Akkreditierungsstelle
D-PL-13042-02-00

Träger des Instituts: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Gelsenkirchen, **Vereinsregister:** VR 519 Amtsgericht Gelsenkirchen
USt-ID: DE125018356, **Vorstand:** Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann

Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie
Direktor: Prof. Dr. rer. nat. L. Dunemann



Hygiene-Institut · Postfach 10 12 55 · 45812 Gelsenkirchen

Fibertex Nonwovens A/S
Svendborgvej 16
9220 AALBORG Øst
DÄNEMARK

Visitors/ postal address:
Rotthaus Str. 21, 45879 Gelsenkirchen,
Germany

Switchboard (0049209) 9242-0
Phone (0049209) 9242-230
Fax (0049209) 9242-222
E-Mail c.schell@hyg.de
Internet www.hyg.de

Reference: W-222427e-12-SI
Responsible: Dr. Ch. Schell

Gelsenkirchen, 06.11.2012

TEST REPORT

Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water
Test pursuant to DVGW Technical Standard W 270, November 2007

Client: Fibertex Nonwovens A/S
Svendborgvej 16
9220 AALBORG Øst
DÄNEMARK

Ordering date: 27.06.2012

Description of the material:

| | |
|-------------------------------------|--|
| Test material: | Fibertex Formtex[®] |
| Composition: | recipe submitted and checked (3499) |
| Processing instructions: | for specifications, consult the client |
| Field of application: | for specifications, consult the client |
| Quantity of material per area unit: | for specifications, consult the client |

Test samples:

| | |
|------------------------|---|
| Nature and property: | 13 pieces of non-woven fibre material white, one side soft, one side smooth, 20 cm x 20 cm |
| Manufacturing: | carried out by the client (description submitted) |
| Processing conditions: | carried out by the client (description submitted) |

Date of receipt of test samples: 29.06.2012

Storing conditions in the testing laboratory until start of test: at room temperature

This test report consists of 3 pages.

The test results and assessments refer exclusively to the examined test specimens and all applicable statutory regulations. The validity of the document expires in case of modifications in the composition of the material or the processing conditions. This present document may only be published and reproduced unabridged and unaltered. This document is no DVGW certification.



Träger des Instituts: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Gelsenkirchen, **Vereinsregister:** VR 519 Amtsgericht Gelsenkirchen
USt-ID: DE125018356, **Vorstand:** Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann

Test conditions:

The tests were performed in accordance with the recommendations contained in DVGW Technical Standard W 270 as of November 2007. Details regarding testing procedures, as well as testing conditions will be given in said Technical Standard. The surface of the examined test pieces totals to 800 cm² each. Using four test items per test period the following test scheme was applied:

- monthly sampling of surface biomass (test period 4 months altogether)
- sampling after 2 months (test period 4 months altogether)
- sampling after 3 months (test period 3 months altogether)

Prior to testing, the test specimens were placed in running tap water for 20 hours, followed by a disinfection procedure using 1% chlorine bleach for 30 ± 5 minutes and then rinsed with drinking water.

Time of exposure:

| | | | |
|------------------------|------------|-----------------|---|
| 1-month samples | 1a: | 1 st | test period from 25.07.2012 to 22.08.2012 |
| | 1b: | 2 nd | test period from 22.08.2012 to 19.09.2012 |
| | 1c: | 3 rd | test period from 19.09.2012 to 17.10.2012 |
| 2-month samples | 2a: | 1 st | test period from 25.07.2012 to 19.09.2012 |
| 3-month samples | 3a: | 1 st | test period from 25.07.2012 to 17.10.2012 |

The exposure took place in containers filled with ground water of drinking water quality at a continuous flow rate of approx. 20 l/h over a period of three months. The water temperature ranged from 10.0°C to 12.3°C.

After one, two and three months the surfaces of the test pieces, as well as the corresponding negative reference samples (stainless steel) and positive reference samples (paraffin) were scraped clean in order to examine for biofilm formation. Afterwards, the surface biomass was transferred to suitable centrifuge tubes. The subsequent centrifugation was carried out at 3.000 x g for 10 minutes followed by the determination of the volume of the sediment.

Test results:

The positive reference sample (pK) showed a pronounced formation of biofilm during all test periods. There was no formation of surface biomass on the negative reference sample (nK).

The results of the analyses of the single specimens of 800 cm² surface in total, pursuant to DVGW Technical Standard W 270 were as follows:

Volume of surface biomass

(single values and arithmetic mean of four test pieces, given in ml / referring to 800 cm²)

| Start of test: 25.07.2012 | | 1-month values | | 2-month values | | 3-month values |
|------------------------------|----------|-------------------------------------|----------|--------------------------------------|----------|-------------------------------------|
| 25.07.2012 - 22.08.2012 | 1a | (< 0.01/< 0.01) < 0.01 | 2a | (< 0.01/< 0.01) < 0.01 | 3a | (< 0.01/< 0.01) < 0.01 |
| | nK pK | < 0.01 > 1.5 | | | | |
| 22.08.2012 - 19.09.2012 | 1b | (< 0.01/< 0.01) < 0.01 | nK pK | < 0.01 > 1.5 | nK pK | < 0.01 > 1.5 |
| | nK pK | < 0.01 > 1.5 | | | | |
| 19.09.2012 - 17.10.2012 | 1c | (< 0.01/< 0.01) < 0.01 | | | | |
| | nK pK | < 0.01 > 1.5 | | | | |

Limiting values [ml / 800 cm²] pursuant to DVGW Technical Standard W 270 (11/2007)

| | | | |
|--|------------------------------------|-----------------|------------------------------------|
| General application: arithmetic means | ≤ (0.05 + 0.02) | ≤ (0.05 + 0.02) | ≤ (0.05 + 0.02) |
| Large surface seals (D 1): arithmetic means | ≤ (0.12 + 0.03) whereas 1c ≤ 1b | ≤ (0.12 + 0.03) | ≤ (0.12 + 0.03) whereas 3a ≤ 2a |
| Small surface seals (D 2): arithmetic means | ≤ (0.20 + 0.03) whereas 1c ≤ 1b | ≤ (0.20 + 0.03) | ≤ (0.20 + 0.03) whereas 3a ≤ 2a |
| Negative Control: | < 0.01 ml | < 0.01 ml | < 0.01 ml |
| Positive Control: | ≥ 1.5 ml | ≥ 1.5 ml | ≥ 1.5 ml |

Assessment:

Provided that it is applied correctly, the material

Fibertex Formtex®

is suitable for use in drinking water systems according to the results of the microbiological examinations pursuant to DVGW Technical Standard W 270 (11/2007).

The Director of the Institute
 p.p.

Dr. Ch. Schell
 Head of Laboratory
 Department of Water Hygiene and Environmental Microbiology

