European Organisation for Technical Approvals
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ETAG 022

GUIDELINE FOR
EUROPEAN TECHNICAL APPROVAL
Of

Watertight covering kits for wet room floors and or walls

- ANNEX B IMPERMEABILITY WHEN SUBJECTED TO MOVEMENT OF THE UNDERLYING MATERIAL - TENSILE AND SHEAR LOADING

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1. SCOPE

The aim of this method is to test watertight layers intended for use in wetrooms. This method is used to assess the ability of the watertight layer to maintain its impermeability when tensile or shear movements occur at joints in the material and/or at borders between materials in the substrate.

2. Application

The method is applicable for liquid applied waterproofing membranes including any sealing stripps, plastic wall cladding and paint-based systems intended for use in wetroom areas.

3. References

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4. Definitions

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5. Sampling

5.1 Tensile testing

Make two rectangular test pieces of a shape as described below.

5.1.1 Ceramic wetroom systems

Apply the liquid applied waterproofing membrane including any sealings stripps to a substrate consisting of 2 hard chipboard sheets about 165 x 125 mm in size. Place the 2 chipboard sheets close together and apply the test material to an area of 150 x 250 mm in accordance with the manufacturer's instructions. A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 1.

5.1.2 Wall cladding materials of plastic

Cut the material to be tested to a size of 150 x 250 mm, with the long side across the direction of the material. Using the adhesive recommended by the manufacturer, bond the material to a

substrate of 2 hard chipboard sheets about 165 x 125 mm in size. Place the 2 chipboard sheets close together, and apply the test material in accordance with the manufacturer's instructions A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 1.

5.1.3 Paint-based systems for wetroom areas

For paint-based systems containing glass fibre fabric or similar materials, cut the material to a size of 150 x 250 mm, with the long side across the direction of the material. Using the adhesive/paint recommended by the manufacturer, apply the

test material to a substrate of 2 hard chipboard sheets about 165 x 125 mm in size. Place the 2 chipboard sheets close together, and apply the glass fibre or similar material in accordance with the manufacturer's instructions. Then apply the paint system in accordance with the manufacturer's instructions. A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 1.

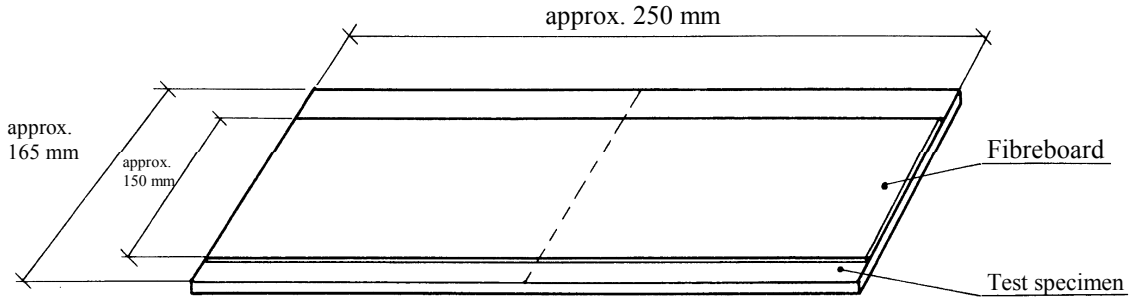

Figure 1.

5.2 Shear loading

Make two rectangular test pieces of a shape as described below:

5.2.1 Ceramic wetroom systems

Apply the liquid applied waterproofing membranes ceramic wetroom system, with its sealings stripps to a substrate of 2 hard, angled chipboard sheets. Place the 2 angled sheets close together and apply the test material in accordance with the manufacturer's instructions. A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 2.

5.2.2 Wall cladding materials of plastic

Cut the material to be tested to a size of 160 x 180 mm, with the long side in the direction of the material. Place the 2 angled sheets close together and apply the test material in accordance with the manufacturer's instructions. A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 2.

5.2.3 Paint-based systems for wetroom areas

For paint-based system containing glass fibre fabric or similar materials, cut the material to a size of 160 x 180 mm, with the long side in the direction of the material. Using the adhesive/paint recommended by the manufacturer, apply the test material to a substrate of 2 hard, angled chipboard sheets. Place the 2 chipboard sheets close together, and apply the glass fibre or similar material in accordance with the manufacturer's instructions. Then apply the paint system in accordance with the manufacturer's instructions. A thin piece of polyethene film may be placed in the gap between the chipboard sheets in order to prevent them from being adhesively bonded together, see Figure 2.

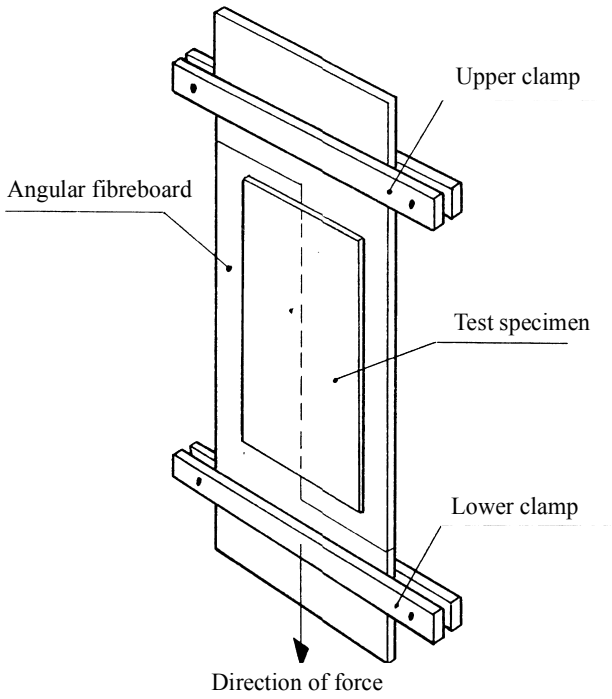

Figure 2.

6. Method of test

6.1 Principle

The watertight layer is exposed to tension and/or shear and afterwards it is controlled with a vacuum chamber whether the watertightness of the layer is maintained.

6.2 Equipment

- Tensile testing machine, capable of providing a load application rate of 0,5 ± 0,1 mm/min and having a clamping device that distributes the clamping force evenly across the width of the test piece.

- 10 mm thick hard chipboard sheet 165 x 125 mm for application of the test material for tensile testing.

- 10 mm thick hard chipboard sheet, sawn into shaped pieces as shown in Figure 2 for application of the test material for shear load testing.

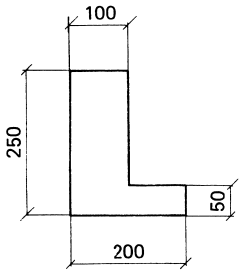

Figure 3.

- Two spacers 1 mm thick and 2, 2 mm thick, for making and maintaining the gap between the 2 chipboard sheets of the test piece.

- A conditioning room 23 ± 2 °C and 50 ± 5 % RH.

- Vacuum chamber for checking the impermeability of the material after tensile or shear loading. The equipment to be in the form of a transparent bottomless box which forms a vacuum chamber when applied to the test surface.

  The size of the box shall be sufficient to cover most of the joint that has been subjected to tensile or shear loading. The size of the box shall be so big that it covers the entire sealing otherwise - if the box is to small to cover the entire sealing - the test have to be repeated.

  The lower edges of the sides of the box shall be in the same plane, and shall be covered by soft sealing strips.

- Vacuum pump or other means by which a negative pressure of at least 20 kPa can be established and maintained in the vacuum chamber described above.

- Leak tracing liquid that can be sprayed, brushed or poured on to the surface to be tested. A suitable liquid is water mixed with dishwashing detergent, or water alone.

6.3 Procedure

After applying the test material, place the test pieces horizontally on a level base and allow them to dry in the conditioning climate for at least one week.

Perform the tests in the conditioning climate.

Attach the ends of the test piece in the tensile testing machine, ensuring that the 2 sheets are not moved relative to each other.

Apply a tensile or shear load to the test piece at a deformation rate of 0,5 ± 0,1 mm per minute until the gap width (1 or 2 mm) as given in the requirements is reached. When the desired gap width has been reached, place the spacers in the gap to maintain the tensile or shear load. The test piece can then be removed from the tensile testing machine and placed on a flat base.

When the test piece has been subjected to tensile or shear loading from the spacers for about five minutes, apply the leak-indicating liquid to the material and place the vacuum chamber over the joint to which the load is applied. Reduce the pressure in the vacuum chamber to about 20 kPa, and inspect the area under test through the transparent top of the vacuum chamber. Any leaks will be revealed by the formation of air bubbles in the film of liquid. Maintain the prescribed negative pressure for at least 30 seconds.

> *Remark: Air can be trapped, and briefly produce bubbles, in pores in the material that do not pass right through the material. In such cases, bubble formation usually declines significantly with time as the leak-indicating liquid is sucked out of the pores. Inspect areas where bubbles have formed and then stopped in order to make a final assessment of the impermeability.*

6.4 Expression of results

The test result is given as an information on whether leaks occurred or not, i.e. whether the water-tight layer passed or failed the test.

7. Test report

Give details of the following in the test report:

a) Name and addres of the testing laboratory
b) Identification number of the test report
c) Name and address of the organization or the person who ordered the test
d) Purpose of the test
e) Method of sampling and other circumstances (date and person responsible for sampling)
f) Name and address of manufacturer or supplier of the tested material or system.
g) Name or identification marks of the tested product or products
h) Description of the tested object
i) Date of supply of the tested object
j) Date of test
k) Test method
l) Conditioning of the test specimens, environmetal data during the test (temperature, relative humidity etc.)
m) Identification of the test equipment and instruments used
n) Any deviations from the test method
o) Test results
p) Inaccuracy or uncertainty of the test results
q) Date and signature