BS EN 15815:2011

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Polymer modified bituminous thick coatings for waterproofing — Resistance to compression

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee B/546, Flexible sheets for waterproofing and water vapour control.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Polymer modified bituminous thick coatings for waterproofing - Resistance to compression

Revêtements bitumineux épais modifiés aux polymères pour imperméabilisation - Résistance à la compression

Kunststoffmodifizierte Bitumendickbeschichtungen zur Bauwerksabdichtung - Beständigkeit gegen Stauchung

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Foreword

This document (EN 15815:2011) has been prepared by Technical Committee CEN/TC 361 “Project Committee — Polymer modified bituminous thick coatings for waterproofing — Definitions/requirements and test methods”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

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1 Scope

This European Standard specifies a procedure for determining the resistance to compression of polymer modified bituminous thick coatings for waterproofing.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 206-1, *Concrete — Part 1: Specification, performance, production and conformity*

FprEN 15814:2011, *Polymer modified bituminous thick coatings for waterproofing — Definitions and requirements*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in FprEN 15814:2011 apply.

4 Principle

After coating the substrate and conditioning the test specimen is placed in a test rig. After then the surface of the coated substrate is stressed with a constant load till a stabilization of the reduction of thickness is reached.

5 Apparatus

5.1 **Flat base** with a diameter equal to or greater than 10 mm (accuracy of 10 µm) to measure the thickness of layers prior to loading.

5.2 **Test rig**, capable of exerting a constant pressure on a surface over an extended period of time.

5.3 Extensometer or vernier calliper (accuracy of 10 µm), measuring marks, micrometer.

5.4 Metal or a plastic frame or a screed template.

5.5 **Concrete support/loading platens** with an area greater or equal than 20 cm $\times$ 20 cm and with a thickness greater or equal than 4 cm thick, minimum 28 days old, minimum quality C 20/25 in accordance with EN 206-1. The upper and lower surfaces of the support/platens are ground so as to be flat and parallel to each other.

6 Test specimens

6.1 General

Squared test specimen with a size of approximately 20 cm $\times$ 20 cm.

6.2 Preparation

The supports and the components of the polymer modified bituminous thick coatings shall be conditioned prior to the preparation of the specimens in a normal climate of (23 ± 2) °C and a relative humidity of (50 ± 5) % in accordance with ISO 554 for at least 24 h.

The polymer modified bituminous thick coating shall be prepared at room temperature as specified by the manufacturer of the product and applied to the ground surface of the concrete support over an area of 20 cm × 20 cm, also at a room temperature.

The thickness of the wet layer shall be such that the thickness of the dry layer corresponds to that specified by the manufacturer for each type of use after drying (at least 3 mm or 4 mm) within a tolerance of 10 %. A frame of the appropriate height or screed template, in which the layer is struck off, shall be used to obtain the required thickness.

The specimens shall be left to dry in a normal climate of (23 ± 2) °C and a relative humidity of (50 ± 5) % in accordance with ISO 554 for 28 days prior to testing.

6.3 Dimensions of the test specimens

The thickness of the dry layer shall be measured using vernier callipers permitting a reading to 0,1 mm. 12 readings shall be taken. The highest and lowest values shall be ignored and the mean value calculated from the remaining 10 values.

6.4 Conditioning of test specimens

The test specimens shall be stored for at least 28 days at a normal climate (23 ± 2) °C and a relative humidity of (50 ± 5) % prior to testing.

7 Procedure

7.1 Test conditions

The test shall be carried out at (23 ± 2) °C.

7.2 Procedure

The thicknesses of the layer shall be determined at sixteen measuring points distributed evenly over the surface of the specimen, but at a distance of not less than 2 cm from the edges of the specimen The mean thickness of the dry layer shall then be determined (S_v).

A minimum of three specimens shall be tested in each test. Several specimens may be stacked and tested simultaneously for convenience. The surface of the coating shall be prevented from adhering to the support of the specimen above it or to the loading platens by inserting a suitable separating layer (e.g. silicone-coated paper) between the specimens.

Specimens tested simultaneously shall be placed in a suitable test rig to prevent any lateral displacement of the specimens occurring during the test and to ensure an evenly distributed application of force over the entire surface of the specimens.

Two gauge marks shall be made on the four sides of the specimen supports and loading platens at a distance of one third of the side length from the edges to enable the mean change in the thickness of the layers of each specimen during the test to be determined.

After the specimens have been mounted in the test rig, the distance between the gauge marks on each specimen shall be measured to 10 µm. A preliminary load of 0,01 MN/m² shall then be applied. The distances between the gauge marks shall be measured again immediately afterwards. The mean change in the thickness of each specimen (ΔS_0) shall be determined from the differences between individual measurements. The thickness of the layers at the start of the test (S_0) is therefore:

$$S_0 = S_v - \Delta S_0 \quad (1)$$

where

S_0 is the thickness of the layer at the start of the test, in millimetre (mm);

S_v is the mean thickness of the dry layer, in millimetre (mm);

ΔS_0 is the mean change of the thickness, in millimetre (mm).

The main load is then applied in accordance with FprEN 15814.

The layer thickness of each specimen shall be measured daily.

The test is deemed to have been passed if the mean change in the thickness of each specimen after 5 days (S_5) is less than 50 % of the initial thickness of the layer and the difference between the changes over the last three days, e.g. between the 2nd day and 5th day ($S_5 - S_2$), does not exceed 3 % (stabilisation).

If the change over three days exceeds 3 %, the test can be extended up to a maximum of 40 days or until the change over three days ($S_n - S_{n-3}$) is ≤ 3 % for an overall change of ≤ 50 %. All three specimens shall fulfil these requirements.

8 Expression of results and precision

8.1 Expression of results

The mean deviation of the thickness of each specimen (ΔS_n) from the initial thickness (S_0) at each measurement n is expressed as the relative change in the thickness of the layer S_n.

$$S_n = (\Delta S_n / S_0) \times 100 \quad (2)$$

where

S_n is the relative change of the thickness of the layer, in percent (%);

ΔS_n is the mean deviation of the thickness of each specimen, in millimetre (mm);

S_0 is the initial thickness, in millimetre (mm).

The test results for each specimen shall be recorded (or plotted, as required) over time and analysed.

8.2 Precision

Precision data are currently not available.

9 Test report

The test report shall include at least the following information:

a) all details necessary to identify the product tested;

b) a reference to this European Standard (i.e. EN 15815) and any deviation from it;

c) details of preparation of test specimens in accordance with Clause 6;

d) test procedure including:

- test pressure;
- deviation of test conditions;

e) the test results in accordance with Clause 8;

f) the dates of the tests.

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