

Flexible underlays for waterproofing for walls

Technical Document

DT 99038-01

1000-hour UV Exposure and Heat Artificial
Weathering Test Protocol

Adhesive Testing Protocol

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CHANGE HISTORY

Revision No.	Date of application	Changes
00	17/11/2017	Updating the layout and reference of the document.
01	09/10/2018	Integration of 1000h aging test methodology.
02	05/02/2021	Added testing protocol on adhesives.
03	15/03/2023	Integration of protective membranes under ATec or DTA or ATEX.
04	15/04/2024	Deletion of the description of the E.J.C. Added shear test description figures.

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1 Artificial aging test protocol

The purpose of this document is to describe the protocol for testing artificial weathering by exposure to UV radiation for 1000 h followed by long-term exposure to heat from a flexible wall membrane. The resistance to water penetration, as well as the tensile strength and elongation will have to be determined after artificial ageing, as part of the QB 38 certification of flexible wall membranes, in addition to the NF EN 13859-2 Annex C standard and the DTU 31.2 which authorises an exposure duration of 1000 hours depending on the exposure in the construction phase different from that described in the EN 13859-2§ C.5.1 standard.

1.1 Apparatus

The apparatus for exposure to UV-A radiation at high temperatures must be specified in EN 1297.

A ventilated oven in accordance with EN 1296 must be used for heat exposure

1.2 Sample preparation

The specimens shall have the dimensions specified in § 5.2.3, 5.2.4 and 5.2.7 of EN 13859-2.

For the determination of tensile properties, two sets of five specimens in the longitudinal direction and two sets of five specimens in the transverse direction shall be prepared. One set of specimens in the series of five specimens in the longitudinal direction and another in the transverse direction must be artificially aged.

The tensile properties of the other two series of specimens shall be determined by a no-exposure test.

For the determination of resistance to water penetration, the specimens specified in §5.2.3 and 5.2.4 of EN 13859-2 must be prepared and exposed to artificial ageing.

1.3 Sample conditioning

The conditioning of specimens exposed to UV radiation must be carried out in accordance with § C.4.3 of EN 13839-2

1.4 Procedure

1.4.1 Exposure to UV radiation at high temperatures

In amending EN 1297 for the purposes of this standard, the following test conditions shall be applied.

The following criteria must be met:

- Standard Black Temperature (BST) of $(50 +3/-0)$ °C;
- UV lamp at 340 nm with irradiance set at 0.83 W/m²/nm on the UV machine;
- Exposure to UV light for 1000 hours;
- No spraying of the product.

The total irradiation energy that the product is to receive at the end of the test is approximately 160 MJ/m².

1.4.2 Heat exposure

The specimens shall be transferred to the ventilated oven in accordance with EN 1296 for an exposure period of 90 days at $(70 +/- 2)$ °C

1.5 Expression of results

Visually examine unexposed and exposed specimens and record and record any observed effects. Specifies resistance to water penetration according to § 4.3.2 of EN 13859-2 after exposure. Calculate and record the mean values of tensile strength and elongation at maximum force in accordance with § 4.3.5 of EN 13859 before and after exposure incorporating the one-sided confidence interval at 95% in accordance with ISO 2602.

2 Adhesive Testing Protocol

2.1 Shear Tests

The shear strength test shall be carried out in accordance with EN 12317. The assembly will have to be done according to the following 2 figures.

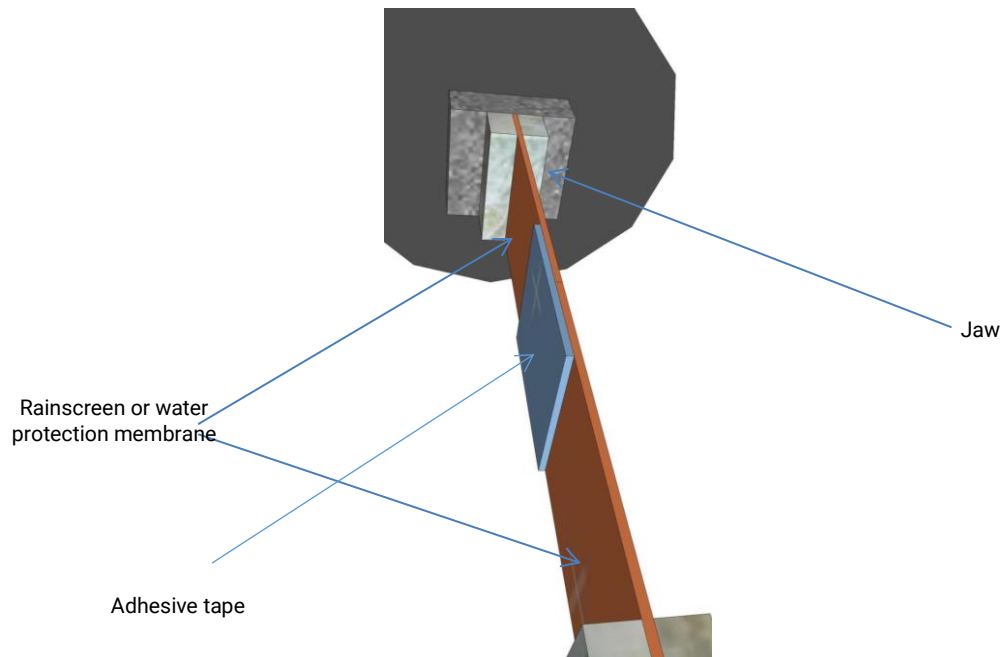


Figure 1 Shear test on a junction of two flexible screens with adherence to adhesive tape attached or associated (visible)

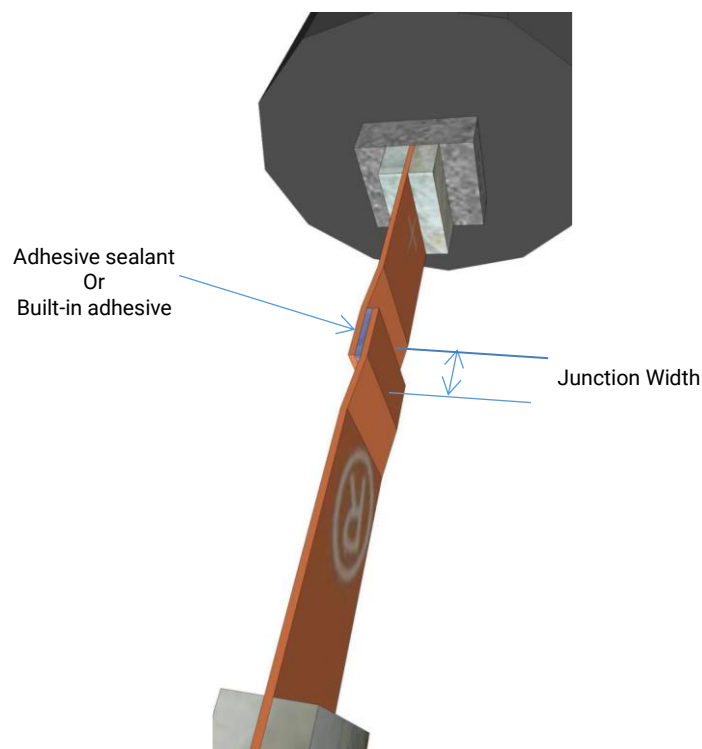


Figure 2 Shear test on joining two flexible screens with adhesive or integrated adhesive bonding (not visible)



Figure 3 Shear test on junction of two flexible screens with adhesive tape attachment (not visible)

2.2 Peel tests: Adaptation of the test protocol of the NF EN 12316-2: 2013 standard.

In order to verify the effectiveness of the adhesive attachment to the associated flexible membranes, suitability tests must be performed. The test consists of peeling a set of two flexible rainscreen membranes and adhesive tape. Suitability testing shall be performed for each associated support membrane.

These tests are carried out in new as well as aged condition.

2.2.1 Equipment:

Complies with EN 12316-2:2013

2.2.2 Sampling:

Samples should be collected in accordance with the following figure:

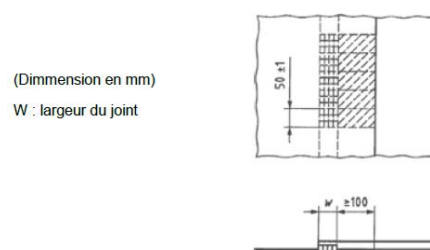


Figure 4 - sampling and dimensions of specimens (NF 12316-2)

The specimens are cut from the junction to be tested, 5 in number. The specimens are cut perpendicular to the junction.

2.2.3 Sample and specimen preparation:
Complies with EN 12316-2:2013

2.2.4 Procedure:
Complies with EN 12316-2:2013



Figure 5 Peel test on joining two flexible screens with adhesive tape attachment (not visible)

2.2.5 Expression of results:

2.2.5.1 Breakout Mode (Visual)

Indicate any information on the way the adhesion failed.

Failure modes can be identified as follows:

- Adhesive breakage (complete absence of adhesive material on the substrate);
- Cohesive break in the adhesive (complete break in the adhesive);
- Partial cohesive fracture (partial fracture in the substrate indicating weak adhesion);
- Rupture of the support membrane (complete rupture of the support);
- Breakage of the adhesive tape (tearing or disintegration of the tape).

In the event of a break in one of the substrates or a break in the adhesive tape, the shear test (in accordance with EN 12317-2) is not necessary.

2.2.5.2 Evaluation

Complies with § 9 of EN 12316-2:2013

2.2.5.3 Test Report:

Complies with § 10 of EN 12316-2:2013