



CERTIFICATION

QB 25 Certification Technical Appendix



Identification no.: QB 25
Revision No.: 04
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MODIFICATION HISTORY

Revision No.	Application date	Modifications
00	01/01/2015	Creation of the Technical Appendix
01	26/10/2015	Reworking of the technical appendix with different type and follow-up testing
02	04/01/2016	Update to the document layout and reference
03	01/01/2018	Inclusion of adhesive testing
04		<p>Introduction of the confidence interval of the mean is expressed with a confidence level of at least 95% (5% fractile), calculated according to Standard ISO 2602 at certified values.</p> <p>Recognition of type testing carried out under Standard EN 13859-2 for the QB 38 application (flexible wall membranes) for an admission application for the right to use the QB 25 mark.</p>



Part 1

Technical requirements: Type testing to be carried out in external laboratories and reference standards

The type testing can be carried out in the CSTB laboratory or in any other external laboratory which has been ISO 17025 accredited by a body belonging to the EA (European cooperation for Accreditation) or assessed periodically by an internal CSTB qualified auditor in accordance with the requirements set out in the ISO 17025 reference system.

Table AT1: Type testing

Type testing	Unit/Class	Flexible Underlays	Comments
SURFACE DENSITY	g/m ²	in § 5.2.1 in Standard NF EN 13859-1.	
WATER PENETRATION RESISTANCE (in new condition and after ageing)	W1	§ 5.2.3 in NF EN 13859-1	Artificial ageing is described below.
WATER VAPOUR TRANSMISSION PROPERTY	m	§ 5.2.5 in NF EN 13859-1.	This water vapour transmission property and its durability may, in case of questions from the certifying body, be presented to the members of the Assessment Committee.
TENSILE PROPERTY (in new condition and after ageing) Tensile force and elongation at break	N/50 mm %	§ 5.2.6 in Standard NF EN 13859-1 and its Appendix A	Artificial ageing is described below.
RESISTANCE TO TEARING ON NAIL SHANK	N	§ 5.2.7 in Standard NF EN 13859-1 and its Appendix B.	
DIMENSIONAL STABILITY	%	§ 5.2.8 in Standard NF EN 13859-1	
FLEXIBILITY AT LOW TEMPERATURE (PLIABILITY)	°C	§ 5.2.9 in Standard NF EN 13859-1	
ARTIFICIAL AGEING		§ 5.2.10 in Standard EN 13859-1 and its Appendix C	ageing by exposure to UV radiation for 336 hours, followed by thermal ageing in a ventilated oven at 70°C for 90 days
SHEAR STRENGTH of connection tape and adhesive (in new condition and after ageing) Set-up as shown in Figure 1 or 2 below	N/50 mm	NF EN 12317- 2 in new condition and after ageing.	Artificial ageing is described above. Important: if there is printing on the underlay in the area where the adhesive is bonded, the bond's performance on the printing must also be validated by means of a shear test in new condition and after ageing.

Note: As part of an admission application for the right to use the QB 25 mark for flexible underlays through Standard EN 13859-1, type testing carried out under Standard EN 13859-2 for the QB 38 application (flexible wall membranes) can be taken into account at the time of the application.



Table AT2: Tests performed during the Admission or Follow-Up Audit

Type testing	Unit/Class	Flexible Underlays	Comments
SURFACE DENSITY	g/m ²	in § 5.2.1 in Standard NF EN 13859-1.	-
WATER PENETRATION RESISTANCE (in new condition)	W1	§ 5.2.3 in NF EN 13859-1	-
TENSILE PROPERTY (in new condition) Tensile force and elongation at break	N/50 mm %	§ 5.2.6 in Standard NF EN 13859-1 and its Appendix A	-
RESISTANCE TO TEARING ON NAIL SHANK	N	§ 5.2.7 in Standard NF EN 13859-1 and its Appendix B.	-
DIMENSIONAL STABILITY	%	§ 5.2.8 in Standard NF EN 13859-1	-

Table AT3: Tests conducted by the mark laboratory on certified products as part of annual sample collection

Type testing	Unit/Class	Flexible Underlays	Comments
SURFACE DENSITY	g/m ²	in § 5.2.1 in Standard NF EN 13859-1.	-
TENSILE PROPERTY (in new condition) Tensile force and elongation at break	N/50 mm %	§ 5.2.6 in Standard NF EN 13859-1 and its Appendix A	-
RESISTANCE TO TEARING ON NAIL SHANK	N	§ 5.2.7 in Standard NF EN 13859-1 and its Appendix B.	-
DIMENSIONAL STABILITY	%	§ 5.2.8 in Standard NF EN 13859-1	-

The tests that will be conducted during the follow-up audits and later under the responsibility of the mark laboratory using collected samples shall be performed on each series of five test specimens in both directions for tensile properties and tearing on nail shank.

The minimal unilateral confidence interval of the mean is expressed with a confidence level of at least 95% (5% fractile), calculated according to Standard ISO 2602, and is then compared to the certified value.

Waterproofing system joint assemblies created using adhesive tape or bonding

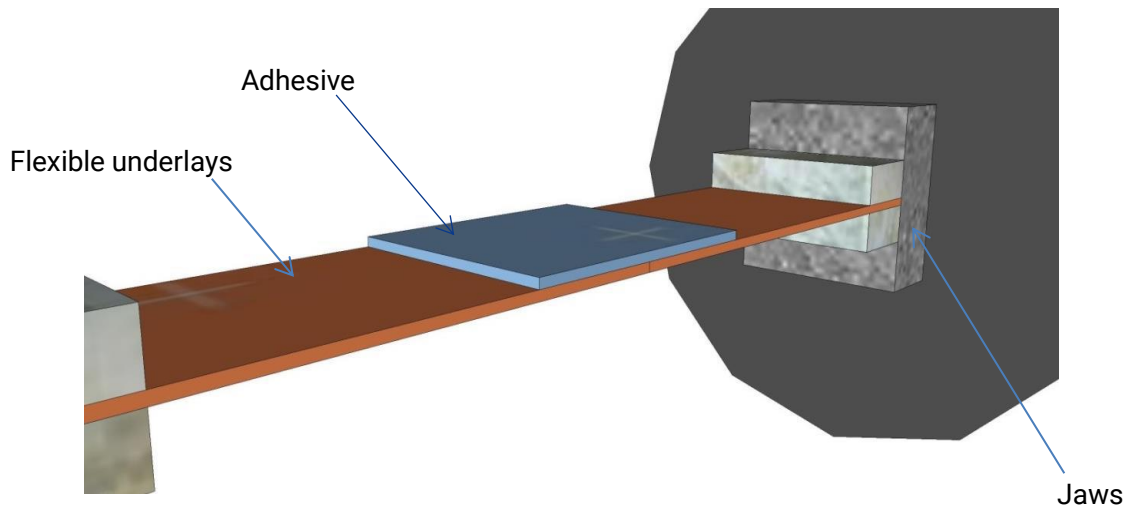


Figure 1 Shear test on membrane connected with adhesive tape bond (visible)

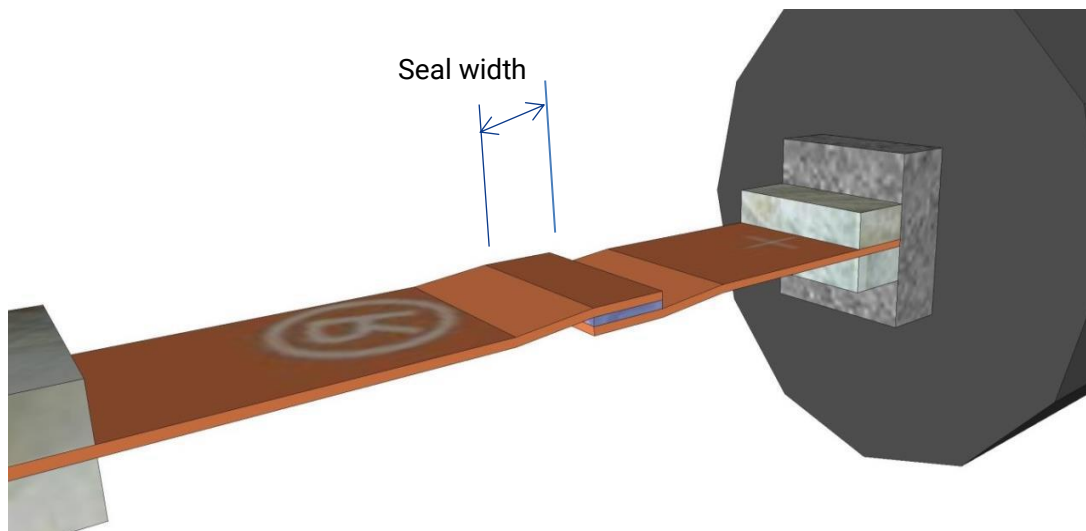


Figure 2 Shear test on membrane connected with adhesive putty bond (not visible)



Part 2

Technical specifications

This section describes the technical specifications for Flexible Underlays.
 The characteristics and performances are detailed in the table below:

Characteristics	Test methods	U	Values	Tolerances		
Length (MLV)	NF EN 1848-1 NF EN 1848-2	m	(MLV)	-0%		
Width (MDV)	NF EN 1848-1 NF EN 1848-2	m	(MDV)	-0.5% / + 1.5%		
Straightness	NF EN 1848-1 NF EN 1848-2	-	Passes/ Does not pass	30 mm per 10 m length		
Mass per unit of area (MDV)	NF EN 1849-1 NF EN 1849-2	g/m ²	(MDV)	-		
Water tightness property (1)						
Water penetration resistance (1) new condition	NF EN 1928 Method A modified by NF EN 13859-1 or NF EN 13111	-	Class W1			
Water penetration resistance (1) after ageing			Class W1			
Water vapour transmission property (2)						
Water vapour transmission property when new: Sd	NF EN ISO 12572/Climate C or NF EN 1931	m	(MDV)	±		
Mechanical properties (3)						
Tensile property: - New condition (MDV) - After ageing (MDV)	NF EN 12311-1 Modified by NF EN 13859-1	N/50 mm	L	T	L	T
			L (3)	T (3)	±	±
Elongation property: - New condition (MDV) - After ageing (MDV)	NF EN 12311-1 Modified by NF EN 13859-1	%	L (MDV)	T (MDV)	±	±
					±	±
Resistance to tearing (on nail shank) (MDV) (3)	NF EN 12310-1	N (LxT)	(3)	(3)	±	±
* Dimensional stability (MLV)	NF EN 1107-2	% (LxT)	-2; +2		-	
Flexibility at low temperature (MLV)	NF EN 1109	°C	-20°C			
Shear strength of overlaps between lengths in new condition and after ageing	NF 12317-2	N/50 mm	The manufacturer defines the minimum values to be achieved in new condition and after ageing. In addition, the optimum weight of the adhesive is checked during production			

(1), (2), and (3), see Paragraph 1.1.3

* Dimensional stability: The dimensional stability mechanical property should be indicated by the manufacturer in the control programme with quality assurance operations carried out once per year.



MLV: Manufacturer's Limit Value which must be obtained during testing, and which can be a minimum or maximum value.

MDV: Manufacturer's declared value, together with a tolerance

The certified characteristics are:

- The composition;
- Technical support;
- The EST classification is described below.

E characterises the water infiltration resistance:

E1: corresponds to Class W1 of Standard NF EN 13859-1 before and after ageing;

S characterises the water vapour permeability:

Sd1: corresponds to a value $S_d \leq 0,10$ m according to Standard NF EN 13859-1;

Sd2: corresponds to a value $0,10 \text{ m} < S_d \leq 0,18$ m according to Standard NF EN 13859-1;

Sd3: corresponds to a value $S_d > 0,18$ m according to Standard NF EN 13859-1.

T characterises the mechanical resistance of the Flexible Underlay and corresponds to a pairing, described in the Certification Reference System, of the tensile strength before and after ageing and the resistance to tearing on nail shank, according to Standard NF EN 13859-1:

T	Maximum on-centre between rafter or truss	Minimal tensile strength before ageing (L x T) EN 12311-1	Minimal tensile strength after ageing (L x T) EN 12311-1	Minimal resistance to tearing on nail shank (L x T) EN 12310-1
TR1	45 cm	100 N/50 mm	70 N/50 mm	75 N
TR2	60 cm	200 N/50 mm	100 N/50 mm	150 N
TR3	90 cm	300 N/50 mm	200 N/50 mm	225 N

Note: The two-directional tensile strength and tearing on nail shank characteristics should undergo statistical analysis including at least the following values: arithmetic mean, standard deviation, minimum value. The dispersion of the results shall be taken into account in the verification of conformity with the thresholds set out by the mark reference system.

Note: the manufacturer's self-inspection records shall be retained and archived for 10 years.