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and types of construction

Bautechnisches Prüfamt

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Laender Governments



European Technical Assessment

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Polyfleece SX 1000

Product family
to which the construction product belongs

Fully bonded, pre-applied flexible sheet for waterproofing

Manufacturer

an.kox GmbH
Junghansring 52
72108 Rottenburg a. N.
DEUTSCHLAND

Manufacturing plant

an.kox GmbH
Junghansring 52
72108 Rottenburg a. N.
DEUTSCHLAND

This European Technical Assessment
contains

12 pages including 7 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

EAD 030378-00-0605

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Specific part

1 Technical description of the product

"Polyfleece SX 1000" is a fully bonded, pre-applied flexible sheet for waterproofing with a three-layer structure, which consists of:

- LDPE foil as protective layer / first sealing layer,
- swellable, silane-modified polymer coating as a second sealing layer,
- PP/PES non-woven fabric (with especial treatment) as bonding layer to fresh concrete.

For the sealing of the longitudinal seams, the waterproofing sheet "Polyfleece SX 1000" is provided along the edges in the longitudinal direction with two factory-integrated, self-adhesive strips (see Annex B2). The adhesive strip on the non-woven side is 75 mm wide and the second adhesive strip on the opposite LDPE foil, as well as, on the other edge is 38 mm wide.

For the sealing of the lateral/cut seams, the following components are used:

- "Polyfleece SX 1000 - adhesive tape": 75 mm wide, acrylic based, double-sided adhesive tape.
- "Polymer-swellingpaste SX 100": swellable, single-component adhesive and sealing compound with a modified polymer base.

For an adequate application of the product – depending on the specific formwork and structure details (e.g. penetrations) – other adjuvants may be needed. In general, these adjuvants are given in the manufacturer's technical documents¹. In single cases the manufacturer is responsible to give guidance which detail treatment is required.

The full and permanent bond to concrete and the protection from lateral water migration are provided by the interlocking of the cement paste with the PP/PES non-woven fabric.

The product is capable for crack bridging as well.

Additional descriptions of the product und the components are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The fully bonded, pre-applied flexible sheet for waterproofing is intended to be used for:

- envelope seal as waterproofing barrier (basement tanking),
- crack bridging and waterproof sealing of cracks and
- prevention of lateral water migration between barrier seal and concrete substrate.

The product is intended to be applied to a structure executed with waterproof concrete (concrete with high water penetration resistance).

The intended use covers the contact with bitumen.

The intended use does not cover bridge deck waterproofing.

The performance given in Section 3 is only valid if the fully bonded, pre-applied flexible sheet for waterproofing is used in compliance with the specifications and conditions given in Annex B.

¹ The manufacturer's technical documents comprise all information necessary for the production and the installation of the product as well as for repair of the waterproofing made from that and it is deposited with DIBt.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fully bonded, pre-applied flexible sheet for waterproofing of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	see Annex A

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Mechanical strength - Tensile strength	see Annex A
Elongation at maximum tensile force	see Annex A
Resistance to static loading	see Annex A
Resistance to impact	see Annex A
Watertightness	see Annex A
Watertightness of joints with adhesive tape	see Annex A
Artificial ageing by long term exposure to elevated temperature	see Annex A
Water vapour transmission property	see Annex A
Alkali resistance in high pH solution	see Annex A
Acid resistance	see Annex A
Compatibility with bitumen	see Annex A
Shear resistance of joints	see Annex A
Resistance to tearing (nail shank)	see Annex A
Elongation at maximum tensile force and maximum tensile force at low temperatures (-45 °C ±2 °C)	see Annex A
Crack bridging ability	see Annex A
Peel resistance (180-degree peel)	see Annex A
Peel resistance (180-degree peel) after immersion in water	see Annex A
Peel resistance (180-degree peel) after exposure to elevated temperature (70 °C)	see Annex A
Peel resistance (180-degree peel) after cleaning	see Annex A
Resistance to damage – water creep at leakage	see Annex A
Resistance to damage – water creep at leakage after cleaning	see Annex A
Watertightness of T-joints	see Annex A
Watertightness under intended use conditions (Tank-test)	see Annex A

Essential characteristic	Performance
Bond strength after water and thermal aging	see Annex A
Dimensional stability	see Annex A
Shear resistance of joints after water aging (50 °C)	see Annex A

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 030378-00-0605, the applicable European legal act is: 1999/90/EC.

The system to be applied is: 2+

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: 1999/90/EC, as amended by Decision 2001/596/EC.

The system to be applied is: 3

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

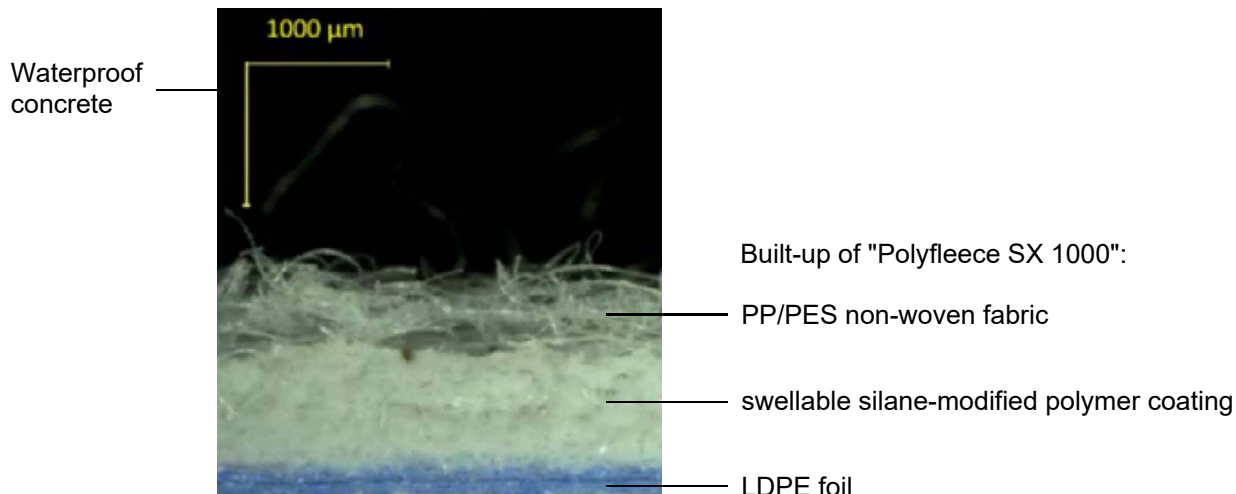
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 10 October 2022 by Deutsches Institut für Bautechnik

Bettina Hemme
Head of Section

beglaubigt:
Hannoun

Description of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000"



Length	20 m (±0.05 m)
Width	1 m / 2m (±0.03 m)
Straightness	≤ 40 mm/10 m
Total Thickness	1.69 mm (±5 %)
Mass per unit area	1280 g/m ² (±10 %)

Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000"

Essential Characteristic		Performance
Reaction to fire		class E ¹⁾
Mechanical strength - Tensile strength	longitudinal / transverse	≥ 250 N/50 mm / ≥ 200 N/50 mm
Elongation at maximum tensile force = Elongation at break	longitudinal / transverse	≥ 20 % / ≥ 40 %
Elongation at maximum tensile force and maximum tensile force at low temperatures (-45 °C)		
Tensile strength	longitudinal / transverse	≥ 500 N/50 mm / ≥ 400 N/50 mm
Elongation at maximum tensile force = Elongation at break	longitudinal / transverse	≥ 15 % / ≥ 25 %
Resistance to static loading Method B – substrate: concrete		20 kg
Resistance to impact Method A – substrate: aluminium plate		250 mm
Resistance to tearing (nail shank)	longitudinal / transverse	≥ 150 N / ≥ 150 N
Water vapour transmission property		Sd = 150 ±20 m

Polyfleece SX 1000 an.kox GmbH	Annex A1
Description and performance of product	

Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000" (continued)	
Essential Characteristic	Performance
Watertightness	watertight, test pressure: 500 kPa ²⁾
Watertightness of joint with adhesive strip³⁾ longitudinal seams with "integrated adhesive strips"; lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" + "Polymer-swellingpaste SX 100"	watertight, test pressure: 100 kPa ²⁾
Watertightness of T-joints T-joints of "integrated adhesive strips" and "Polyfleece SX 1000 - adhesive tape" + "Polymer-swellingpaste SX 100"	watertight, test pressure: 100 kPa ²⁾
Watertightness under intended use conditions (Tank-test) "Polyfleece SX 1000" with "integrated adhesive strips" and "Polyfleece SX 1000 - adhesive tape" + "Polymer-swellingpaste SX 100", 1mm construction joint	watertight, reference hydrostatic pressure: 2 bar ⁴⁾ (test pressure: 500 kPa)
Crack bridging ability crack width: 2.0 mm	watertight, no cracks, no detachment or formation of blisters, reference hydrostatic pressure: 2 bar ⁴⁾ (test pressure: 500 kPa)
Resistance to damage – water creep at leakage	≤ 15 mm
Resistance to damage – water creep at leakage after cleaning	≤ 20 mm
Peel resistance (180-degree peel)	≥ 50 N
Peel resistance (180-degree peel) after immersion in water	
7- and 56-days normal air conditioning	≥ 50 N
7-, 28- and 56-days water immersion	≥ 40 N
Peel resistance (180-degree peel) after exposure to elevated temperature (70 °C)	
56-days normal air conditioning	≥ 50 N
28- and 56-days thermal aging (70 °C)	≥ 40 N
Peel resistance (180-degree peel) after cleaning	≥ 50 N
Shear resistance of joints	
longitudinal seams with "integrated adhesive strips"	≥ 200 N/50 mm, fracture in joint
lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" + "Polymer-swellingpaste SX 100"	≥ 250 N/50 mm, fracture outside joint
Shear resistance of joints after water aging (50 °C)	
longitudinal seams with "integrated adhesive strips" 7-, 14-, 28- and 56-days hot water aging (50 °C)	≥ 100 N/50 mm, fracture in joint; deviation from state of delivery: 0 % to -50 %
lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" + "Polymer-swellingpaste SX 100" 7-, 14-, 28- and 56-days hot water aging (50 °C)	≥ 150 N/50 mm, fracture in joint; deviation from state of delivery: -10 % to -60 %
Polyfleece SX 1000 an.kox GmbH	Annex A2
Performance of product	

Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000" (continued)	
Essential Characteristic	Performance
Artificial ageing by long term exposure to elevated temperature	
Thermal aging for 24 weeks at 70 °C: Durability of watertightness	watertight at test pressure of 60 kPa ⁵⁾ before and after aging (durable against thermal aging)
Visible defects	Free of visible defects
Change of tensile properties (longitudinal) / state of delivery	
– Tensile strength	±20 %
– Elongation at maximum tensile force	±20 %
– Modulus of elasticity	±20 %
Oxidation induction time (isothermal OIT)	≥ 6 min
Overall aging behaviour in the course of test time (4, 8, 16 and 24 weeks) at all aging temperatures (23, 40 and 70 °C)	durable against thermal aging, free of visible defects, tensile properties and OIT within above given performance ranges, no linear change
Alkali resistance in high pH solution	
Durability of watertightness	watertight at test pressure of 60 kPa ⁵⁾ before and after immersion (durable against alkali)
Change of tensile properties (longitudinal) / state of delivery	
– Tensile strength	±20 %
– Elongation at maximum tensile force	±20 %
– Modulus of elasticity	±30 %
Acid resistance	
Durability of watertightness	watertight at test pressure of 60 kPa ⁵⁾ before and after immersion (durable against acid)
Change of tensile properties (longitudinal) / state of delivery	
– Tensile strength	±20 %
– Elongation at maximum tensile force	±20 %
– Modulus of elasticity	±25 %
Polyfleece SX 1000 an.kox GmbH	Annex A3
Performance of product	

Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000" (continued)

Essential Characteristic	Performance
Compatibility with bitumen	
Durability of watertightness	watertight at test pressure of 60 kPa ⁵⁾ before and after exposure (durable against bitumen)
Change of tensile properties (longitudinal) / reference value	
– Tensile strength	±20 %
– Elongation at maximum tensile force	±20 %
– Modulus of elasticity	±20 %
Bond strength after water and thermal aging	
2 days after constructing (early formwork stripping)	≥ 0.50 MPa; adhesion failure
7-days standard atmosphere conditioning (reference value)	≥ 0.50 MPa; adhesion failure
28- and 56-days water immersion	≥ 0.20 MPa; cohesion failure in the swellable layer; no linear drop; deviation from reference value: -30 % to -70 %
28- and 56-days thermal aging (70 °C)	≥ 0.50 MPa; adhesion failure; no linear drop; deviation from reference value: ±10 %
Dimensional stability	longitudinal / transverse ±0.5 % / ±0.5 %

1) Class according to EN 13501-1

2) Actual water pressure in the test (free sheet)

3) Assessment method of "Watertightness of T-joints" is used for assessing wide joints

4) Reference hydrostatic pressure (the relevant water load for the intended use) equals the actual test pressure under intended use conditions (applied state) divided by a safety factor of 2.5

5) Test pressure for "Type T" as of EN 13967

Polyfleece SX 1000 an.kox GmbH	Annex A4
Performance of product	

1. Polyfleece SX 1000

Fully bonded, pre-applied flexible sheet for waterproofing as described in clause 1 and Annex A1 of this ETA

Width: 1 m or 2 m

Length: 20 m

Total thickness: 1.69 mm

For the characteristics see Annexes A1 - A4



2. Polyfleece SX 1000 - adhesive tape

Acrylic based double-sided adhesive tape with a PES/PVA-scrim

Width: 75 mm

Length: 20 m

Total thickness: 0.24 mm *

Adhesive strength > 30 N/25 mm (24 hours) *



3. Polymer-swellingpaste SX 100

Swellable, single-component adhesive and sealing compound with a modified polymer base

290 ml – cartridge

Density: 1.4 g/cm³ *

Shore hardness (Shore A): Shore A 30 *

Tensile strength: 1.2 N/mm² *

Elongation at break: 300 % *



* manufacturer's specifications

Polyfleece SX 1000

an.kox GmbH

Description of product and components

Annex A5

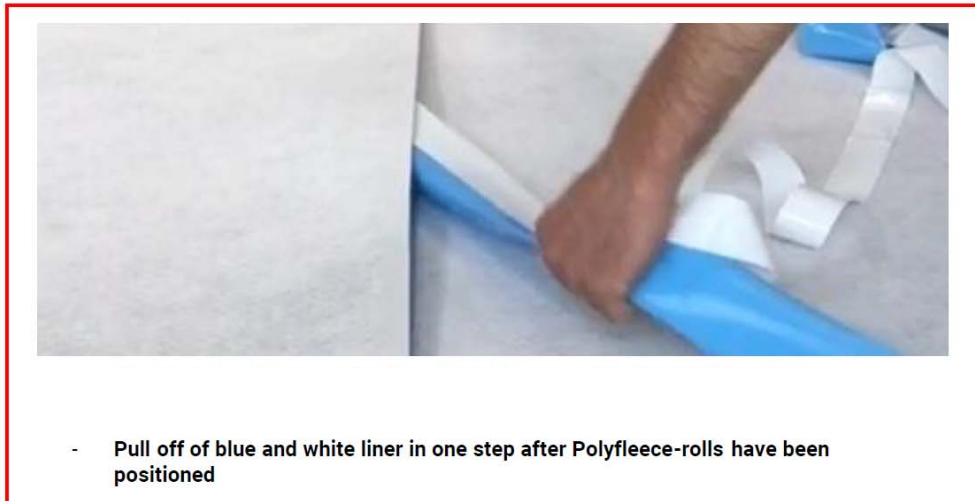
Installation

The performance of the fully bonded, pre-applied flexible sheet for waterproofing can be assumed only, if the installation is carried out according to the installation instructions stated in the technical documents of the manufacturer, in particular taking account of the following points:

- installation by appropriately trained personnel;
- installation of only those components which are specified components of the product, e. g., "Polyfleece SX 1000 - adhesive tape" and "Polymer-swellingpaste SX 100";
- installation with the required tools and adjuvant;
- precautions during installation;
- inspecting the substrate surface for stability, cleanliness, flatness and correct treatment;
- keeping the boundary conditions (e.g. temperature range, humidity);
- inspecting during installation and of the finished waterproofing and documentation of the results;
- securing the waterproofing sheet in place during installation, reinforcement works and concreting;
- appropriate fixation, maximum/minimum fixing distances;
- treatment of details, e.g. penetrations, corners, free ends, in accordance with manufacturer's technical documents;
- protection against dirt and mechanical damage, if necessary, cleaning and/or repairing the waterproofing sheet before concreting;
- "Polyfleece SX 1000" is laid on a suitable substrate or attached to the formwork (pre-applied) with the bonding layer (non-wovens side) facing the fresh concrete;
- Longitudinal seams are overlapped by at least 75 mm and bonded using the integrated adhesive strips;
- Lateral/cut seams are overlapped by approximately 100 mm and bonded using the double-sided adhesive tape "Polyfleece SX 1000 – adhesive tape" together with the "Polymer-swellingpaste SX 100".

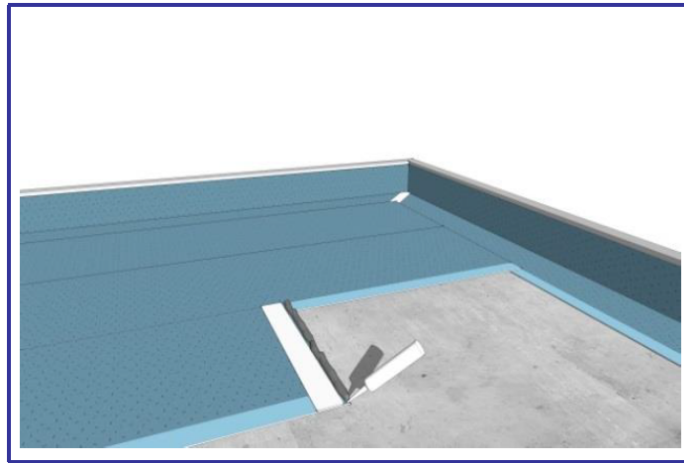
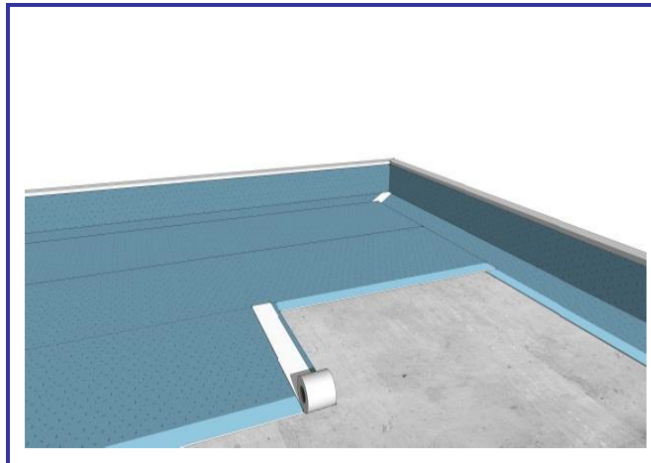
<p>Polyfleece SX 1000 an.kox GmbH</p>	<p>Annex B1</p>
<p>Intended use Specifications</p>	

Bonding of the longitudinal seams using the integrated adhesive strips:



- Pull off of blue and white liner in one step after Polyfleece-rolls have been positioned

Bonding of the lateral/cut seams using the double-sided adhesive tape "Polyfleece SX 1000 - adhesive tape" and the adhesive/sealing compound "Polymer-swellingpaste SX 100":



- If that is not possible following procedure must be carried out:
At corner and/or cross-/T-overlaps the self-adhesive Polyfleece SX® 1000- tape 75 mm is assembled at about 25 mm from the frontside leaving a 25 mm fleece-strip open. Subsequently removal of the protection foil.

- Additional bonding of the open fleece edge stripe with Polymer-swellingpaste SX® 100.

Polyfleece SX 1000
an.kox GmbH

Intended use
Specifications

Annex B2