

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-22/0536**  
**of 10 October 2022**

English translation prepared by DIBt - Original version in German language

### 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  
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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 documents<sup>1</sup>. 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.

<sup>1</sup> 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**

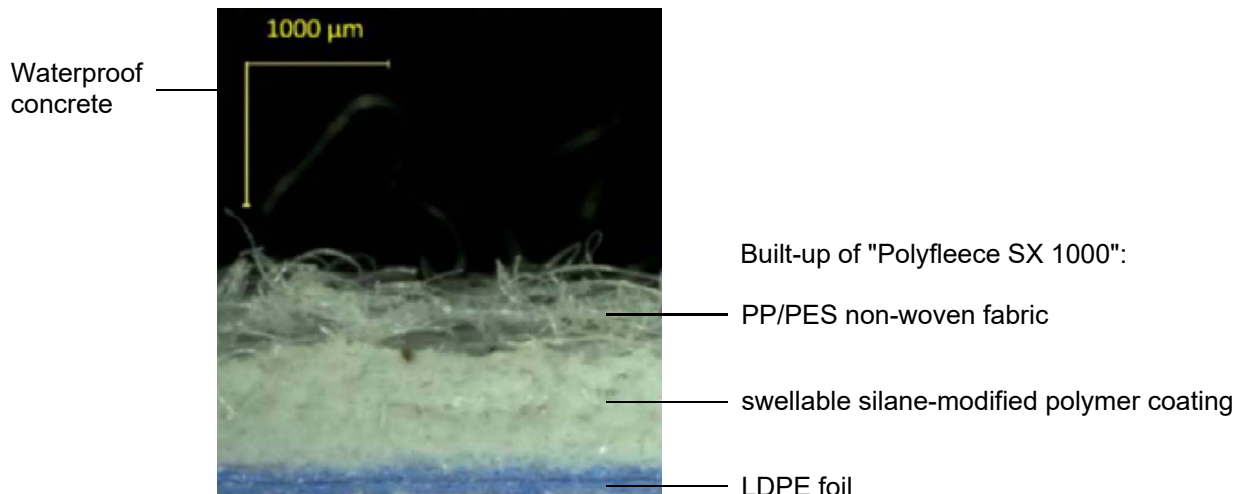
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

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"**



Built-up of "Polyfleece SX 1000":

PP/PES non-woven fabric

swellable silane-modified polymer coating

LDPE foil

|                    |                               |
|--------------------|-------------------------------|
| 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 <sup>2</sup> (±10 %) |

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

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

|   |          |
|---|----------|
| <b>Polyfleece SX 1000</b><br>an.kox GmbH      | Annex A1 |
| <b>Description and performance of product</b> |          |

| <b>Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000" (continued)</b>   |  |
|---|--|
| <b>Essential Characteristic</b>   | <b>Performance</b>   |
| <b>Watertightness</b>   | watertight, test pressure: 500 kPa <sup>2)</sup>   |
| <b>Watertightness of joint with adhesive strip<sup>3)</sup></b><br>longitudinal seams with "integrated adhesive strips";<br>lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" +<br>"Polymer-swellingpaste SX 100"       | watertight, test pressure: 100 kPa <sup>2)</sup>   |
| <b>Watertightness of T-joints</b><br>T-joints of "integrated adhesive strips" and "Polyfleece SX 1000 -<br>adhesive tape" + "Polymer-swellingpaste SX 100"  | watertight, test pressure: 100 kPa <sup>2)</sup>   |
| <b>Watertightness under intended use conditions (Tank-test)</b><br>"Polyfleece SX 1000" with "integrated adhesive strips" and<br>"Polyfleece SX 1000 - adhesive tape" +<br>"Polymer-swellingpaste SX 100", 1mm construction joint | watertight,<br>reference hydrostatic pressure: 2 bar <sup>4)</sup><br>(test pressure: 500 kPa)   |
| <b>Crack bridging ability</b><br>crack width: 2.0 mm  | watertight, no cracks, no detachment or<br>formation of blisters,<br>reference hydrostatic pressure: 2 bar <sup>4)</sup><br>(test pressure: 500 kPa) |
| <b>Resistance to damage – water creep at leakage</b>  | ≤ 15 mm  |
| <b>Resistance to damage – water creep at leakage after cleaning</b>   | ≤ 20 mm  |
| <b>Peel resistance (180-degree peel)</b>  | ≥ 50 N   |
| <b>Peel resistance (180-degree peel) after immersion in water</b>   |  |
| 7- and 56-days normal air conditioning  | ≥ 50 N   |
| 7-, 28- and 56-days water immersion   | ≥ 40 N   |
| <b>Peel resistance (180-degree peel) after exposure to elevated temperature (70 °C)</b>   |  |
| 56-days normal air conditioning   | ≥ 50 N   |
| 28- and 56-days thermal aging (70 °C)   | ≥ 40 N   |
| <b>Peel resistance (180-degree peel) after cleaning</b>   | ≥ 50 N   |
| <b>Shear resistance of joints</b>   |  |
| longitudinal seams with "integrated adhesive strips"  | ≥ 200 N/50 mm, fracture in joint   |
| lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" +<br>"Polymer-swellingpaste SX 100"   | ≥ 250 N/50 mm, fracture outside joint  |
| <b>Shear resistance of joints after water aging (50 °C)</b>   |  |
| longitudinal seams with "integrated adhesive strips"  | ≥ 100 N/50 mm, fracture in joint;  |
| 7-, 14-, 28- and 56-days hot water aging (50 °C)  | deviation from state of delivery:<br>0 % to -50 %  |
| lateral/cut seams with "Polyfleece SX 1000 - adhesive tape" +<br>"Polymer-swellingpaste SX 100"   | ≥ 150 N/50 mm, fracture in joint;  |
| 7-, 14-, 28- and 56-days hot water aging (50 °C)  | deviation from state of delivery:<br>-10 % to -60 %  |
| <b>Polyfleece SX 1000</b><br>an.kox GmbH  | Annex A2   |
| <b>Performance of product</b>   |  |

| <b>Performance of the fully bonded, pre-applied flexible sheet for waterproofing "Polyfleece SX 1000" (continued)</b>   |  |
|---|--|
| <b>Essential Characteristic</b>   | <b>Performance</b>   |
| <b>Artificial ageing by long term exposure to elevated temperature</b>  |  |
| Thermal aging for 24 weeks at 70 °C:<br>Durability of watertightness  | watertight at test pressure of 60 kPa <sup>5)</sup> 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 |
| <b>Alkali resistance in high pH solution</b>  |  |
| Durability of watertightness  | watertight at test pressure of 60 kPa <sup>5)</sup> 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 %  |
| <b>Acid resistance</b>  |  |
| Durability of watertightness  | watertight at test pressure of 60 kPa <sup>5)</sup> 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 %  |
| <b>Polyfleece SX 1000</b><br>an.kox GmbH  |  |
| <b>Performance of product</b>   | Annex A3   |



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

| Essential Characteristic                                      | Performance   |
|---|---|
| <b>Compatibility with bitumen</b>                             |   |
| Durability of watertightness                                  | watertight at test pressure of 60 kPa <sup>5)</sup> 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 %   |
| <b>Bond strength after water and thermal aging</b>            |   |
| 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 %                                 |
| <b>Dimensional stability</b>                                  | 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

**Performance of product**

Annex A4

**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/cm<sup>3</sup> \*

Shore hardness (Shore A): Shore A 30 \*

Tensile strength: 1.2 N/mm<sup>2</sup> \*

Elongation at break: 300 % \*



\* manufacturer's specifications

**Polyfleece SX 1000**

an.kox GmbH

Annex A5

**Description of product and components**

**Installation**

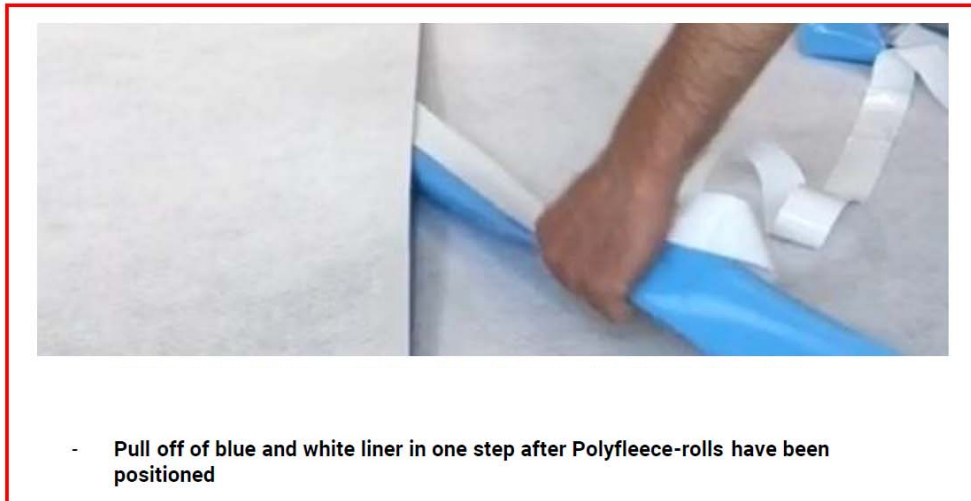
The performance of the fully bonded, pre-applied flexible sheet for waterproofing can be assumed only, if the installation is carried out according to the installation instructions stated in the technical documents of the manufacturer, in particular taking account of the following points:

- 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".

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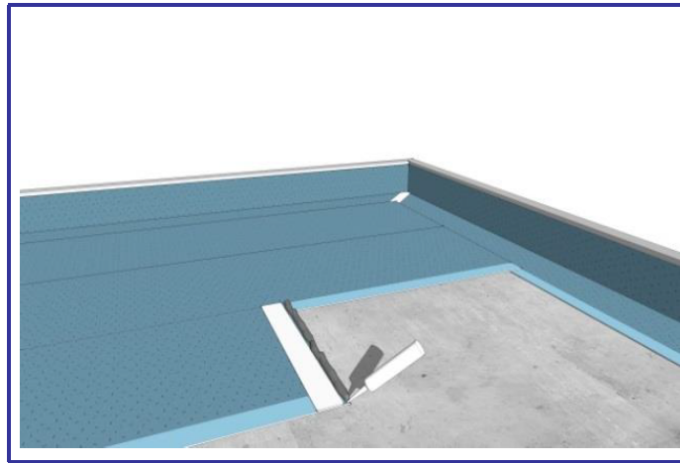
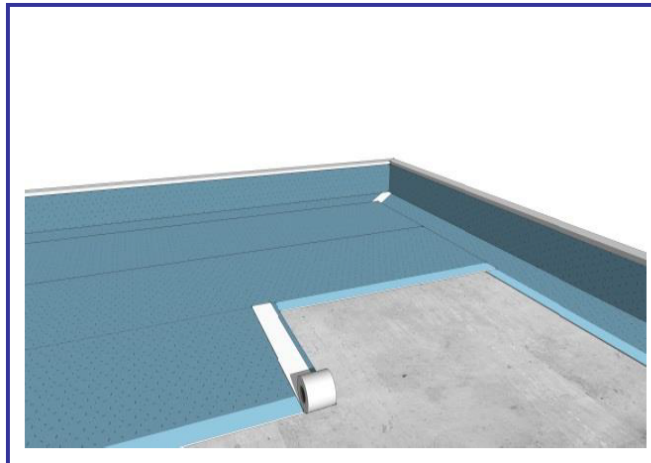
|  |                 |
|--|-----------------|
| <p><b>Polyfleece SX 1000</b><br/>an.kox GmbH</p> | <p>Annex B1</p> |
| <p><b>Intended use</b><br/>Specifications</p>    |                 |

**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<sup>®</sup> 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<sup>®</sup> 100.

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**Polyfleece SX 1000**  
an.kox GmbH

**Intended use**  
Specifications

Annex B2