

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-23/0531
of 21 December 2023

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

DIFFLEX THERMO TPU ND SK

Product family
to which the construction product belongs

Membranes for use as roof underlays

Manufacturer

BWK Dachzubehör GmbH
Birkichstraße 1
74549 Wolpertshausen
DEUTSCHLAND

Manufacturing plant

BWK IV (80324)

This European Technical Assessment
contains

8 pages including 3 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 030218-01-0402

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Specific part

1 Technical description of the product

"DIFFLEX THERMO TPU ND SK" is a 2-layer roof underlay membrane, which consists of a special polyester nonwoven (PES) with a diffusion-open, special polyurethane copolymer coating (TPU) on the upper side.

"DIFFLEX THERMO TPU ND SK" is provided with alternately arranged, factory-integrated self-adhesive zones along both longitudinal edges (integrated self-sealing edges).

The membranes do not contain any substances that are intended to inhibit or prevent root penetration (root protection agents).

The roof underlay membranes are fastened to the timber construction with nails or screws, e.g., by means of nailed or screwed counter battens.

For an adequate application of product – depending on the specific roof design, e. g. roof slope, roof built-up, details – other adjuvants may be needed, e. g. mastic sealant, adhesive tape, nail-sealing tape. These adjuvants are given in the manufacturer's technical documents¹.

An additional product description is given in Annex A.

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

The membranes are intended for use as roof underlay under roof covering of discontinuous roofs.

In the technical documents the manufacturer gives information concerning the substrates, roof build-ups, roof pitches and exposure time to weathering which the product is suitable for.

The performance given in Section 3 is only valid if the roof underlay membranes are used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the roof underlay membranes of at least 10 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
External fire performance of roofs	see Annex A

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

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Resistance to water penetration	see Annex A
Water column resistance	see Annex A
Water vapour transmission properties	see Annex A
Tensile properties	see Annex A
Resistance to tearing	see Annex A
Hail resistance	see Annex A
Dimensional stability	see Annex A
Flexibility at low temperature	see Annex A
Resistance to penetration of air	see Annex A
Water tightness of seams	see Annex A
Emissivity	see Annex A
Tightness of perforations from nails and screws	see Annex A
Content, emission and/or release of dangerous substances	see Annex A

3.3 Aspects of durability

Essential characteristic	Performance
Artificial ageing behaviour by exposure to combination of UV radiation (336 h) and elevated temperature and to heat	see Annex A
High heat resistance	see Annex A
Artificial ageing behaviour by exposure to combination of UV radiation (5000 h) and elevated temperature and to heat	see Annex A
Artificial ageing behaviour by prolonged exposure to heat with accelerated air-speed 5 ± 2 m/s	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. 030218-01-0402, the applicable European legal act is: Decision 1999/90/EC.

The system to be applied is: 3

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 1999/90/EC, as amended by 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 21 December 2023 by Deutsches Institut für Bautechnik

Bettina Hemme
Head of Section

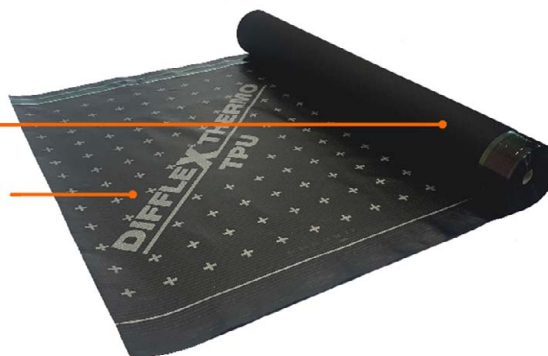
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Description of the roof underlay membrane "DIFFLEX THERMO TPU ND SK"

Built-up:

Special polyester nonwoven carrier (PES)

Special polyurethane copolymer coating (TPU)



Length	50 m (- 0 %)
Width	1.5 m (+ 1.5 / - 0.5 %)
Straightness	≤ 30 mm/10 m
Mass per unit area	210 g/m ² (± 10%)

Performance of the roof underlay membrane "DIFFLEX THERMO TPU ND SK"

Essential characteristic	Performance
Reaction to fire	Class E – d2 ¹⁾
External fire performance of roofs	NPA
Resistance to water penetration	Class W1 ²⁾
Water column resistance	NPA
Water vapour transmission properties (S _d)	0.16 m
Tensile properties	
Maximum tensile force	longitudinal / transverse 360 N/50 mm / 400 N/50 mm
Elongation	longitudinal / transverse 45 % / 65 %
Resistance to tearing	longitudinal / transverse 250 N / 200 N
Hail resistance (damaging velocity v _d)	NPA
Dimensional stability	longitudinal / transverse < 1 % / < 1 %
Flexibility at low temperature	- 30 °C
Resistance to penetration of air	0 m ³ /(m ² × h × 50 Pa)

(NPA: no performance assessed)

¹⁾ Class according to EN 13501-1

The tests for reaction to fire have been performed regarding mounting and fixing as follows:

- free hanging

²⁾ Class according to EN 13859-1

DIFFLEX THERMO TPU ND SK

BWK Dachzubehör GmbH

Description and performance of product

Annex A1

Performance of the roof underlay membrane "DIFFLEX THERMO TPU ND SK" (continued)		
Essential characteristic	Performance	
Water tightness of seams	NPA	
Emissivity (ϵ_n)	NPA	
Tightness of perforations from nails and screws		
Laboratory test (wind-driven rain test) - on a full-surface and pressure-resistant substrate (at fastening points) - with integrated self-sealing edges (SK) - roof pitch $\geq 14^\circ$ - heavy rain $\leq 2 \text{ l/m}^2 \times \text{min}$ and wind pressure $\leq 600 \text{ Pa}$	No dripping water (eligible for the hygrothermal simulation)	
Hygrothermal assessment (hygrothermal simulation) of a roof structure with rain entry ³⁾ through nail penetrations into the roof rafters: - exposure time (without roof covering) of 3 months + drying phase (ventilated roof covering) of 5 years - central European climate conditions (altitudes $\leq 690 \text{ m}$ above sea level with an average total annual rainfall $\leq 1185 \text{ mm/a}$)	No additional nail-sealing material necessary	
Content, emission and/or release of dangerous substances	NPA	
Artificial ageing behaviour by exposure to combination of UV radiation (336 h) and elevated temperature and to heat		
Resistance to water penetration after aging	Class W1 ²⁾ (resistant to artificial ageing; 336 h UV + 90 d at 70°C)	
Tensile properties after aging		
Maximum tensile force	longitudinal / transverse	355 N/50 mm / 375 N/50 mm
Elongation	longitudinal / transverse	40 % / 60 %
High heat resistance (110°C)		
Resistance to water penetration after aging	Class W1 ²⁾ (resistant to high heat / artificial ageing; 336 h UV + 90 d at 110°C)	
Tensile properties after aging		
Maximum tensile force	longitudinal / transverse	350 N/50 mm / 335 N/50 mm
Elongation	longitudinal / transverse	40 % / 60 %
Artificial ageing behaviour by exposure to combination of UV radiation (5000 h) and elevated temperature and to heat	NPA	
Artificial ageing behaviour by prolonged exposure to heat with accelerated air-speed 5±2 m/s	NPA	
(NPA: no performance assessed)		
<p>²⁾ Class according to EN 13859-1</p> <p>³⁾ Rain entry in the hygrothermal simulation = moisture entry obtained in the laboratory test</p>		
DIFFLEX THERMO TPU ND SK	BWK Dachzubehör GmbH	Annex A2
Performance of product		

Installation

The performance of the roof underlay membranes 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 with the required tools and adjuvants;
- precautions during installation;
- substrate, roof build-up, roof pitch and exposure time to weathering in accordance with manufacturer's instructions;
- inspecting the roof structure for sufficient stability;
- appropriate fixation in accordance with manufacturer's instructions, e. g., permanent fixation with nailed or screwed counter battens, maximum / minimum fixing distances;
- treatment of overlaps and details, e. g. eave, ridge, free end, in accordance with manufacturer's instructions;
- where applicable, inspecting the overlapping and bonding areas which shall be clean, dry and free of dust, frost and grease;
- inspecting compliance with suitable weather conditions, e. g. considering the respective installation temperatures;
- applying a nail-sealing tape where necessary (in accordance with manufacturer's instructions), e. g. in case of non-full-surface or non-pressure-resistant substrate at fastening points or in case of a not appropriate roof pitch.

DIFFLEX THERMO TPU ND SK	BWK Dachzubehör GmbH	Annex B
Intended use Specifications		