

SINTEF confirms that

## IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN single layer roofing membranes

meets the provisions regarding product documentation given in Norwegian building regulations, with properties, fields of application and conditions as stated in this document

### 1. Holder of the approval

IKO nv  
 D'Herbouvillekaai 80  
 B-2020 Antwerp  
 BELGIUM  
[www.iko.com](http://www.iko.com)

### 2. Manufacturer

IKO nv  
 D'Herbouvillekaai 80  
 B-2020 Antwerp  
 BELGIUM  
[www.iko.com](http://www.iko.com)

### 3. Product description

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN single layer bituminous roofing membranes are made of SBS modified bitumen and reinforced with a felt of polyester. The membranes are based on a welding overlapping system, see fig.1. The upperface of IKO powerflex 5500 AD/F SN is covered by dark mineral-granules, while IKO Carrara Tecno SN is covered by white mineral-granules, otherwise the products are identical. The lowerface and the overlaps are protected by a thin plastic-foil which melts by welding. Joints can be torched or hot air welded. IKO powerflex 5500 AD/F SN can be supplied with different colour of granules. Measures and tolerances are given in table 1.

Table 1 Measurements and tolerances for IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN <sup>1)</sup>

Designation	Measures	Tolerances	Unit
Thickness (indicative)	4,7	-	mm
Weight	5,7	- 0,2 / + 0,80	kg/m <sup>2</sup>
Width	1 m	- 0 / + 0,005	m
Roll length	7,5 m	- 0 / + 0,01	m
Weight of reinforcement	ca. 230	-	g/m <sup>2</sup>

<sup>1)</sup> Measured according to EN 1848-1 and 1849-1

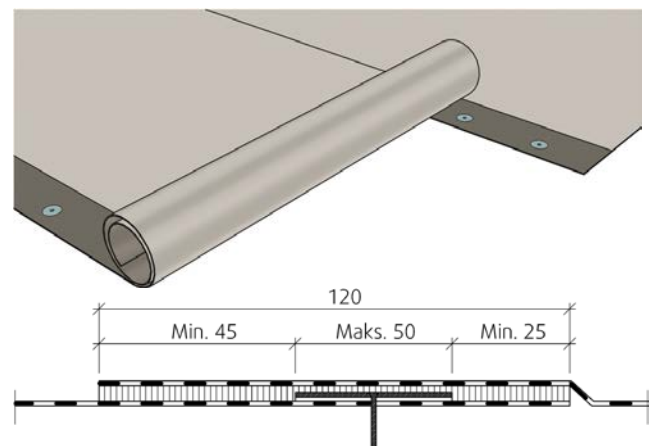


Fig. 1  
 IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN mechanically fixed in a 120mm welded side overlap.

### 4. Fields of application

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN can be used for covering sloped and flat roofs. The system is designed for mechanically fastened single membrane roofing. See fig. 1. IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN can be used for new roofing or under rehabilitation.

The slope of the roof must be sufficient to allow rain and melting water to drain away. SINTEF Building and Infrastructure recommends a slope of at least 1:40 for all roofs. In general IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN can also be used for accessible and non accessible roofs, green roofs parking decks with floating floor and culverters.

### 5. Properties

#### Material properties

Product properties for fresh material are shown in table 2.

Table 2

Product-properties for fresh material of IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN single layer roofing membrane

Property	Test method	Control limit <sup>1)</sup>	SINTEF's recommended minimum performance <sup>2)</sup>	Unit
Dimensional stability	EN 1107-1:1999	$\leq \pm 0,3$	$\leq \pm 0,6$	%
Flexibility at low temp. upper face: lower face:	EN 1109-1:1999	$\leq - 15$ $\leq - 15$	$\leq - 15$	°C
Flow resistance at elevated temp.	EN 1110:1999	$\geq 100$	$\geq 90$	°C
Water tightness 10kPa / 24t:	EN 1928:2000 (A)	Tight	Tight	-
Adhesion of granules <sup>3)</sup>	EN 12039:2000	$\leq 2,5$	$\leq 2,5$	G
Resistance to tearing, nail shank	L T EN 12310-1:2000	$\geq 250$ $\geq 200$	$\geq 150$	N
Tensile strenght	L T EN 12311-1:2000	$\geq 800$ $\geq 600$	$\geq 600$	N/50 mm
Elongation	L T EN 12311-1:2000	$\geq 25$ $\geq 30$	$\geq 10$	%
Average peel resistance of joints	L T EN 12316-1:2000	$\geq 100$ $\geq 200$	$\geq 50$	N/50mm
Shear resistance of joints	L T EN 12317-1:2000	$\geq 600$ $\geq 600$	$\geq 600$	N/50mm
Resistance to puncturing Impact +23 °C: Impact -10 °C: Static load:	EN 12691:2006 (A) EN 12691:2001 EN 12730:2001 (A)	$\geq 1250$ $\leq 30$ $\geq 20$	$\geq 500$ $\leq 30$ $\geq 20$	mm mm diam Kg
Watertightness after stretching at low temperature (10% at -10°C)	EN 13897:2005	Tight	$\geq 10$	%

<sup>1)</sup> The declared values are control limits both for internal control at the producer and for supervising control. If nothing else is mentioned, the control limits concern both direction of the product where relevant.

<sup>2)</sup> SINTEF's recommended minimum performance in SINTEF Technical Approval for single layer bituminous waterproofing membrane

<sup>3)</sup> Modified to loss of granules in gram.

### Properties related to fire

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN fulfill the requirements of class B<sub>ROOF</sub>(t2) according to EN 13501-5 for substrates mineral wool, wood particle board and concrete/calcium silicate board. The product has been tested according to CEN/TS 1187-2.

### Durability

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN was tested for durability belonging to this Technical Approval. Product was tested 12 weeks in heatchamber at (70 °C) and was assessed as satisfactory. Properties which are tested on aged material, according to the standards, mentioned in table 2, were tensile strength, elongation and flexibility at low temperature.

### Calculation of fasteners

The design capacity for anchoring the membrane with Afast BS-4.8 self drilling screw and Afast Guardian RB45xL KOMBI plastic-washer with integrated sleeve is 920 N per fastener. This capacity applies to the connection between the membrane and the fastener according to EN 16002. For weak underlays the connection between the underlay and the fastener might limit the capacity. This must be considered. The lowest value for membrane/underlay must always be used.

Calculation of fastener spacing is carried out according to SINTEF Building Research Design Sheet no. 544.206 and "TPF Informs No. 5".

## 6. Environmental aspects

### Substances hazardous to health and environment

The products contain no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

### Effect on soil, surface water and ground water

The leaching properties of the products are evaluated to have no negative effects on soil or ground water.

### Waste treatment/recycling

The products shall be sorted as residual waste on the building/demolition site. The products shall be delivered to an authorized waste treatment plant for energy recovery.

### Environmental declaration

No environmental declaration (EPD) has been worked out for the products

## 7. Special conditions for use and installation

### *Fasteners*

Fastening with ordinary steel washers and screws in longitudinal overlaps may be used on firm underlays such as woodbased sheathing or concrete.

On underlays of thermal insulation with a compression strength of at least 80 kPa/m<sup>2</sup> (level CS (10) 80 according to EN 13162 or EN 13163), steel washers with deep collars or telescopic plastic washers should be used.

Fasteners with good telescopic effect must be used when the membrane is installed on thermal insulation materials with lower compressive strength. The tightening of the fasteners must be specially checked.

### *Installation*

The joints of IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN can be torched or hot air welded, and shall be installed in accordance with the principles shown in SINTEF Building Design Sheets 544.203, 544.204 and 544.206, in "TPF informs No. 5" and in the instruction guidelines of the producer.

Mechanical fasteners shall be placed at welded overlaps with a minimum width of 120 mm. The fasteners must be positioned at a distance from the membrane edges that provides minimum 25 mm bonding on the inside and minimum 45 mm bonding on the outside of the fastener, see fig. 1.

Transverse joints must have a 150 mm overlap. The underlying corner is fastened, and the overlying corner is cut at an angle. A good result is achieved by 'drowning' the surfaces in bitumen before the joint is fully welded.

### *Underlay*

When a fire classification is required the underlay must be in accordance with the provisions stated in section 5 "Properties related to fire".

For re-roofing on old roofing that contains softeners as for example PVC a separate migration barrier of approximately 150 g/m<sup>2</sup> polyester felt has to be used.

### *Traffic on the roof and maintenance*

Special precautionary measures should be taken to protect the roofing membrane if the roof is expected to have more traffic than is necessary for inspection and maintenance purposes only. Before repairing the roofing membrane, the surfaces have to be cleaned before welding starts.

### *Storage*

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN must be stored in an upright position.

## 8. Factory production control

IKO powerflex 5500 AD/F SN and IKO Carrara Tecno SN are subject to supervisory factory production and product control according to contract between SINTEF Building and Infrastructure and IKO nv. concerning Technical Approval.

IKO nv. has a quality management system what is certified by Bureau Veritas Quality, Belgium according to ISO 9001:2008 and ISO 14001:2004.

## 9. Basis for the approval

Product properties for IKO powerflex 5500 AD/F SN has been determined by type testing on fresh and aged material, documented in the following reports:

- SINTEF Building and Infrastructure, Report 3D1492, dated 2012-12-18, Wind-uplift-testing.
- SINTEF NBL, Report 102010.40/13.032, dated 2013-08-29, Fire-testing.
- SINTEF NBL, Report 102010.02/13.039, dated 2013-09-05, Fire classification report
- SINTEF Building and Infrastructure, Report 102004575-4, dated 2013-11-19, Typetesting.
- Kiwa N.V., report 0011-L-19/1, dated 2019-03-18, firetesting
- Kiwa N.V., report 0012-L-19/1, dated 2019-03-18, firetesting
- Kiwa N.V., report 0013-L-19/1, dated 2019-03-18, firetesting
- Kiwa N.V., report 0014-L-19/1, dated 2019-03-18, firetesting

## 10. Marking

Materialwrapping shall be marked with product description and production date. The approval mark for SINTEF Technical Approval No. 20385 may also be used.



Approval mark

## 11. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

## 12. Technical management

Project manager for this approval is Holger Halstedt, SINTEF Building and Infrastructure, dep. Materials and Structures, Trondheim.

for SINTEF Building and Infrastructure

A handwritten signature in blue ink that reads "Hans Boye Skogstad". The signature is written in a cursive style with a blue color.

Hans Boye Skogstad  
Approval Manager