SINTEF

Technical Approval

SINTEF Certification
No. 2521

Issued: 09.07.2007
Revised: 04.05.2015
Valid until: 01.09.2019

SINTEF Building and Infrastructure confirms that

Sarnafil TG 66 FPO roofing and waterproofing membrane

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

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NO-2026 Skjetten
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2. Manufacturer

Sika Manufacturing AG
Sarnen, Switzerland

3. Product description

Sarnafil TG 66 is a flexible polyolefin roofing and water-proofing membrane with a base of glassfelt. Stabilisers are added to make the membrane resistant against high and low temperatures, UV radiation and ozone.

Standard surface colour is grey or beige. The underside is black. The membrane is delivered in different thicknesses, see Table 1. Other lengths can be delivered on request.

Table 1
Measures and tolerances for Sarnafil TG 66

Designation	TG 66-12	TG 66-15	Unit
Thickness [1)] - Tolerance	1.2 +10 / -5	1.5 +10 / -5	mm %
Weight - Tolerance	1.25 +10 / -5	1.5 +10 / -5	kg/m² %
Width - Tolerance	2.0 +1 / -0,5	2.0 +1 / -0,5	m %
Roll length - Tolerance	20 +5 / -0	20 +5 / -0	m %
Weight of base	50	50	g/m² %

1) Sarnafil TG 66 is also available in thickness 1.8 mm and 2.0 mm. Standard roll length is 15 m.

The product is CE marked according to EN 13956.

4. Fields of application

General

Roofs must have adequate slope in order to drain water from rain and melting snow. SINTEF Building and Infrastructure recommends in general a minimum slope of 1:40 for all roofs.

Ballasted roof

Saranfil TG 66 is normally used with thickness 1.5 mm on flat roofs. The membrane is loosely laid and shall be covered with gravel ballast or concrete/concrete slab. Sarnafil TG 66 shall be covered with a protection layer of polyester felt or similar. The membrane can not be laid unprotected against fire, i.e. with combustible material or open against the air. Sarnafil TG 66 can not be used in mechanically fastened applications. Examples of intended use are shown in Fig. 2 – 6.

Wet rooms

Sarnafil TG 66 1.5 mm may also be used as waterproofing membrane in wet room floors, see Fig. 1. The membrane may be installed on concrete or on suitable subfloor boarding. Sarnafil TG 66 must always be covered by a protection layer, plus a concrete slab or a levelling compound suitable as underlay for tiles or other suitable flooring. On rough underlay the membrane must also be protected with a protection layer on the underside.

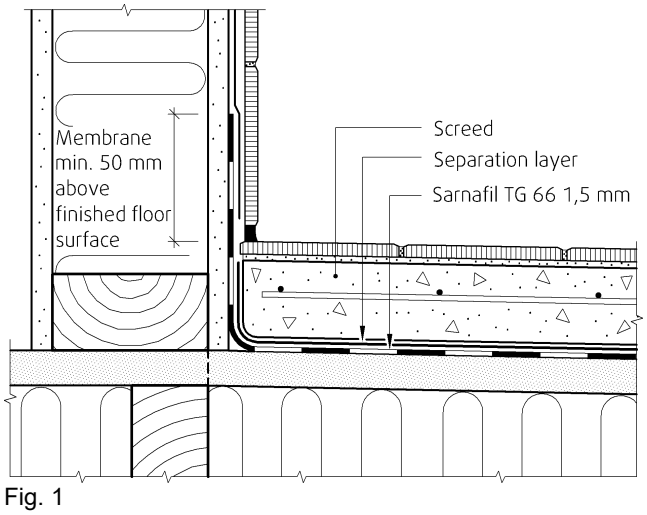

Fig. 1
Example of Sarnafil TG 66 used in wet room floor

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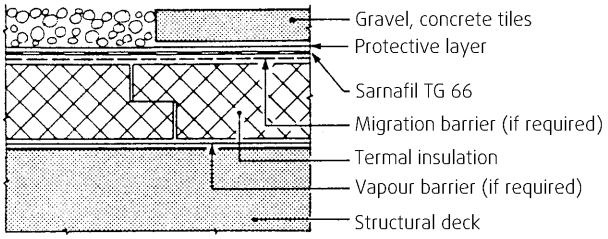

Fig. 2
Example of Sarnafil TG 66 1.5 mm (1.2 mm) used as roofing with ballast covering

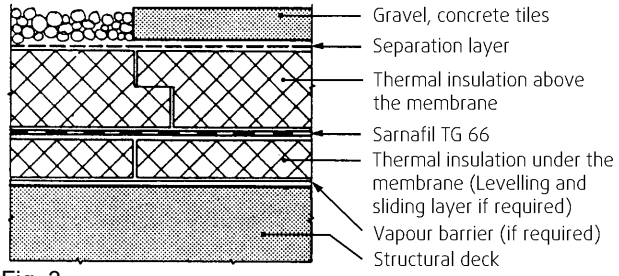

Fig. 3
Example of Sarnafil TG 66 1.5 mm (1.2 mm) used in application in roof with thermal insulation positioned partly above the membrane

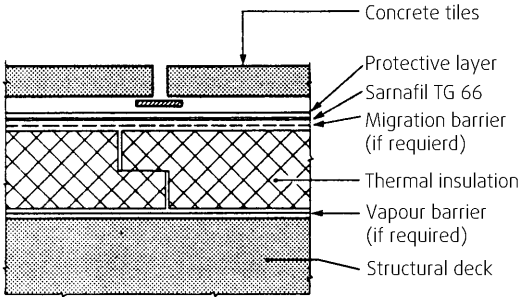

Fig. 4
Example of Sarnafil TG 66 1.5 mm (1.2 mm) used in roof with light traffic (walking)

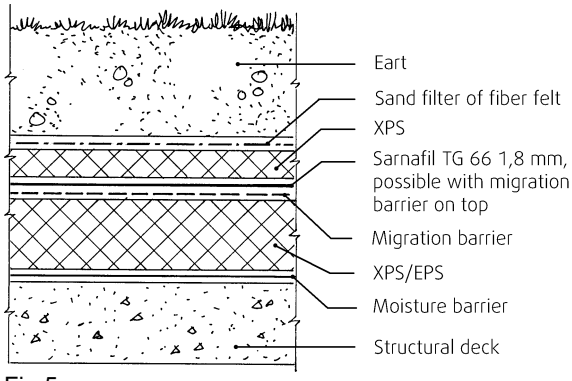

Fig 5
Example of use on roof with planting

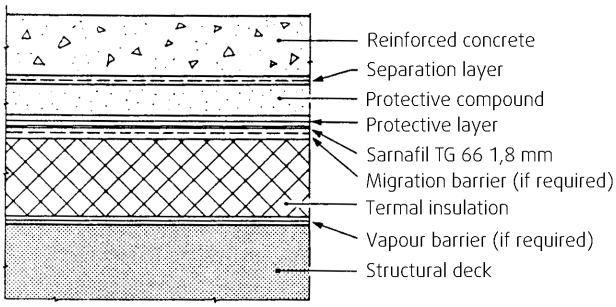

Fig. 6
Example of use in roof with heavy traffic

Roofs, terraces and parking decks

Sarnafil TG 66 with thickness ≥ 1.5 mm can also be used as covering on terraces with pedestrian traffic, in duo-roof construction, parking decks and roof with planting. Examples of use in such constructions are shown in Fig. 3-6. Sarnafil TG 66 is loosely laid and shall be covered with a protection layer before incombustible material is loaded on the membrane. On rough underlay a protection layer shall also be used on the underside of the membrane. Sarnafil TG 66 can not be mechanically fastened.

5. Properties

Material properties

Product properties of fresh material are shown in table 2.

Properties related to fire

Sarnafil TG 66 has no fire classification. For satisfying fire class B_{ROOF} (t2) the membrane must be used in connection with incombustible ballast as show in Fig. 2-6.

Durability

Some properties after artificial ageing are given in Table 3. The products have shown satisfying properties after artificial ageing in connection with type-testing and audit testing performed by SINTEF Building and Infrastructure.

Wet room membrane

Sarnafil TG 66 with thickness 1.5 mm has been tested according to test method NT Build 230 “Bathroom floors: Watertightness” with satisfactory results.

Table 2
Product properties for fresh material of Sarnafil TG 66 FPO roofing and waterproofing membrane

Property	Test method NS-EN	DoP[1)]	Control limits [2)] TG 66 t = 1.2 mm og 1.5 mm	SINTEFs recommended minimum values [3)]	Unit
Foldability at low temperature	495-5:2001	≤ -30	≤ -30	≤ -30	°C
Dimensional stability	1107-2:2001		± 0.2	± 0.5	%
Water tightness (10 kPa))	1928:2000 (A)	Tight	Tight	Tight	-
Tear resistance	12310-2:2000	-	≥ 150	≥ 80	N
Tensile strength L/T	12311-2:2000 (B)	≥ 9/≥ 7	≥ 9/≥ 7	≥ 7	N/mm²
Elongation	12311-2:2000 (B)	≥ 500	≥ 500	≥ 150	%
Average peel resistance of joints	12316-2:2000	-	≥ 150	-	N/50 mm
Shear resistance of joints	12317-2:2000	≥ 500	≥ 500	≥ 380	N/50 mm
Resistance to puncture - by impact at +23 °C (rigid) - by impact at -10 °C - by static loading, (soft) - by static loading, (rigid)	 12691:2006 (A) 12691:2001 12730:2001 (A) 12730:2001 (B)	 ≥ 800 ≥ 20 ≥ 20	 ≥ 800 ≤ 20 ≥ 20 -	 ≥ 400 ≤ 20 ≥ 20 -	mm mm diam. kg kg

1) Declared values in the manufacturer's "Declaration of Performance", DoP.
2) The stated values are control limits existing for internal control at the producer and by supervising control. If nothing else is mentioned, the control limits concern both directions of the product where relevant.
3) SINTEFs recommended minimum values for approved polymeric membranes covered with gravel ballast or concrete slab.

Table 3
Product properties for alkaline aged (NT POLY 161) material of Sarnafil TG 66 FPO roofing and waterproofing membrane

Property	Test method	Value Sarnafil TG 66 t = 1.2 mm	Unit
Tensile strength	EN 12311-2:2000 (B)	≥ 7	N/mm²
Elongation	EN 12311-2:2000 (B)	≥ 450	%

6. Environmental aspects

Substances hazardous to health and environment

Sarnafil TG 66 contains no hazardous substances with priority in quantities that pose any 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 product are evaluated to have no negative effects on soil, ground water or drinking water.

Waste treatment/recycling

Sarnafil TG 66 waste should be sorted on site as plastic based material. Such waste can be recycled. Product recovered from demolition work should be delivered to a reception point for energy recovery

Environmental declaration

An environmental declaration (EPD) has been worked out according to EN 15804 for Sarnafil TG 66 FPO. Environmental indicators are given in table 4.
For complete documentation see NEPD00302E, www.epd-norge.no

Tabell 4
Environmental declaration according to EN 15804 for Sarnafil TG 66 FPO Cradle to gate with options. Production site: Sarnen, Switzerland. Declared unit: 1 m².

Indikator	Value[1)]
Greenhous effect, kg CO_2 ekv.	3.9
Total energy use, MJ	127

1) Transport from Switzerland to Oslo, Norway and end of life stage (waste) is included.

7. Special conditions for use and installation

Installation in general

Sarnafil TG 66 is welded by hot air, and shall be installed by an authorised installer/contractor according to the manufacturer's instructions. The product shall only be used in constructions where the membrane is covered with ballast of incombustible materials like gravel or concrete.

The underlay shall be thoroughly cleaned before installation, and without sharp edges that may puncture the membrane. On rough underlay a protection layer shall be used between the membrane and the underlay. A protection layer shall also be used over the membrane if the ballast can lead to puncture. In particular it must be checked that the membrane is not damaged by impacts

from sharp objects, or objects being trampled into the membrane during installation.

Ballast

Necessary ballast is calculated according to SINTEF Building Research Design Sheet 544.202 and "TPF Informs no. 5" published by Takprodusentenes Forskningsgruppe.

Roofs, terraces and parking decks

Application in roofs, terraces and parking decks shall be in accordance with the principles shown in SINTEF Building Research Design Sheets no. 525.207, 525.304, 525.306, 525.307, 544.202 and 544.204.

Underlay

When the membrane is applied directly on rough underlay, without additional insulation, a protection layer of polyester felt or similar shall be used. SINTEF Building and Infrastructure recommends use of approx. 150 g/m² felt when applied directly on bitumen based roofing, 250 g/m² felt when applied directly on concrete underlay and minimum 300 g/m² felt on concrete underlay in constructions with heavy traffic.

Wet room floor membrane

Sarnafil TG 66 applied in wet rooms shall be installed on concrete or on subfloor sheathing in accordance with SINTEF Building Research Design Sheet no. 522.861.

It is recommended to use a protection layer between the membrane and the floor screed. On rough underlay a protection layer shall also be used between the membrane and the underlay.

The floor screed must be laid as soon as possible after the membrane and a protection layer has been installed.

Construction details for connections to walls, and details for penetrating components like pipes etc., shall be in accordance with the design principles shown in SINTEF Building Research Design Sheet no. 541.805.

Traffic on the roof

If more traffic on the roof than what is necessary for inspection and maintenance is to be expected, special measures to protect the membrane should be taken.

Inspection and maintenance

The roofing must be cleaned before welding when carrying out necessary repair works.

Storage

The membranes should be stored dry, with the rolls placed on pallets at the building site and protected by a covering.

8. Factory production control

The quality system at Sika Manufacturing AG is certified according to ISO 9001:2000 and ISO 14001:2004 by Swiss Association for Quality and Management Systems, certificate no. 10720.

Sarnafil TG 66 is subject to supervisory factory production and product control according to contract between SINTEF Building and Infrastructure and Sika Supply Center AG concerning Technical Approval.

9. Basis for the approval

Material and design data have been verified by tests which are mainly documented in the following reports:

- SINTEF Building and Infrastruture. Report no. O 20103 dated 19.02.2007 (material properties).
- UBAtc. Report no. 01/2478 dated 27.08.2001 (material properties).
- Norwegian Building Research Institute. Report no. O 9999-33 dated 04.04.2005 (wet room membrane).

10. Marking

All rolls shall be marked with the manufacturer's production code. All pallets/packages shall be marked with the product designation and the date of production. The approval mark for SINTEF Technical Approval No. 2521 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 Knut Noreng, SINTEF Building and Infrastructure, Trondheim

for SINTEF Building and Infrastructure

Marius Kvalvik

Marius Kvalvik
Approval Manager