SINTEF Technical Approval

TG 2164

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SINTEF confirms that

ISO-DRAIN 8 moisture barrier

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

Interplast Kunststoffe GmbH
Heinrich-Schickhardt-Str. 1
72221 Haiterbach
Germany
www.interplast.de

2. Product description

ISO-DRAIN 8 is a dimple sheet material made of 0,5 mm high density polyethylene (HDPE). The product is also sold under the brand name Plastofol. The sheets have round dimples which form a 8 mm cavity between the sheets and the substructure, see Fig. 1. Colour of material is black. Measures and tolerances are shown in Table 1.

Supplementary components of the moisture barrier system are shown in Table 3.

Table 1
Measures and tolerances for ISO DRAIN 8

Property	Measure [1)]	Tolerance	Unit
Thickness material	0,48	± 0,05	mm
Weight	0,50	± 0,05	kg/m²
Total height	8	± 0,01	mm
Standard width	1,00 / 1,50 2,00 / 2,40	± 0,01	m
Standard roll length	20,00	± 0,05	m

[1)] Measured according to EN 1848-2 and EN 1849-2

3. Fields of application

External walls
ISO-DRAIN 8 can be used as a water repellent and capillary breaking sheet on the outside of external basement walls, as shown in Fig. 2. Because of the studs in the membrane cavities are formed where penetrating water or condensation can drain without having a lasting negative impact on outside tightening layer of the basement wall. This requires a sufficient drainage at the bottom of the foundation.

Roofs
ISO-DRAIN 8 can be used to protect bituminous roofing layers in roofs with grass turf as top layer, see Fig. 3. ISO-DRAIN 8 forms here also a cavity where penetrating water or condensation can drain

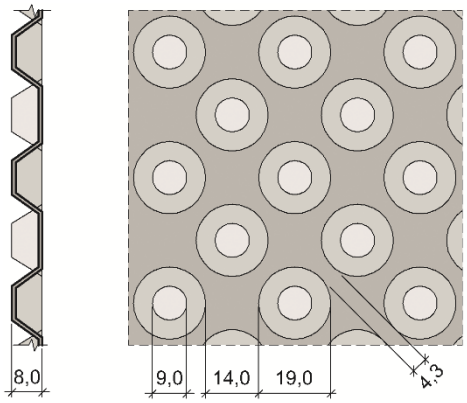


Fig. 1
ISO-DRAIN 8 moisture barrier, geometrical information

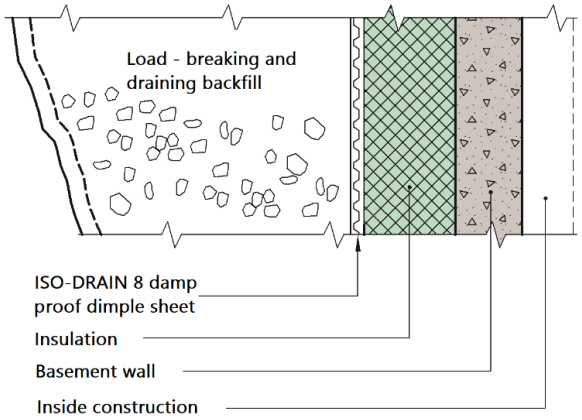


Fig. 3
ISO-Drain 8 used on insulated basement wall. For faster drying process of the basement wall it is recommended to place the membrane outside the vapour open insulation as e.g. EPS, see also SINTEF Building Research Design Guide 523.111 *Yttervegger mot terreng. Varmeisolering og tetting*

without having a lasting negative impact on the bituminous layer beneath.

4. Properties

Material properties
The product characteristics for ISO-DRAIN 8 are shown in Table 2.

Table 2
Product characteristics for fresh material of ISO-DRAIN 8

Property	Test method EN	Declaration of performance [1]	Control limit [2]	Unit
Water tightness	1928 (A)	tight	tight	
Water vapour transmission	1931	-	≥ 1 x 1012 ≥ 200	m^2sPa/kg m (s_d value)
Resistance to tearing (nail shank)	12310-1	-	≥ 300	N
Resistance to puncture - by impact at +23°C - by static loading	 12691 (A)[3] 12730 (A)[4]	 - -	 ≥ 250 ≥ 20	 mm kg
Tensile strength L T	12311-2 (A)	-	≥ 370 ≥ 370	N/50mm
Elongation L T	12311-2 (A)	-	≥ 25 ≥ 25	%
Shear resistance of joints	12317-2	-	≥ 100	N/50mm
Deformation under load after 60 hours	13967:2004 Annex B	-	≤ 20 50	% kN/m^2

[1] Manufacturers Declaration of Performance, DoP
[2] Control limit shows values, product need to satisfy during internal factory production control and audit testing
[3] Tested on hard substrate (Aluminium)
[4] Tested on soft substrate (EPS)

Table 3
Product description of supplementary components for ISO-DRAIN 8

Component	Material	Description	Dimensions
Wall/floor connection	HDPE	Sheet partly with studs and partly flat sheets	Thickness: 0.48 mm Width: 180 mm Length 20 m
Joint strip	HDPE	Strip for joining sheets on floors	Thickness: 1 mm Width: 120 mm Length: 20 m
Sealing tape	Butyl rubber	Adhesive tape for fixing joint strip in floors and to concrete	Thickness: 1 mm Width: 40 mm Length: 40 m
Fixing	Zink plated carbon steel	Fixing with washer (basement wall, roof)	Diameter: 3.5 mm Length: 35 mm
Top edge profile	HDPE	Edge profile to seal top edge between ISO-DRAIN 8 and basement wall	Thickness: 1,2 mm / Height: 10 and 65 mm Width: 46 mm / Length: 2,0 and 2.5 m

Safety in case of fire
ISO-DRAIN 8 is not classified according reaction to fire in EN 13501-1. Were fire cell separations need to be considered the material is not permitted to go through these separations.

Durability
ISO-DRAIN 8 has been tested for its durability. Tests were performed after UV ageing, after it has been aged in alkalic environment and after it was aged in combined climate simulation and heat chamber. Product is assessed to have satisfying properties for durability if it is used as described in this approval.

5. Environmental aspects

Substances hazardous to health and environment
ISO-DRAIN 8 contains 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 product are not evaluated regarding effects on soil or ground water.

Waste treatment/recycling
ISO-DRAIN 8 shall be sorted as residual waste on the building/demolition site. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration
An environmental declaration (EPD) has not been worked out for ISO-DRAIN 8.

6. Special conditions for use and installation

External basement walls
ISO-DRAIN 8 shall be installed with the studs against the wall. The joint overlaps shall be 150 mm for horizontal joints and 500 mm for vertical joints. Fixings are placed every 250 mm along the upper edge.

The sheets should cover both wall and foundations as illustrated in Fig. 3, with the top edge covered by a profile above ground level.

ISO-DRAIN 8 shall be installed according to the principles in the SINTEF Building Research Design Guide no. 514.221 *Fuktsikring av konstruksjoner mot grunnen*.

Roofs with turf covering
On roofs with turf covering ISO-DRAIN 8 shall be installed with the studs oriented towards the bituminous roofing layer, as shown in Fig. 4. Fixings shall be applied along the upper edge; spaced c/c 200 mm for 1 m wide sheets and c/c 100 mm for 2 m wide sheets. Joint overlaps shall be min. 300 mm for roof slopes less than 25°, and min. 250 mm for steeper roofs. Overlaps at end joints shall be min. 400 mm.

ISO-DRAIN 8 shall be in installed according to the principles shown in SINTEF Building Research Design Guide no. 544.803 *Torvtak*.

7. Factory production control

ISO-DRAIN 8 is produced by Interplast Kunststoffe GmbH, Heinrich-Schickhardt-Str. 1, 72221 Haiterbach, Germany.

The holder of the approval is responsible for the factory production control in order to ensure that ISO-DRAIN 8 is produced in accordance with the preconditions applying to this approval.

The manufacturing of ISO-DRAIN 8 is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer Interplast Kunststoffe GmbH has a quality management system certified by Kiwa International Cert GmbH to EN ISO 9001, certificate No. 99374A.

The manufacturer Interplast Kunststoffe GmbH has an environmental management system certified by Kiwa International Cert GmbH to EN ISO 14001, certificate No. 102708.

8. Basis for the approval

The evaluation of ISO-DRAIN 8 is based on reports owned by the holder of the approval.

The evaluation of design and technical solutions are based on recommendations given in SINTEF Building Research Design Guides.

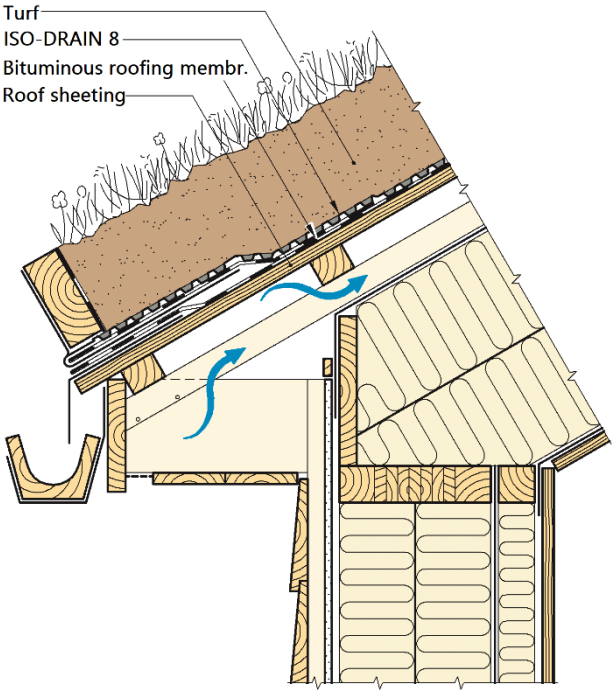


Fig. 4
ISO-DRAIN 8 used on bituminous roofing layer in roof with turf covering.

9. Marking

ISO-DRAIN 8 shall be marked with the name of the product, the manufacturer and the date of production or a traceable production number. Marking may be done on the sheets and/or the wrapping.

ISO-DRAIN 8 is CE-marked in accordance with EN 13967.

The approval mark for SINTEF Technical Approval No. 2164 may also be used.

for SINTEF

Hans Boye Skogstad
Approval Manager