

# PLURA® HP HAIL PROOF

*Certified hail-proof waterproofing membrane*

## Description

Pre-fabricated waterproofing membrane made of distilled bitumen and elastomeric polymers (SBS) having a woven non woven single strand composite polyester reinforcement, which provide the membrane with high mechanical characteristics and excellent dimensional stability. The upper face is self-protected with mineral slates which reduce superficial heat absorption improving the durability of the membrane. The self-protected versions have a side selvedge of 10 cm and upon request a head selvedge of 15 cm, to improve adhesion between the sheets.

## Fields of use

For the application of the membrane the use of heat is generally used by means of a gas torch or specific hot air machine. Use protective devices required by law. The application by heat is not suggested when on heat sensitive materials (polystyrene insulation).

- Coordinate the operations in a way to not cause damage to the construction elements and underground structure. Avoid to leave the structure for the night or for periods of prolonged work interruptions without having been properly sealed.
- **The application surface must not have any depressions to avoid the risk of ponding water, the slope must be at least 1.5% on concrete decks and 3% for steel or wooden ones, this to guarantee a proper run off of rainwater.**
- The water drainage spouts should be sufficiently big enough to allow for rain water to be eliminated in an efficient way.
- Prepare cementitious substrates, including verticals and details, with a bituminous primer either by brush or airless, approx. 300/400 gr/m<sup>2</sup>.
- Allow this preparation layer to dry before proceeding with any other operation.
- With prefabricated constructions, apply a suitable reinforcing strip along all joints. In the presence of construction joints, prefabricated panels or metal decks, suitable expansion joints are to be considered.

The membranes must be applied to the substrate fully bonded. In any case, when in the proximity of the head laps, the membrane must be applied for at least 100 cm; furthermore all details, perimeters, verticals, change of slope as well as projecting area must be fully bonded.

For further information and news it is recommended to consult the PLUVITEC technical literature; our Technical Office is always available to evaluate particular problems and to provide the necessary assistance to best apply our waterproofing membranes.

## Stratigraphy



1. PE film
2. Waterproofing mass
3. Composite polyester reinforcement
4. Waterproofing mass
5. Mineral finish

## Advantages of

### Plura HP HAIL PROOF

- The high elasticity of the SBS-type compound with flexibility at low temperatures up to -25°C is ideal for ensuring optimum adhesion to the support and for best impact resistance.
- The reinforcement of the spunbonded polyester fibre nonwoven fabric with elevated mechanical properties and excellent dimensional stability is perfect for coverings subject to dimensional variations. Additionally, the elevated bulk of the reinforcement allows for the obtaining of excellent puncture resistance.
- The thickness of 4 mm measured on the selvedge allows utilisation in a single layer and increases the impact resistance.
- The self-protection in mineral slate allows for utilisation as a top layer and increases resistance to cutting caused by hail.



**EN 13583**

## Fields of use



### EN13583 Hail resistance (Certificate n° 318557)

N° layers			Method of application				Type of applications			Type						
Single layer	Double layer	Multilayer	Torch	Hot air	Mixed (Torch / Air)	Cold bond glue	Mechanical fixing	Thermoadhesive / Self-adhesive	Fully bonded	Partially bonded	Loose laid	Complimentary layer	Top layer	Heavy protection	Anti-root	Other uses

**PLURA HP HAIL PROOF PA 4 MM ON SELVEDGE**

The waterproofing membrane based on distilled bitumen and polymers, as shown in this data sheet does not require the issue of a MSDS, because it does not contain dangerous substances. The information data sheet for the proper use of products is available.

## Certification

To obtain an evaluation of the membrane's resistance to hail, we have tested the PLURA HP HAIL PROOF 4 mm in the Giordano S.p.A. institute in accordance with the UNI EN 13583:2012 regulations (test report no. 318557).

Frontal mode:

After positioning the sample on the support with the top layer facing upwards, the trial area was covered with 200 g of crushed ice for 3 minutes.

After removing the ice, the launching of polyamide balls commenced at a velocity expected to cause damage on n. 5 specimens placed both a soft and rigid supports.

Test results:

- Rigid support (steel base): damage velocity "dv" 38 m/s (c.a. 137 km/h)
- Soft support (polystyrene foam thickness 20 mm and volumetric mass 20 kg/m<sup>3</sup>: damage velocity "dv" 50 m/s (c.a. 180 km/h).

## Sizes & packing

Description	PA 4 mm
<b>Rolls size [m]</b>	8 x 1
<b>Rolls per pallet</b>	25
<b>Square meters per pallet [m<sup>2</sup>]</b>	200

Sizes & packing may vary depending on the type of transportation. The technical data given is based on average values obtained during production. We reserve the rights to change or modify the nominal values without prior notice or advice. The information contained in this data sheet are based on our experience. We cannot take any responsibility for a possible incorrect use of the products. The customer has to choose under their own responsibility a product fit for the intended use.

## Technical data

Technical Characteristics	Measure units	Reference norm	PA	Tolerances
<b>Type of reinforcement</b>			Single strand polyester	
<b>Upper face finish</b>			Mineral *	
<b>Lower face finish</b>			PE film	
<b>Length</b>	m	EN 1848-1	8 -1%	≥
<b>Width</b>	m	EN 1848-1	1 -1%	≥
<b>Thickness</b>	mm	EN 1849-1	4 on selvedge	±0.2 mm
<b>Flow resistance</b>	°C	EN 1110	100	≥
<b>Flow resistance after ageing</b>	°C	EN 1296	90	-10°C
<b>Loss mineral</b>	%	EN 12039	30	≤
<b>Cold flexibility</b>	°C	EN 1109	-25	
<b>Shear resistance L / T</b>	N/5 cm	EN 12317-1	1100 / 800	-20%
<b>Tensile strength L / T</b>	N/5 cm	EN 12311-1	1200 / 900	-20%
<b>Elongation at break L / T</b>	%	EN 12311-1	40 / 40	-15
<b>Tearing resistance L / T</b>	N	EN 12310-1	250 / 250	-30%
<b>Dimensional stability</b>	%	EN 1107-1	-0.3	≤
<b>Static puncture resistance</b>	kg	EN 12730	25	
<b>Dynamic puncture resistance</b>	mm	EN 12691-B	1500	
<b>Fire resistance</b>		EN 13501-5	F ROOF	
<b>Fire reaction</b>		EN 13501-1	F	
<b>Watertightness</b>	kPa	EN 1928-B	60	≥

\* Mineral self-protected products may undergo color tone variations due to the time and length of storage. Exposure to atmospheric conditions, after application, will tend to uniform the color after a few months. The change in color tone cannot therefore be contested and / or complained of as it is a natural phenomenon that the slate manufacturer himself cannot guarantee.

## Other performance data

Technical Characteristics	Measure units	
<b>Specific heat</b>		1.70 KJ/kg°C
<b>Thermal conductivity</b>	λ	0.170 W/m°C

## Application and Recommendations

- On cementitious surfaces and similar apply, by roller or airless, bituminous primer, approx. consumption 300 gr/m<sup>2</sup>.
- Apply by torch application a 25 cm strip of membrane reinforced with polyester along all vertical up stands.
- To have all overlaps with the slope, position the membrane always starting from the lowest point. (Draw. N.1)
- Position the membrane sheets staggered, avoiding to create any overlaps against the slope and the drains. (Draw. N.2)
- Cut the corners of membrane sheet which will be laid under the next sheet at a 45° angle (10 x 10 cm). (Draw. N.3)
- The joints, both side and head, must be respectively overlapped by 10 & 15 cm. (Draw. N.3)
- The second layer of membrane will be applied astride and over the first one, always in the same direction, and approx. 1/4 of its length from the previous sheet. (Draw. N.4)
- The bituminous membrane will be applied with a propane gas torch to the substrate. It is necessary to heat the entire surface, except for the side & head laps, making sure that the compound forms a liquid mass in front of the roll to assure that it saturates any superficial porosity.
- The side laps (10 cm) and head laps (15 cm) will be heat welded with an appropriate torch; during this stage the overlaps should be pressed by using a roller (15 kg) from which a bead of compound should flow and therefore avoiding to have to iron the overlaps.
- Apply the vertical membrane sheet having the same characteristics of the waterproofing membrane and dimensions equal to the width of the roll, making sure that it overlaps the horizontal one by at least 10 cm, heating it with a gas torch and squeezing it with a trowel until a bead of compound appears from underneath.
- The height of the verticals must be equivalent or superior to the finished surface by at least 15 cm.

To best use the technical characteristics of bituminous membranes and guarantee the maximum performance and durability of the jobs where they are used, some simple but fundamental rules must be respected.

- The rolls are to be stored in an upright position, indoors in a dry and ventilated area, away from heat sources. Absolutely avoid the stacking of rolls and pallets for storage or transport to avoid possible deformations which may compromise a perfect installation. It is recommended to store the product at temperatures above 0°C.
- The rolls shall be kept in a warm or heated storage area during application, should the workability of the material deteriorate or become stiff and difficult to install during application, these should be returned to the heated storage area and substituted with new rolls. The rolls that are temporarily stored on the roof before application, shall be kept elevated by being left on their own pallets and shall be covered and protected from the weather.
- The application surface must be smooth dry & clean.
- The application surface must be previously treated with a suitable bituminous primer, to eliminate dust and enhance the adhesion of the membrane.
- The application surface must not have any depressions to avoid the risk of ponding water, the slope must be at least 1.5% on concrete decks and 3% for steel or wooden ones, this to guarantee a proper run off of rainwater.
- In situations of application on vertical surfaces superior to 2 meters or on very sloped substrates, apply suitable mechanical fixings to the head laps, after which they will be sealed when torching the head laps.
- The application must be done at temperature higher than + 5°C.
- The application must be interrupted in adverse weather conditions (high humidity, rain, etc.).
- Roofs waterproofed with elastomeric membranes must have the last layer self protected with mineral slates. As an alternative, depending on the type of structure, it is possible to use heavy protection (gravel, floating pavements, etc.).
- The pallets on which the rolls are packaged are intended for normal warehouse use.
- The materials on stock should be rotated following a first in first out rotation.

