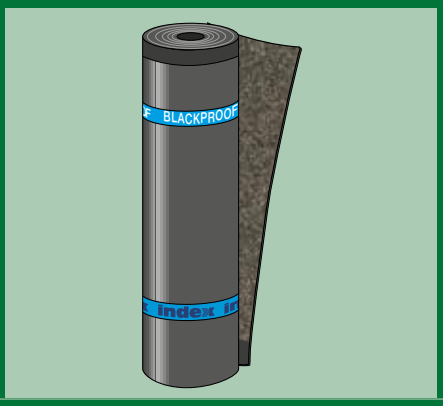


BLACKPROOF

PRE-CASTING PREFABRICATED MEMBRANE FOR WATERPROOFING SINGLE-LAYER FOUNDATIONS, WITH OR WITHOUT CONTAINMENT DIAPHRAGM, SELF-SEALING AND ANTI-RADON

GRANTS *LEED* CREDITS

CATEGORY	CHARACTERISTICS			ENVIRONRMENTAL							METHOD OF USE	
HE			Reazione al fuoco		ASBESTOS FREE	TAR FREE	CHLORINE FREE					
ELASTOMERIC	WATERPROOF	RADON BARRIER	REACTION TO FIRE	ECO GREEN	ASBESTOS FREE	TAR FREE	CHLORINE FREE	RECYCLABLE	NON DANGEROUS WASTE	EXHAUSTED OIL FREE	TORCH APPLICATION	HOT AIR APPLICATION

This system for cold waterproofing foundations from the outside is based on the use of the **BLACKPROOF** composite membrane consisting of a sheet of HDPE and an elastomeric polymer bitumen mix reinforced with non-woven polyester, equipped with an overlap band that adheres by pressure being applied at room temperature. **BLACKPROOF** is used for pre-casting waterproofing with an excavation containment diaphragm (fig. 1) and in open excavation foundations it covers the bed and so is connected to the bitumen waterproofing of the walls being erected, applied by either heat-bonding or self-adhesive or applied with a liquid membrane (fig. 2).
Both waterproofing systems can also be used in the presence of water-bearing strata.

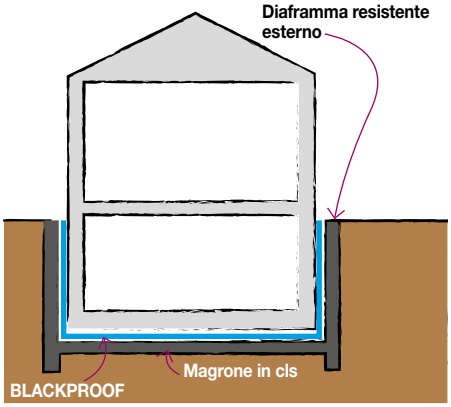


Fig. 1. Impermeabilizzazione pre-getto in presenza di diaframma di contenimento dello scavo

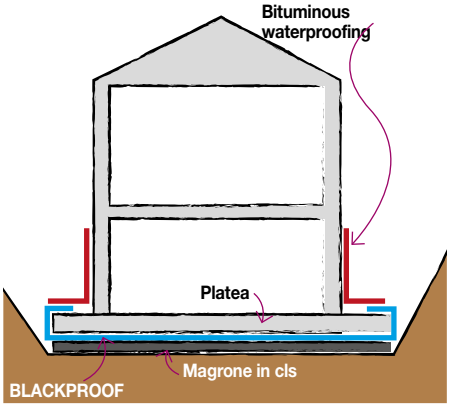
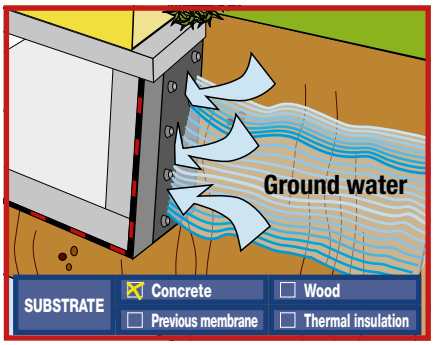


Fig. 2. Impermeabilizzazione pre-getto della platea e raccordo all'impermeabilizzazione bituminosa delle pareti



HOW TO WATERPROOF FOUNDATIONS QUICKLY AND MORE SECURELY

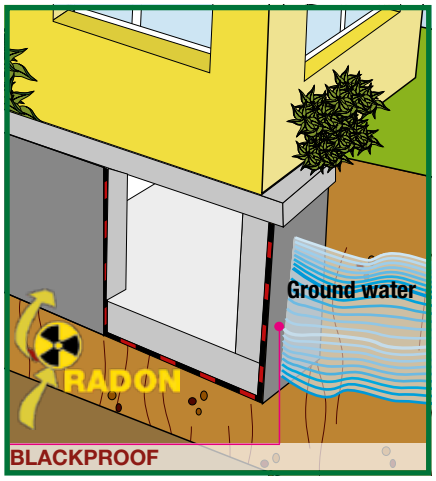
Waterproofing in excavations with or without containment diaphragms, preventing also the lateral migration of groundwater in the event that the pre-casting membrane becomes torn accidentally

Laying waterproof coverings on foundations, whether the membranes are synthetic or bitumen, is a long and laborious process. In addition, because they do not adhere to either fresh cast concrete or, some types, even concrete already laid, if the covering accidentally tears, they allow copious and widespread lateral migration of groundwater between the covering and all surfaces of the foundation, making it impossible to trace and isolate the origin of the leak.

HOW TO PROTECT BASEMENT ROOMS FROM THE PENETRATION OF RADIOACTIVE RADON GAS

RADON is a product of the decomposition of uranium 238 contained in rock and subsoil from which it migrates outwards. There are three isotopes: RADON 219, RADON 220 and RADON 222. The first two are considered less dangerous because a lower quantity is present and they have a very short lifespan, 4 seconds for the first and around 1 minute for the other. RADON 222 on the other hand has a lifespan of 3.8 days which gives it time to spread to the outside, penetrate the basement rooms of buildings or dissolve in water.

BLACKPROOF is a self-sealing, pre-casting membrane designed by INDEX to protect buildings from radioactive gases.



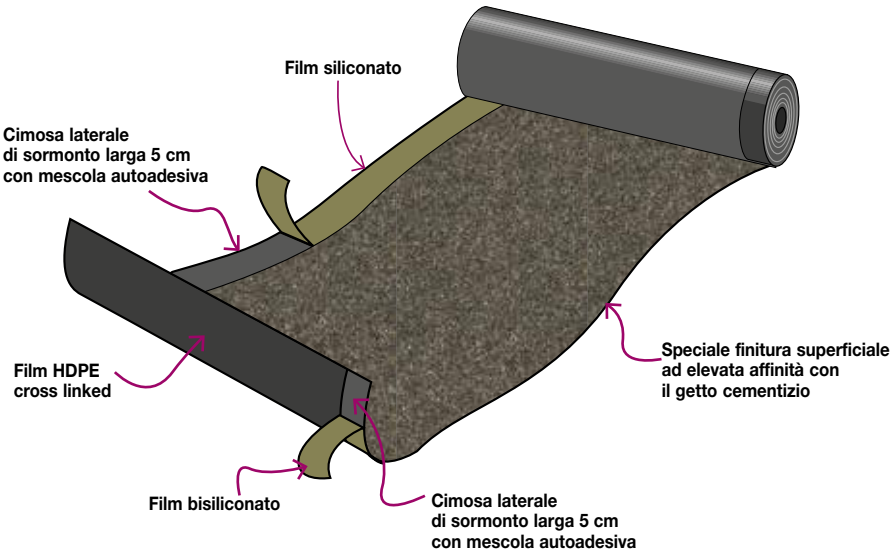
BLACKPROOF is a waterproofing membrane designed by INDEX to deal with problems of safety and water tightness of the foundations, either with or without excavation containment diaphragms including in the presence of groundwater and Radon gas.
The **BLACKPROOF** pre-casting membrane has very low Radon permeability and so the external coating of the foundation ensures complete protection for the building. Besides holding back groundwater, a barrier is created that also ensures a continuous, efficient and permanent barrier against radioactive gas.
Compared to standard membranes, adhesion to the cast concrete and the self-sealing properties of the **BLACKPROOF** membrane together guarantee a seal that is far superior against high pressure water and gas, even if the coating accidentally becomes torn.

Description

BLACKPROOF is a membrane consisting of a sturdy sheet of high-density, cross-laminated polyethylene (HDPE) coupled to an elastomeric polymer distilled bitumen mix reinforced with non-woven polyester which is resistant to punching, laceration and has a high ultimate elongation.
The mix is based on distilled bitumen, selected for industrial use, with a high content of elastomeric polymers to obtain a polymer distilled bitumen compound “with phase inversion”. The matrix of this compound, which consists of polymeric components in which the bitumen is dispersed, determines its main characteristics.
Its mechanical resistance, particularly resistance to punching and to elongation can be attributed to the positive synergy obtained by the union of HDPE and non-woven sheets that reinforce the elastomeric mix.
The lower side of **BLACKPROOF** is coated with the HDPE sheet, while the upper side consists of a special mineral finish anchoring with high affinity to the site cast concrete. The upper side has a 5-cm wide overlap side strip without the mineral finish, and is protected by a silicone-coated film, which matches up with another overlap strip of the same width on the opposite lower face, not covered with HDPE film and protected by a film siliconized on both sides that allows the sheets to be overlapped preventing them from bonding before they are properly aligned. Overlapping adjoining sheets by 5 cm and pressing on them with a roller will provide an even and secure seal.
On request the Phenoxy-Fatty Acid Ester additive, a special anti-root agent, can be added to the **BLACKPROOF** polymer-bitumen membrane.

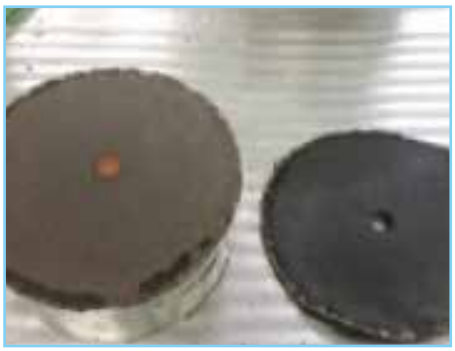
Advantages

- **Applied as a single-layer.**
- **Easy, quick and safe to lay.**
- **The self-adhesive longitudinal overlaps do not require any sealing bands or special accessories for laying.**
- **The overlaps and any seals remain waterproof even when subjected to a water head of 60m.**
- **BLACKPROOF adheres independently and permanently to fresh cast concrete**
- **BLACKPROOF’s strong adhesion to concrete even if torn prevents the lateral migration of groundwater behind the coating even when subjected to a water head of 60m.**
- **Much more effective waterproofing compared to similar products.**
- **High resistance to perforation.**
- **High flexibility and deformability that allows cracks of 20 mm to be bridged.**
- **BLACKPROOF in open excavation foundations is compatible with wall coatings that use elastomeric bitumen membranes made by INDEX whether torch bonded and self-adhesive. It is also compatible with the IDROBIT, IDROLASTIK AB RAPID and PURLASTIC FLASHING liquid coatings.**
- **Resistant to salt water as well.**
- **Can also be applied with periodic groundwater.**
- **The BLACKPROOF system requires no accessories.**
- **BLACKPROOF can remain exposed for a long time before concrete is cast.**



RESISTANCE TO LATERAL MIGRATION: pass the test with a 6-bar pressure

Checking the resistance to lateral migration is performed by testing a sheet of membrane with a 16 mm hole onto which concrete has been poured. Once the concrete has cured the sample is subjected to a waterproof test with coloured water at a pressure of 6 bar maintained for over 15 days. After this period the sample is detached from the concrete and a check is made that the coloured impression of the water has not extended beyond the surface of the hole.



Excellent adhesion to concrete

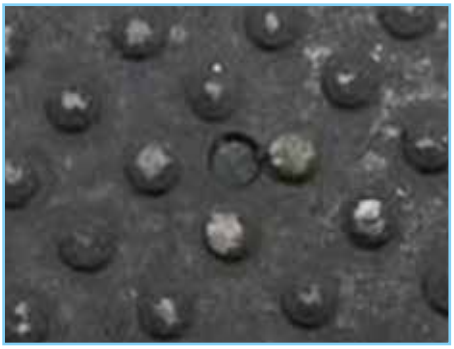
The adhesion to concrete initially guaranteed by the exclusive mineral surface treatment is then further increased by the hydration heat of the cast concrete which softens the elastomeric mix specifically designed to react with heat and subsequently adhesion continues to increase over time under the pressure of the water-bearing strata.

Self-sealings

Despite perforations made by nails, the material maintains its waterproofing even at a pressure of 6 bar.

The seal of self-adhesive joints

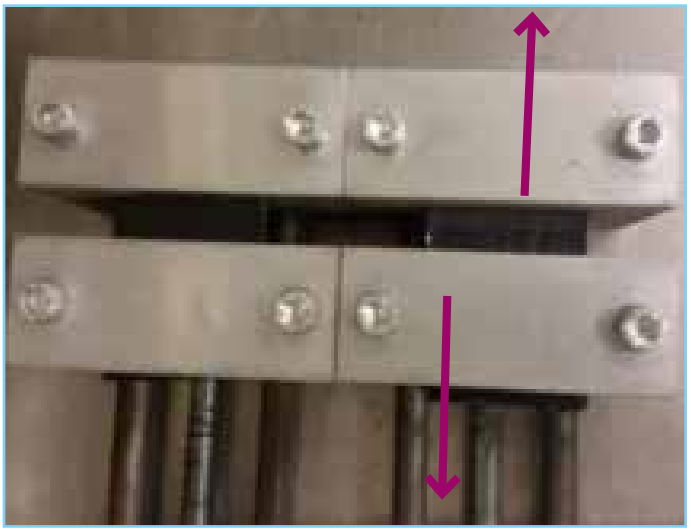
The self-adhesive joints have passed the leakage test under the pressure of a 60 m column of water.
The leakage test on the self-adhesive joints is made by means of circular overlapping carried out with the same material to simulate longitudinal overlapping.
The self-adhesive overlap is placed on a perforated plate in equipment to which water with the addition of methylene blue is poured. A pressure of 60 m of water is exerted on the surface of the membrane. After 15 days under pressure no leaks were found.



Stress Elongation Test

The sample, fixed between two terminals at close proximity, is lengthened by a certain distance and kept in position for a prolonged period to evaluate any creep phenomena.

	distance between clamps	Time passed	Remarks
1	2 mm	1 day	No cracks
2	5 mm	1 day	No cracks
3	10 mm	1 day	No cracks
4	15 mm	7 days	No cracks
5	20 mm	30 days	No cracks



Application fields

The primary use of the **BLACKPROOF** membrane is to waterproof basement rooms from the outside even where groundwater and Radon gas are present, where it creates an adhesive waterproof protection that is resistant to tearing and perforation.

BLACKPROOF is classified according to UNI EN 13969 as a membrane used to prevent rising damp from the ground.

CE **INTENDED USE OF "CE" MARKING SPECIFIED ACCORDING TO THE AISPEC-MBP GUIDLINES**

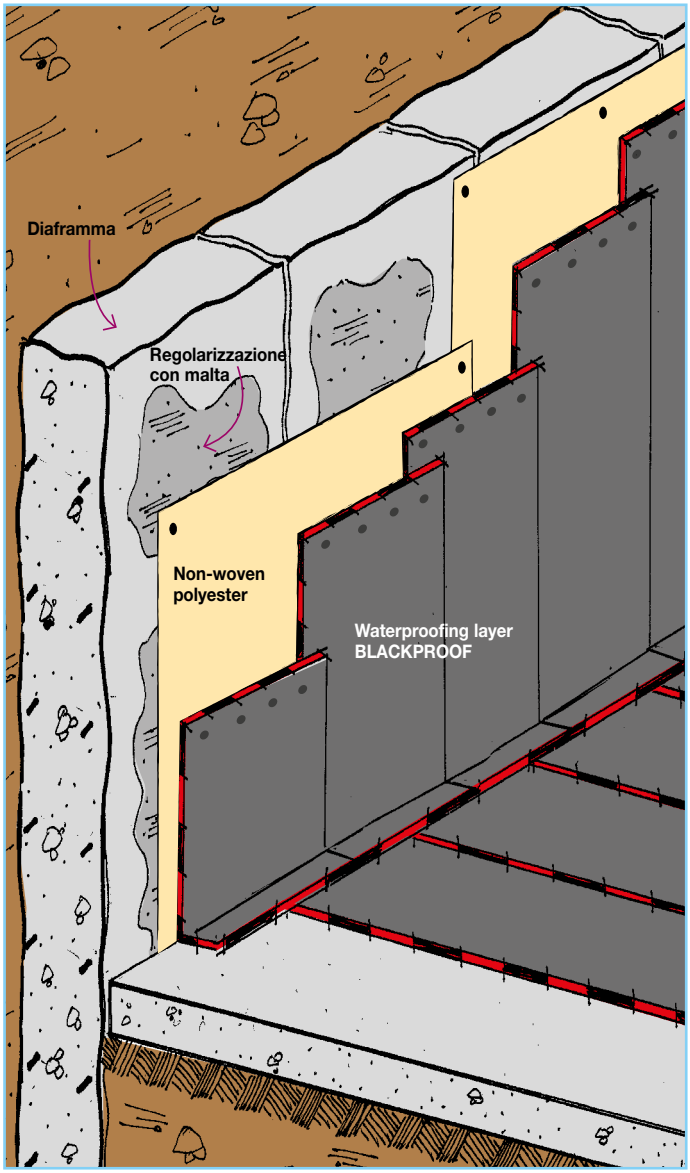
EN 13969 - MEMBRANE BITUMINOSE DESTINATE AD IMPEDIRE LA RISALITA DELL'UMIDITÀ DAL SUOLO
• Membrane per fondazioni
- BLACKPROOF

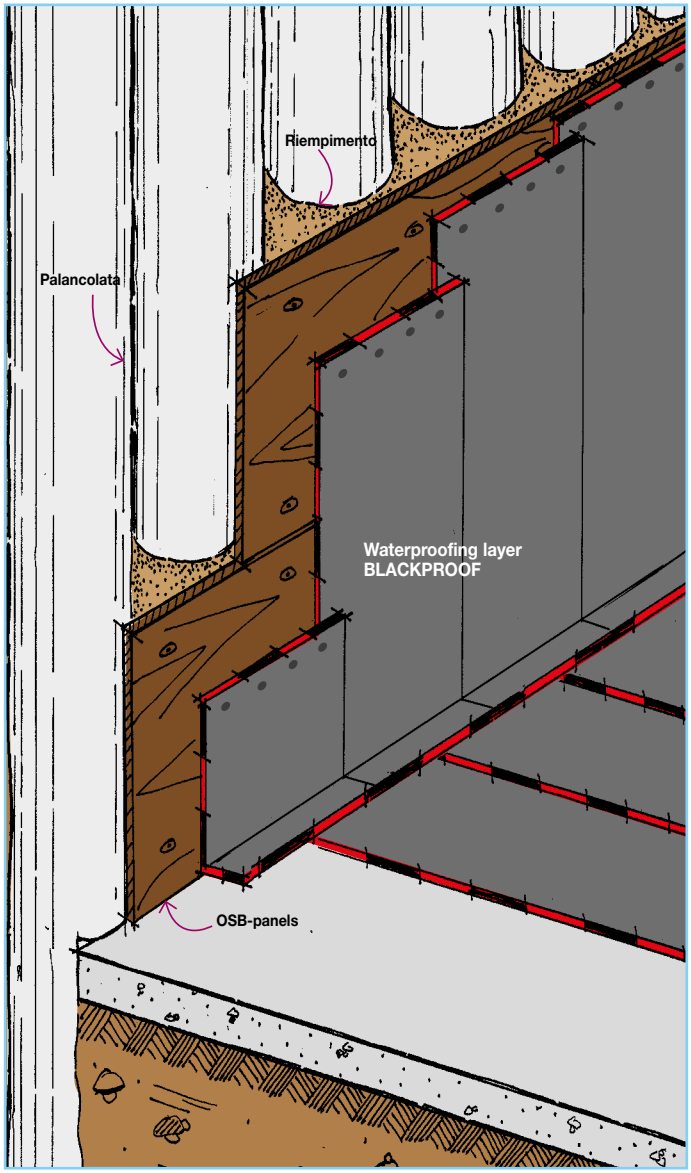
Method of use

» PREPARING THE LAYING SURFACE

Lean concrete under the bed
The concrete hood must be a minimum thickness of 4 cm and free from any stagnant water. It must also not have any crumbling parts and rough areas that could tear the membrane. Before laying **BLACKPROOF** a non-woven fabric of at least 700 g/m² must also be put in place. Laying geotextiles can however be avoided if the surface of the lean concrete is carefully smoothed. It should be taken into consideration that the use of a geotextile will allow the material to move more easily in the event of earth tremors, thereby reducing the risk of damage caused by granules of concrete that could detach from the lean concrete and tear the membrane during an earthquake.

Containment walls
The diaphragms should be evened with sprayed concrete or with cement mortar and any water leaks sealed with BETONRAPID - INDEX SpA.
Before laying **BLACKPROOF** on the vertical part, put in place a non-woven fabric from 700 g/m² to 1200 g/m² chosen on the basis of the fibre used in the sprayed concrete. Use 1200 g/m² if it is reinforced with metal fibres or 700 g/m² if it is not.
The surface of sheet piling or similar elements should be evened with 18 mm OSB panels behind which the concrete will be cast.





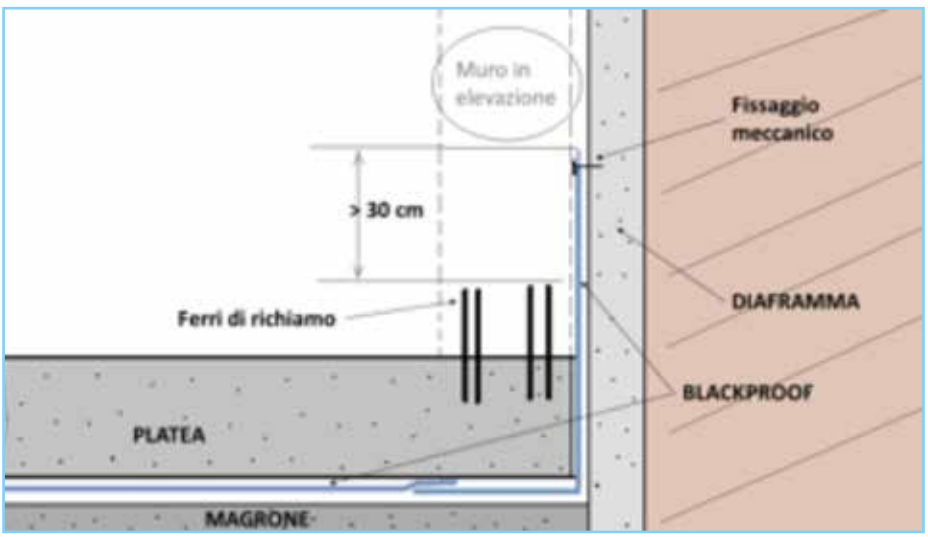
»LAYING THE MEMBRANE

On the lean concrete under the bed
The rolls need to be kept covered in a dry place and only taken to the site the moment they are needed. The pack should be opened immediately before laying. Rolls should be opened with the HDPE side facing downwards and must be applied when dry, overlapping them by 50 mm along the overlap strip on the sheet.
The ends of the sheets must be staggered by at least 30 cm providing a cross overlap of 10 cm.
After removing the silicone-coated protection strips on the opposite adhesive edges, the longitudinal overlaps are self-sealing when pressure is applied with a metal roller to obtain an even and safe adhesive-on-adhesive seal.

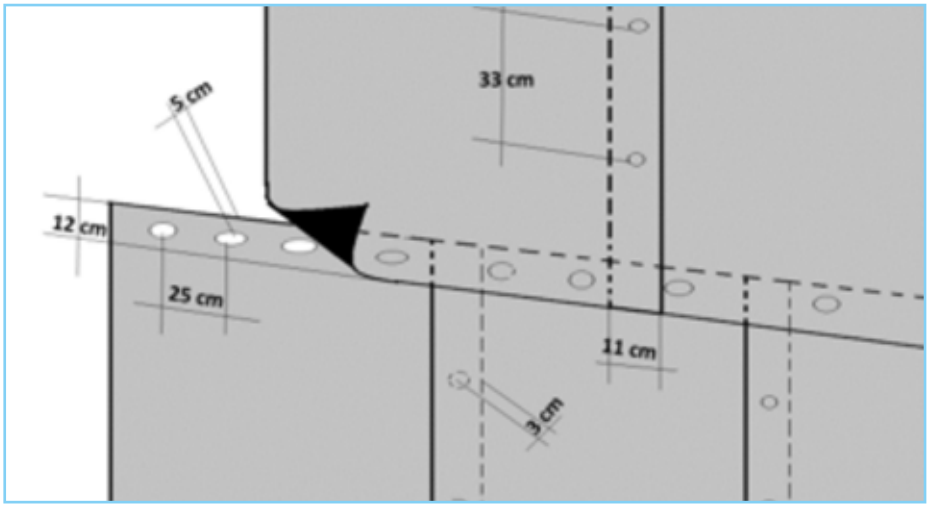



The end overlaps are sealed using a hot air gun or a light flame from a torch with a bell of a diameter no greater than 2 cm.

BLACKPROOF is a thermoplastic product and so during the hottest part of the day in summertime it softens, while on the contrary with the cold it hardens so that the self-adhesive selvedges become less adhesive.
The excellent performance when cold of **BLACKPROOF** does not however mean that the membrane can be laid at low temperatures without taking precautions. Below +10°C, also depending on the humidity of the air and the support, special care must be taken when laying, if necessary using a hot air heater or a “light flame” to activate the adhesion of the self-adhesive selvedge.
The temperature of +5°C is nevertheless the minimum for laying.
BLACKPROOF cannot remain exposed for any long periods and the application must be covered within 60 days.
For foundations with containment walls, before erecting the walls of the building it is recommended that the walls be covered with **BLACKPROOF** by at least 30 cm beyond the height of the wall rebars inserted in the bed.

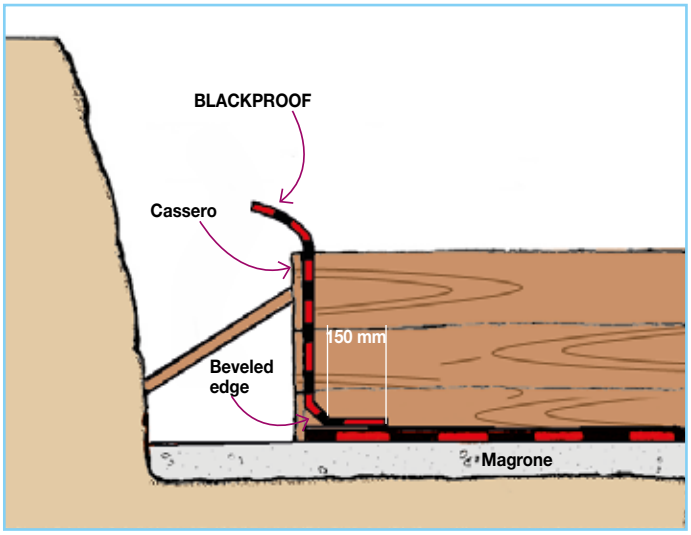


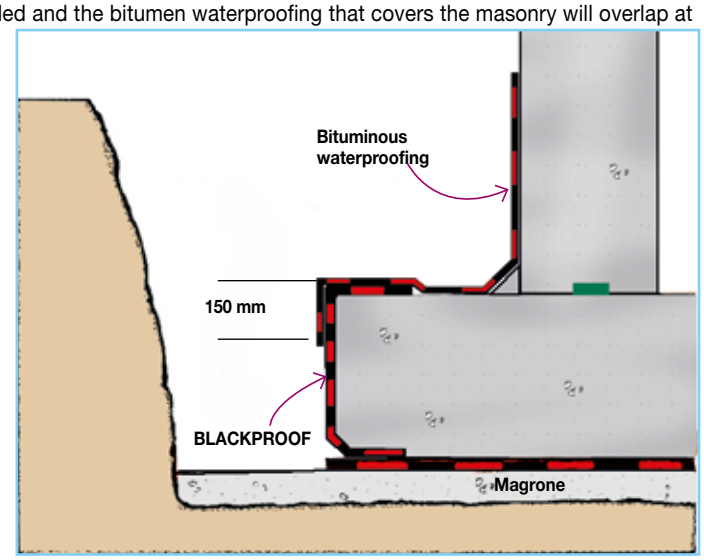
On walls
On vertical parts the sheets should be fixed mechanically at the ends every 25 cm using nails with large heads of approx. 2 cm in diameter, suitable for the type of support. The end overlaps should be approx. 12 cm. covering by at least 5 cm the head of the nail that must be fixed at least 5 cm from the top edge. The overlap should be sealed with a small torch that has a bell of less than 2 cm in diameter.
The sheets should be fixed with 3 nails per linear metre including under the longitudinal adhesive overlaps, centering the nails at 3 cm from the edge and overlapping the sheets by 11 cm, of which 5 are cold self-sealed and the rest bonded with a small torch.



Laying against formworks (open excavation foundations)
Once the flat part of the lean concrete has been covered, formworks can be mounted to contain the cast of the bed. Wooden 5×5cm elements set at an angle should be provided at the base of the formworks. The **BLACKPROOF** sheets are arranged on the formworks parallel to them, fixing them temporarily to the ends of the formworks using a staple gun or with nails that will later be removed before removing the formworks from the bed.
Arranging the sheets in this way makes it possible to limit the number of overlaps to be sealed on the vertical part but the width of the sheets is 105 cm and having to make a turn up on the surface of approx. 15cm, the maximum height reached by the sheet applied to the formwork is 85 cm, of which 10 cm is turned up at the top of the bed. This arrangement can therefore be used up to a general bed thickness of 75 cm. For thicker beds, the sheets must be applied vertically as if they were being laid on walls.

BLACKPROOF is then turned back over the bed where it will be heat-bonded and the bitumen waterproofing that covers the masonry will overlap at





the corner of the bed to be joined to the **BLACKPROOF** by approx. 15 cm

»REPAIRING BLACKPROOF
Repairs can be made with hot air or a light flame with patch of the same product.
Thoroughly clean the areas around the tear and use PURLASTIC FLASHING - INDEX SpA to bond a piece of the same material that is a 10 cm larger than the torn part in all directions.

PURLASTIC FLASHING is a ready-to-use thixotropic one-component liquid polyurethane-bitumen membrane. The material hardens with air humidity and creates a strong flexible membrane with excellent adhesion to bituminous substrates.
PURLASTIC FLASHING is thixotropic and can be applied on upright surfaces without dripping or slipping. It can be used to bond the end overlaps of the **BLACKPROOF** membrane or any part of the waterproof covering without a self-adhesive edge. Reinforced with non-woven fabric, RINFOTEX - INDEX SpA also seals the covering joins at special points such as pipes, expansion joints and other elements that penetrate the waterproof covering.

»CASTING THE FOUNDATION BED
Reinforcement irons must rest on cement spacers with a flat contact surface of approx. 10 cm² to be placed on the waterproof covering. Before casting the concrete, make sure the surface of the covering is dry and the concrete must be thoroughly vibrated using equipment that will not damage the membrane.

TECHNICAL CHARACTERISTICS

	Standard	T	BLACKPROOF
Reinforcement			"Non-woven" Spunbond polyester fabric stabilized with fibreglass
Thickness	**EN 1849-1**	±0,2	2.5 mm
Roll size	**EN 1848-1**	–1%	1.05×10 m
Watertightness	**EN 1928 – B**	≥	60 kPa
Shear resistance L/T	**EN 12317-1**	–20%	350/300 N/50 mm
Maximum tensile force L/T	**EN 12311-1**	–20%	450/400 N 50 mm
Elongation L/T	**EN 12311-1**	–15% V.A.	60/60%
Resistance to impact	**EN 12691 – A**		300 mm
Resistance to static loading	**EN 12730 - A**		25 kg
Resistance to tearing (nail shank) L/T	**EN 12310-1**	–30%	150/120 N
Flexibility to low temperature • after ageing	**EN 1109** **EN 1296-1109**	≤ +15°C	–25°C –20°C
Flow resist. at high temperature • after ageing	**EN 1110** **EN 1296-1110**	≥ –10°C	100°C 90°C
Resistenza alla penetrazione laterale dell'acqua	**ASTM D 5385**		Nessuna perdita a 6 bar (600 KPa)
Reaction to fire Euroclass	**EN 13501-1**		F
External fire performance	**EN 13501-5**		F roof
Thermal specifications			
Thermal conductivity			0.2 W/mK
Heat capacity			5.20 KJ/K

Compliant with EN 13707 in terms of the resistance factor to steam penetration for reinforced polymer-bitumen membranes, the value of μ = 20 000 may be considered, unless declared otherwise.

PRODUCT FINISHING

FINITURA MINERALE AUTOAGGRAPPANTE. È realizzata per adesione a caldo di sabbia di minerali esenti da silice libera, evita l'incollaggio delle spire del rotolo e funge da intermediario di adesione per il getto di calcestruzzo della fondazione.

HDPE POLYETHYLENE FILM.

• FOR ANY FURTHER INFORMATION OR ADVICE ON PARTICULAR APPLICATIONS, CONTACT OUR TECHNICAL OFFICE • IN ORDER TO CORRECTLY USE OUR PRODUCTS, REFER TO INDEX TECHNICAL SPECIFICATIONS •

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