

MAPEPROOF FBT

Synthetic fully-bonded waterproof sheet membrane,
laminated with non-woven fabric for waterproofing
underground structures



WHERE TO USE

Waterproofing horizontal and vertical surfaces of underground structures before pouring concrete such as:

- carparks and garages;
- underground areas in general;
- swimming pools, basins and storage tanks;
- underpasses.

Mapeproof FBT may be applied underneath foundation slabs and against diaphragms, pile walls, sheet piling and other retaining structures for excavation work.

ADVANTAGES

- **Mapeproof FBT** is made up of a synthetic membrane, laminated with non-woven polypropylene fabric which, once concrete has been poured, forms a monolithic bond with the concrete and remains perfectly bonded over time.
- **Mapeproof FBT** is a waterproofing system that becomes fully bonded to poured concrete and prevents water from migrating laterally between the foundation structure and the membrane.
- Completely watertight overlaps.
- **Mapeproof FBT** is cold-applied and no heat and/or naked flames are required. It is positioned before placing the steel reinforcement and pouring the concrete and does not require a protective layer.
- Easy to install: **Mapeproof FBT** is extremely flexible and is easy to shape during installation so that it follows the form and geometry of the substrate.

TECHNICAL CHARACTERISTICS

Mapeproof FBT is a waterproofing membrane made up of a synthetic FPO sheet tightly coupled to a layer of non-woven fabric. When it comes into contact with poured concrete it forms a tough bond with it.

Mapeproof FBT is resistant to natural agents and aggressive substances normally found in groundwater and in the soil. It is highly durable and resistant to ageing from UV rays while normal site activities are being carried out.

Mapeproof FBT forms a highly effective barrier against groundwater, moisture in the ground, radon and methane.

Mapeproof FBT complies with the requirements of the EN 13967 standard ("*Flexible sheets for waterproofing – Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet*").

Elements of the system

Mapeproof FBT system must be used together with other accessory products to guarantee the watertightness of all construction details that are typically found on a construction site. The products used in the system are as follows:

- **Mapeproof FBT Tape 600**, adhesive tape to form particular features over the top of adjacent sheets;
- **Mapeproof SA Tape**, adhesive tape to form sealed joints under adjacent sheets **Mapeproof FBT**, **Mapeproof AL** and **Mapeproof SA**;
- **Mapeproof Fix Tape**, double-sided adhesive fixing.

APPLICATION PROCEDURE

Application of the product

Substrates must be sound and stable and may also be damp, but there must be no standing water. The surfaces on which **Mapeproof FBT** is to be applied must be even and have no large protruding areas or hollows.

Substrates suitable for applying **Mapeproof FBT** include concrete, rigid insulating panels and wooden panels.

Application of the product

Horizontal surfaces

Pour a poor concrete on the ground to create an even layer on which to apply the membrane. Place **Mapeproof FBT** over the horizontal surface and run it up along the side walls to form a strip wider than the thickness of the foundation slab.

Overlap the sheets lengthways so that the self-adhesive edges hold them in place. Use **Mapeproof FBT Tape 600** and “in special cases also **Mapeproof SA Tape**” to join the ends between each sheet.

Before placing the steel reinforcement and pouring the concrete, make sure all the joints are well bonded. If any of the joints are poorly bonded, apply more **Mapeproof FBT Tape 600** to form a better bond.

Vertical retaining walls prior to pouring concrete

Before applying the sheets against diaphragms or piles, hydro-blast the surfaces and level off the installation bed and the ends of the tie-rods, which should not be too rough or have large hollows, with **Mapegrout T60** fibre-reinforced, controlled-shrinkage, sulphate-resistant, thixotropic mortar for restoring concrete admixed with 0.25% of **Mapecure SRA**.

When applying the sheets against piles, these only need to be carefully hydro-blasted.

Then waterproof the side walls by applying **Mapeproof FBT**, starting from the top of the walls and working downwards until it joints with the strip at the bottom of the walls, applied before pouring the foundation slab.

Once the waterproofing system has been installed, check the overlaps and joints before pouring the concrete to make sure they are all well bonded. If any of them are poorly bonded, apply more **Mapeproof FBT Tape 600** to form a better bond.

Between each pour of concrete, the construction joint that forms must be sealed with **Idrostop**, hydro-expanding acrylic profile to be placed at the midpoint of the construction joint.

RECOMMENDATIONS

Do not apply **Mapeproof FBT** if there is water or standing water.

- If **Mapeproof FBT** is accidentally damaged while carrying out normal site activities, repair the damaged area by inserting below it (lean side/excavation confining work) an off-cut of the sheet, sealed with **Mapeproof FBT Tape 600**.
- Concrete must be poured over **Mapeproof FBT** within 50 days (40 in hot weather) of application.
- When **Mapeproof FBT** is applied prior to pouring concrete inside formworks, it is only possible to remove the formworks when the concrete reaches a compressive strength of 10 N/mm².
- In case of accidental accumulation of dust, sand and mud on the adhesive surface of **Mapeproof FBT**, perform a surface washing with water jets to ensure correct bond to the subsequently poured concrete.

PACKAGING

Mapeproof FBT is available on 20 m² rolls (width of roll 1 metre).

STORAGE

Mapeproof FBT may be stored for 24 months if kept in its original packaging in a dry place at +10°C to +30°C. Do not stack the pallets during transport and storage.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapeproof FBT is an article and referring to the current European regulations (Reg. 1906/2007/EC - REACH) does not require the preparation of the Safety Data Sheet. During use it is recommended to wear protective gloves and goggles and follow the safety requirements of the workplace.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Appearance/material:

Side in contact with poured concrete: white non-woven PP fabric

Side in contact with substrate: white synthetic FPO sheet

Width of roll:

1 m (0.9 + 0.1 of self-adhesive edging)

Nominal thickness:

1.7 mm (thickness of FPO sheet 1.2)

Weight: $\geq 1.3 \text{ kg/m}^2$

APPLICATION DATA

Application temperature: 0°C to $+40^\circ\text{C}$

FINAL PERFORMANCE

Watertightness (no lateral migration) according to ASTM D 5385 mod.:	$\geq 7 \text{ bar}$
Radon gas diffusion coefficient:	$2.14 \text{ E-13 m}^2\text{s}^{-1}$
Permeability to methane gas (ISO 7229):	$110 \text{ ml/m}^2\cdot 24 \text{ h}$
Resistance to root penetration according to CEN/TS 14416:	no penetration or perforation
Tensile strength (ASTM D 412):	$> 8.5 \text{ MPa}$
Elongation at failure (ASTM D 412):	$\geq 600\%$
Peel adhesion to concrete (ASTM D 903):	$> 1000 \text{ N/m}^{(1)}$
Peel adhesion to overlaps (ASTM D 1876):	$> 450 \text{ N/m}$
Flexibility at low temperatures (ASTM D 1970):	pass
Water absorption (ASTM D 570):	$> 1.2\%$
Resistance to puncture (ASTM E 154):	$> 900 \text{ N}$

Performance characteristic	Test method	Requirements according to EN 13967	Performance of Mapeproof FBT
Watertightness:	EN 1928 (method B)	24 hours at 60 kPa	pass
Visual defects:	EN 1850-2	none	none
Tensile strength:	EN 12311-2 (method B)		longitudinal: $\geq 8.5 \text{ N/mm}^2$ transversal: $\geq 9.5 \text{ N/mm}^2$
Elongation at failure:	EN 12311-2 (method B)		longitudinal: $\geq 450\%$ transversal: $\geq 650\%$
Water vapour permeability S_D :	EN 1931 (method B)		75 m
Resistance to static loading:	EN 12730	Value declared by manufacturer	Method A and Method B, 20 kg load: pass
Resistance to tearing (nail shank):	EN 12310-1		longitudinal: $\geq 600 \text{ N}$ transversal: $\geq 600 \text{ N}$
Joints strength:	EN 12317-2		$\geq 300 \text{ N/50 mm}$
Resistance to impact:	EN 12691		Method A height of 200 mm: pass Method B height of 1500 mm: pass
Durability, expressed as watertightness after artificial ageing:	EN 1296, test in compliance with EN 1928	Impermeability after 24 hours at 60 kPa	pass
Durability, expressed as watertightness after exposure to chemicals:	EN 1847, test in compliance with EN 1928	Impermeability after 24 hours at 60 kPa	pass
Bitumen compatibility:	EN 1548, test in compliance with EN 1928	Impermeability after 24 hours at 60 kPa	pass
Reaction to fire:	EN 13501-1	Euroclass	E

(1) The membrane peel adhesion to concrete is measured at 305 mm/min at ambient temperature after 28 days of curing

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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