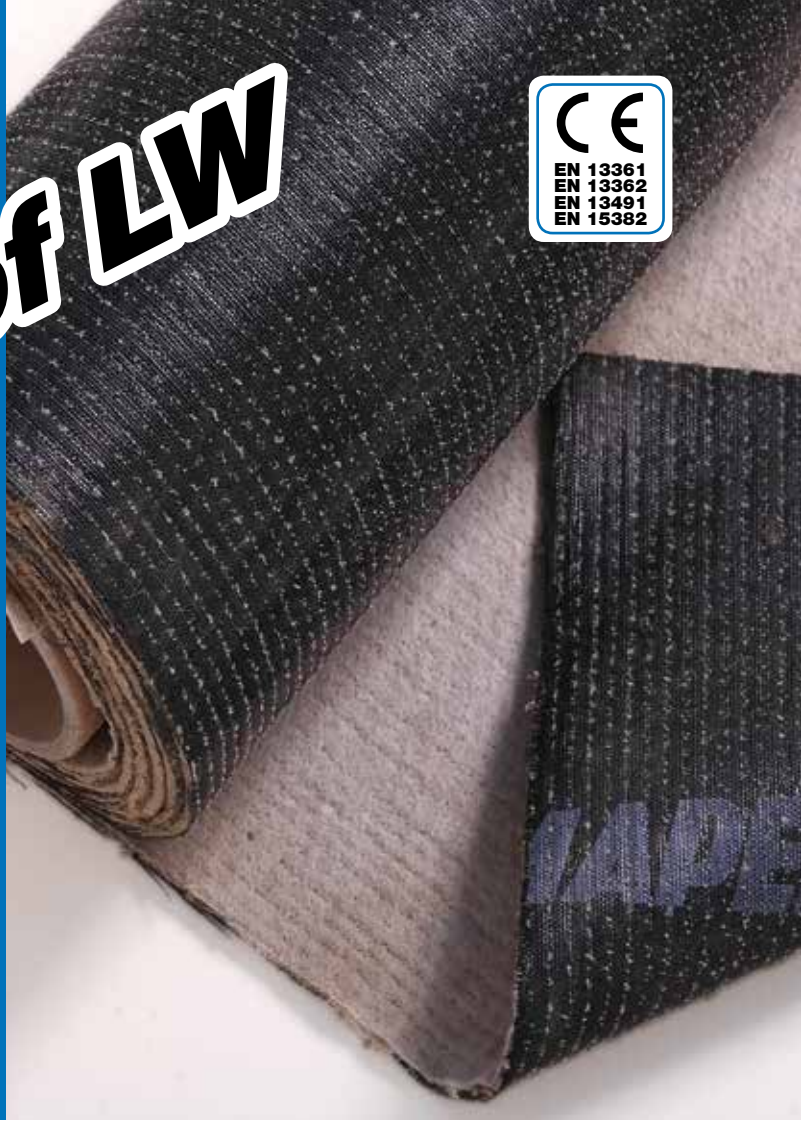
MAPEI

Mapeproof LW

CE
EN 13361
EN 13362
EN 13491
EN 15382



Bentonite waterproofing sheets for structures below ground level, suitable for both horizontal and vertical surfaces

WHERE TO USE

Waterproofing concrete structures below ground level with a water table less than 5 m.

Some application examples

Waterproofing horizontal and vertical concrete structures in environments below ground level, below slabs, on retaining walls, against diaphragms and soldier-pile walls, for example in underground car-parks, cellars, swimming pools, underpasses and basements.

TECHNICAL CHARACTERISTICS

Mapeproof LW consists of two layers of geotextile fabrics which are needle-punched together to form a sandwich around a uniform layer of natural sodium bentonite. The needle-punching process involves the use of thousands of needles with a hooked tip, which force part of the fibres of the upper layer of non-woven fabric through the middle layer of bentonite, and stitch it to the lower support layer of geotextile fabric. Thanks to this special mechanical strengthening system, the natural sodium bentonite contained in **Mapeproof LW** remains fixed in place, even after hydration.
The needle-punching process also guarantees that the non-woven geotextile fabric in contact with the concrete is saturated with bentonite. The properties of **Mapeproof LW** ensure it forms a self-sealing composite which, on contact with moisture in the ground, forms a gel with excellent waterproofing properties.

APPLICATION PROCEDURE

Preparation of the substrate

The surfaces on which **Mapeproof LW** is applied must be even and free of large protruding areas or hollows. The substrate may also be damp.

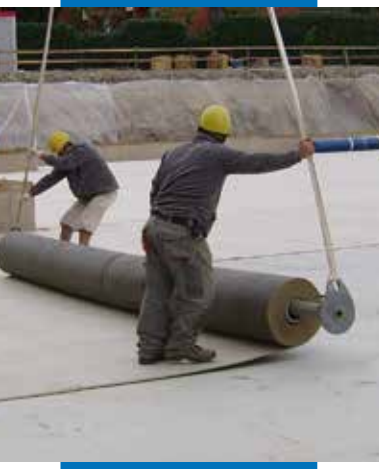
Laying on horizontal surfaces

When laying on horizontal surfaces, cast a layer of concrete to form an even surface on which the bentonitic barrier will be laid. Lay the **Mapeproof LW** sheets by staggering the joints and overlapping the edges by 10 cm. Fasten the sheets in place with nails and **Mapeproof CD** washers at intervals of approximately 50 cm. Fold the edges of **Mapeproof LW** over formwork and onto vertical surfaces, such as diaphragms, micro-piles, adjacent brickwork, etc. Then pour on the reinforced concrete with sufficient protection to resist hydraulic lift. If casting of the concrete is interrupted, the construction joint between old and fresh concrete must be sealed with **Idrostop B25** or **Idrostop Soft**, bentonitic joints, or with **Idrostop**, hydro-expanding acrylic profile.
To improve durability, concrete used for foundations must be chosen according to UNI 11104 (EN 206) standards.

In order to respect the water/cement ratios indicated for the exposure classes contained in the standard, and in order to guarantee good performance of both the fresh and hardened concrete (fluidity, maintenance of workability, good strength after medium and long periods, etc.), we recommend using admixtures from the **Dynamon** range (please refer to the relavant technical data sheets, and contact MAPEI's Technical

Mapeproof LW

Waterproofing of structures below ground level against sheet piles



Waterproofing a horizontal surface with Mapeproof LW

Grouting a gap in correspondence with a corner of the sheet with Mapeproof Mastic

Services Department to design the correct mix design).

Laying on vertical surfaces (after casting)
Before pouring vertically, all construction joints between walls and the foundations, and between adjacent walls, must be sealed using **Idrostop B25** or **Idrostop Soft**, bentonitic joints, or **Idrostop**, hydro-expanding acrylic profile. After casting the concrete as prescribed in UNI 11104 (EN 206) standards, all rough surfaces must be eliminated, any honey combing must be smoothed over with **Mapegrout 430** or **Planitop Smooth & Repair R4**.
Metallic spacers must be removed by forming a 2 cm-deep slot, which must then be sealed using **Mapegrout 430** or **Planitop Smooth & Repair R4**. If plastic piping is used as spacers, seal the piping with special plugs and seal the plugs with **Adesilex PG4** two-component, thixotropic epoxy adhesive. Form a coving to blend in the horizontal and vertical surfaces at the corner between the walls and the foundations with **Mapegrout 430** or **Planitop Smooth & Repair R4**, or with mortar made using sand and cement, with **Planicrete** admix at a ratio of 1 : 3. Then lay rolls of **Mapeproof LW** starting from the top, making sure that the sheets overlap by 10 cm. The sheets must then be fixed in place with nails and **Mapeproof CD** washers at intervals of approximately 30 cm.
Before filling the excavations, protect the bentonite sheet that has just been applied by overlaying with spun-bound fabric with a weight of 250 g/m^2. Holes and trenches around the membrane must be filled using well-graded material without stones, forming well-compacted, homogenous layers approximately 40 to 50 cm thick.

Laying on diaphragms and soldier-pile walls (before casting)
Use a high-pressure hydro-cleaner to wash down the surface. Smooth over the surface and the heads of the tie-rods with **Mapegrout T60** fibre-reinforced, controlled-shrinkage, sulphate-resistant thixotropic mortar for repairing concrete, with an addition of 0.25% of **Mapecure SRA**. Once the concrete has hardened, fix a sheet of **Mapeproof LW** on the heads of the tie-rods to locally reinforce the waterproofing layer. Then waterproof the entire surface by applying sheets of **Mapeproof LW** starting from the top, overlapping the sheets by 10 cm. Fix the sheets in position with nails every 30 cm.

RECOMMENDATIONS

- **Mapeproof LW** must only be used on structures where the water table is no more than 5 m deep.
- The bentonite barrier must not be laid directly under water.
- Only compact, homogenous concrete adequately calculated structures must be built on the bentonite barrier.
- Instead of **Mapeproof LW** on retaining walls after casting, apply **Mapelastic Foundation** with a trowel, roller or by spray in two coats at a total thickness of 2 mm. Then, before filling in the excavations, apply a protective drainage layer in combination with a layer of non-woven fabric, such as **Polyfond Kit Drain** produced by Polyglass SpA.
- All tie-rods, etc. which pass through the layer of **Mapeproof LW** must be sealed with **Mapeproof Mastic** bentonite grouting paste.
- Damaged areas must be repaired with **Mapeproof Mastic** bentonite grouting paste or replaced with a new piece of **Mapeproof LW**, according to the size of the damaged area.

PACKAGING

Mapeproof LW is supplied in two versions:
– **Mapeproof LW** 2.5 m x 22.5 m rolls;
– **Mapeproof LW** 5 m x 40 m rolls.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapeproof LW is an article and referring to the current European regulations (Reg. 1906/2007/CE - REACH) does not require the preparation of the material safety data sheet. During use it is recommended to wear gloves and goggles and follow the safety requirements of the workplace.

PRODUCT FOR PROFESSIONAL USE.

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

All relevant references for the product are available upon request and from www.mapei.com

TECHNICAL DATA (typical values)

Conforms to the following European harmonised standards: EN 13361, EN 13362, EN 13491, EN 15382

PRODUCT IDENTITY AND FINAL PERFORMANCE	
Geotextile fabric	
Lower layer of geotextile fabric:	polypropylene fabric
Weight of lower layer of geotextile fabric (g/m^2):	120
Upper layer of geotextile fabric:	polypropylene non-woven fabric
Weight of upper layer of geotextile fabric (g/m^2):	200
Layer of bentonite	
Type:	natural sodium
Aeric mass (EN 14196) (g/m^2) – with 12% humidity:	4,100
Swelling index (ASTM D 5890) (ml/2 g):	28
Bentonitic geo-composite	
Total aeric mass (EN 14196) (g/m^2):	4,420
Hydraulic conductivity (ASTM D 5887) (m/s):	1E-11
Permeability with 5 m water table (hydrostatic load 50 kPa) (m/s) (*):	< 1.85E-11
Flux (ASTM D 5887) ((m^3/m^2)/s):	5E-9
Static puncture test (EN ISO 12236) (kN):	2.0
Longitudinal tensile strength (EN ISO 10319) (kN/m):	12.0
Transversal tear strength (EN ISO 10319) (kN/m):	12.0
Peeling (ASTM D 6496) (N/m):	600
Bond strength to concrete (ASTM D 903) (kN/m):	2.8
Thickness of product (EN ISO 9863-1) (mm):	6.0
Seal of overlaps:	the geocomposite product is self-sealing

(*) Laboratory tests according to ASTM D 5084

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