

## Sika BentoShield® MAX LM

Polymer modified bentonite waterproofing system.  
mechanically bonded, contaminate resistant, self healing  
membrane for basement and below ground structures.

### Product Description

Sika BentoShield® MAX LM is a self healing waterproofing membrane that's resistant to contaminated soils, forming an automatic mechanical bond to freshly poured concrete it virtually eliminates the possibility of water movement between the membrane & structure. Approximately 6.5 mm thick, consisting of two polypropylene geotextiles, a woven fabric and non-woven fabric, enclosing pre-hydrated homogeneous layer of granular sodium bentonite at a minimum weight of 5000g/m<sup>2</sup>. The two geotextiles are interlocked by a needle-punching process forcing fibres from the non-woven layer through and beyond the woven layer. This process contains and confines the polymer modified bentonite granules and forms a physical link between the geotextiles. A flexible polyethylene layer is integrally bonded to the non-woven geotextile.

### Uses

- Damp proofing, water proofing, tanking membrane for horizontally and vertical applications where buildings are expected to be subject to hydrostatic water pressure.
- Below ground reinforced concrete structures
- Effective against diaphragm wall constructions.
- Direct application onto ground retaining concrete piling when placed within the piling - concrete interface
- Direct application within steel sheet piling – concrete interface
- Can be placed within the formwork.
- Below structural reinforced concrete slabs.

### Characteristics / Advantages

- Qualified waterproofing tanking membrane in accordance with BS8102: 2009
- Water tightness of the laps tested to BS EN 1928.
- Designed to offer protection in areas subject to changing geological conditions such as flood plains, areas of soil settlement and brown field constructions.
- Application ensures performance stability in high water table environments and constructions which are subject to future alterations in water levels.
- An effective barrier against ground water in saline environments.
- Easy to install, no primers required.
- Easy to install, no protection boards required.
- Can be applied in temperatures below 0°C
- Will self heal when subjected to a head of water<sup>1</sup>.
- Can be applied during conditions of high humidity.
- Major constructions benefit from speed of application.

<sup>1</sup> Damaged area size less than 2mm. Self-healing varies subject to moisture, confinement and compression levels.



Construction

<b>Tests</b>	Hydrostatic Pressure	70m	ASTM D 5385
	Permeability	< 1,0 x 10 <sup>-11</sup> m/sec	ASTM D 5887
	Index Flux	< 5,0 x 10 <sup>-9</sup> m <sup>3</sup> /sec-m <sup>2</sup>	ASTM D 5887
	Tensile Strength	> 10 kN/m	ASTM D 6768
	CBR Puncture	> 1850N	EN ISO 12236
	Peel Adhesion to Concrete	> 2,5 kN/m	ASTM D 903
	Thickness	6,5 mm	EN 964-1
	Bentonite Content(1)	> 5000 g/m <sup>2</sup>	ASTM 5993
	Free Swell	> 27 ml/2g	ASTM D 5890
	Fluid Loss	< 15 ml	ASTM D 5891
	Montmorillonite content	< 80%	XRD Analysis
	Non Woven - Mass/Unit Area	200 g/sq.m	ASTM D 5261
	Woven - Mass/Unit Area	110 g/sq.m	ASTM D 5261
	PE thickness	0,2mm	ASTM D 5199

<b>Approval / Standards</b>	<ul style="list-style-type: none"> <li>■ Conforms to the requirements of BS EN 1928 (24h/60 KPa) Watertightness to liquid water</li> <li>■ Declaration of performance CPR-0554-MAXLM-25-07</li> <li>■ CE Certificate No. 1301 – CPD - 0554</li> <li>■ EN 13491:2007 - Geosynthetic barriers “Characteristics required for use as a fluid barrier in the construction of tunnels and underground structures</li> <li>■ EN 13492:2004 - Geosynthetic barriers “Characteristics required for use in the construction of liquid waste disposal sites, transfer stations or secondary containment”</li> <li>■ EN 13493:2007 - Geosynthetic barriers “Characteristics required for use in the construction of solid waste storage and disposal sites”</li> <li>■ EN 13361:2004 - Geosynthetic barriers “Characteristics required for use as a fluid barrier in the construction of reservoirs and dams”</li> <li>■ EN 13362:2006 - Geosynthetic barriers “Characteristics required for use in the construction of Canals</li> </ul>
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## Product Data

### Form

**Appearance / Colour** Black woven / White non-woven geotextiles, yellow polyethylene laminate

**Packaging** 1.1m x 5m rolls, 2.5m x 25m rolls  
(tolerance ±3%)

### Storage

**Storage Conditions / Shelf Life** 2 years.

### Technical Data

**Chemical Base** Polymer modified natural sodium bentonite and polypropylene geotextiles

**Density** Nominal 5.00 Kg/m<sup>2</sup>

**pH Value** 9.5 ± 0.5

## System Information

### Application Details

Sika BentoShield® MAX LM is installed with the woven geotextile in contact with the concrete surface to be waterproofed.

No priming is required as the system mechanically bonds to poured concrete thus forming an integral seal which prevents water migration.

By lapping joints with a minimum overlap of 100 mm between adjoining edges and 100 mm between roll ends a continuous waterproof barrier is created. Laps should be staggered by 300 mm to avoid a build up of product in one location.

All vertical lap joints are sealed with Sika BentoShield SS50 Bonding Tape. Horizontal lap joints can be sealed with Sika BentoShield SS50 Bonding Tape, a 5 mm x 50 mm fillet of Sika BentoShield Granules or a similar fillet of Sika BentoShield Paste, and closed with staples or fixing system.

### Application Conditions / Limitations

Sika BentoShield® MAX LM should only be applied after the successful preparation of the substrate is completed.

The membrane is designed to work under confinement.

When placing Sika BentoShield® MAX LM inside the formwork, the formwork must be removable & not the stay in-situ variety.

Sika BentoShield® MAX LM products are not designed to be installed over ice or in standing water. Should the ground water contain strong acids, alkalis, or has a conductivity of 2,500 µmhos/cm or greater, water samples should be tested for compatibility.

Rolls may compress slightly during storage. Membrane can be shaken once unrolled to return to their full length.

### Compatibility

Sika BentoShield® MAX LM may be combined with other Sika products.

Important: Always conduct trials before combining products in specific mixes and contact the Sika Technical Service Department for information and advice about any specific combinations.

Material is unaffected by temperature.

## Application Instructions

### Application Method / Tools

#### Vertical surfaces

SikaBentoShield MAX LM should be temporarily fixed to the inside face of the formwork before casting concrete, in order to create a mechanical bond with the poured concrete. It is possible to install Sika BentoShield® MAX LM against the outside of existing walls, but no bond will be formed between the membrane and the concrete.

On cast concrete substrates, the product may be aligned horizontally or vertical but care should be taken to ensure that all laps face away from the direction of the intended concrete pour. Overlaps are secured using washer-headed fasteners. When placing to inside face of the formwork, aligned the membrane vertically and take care that all the laps face away from the intended flow of the poured concrete. The overlaps are secured to the shuttering using nails or staples. A minimum overlap of 100 mm is required between the vertical membrane and the membrane protruding from the base slab.

The exposed LDPE membrane laps should be securely sealed with SikaBentoShield SS50 Bonding tape prior to backfilling. Backfill material should be free from debris and angular aggregate, and should be compacted to a minimum 85% Modified Proctor Density, this should be carried out at the soonest opportunity after the formwork has been removed.

Sika BentoShield® Max LM should be terminated on the concrete structure at

ground level by lapping under the extended DPC by 150mm with a 5 x 50mm bead of SikaBentoShield Paste placed inside the lap. The lap is then securely closed with the fixing of 10mm SikaBentoShield Termination Strip

### Horizontal surfaces

Surfaces intended to be waterproofed should be even and smooth. The surfaces may be damp but must free from standing water. Soil substrates should be compacted to a minimum 85% Modified Proctor.

Extend the membrane vertically by a minimum of 300 mm at the slab edge and form an overlap with the vertical membrane. The vertical membrane should always lap over the horizontal section if the area is to be subject to backfill.

Overlaps should be secured using staples or washered-nails to prevent displacement during concrete placement. The PE laminate should be sealed with SikaBentoShield SS50 tape by peeling the laminate away from the bentonite layer and lapping with the adjacent cent sheet. Alternatively, a 5 mm x 50 mm fillet of Sika BentoShield Granules or a similar fillet of Sika BentoShield Paste can be placed over the lap.

Laps should always face away from the direction of the intended concrete pour.

The concrete slab should be steel re-enforced and of a minimum thickness of 150 mm.

Protrusions through the membrane, such as piles, service pipes, conductors & anchors, should be sealed by forming a hole through the membrane, fitting the membrane securely over the protrusion, bedding the membrane onto the protrusion using SikaBentoShield Paste or a paste created by mixing SikaBentoShield Granules with water.

**Value Base** All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

**Local Restrictions** Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

**Health and Safety Information** For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

**Legal Notes** The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

