



SEALMAT®

BENTONITE GEOTEXTILE HIGH PERFORMANCE DPM

DESCRIPTION

Sealmat is a high performance self-bonding, BBA certified damp-proof membrane, consisting of 4.5kg/m² (average) of high-swelling sodium bentonite, confined between two polypropylene geotextiles. The geotextiles are needle-punched together using a patented process, which interlocks the fibres forming an extremely strong composite, that maintains the equal coverage of bentonite, as well as protecting it from inclement weather and construction related damage. When Sealmat hydrates, it forms a monolithic membrane, which prevents the passage of both water and water vapour. Sealmat contains zero VOC, can be installed in all weather conditions, and most importantly, has proven effective on both new and remedial waterproofing projects worldwide.

Sealmat works by forming a low permeability membrane upon contact with water. When wetted, unconfined bentonite can swell up to 15 times its dry volume. When confined under pressure the swell is controlled, forming a dense, impervious waterproofing membrane. The swelling action of Sealmat can self-seal small concrete cracks caused by ground settlement, concrete shrinkage, or seismic action - problems over which there is normally no control. Sealmat forms a strong mechanical bond to concrete when the poured-in-place concrete encapsulates the geotextile fibres. This is very important in suspended slab applications or in use over void-forming systems, where traditional DPM products, which do not self-bond to the structure, would typically fall away and fail.

The needle-punched construction of Sealmat allows for all weather installation, as the bentonite is pre-confined, and cannot go into free swell.

APPLICATIONS

Sealmat is designed for ground-level DPM applications, as part of the Volclay Waterproofing System in conjunction with Voltex and Waterstop RX (which are used in basement waterproofing).

Due to its self-bonding ability, Sealmat is particularly useful in suspended slab or void-former installations, where the substrate may fall away over time, and traditional membranes would fail.

Sealmat can be installed in all weather conditions, without the need for primers, adhesives, or tapes, and offers the additional benefits of self-sealing and self-healing, thanks to the properties of the bentonite.

Where contaminated ground-water conditions exist, use Sealmat-CR with contaminant resistant sodium bentonite. Sealmat-CR resists higher levels of the following contaminants: nitrates, phosphates, chlorides, sulfates, lime, and organic compounds/hydrocarbons.

INSTALLATION

GENERAL

Install Sealmat in strict accordance with the manufacturer's installation guidelines, and project specific documentation. Use accessory products as recommended. Also, use Sealmat-CR as required, for contaminated conditions. Install Sealmat with the green/white (woven) geotextile toward the concrete to be waterproofed (and the green non-woven/spun geotextile towards the ground water). Install Waterstop-RX in all applicable construction joints, and penetration details. For applications not covered herein, refer your application to CETCO.



PREPARATORY WORK

Substrate should be of compacted soil, or lean-mix concrete under-blinding, free of voids and sharp projections. Sealmat can be applied in conjunction with void-forming systems, or rigid insulation, but must always be on top, so that concrete is poured directly against the Sealmat, allowing it self-bond to the structure (peel-adhesion).

UNDER CONCRETE FLOOR SLABS

Sealmat is recommended for use under reinforced concrete slabs minimum 150mm thick, placed on compacted substrate, lean-mix concrete under-blinding, rigid insulation, or void-forming systems.

Place Sealmat over the properly prepared substrate with the green/white (woven) geotextile side facing the concrete to be waterproofed (i.e. the green non-woven/spun side towards the groundwater).

Overlap all adjoining edges a minimum of 100mm and stagger end laps by a minimum of 300mm. Secure all laps by nailing into concrete under-blinding at 400mm c/c (Soft-Washer fasteners), or staple laps at 200mm c/c (CETCO Box-Staple system) to prevent any displacement before and during concrete placement.

Sealmat should not extend into foundation bearing planes (i.e. pile-caps, pads, ground-beams, etc.), but should completely envelop them. Where this is not possible/desirable, Volseal 200 can be used as waterproofing continuity through the bearing plane (see junctions with foundations), to which Sealmat can be linked using a 100mm lap, incorporating a 5mm x 75mm fillet of Bentoseal.

EDGE OF SLAB / TERMINATIONS

Typically, slab edge formwork is in position prior to Sealmat being installed. Apply Sealmat to the inside of the edge formwork, preferably horizontally, securing the top edge to the formwork with hand staplers/tackers generally using 14mm staples or nailing with small lost-head or oval nails (bent over), and extending onto horizontal plane, following general application guidelines for lapping and securing all adjacent edges.

Terminate Sealmat at ground level, etc, integrating the Sealmat with Volsheet DPC (damp proof course / cavity tray) as per architect's requirements, by

extending the DPC to overlap Sealmat a minimum of 100mm. The Sealmat/DPC lap should be enhanced by the inclusion of a 5mm x 75mm fillet of Bentoseal, centrally located. The free edge of the Volsheet DPC should be secured back to the concrete using Termination Bar, secured by nailing at 300mm c/c.

Where slab edges are cast against existing structures, and there is no overlap access later, Volsheet DPC and the lap with Sealmat will need to be installed prior to concrete placement.

Backfill material to slab edge locations shall be of compactable soils, and free of construction debris. Backfill shall be clean, well graded, and compacted every 300 mm to 85% modified proctor, and meet these general specifications:

- No rocks, stones or boulders larger than 50mm
- 90% minimum soil particles smaller than 5mm
- 10% maximum soil particles finer than 74micron

JUNCTIONS WITH FOUNDATIONS

Sealmat can be installed around foundations (pile caps, pads, ground-beams, etc.), or the waterproofing can be taken through the foundation bearing-plane using Volseal 200 (cementitious waterproofing by crystallization), to which the Sealmat is linked around the outer edges of the bearing plane (100mm lap, including 5mm x 75mm Bentoseal). Volseal 200 does not act as a 'bond-breaker'/interfere with the transmission of load (refer to Volseal 200 TechData sheet).

Perimeter reinforcement between the foundation and the slab (as applicable) will have to be considered, as this could interfere with the lap detail, requiring the foundation to be cast bigger, or the edge reinforcement to be moved inwards.

PENETRATIONS

Cut Sealmat to provide a snug fit around all penetrations (pipes, etc.). Detail all penetrations with a 40mm fillet of Volclay Paste (Votex Granules + water) around the penetration on top of the Sealmat.

Detail all pipe penetrations with Waterstop RX101 as a 'puddle-flange' within the concrete, ensuring a minimum of 75 mm concrete cover to all sides. Secure with tie-wire.

LIMITATIONS

Horizontal installation surfaces shall be free of excessive* standing water, particularly where concrete underblinding is not utilised. (*Sealmat can be installed in all inclement weather conditions, providing the quality/accuracy of the installation is not affected e.g. Sealmat floating, Waterstop RX submersed, etc).

Sealmat is not designed for 'unconfined' above-ground waterproofing applications, or structures below ground (including lift pits, trenches, manholes, basement construction, etc.). Sealmat is engineered for use under reinforced structural concrete slabs of 150 mm thick or greater.

Sealmat is not designed to waterproof expansion joints. Expansion joints require a properly engineered expansion joint solution.

STORAGE

Keep Sealmat and all accessory products dry, with adequate polythene sheeting protection. Block up or palletise materials (as delivered) to prevent contact with ground surface water.

SIZE & PACKAGING

Standard Sealmat roll sizes are 1.1m x 5.0m (5.5m²) packaged 35 No. rolls per pallet (192.5 m²). Average product weight is approximately 5.0kg/m². Sealmat dimensions can be tailored to suit project requirements (depending on project size) up to a maximum of 5.0m x 40.0m. Larger rolls may be subject to special handling requirements, but will be delivered with lifting straps attached.

ACCESSORY PRODUCTS

BENTOSEAL

Trowel-grade sodium bentonite detailing compound, used primarily for Sealmat ground-level terminations/junctions with other sheet membranes (Volsheet DPC, etc.), typically applied 5mm thick x 75mm wide. Bentoseal is packaged in 14.25 litre tubs.

VOLCLAY GRANULES

Pure granular Bentonite used to detail critical areas that may require extra protection. Volclay Granules are packaged in 20kg bags. Bulk density is 1,080kg/m³.

WATERSTOP RX101

Bentonite/butyl hydrophilic waterstop, with self-injecting properties, for use in in-situ reinforced concrete construction joints. Waterstop RX101 is secured with Revofix mesh. Minimum concrete cover to all sides should be 75mm. Waterstop RX is not designed for use in expansion/movement joints.

VOLSHEET DPC

High performance thermoplastic polymeric Damp Proof Course, supplied in 20m rolls, 650mm or 1000mm wide. End laps are sealed with Butyl Tape DS100.

VOLSEAL 200

Surface applied cementitious waterproofing material, which waterproofs and protects concrete in-depth by crystallisation. Volseal 200 is supplied in powder form in 25kg tubs, and needs only to be mixed with water prior to application.

VOLSEAL 250

Two-component acrylic polymer modified cementitious waterproof coating, with elastic properties. VOLSEAL 250 provides surface waterproofing for internal and external applications, subject to both positive and negative hydrostatic pressure, against concrete or prepared masonry. Volseal 250 is supplied in 35kg 2-part packs (25kg powder, 10kg liquid).

FIXING SYSTEMS

Soft-Washer fasteners: hardened steel nails with large pre-mounted soft-washers, for hand-nailing into concrete under-blinding.

Box-Stapling system: self-closing staple system for securing Sealmat laps over all substrates, including concrete, compacted soil, rigid insulation, and void-forming systems.

TECHNICAL DATA

Property	Test Method	Typical Value
BENTONITE MASS PER UNIT AREA	ASTM D 3776 (mod)	4.5 kg/m ²
PEEL ADHESION TO CONCRETE	ASTM D 903 (mod)	2.5 KN (per m width)
HYDROSTATIC PRESSURE RESISTANCE	ASTM D 5385 (mod)	70 m
PERMEABILITY	ASTM D 5084	1 X 10 ⁻⁹ cm/sec
GRAB TENSILE STRENGTH	ASTM D 4632	422N
PUNCTURE RESISTANCE	ASTM D 4833	445N
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970	UNAFFECTED @-32°C