

Waterproofing Substrates

Waterproofing and moisture suppressant for walls & floors



Bis-Watertite and Vapourstop

Introduction

Bis-Watertite and Vapourstop are styrene butadiene latex based liquid applied membranes, which offer a simple method for many waterproofing and vapour proofing applications.

Advantages include:

- Single pack system
- Water based compounds that can be applied even to damp backgrounds
- Non-toxic, non hazardous, solvent and Plasticiser free
- Quick drying. Typically touch dry in 1 hour
- Good bond to many substrates
- Toughness, high flexibility, extensibility and good crack bridging properties
- Low water vapour permeability
- Alkali resistant, can be applied to alkaline surfaces
- Resistant to silage acids
- Non staining and stain blocking

Applications

- **Floors.** Under screeds (or above screeds) to provide a damp proof membrane.
- **Basements.** As part of a waterproofing system beneath ground level.
- **Walls.** Can be used under render or plaster as a water barrier or vapour barrier.
- **Roofs.** As the main waterproofing coating or as part of a repair system. It is recommended that the membrane be protected from UV.
- **Tiling.** As secondary protection under tiles in wet areas e.g. bathrooms, food processing areas, balconies, etc.
- **Water Storage.** The membranes perform well in our tests even when continuously immersed in water.

- **Silage Storage.** The membrane protects concrete from silage attack.
- **Gas barrier,** e.g. to minimise methane transmission
- **Stain block coating**

Makes watertight and protects backgrounds including:

- Gypsum plaster
- Plasterboard
- Timber based backgrounds
- Concrete
- Sand/Cement render
- Fibreboard
- Anhydrite screeds
- Lightweight blocks
- Concrete Blocks
- Brickwork
- Steel

Composition

The range is based on advanced styrene butadiene latex that is formulated with fillers, pigments and film control agents. It is water based and free of solvents and Plasticiser.

Appearance

Colour: Light Blue

The colour of the liquid compound will differ slightly from the colour of the dried membrane. The colour shade may vary from batch to batch.

The product as supplied is a viscous liquid of similar consistency to thick emulsion paint (in the order of 4000 mPa.s).

The membrane dries to form a tough semi-gloss finish.

Coverage

A minimum dried coating thickness of 0.6mm is needed to provide a vapour

barrier. This should be applied in a minimum of two coats (i.e. 0.3mm dry film thickness per coat for two-coat application) to comply with CP102: 1973, Code of Practice for protection of buildings against water from the ground. CP102: 1973 has been partially replaced by BS 8102:1990.

For the final dried membrane thickness to be 0.6mm coverage rate of 1.2kg/m² is required (this is the total for all coats). This corresponds to approximately 1 litre/m².

Applying Bis-Watertite & Vapourstop

The background surface should be smooth or have a light even texture. Any masonry should be flush pointed and defects in existing surfaces made good.

The surface needs to be clean, sound and free of dust, loose material or free surface water. The membrane should not be applied in wet conditions or where these conditions are likely to occur before the membrane has dried. The membrane should not be applied when the temperature of the background, or the air temperature, is below 7°C.

It is sometimes advantageous to pre-wet concrete or masonry backgrounds so that these are damp but free from any water glistening on the surface, to aid the wetting out of the background.

Because of the wide variety of background types and site conditions it is always advisable to *check adhesion to the background by testing on a sample area before starting any job.*

Brush, roller or airless spray may apply the membrane*. If necessary the compound can be diluted with up to 10% water. However, care should be taken to ensure that the correct dry coat thickness is applied.

The thickness of the dried membrane per coat depends on the method of application. For a single dry coat thickness of more than 0.3mm it is recommended that the membrane be applied by airless spray. If airless spray is used, single dry coat thickness of up to 1mm can be obtained. (Note: A single coat of 0.6mm dried thickness or more will require a greater drying time than for an equivalent multicoated application.)

If two coats are being applied it is recommended that the coats be applied at right angles to each other.

Before applying the second coat it is necessary to let the first coat become touch dry. The time required reaching this touch dry condition will vary according to site conditions but will typically be in the order of 1 hour. It is preferable if the second coat is applied within 24 hours of applying the first coat. After all coats have been applied, the membrane should be left for at least 4 days before attempting any ponding tests. Under unfavourable drying conditions this period may need to be extended.

Whilst most applications to concrete roofs have been successful, blistering (shortly after application of the membrane to the roof) has occasionally occurred. The heat causes this blistering from the sun causing a vapour pressure build up below the membrane. The problem is exacerbated if the background concrete is wet. The risk of blistering can be minimised by ensuring a very good bond to the background and avoiding application of the membrane in, or shortly prior to, strong sunlight. Techniques for maximising bond are:

a. Vigorously brush the first coat into the background concrete using a stiff bristled broom.

Or

b. Prime the roof with a slurry coat" and Flexibond at a dilution rate of 1 to 3 parts clean water and mixed with four parts Biscem Vitri-Rapid., or similar cement based adhesive. This slurry coat should be dry in 2 hours according to the site and ambient conditions.

In some situations e.g. at high stress points such as wall/floor junctions it is beneficial to use fabric (scrim) reinforcement. Such reinforcement is available, as part of the Bis-Watertite waterproofing system or in many cases local availability will often influence choice. Fabric made from polypropylene or polyester is suggested. Fabric made from natural fibres should be avoided.

By choosing a suitable reinforcement it is possible to achieve good control of the coating thickness i.e. by choosing a fabric approximately 0.5mm thick and ensuring that the mesh is completely filled and covered, the minimum coating thickness of 0.6mm will be automatically achieved.

The incorporation of fabric usually increases the tensile strength but decreases the extensibility.

The fabric is rolled into the wet first coat, and then coated with additional membrane after allowing the first coat to dry to a tacky condition. Once this is touch dry a further coat is applied, sandwiching in the scrim.

* (e.g. "Aro" gun, model 651533, on a "Clemco" pot. Compressed air supply pressure 5.6N/mm² (800psi) and compression ratio 28:1. Tip size 0.64mm (25/1000)". Fan width 200mm (8").

Adhesion of materials on to the dried Membrane

General

Many wet applied cementitious materials bond well, it is recommended they contain an additional polymer, or are pre-blended and classed as polymer modified. When applying polymer free material such as screed, render or plaster the highest adhesion results are obtained if the material is applied as soon as the membrane is touch dry. To further enhance the bond once the second coat of membrane has been applied blind with a sharp dry sand to form a mechanical key for the subsequent coating.

Ceramic Tile Adhesives

Most single pack ceramic tile adhesives bond well to the dried membrane coating, even after a drying period of several months. However the longer the drying period the more opportunity there is for surface contamination. Tile adhesives that have been designed to comply with the draft European standard for tile adhesives can be expected to have a bond strength (pull-off) to the membrane of at least 0.5N/mm².

Floor screeds and renders

Latex smoothing compounds or Polymer modified compounds should be applied within the first 24/48 hours to establish the best bond. Forming a mechanical key with dry sand as previously described can enhance this.

Gypsum Plasters

The membrane complies with the bond strength requirements of BS5270 Part 1 1989 regarding bonding agents for use with gypsum building plasters.

Flooring Adhesives

a. Most flooring adhesives bond well to the membrane. When bonding flooring materials such as PVC sheet over the membrane two points should be considered:

b. It is advisable to use adhesive/floor-covering combinations that are low in Plasticiser content.

The concrete below the membrane should be sufficiently dry before the membrane is applied to pass a humidity box test of the type specified in BS 8203 Part 2, but with a maximum relative humidity limit of 90%.

Barrier properties.

A 0.6mm thick dry film of **Bis-Watertite/Vapoustop** which has been allowed to cure by air at a temperature of 23⁰C/50% R/H for 7 days.

Resistance of water penetration (positive head pressure) on a porous tile biscuit prevented water at 0.2N/mm² pressure from penetrating into the tile during the 24-hour test period. This is equivalent to a 20-metre head of pressure.

Resistance of water penetration (negative head pressure) when using the membrane on the interior of basements the membrane should be over coated with render, in order to prevent hydrostatic pressure causing localised bond failures of the membrane to the background.

Water vapour permeability is <4g/m²/24hours at 25⁰C/75%RH. As measured by BS3177.

Tensile strength (testing speed 500 mm/minute) Tensile strength at break 4 N/sq.mm

Elongation (testing speed 500 mm/minute) Elongation at break 350%

Crack bridging Tests carried over both cracked and uncracked mortar specimens indicate a crack bridging potential at 23⁰C of at least 2 mm.

Shore hardness The membrane gives a Shore hardness value of 70

Low temperature flexibility The membrane passes the severe mandrel test of BS 3900 part E at temperatures down to 0⁰C.

Storage In cool dry conditions, protect from frost store between 5⁰C – 35⁰C.