

Standard Specification for the application of the EQUUS SOPREMA COLPHENE BSW below-ground waterproofing system to concrete or masonry structures.

For areas with risk of hydrostatic water pressure

Project:
Specification: P5100
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1.0 PREAMBLE:

This specification is for the application of the **EQUUS SOPREMA COLPHENE BSW** waterproofing membrane system to below-ground concrete structures, concrete floors, and screed-protected areas in construction. The membrane system can be pre-applied or post-applied giving the designer installation options which are crucial to the success of below-ground waterproofing systems.

EQUUS SOPREMA COLPHENE BSW membranes have been specifically designed to adhere to freshly poured concrete due to the chemical and mechanical bond between the waterproofing membrane and structural concrete, which not only prevents water infiltration inside the building but also prevents lateral water migration between the membrane and concrete. The membrane resists underground soil settlement and is designed for use in areas where a risk of hydrostatic water pressure is present.

The system is applicable on moist and dusty areas. After installation the system is not dependent on the weak lean concrete but forms one part with the reinforced concrete floor slab or wall.

The **EQUUS SOPREMA COLPHENE BSW** membrane can be loose laid on lean site concrete or compacted hardfill. All overlaps, vertical elements and corners are welded by gas torch.

The **COLPHENE BSW H** and **COLPHENE BSW V** membranes have a unique advantage in that they are finished with DUO SELVEDGE lap technology. The first section of the of the DUO SELVEDGE lap is self-adhesive, which is pressed closed initially. This protects components under the membrane such as polystyrene or other foam insulation from melting during the heat welding process. The remaining section of the lap area can then be closed safely.

Note: Refer to the WMAI Code of Practice for Below-Grade Tanking Membranes for further information.

2.0 SURFACE PREPARATION:

2.1 General - Responsibility:

Unless expressly agreed otherwise at time of contract pricing, all work in this section shall be the responsibility of the main contractor, whether carried out by their own staff, other sub-trades, or the membrane sub-contractor.

2.2 Concrete Preparation:

Concrete structures must be specifically engineered to meet the requirements of the New Zealand Building Code.

When applying to existing substrates and structures, they must be thoroughly inspected to ensure that they will not affect the performance of the membrane when applied.

Curing times may vary dependent on location, mixes and climate conditions. After the slab has been poured allow sufficient drying time, generally between 14 – 28 days. To verify concrete has sufficiently dried, a measurement can be taken using a hygrometer. A maximum relative humidity of 75% is required, measured at the time of membrane application.

It is recommended that concrete curing compounds are not used. Consult Equus Industries Ltd for a recommendation prior to use if specified by others. Any traces of such compound must be gone or removed before membrane work begins.

The concrete shall be finished to NZS3114:1987 U3, with a light trowel texture.
The concrete shall have all ridges and protrusions stoned flush.

3.0 MEMBRANE APPLICATION:

Note: A prestart meeting should be held onsite with the Main Contractor and the Equus Certified Applicator prior to commencement membrane installation.

Note: Install **COLPHENE BSW V** only in fair weather conditions with a substrate temperature above 10°C. In conditions where the temperature may be lower, the use of hot air against the membrane may be required for detailing and edge laps to ensure watertightness.

3.1 Tanking – Beams, Pile Caps and Lift Pits – Pre-applied into formwork:

Loose lay **COLPHENE BSW H** to fit inside the formwork with the crystals facing upwards. The sheets laps are closed in accordance with the DUO SELVEDGE lap technology (see section 3.8.1). Ensure all joints are well sealed, with a minimum lap of 100mm. This is indicated by the presence of a thin bead of extruded bitumen at all sheet joints after torching. End laps shall have a width of 150mm and be offset in adjacent runs.

Pile caps shall be finished using a non-shrink mortar to a smooth finish with no nibs or protrusions. The vertical areas and corners of beams, piles and pillar-caps receive a primer of **SOPRADERE QUICK**. All corners (internal and external) are reinforced with an additional strip of **COLPHENE BSW H**.

In some cases, the liquid detail membrane **ALSAN FLASHING**, **ALSAN FLASHING QUADRO**, or **MATACRYL THIX** can be used to overflash the membrane onto the pile.

APPLICATION: HORIZONTAL FLOOR APPLICATIONS – LOOSE LAID UNDER SLAB

3.2 Insulation: (under-slab when required)

Install Equus supplied XPS thermal insulation in a brick bond pattern against hardfill or site concrete using full boards where possible.

3.3 Tanking – Horizontal floor applications – Loose-laid

Where **COLPHENE BSW H** is installed as a loose laid waterproofing membrane under concrete floor slabs, concrete curing times are not applicable. **COLPHENE BSW H** can be loose laid over compacted hardfill or site concrete.

Loose lay **COLPHENE BSW H** to fit inside the formwork with the crystal facing upwards. The sheets joints are closed in accordance with the DUO SELVEDGE lap technology (refer to section 3.8.1). Ensure all joints are heat welded and well sealed, with a minimum lap of 100mm. This is indicated by the presence of a thin bead of melted bitumen at all sheet joints after torching. End laps shall be a width of 150mm and be offset in adjacent runs.

When laying **COLPHENE BSW H** as a water-proof membrane under a concrete slab, the maximum non-specific design of hardfill shall be up to 600mm in depth. Granular fill, sand blinding and compaction shall comply with the requirements of NZS 3604-99.

Granular fill buildups greater than 600mm will require specific design by the Geotechnical Engineer.

Special attention must be paid when placing reinforcing steel to avoid unnecessary puncture or damage to the **COLPHENE BSW H**. While the membrane is tough and resistant, care is necessary.

Note: The main contractor shall immediately notify the waterproofing contractor if any such damage occurs so it can be repaired before the concrete is finally placed.

APPLICATION – PRE-APPLIED SELF-ADHESIVE MEMBRANE AGAINST LOST FORMWORK

3.4 Insulation: (where required)

Install Equus XPS thermal insulation against the lost formwork before installing the Equus drainage layer. Insulation can be held in place with **DOUBLESTICK** double-sided tape or **EQUUS SOPREMA** fixings.

3.5 Tanking – Vertical wall application – Pre-applied against lost formwork:

Install **Equus drainage layer** to the lost formwork (or insulation) by means of **EQUUS SOPREMA** Fixings. The filter cloth of the drainage layer shall face the lost formwork. Apply **COLPHENE BSW V** to the drainage board by self-adhesive application. with edge laps 100mm minimum and end laps 150mm minimum, offset in adjacent runs. Seal all DUO SELVEDGE laps. Mechanically fasten the **COLPHENE BSW V** at the top to keep it in place during concrete installation.

Creasing of the membrane is not permitted as it may be damaged during the concrete pour.

APPLICATION – POST-APPLIED SELF-ADHERED MEMBRANE ON CONCRETE OR MASONRY WALLS

3.6 Tanking – Vertical wall application – Post-applied by torch-on application:

All concrete wall areas are fully primed with **SOPRADERE QUICK** bitumen primer, applied by brush or roller to a dried and prepared surface at a spreading rate of 5 m²/L. Allow to dry for 4-24 hours depending upon prevailing weather conditions.

COLPHENE BSW H sand-finished membrane is used as a reinforcement strip in all internal and external corners, connections between floor and wall, and cold joints. The reinforcement strip is fully torch welded in the corner, followed by torching the full rolls of **COLPHENE BSW H** membrane onto the wall. The sheets joints are closed in accordance with the DUO SELVEDGE lap technology. Ensure all laps are well sealed with a minimum cover of 100mm, and end lap minimum of 150mm.

Where required for detailing liquid membrane **ALSAN FLASHING**, **ALSAN FLASHING QUADRO**, or **MATACRYL THIX** can be used.

3.7 Tanking – Vertical wall application – Post applied: self-adhesive application:

All vertical areas such as foundation walls are fully primed with **Equus Peel and Stick Primer**, applied by brush and/or roller at a spreading rate of 6 to 8 m²/L, depending on the porosity of the substrate. Allow to dry for a minimum 1 hour depending upon prevailing weather conditions.

COLPHENE BSW V membrane is used as a reinforcement strip in all internal and external corners, connections between floor and wall, and cold joints. The reinforcement strip is fully pressed in place. The **COLPHENE BSW V** self-adhesive membrane is installed by removing the siliconized film and pressing the membrane into place on the primed surface. Use a soft broom or roller to ensure there are no trapped air bubbles under the membrane and that it is well bonded to the surface.

The sheets joints are closed with the DUO SELVEDGE lap technology. Ensure all joints are well sealed with a minimum lap of 100mm by torch or hot-air, with an end lap of minimum 150mm

Where required for detailing liquid membrane **EASY FLASHING**, **ALSAN FLASHING QUADRO**, or **MATACRYL THIX** can be used.

Equus drainage layer is secured in place over the membrane using the **Equus Termination Bar** and **Alsan Mastic 2200** sealant.

3.8 Tanking – Vertical wall application – Post applied:
Alternative option where the building is less than 3m deep below ground and has a low risk of hydrostatic pressure.

All vertical areas such as foundation walls are fully primed with **Equus Peel and Stick Primer** at a spreading rate of 6 to 8 m²/L by brush and/or roller depending on the porosity of the substrate. Allow to dry for a minimum 1 hour depending upon prevailing weather conditions.

Extra strips of **COLPHENE 3000** membrane shall be used to reinforce all internal and external corners. These are also required at floor and wall junctions to connect to the DPM extending up from below the floor slab where required. **COLPHENE 3000** self-adhesive membrane is installed by removing the siliconized film and pressing the membrane into place on the primed surface. Use a soft broom or roller to ensure there are no trapped air bubbles under the membrane and that it is well bonded to the surface. Heat, preferably by hot air, is used on all connections and laps to ensure they are fully waterproof. Ensure all membrane laps are well sealed with a minimum side lap of 100mm and minimum end-lap of 150mm.

3.9 Insulation: (vertical against walls where required)

Install Equus supplied XPS thermal insulation against **COLPHENE BSW V** membrane, held in place with dots of **DOUBLESTICK** tape. **Equus drainage layer** will then be installed over top of the insulation.

3.10 Tanking – General Application:

.1 Sheet Joints:

Decide the most suitable direction to follow. Unroll and discard packaging. Align the first roll, cut to length as required and re-roll both ends to the middle. In case of fully bonded applications, torch or press evenly as the membrane is unrolled into place.

Ensure even heat application. Repeat in sequence with all rolls, maintaining minimum side laps of 100mm and end laps of 150mm.

The **COLPHENE BSW H** and **COLPHENE BSW V** membranes have a unique advantage in that they are finished with DUO SELVEDGE lap technology. The first section of the of the DUO SELVEDGE lap is self-adhesive, which is pressed closed initially. This protects components under the membrane such as polystyrene or other foam insulation from melting during the heat welding process. The remaining section of the lap area can then be closed safely.

.2 Detailing

Detailing shall be carried out using **EASY FLASHING** or **ALSAN FLASHING QUADRO** liquid membrane.

.3 Repairs to damaged areas:

Should the **COLPHENE BSW** be damaged or perforated so that its waterproofing qualities are affected, repairs can be made by heat-welding a piece of **COLPHENE BSW** membrane of suitable size to cover the damaged area with a minimum overlap of 150mm on all sides of the damaged area.

.4 Backfilling: (Walls)

The membrane must be protected from damage by abrasive materials and expansive soils in the ground over its lifetime and especially during back filling. It is also useful to reduce excessive hydrostatic pressure on the membrane itself. This can be achieved by installing Equus thermal insulation and Equus approved protection and drainage layer after membrane installation.

The drainage layer is installed over the finished membrane prior to backfilling and shall be kept in place using Equus **termination bars** and **ALSAN MASTIC 2200 sealant** to spot stick the drainage layer to the membrane and seal the top of the termination bar.

Ensure a drain coil with a minimum diameter of 100mm (incorporating a filter material) is installed at the base of the foundation prior to backfilling. The drain is required to discharge to an approved outlet. Installation shall be in accordance with E2/AS1 External Moisture of the New Zealand Building Code with provision for cleaning.

Free draining granular backfill is required behind the tanked wall and around the drain coil to allow the free flow of water to the drain. An impervious ground cover is required above the backfilled area to redirect surface water away from the building. Minimum fall shall be 1:30.

Equus Industries Limited must be consulted regarding the design and suitability of membrane protection layers.

3.11 Penetrations:

This shall include all outlets and pipe penetrations through the wall. This can be carried out before, during or in some cases after laying of the membrane depending on the detail type. All detailing shall be done in accordance with the manufacturer's technical literature.

3.12 Sealant:

ALSAN MASTIC 2200 (for COLPHENE BSW) and/or **SOPRASEAL** (for COLPHENE 3000) shall be used for detailing membrane edges and termination bars

3.13 Waterstops:

For cold joints and floor /wall junctions where required, **Equus Swellseal, Aquafin CJ4 or Aquafin CJ6** waterstops can be used. Consult Equus Industries Ltd for a recommendation if required.

4.0 MAINTENANCE AND WARRANTY:

4.1 Maintenance:

Equus Industries Limited recommends, as normal maintenance, that a certified installer inspect the following areas to ensure weathertightness and durability of the system:

- The top edge of the membrane sheet
- Sheet protection at that top edge
- The subsoil drainage is not blocked and is free draining to an approved outlet.

Check all associated building elements that can impact on the durability of the membrane.

4.2 Warranty:

The **EQUUS SOPREMA COLPHENE BSW** waterproofing membrane, as detailed in this specification, may be warranted as waterproof for a period of up to twenty (20) years provided that:

- (a) All work is carried out by a Certified Equus Applicator.
- (b) The **EQUUS SOPREMA COLPHENE BSW** is installed in accordance with the

manufacturer's technical literature and the Application Manual current at the time of design, use, installation, and maintenance.

(c) The Warranty is issued in conjunction with an appropriate Maintenance Statement.

The period of warranty is determined by the situation of the installation. The warranty period shall be determined for any contract in consultation with the Manufacturer or his representative.

The warranty is provided to the client by the Equus Certified Applicator carrying out the work and is backed by the Manufacturer as to the fitness for the purpose of the materials supplied for the contract.

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