



**STRUCTURAL  
WATERPROOFING  
SYSTEM**

INSTALLATION GUIDELINE  
**DUOFLEX SP**

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**SECTION 1**  
**PRE-INSTALLATION**  
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## GENERAL

These pre-installation and application guidelines are intended as a guide to the products' safe and proper storage, handling and application.

Duoflex Structural Waterproofing System is a rubberised bitumen product, modified with SBS styrene butadiene polymer resins and natural rubbers, supplied in solid blocks ready for onsite melting using a standard thermostatically controlled bitumen boiler.

Application and Performance Advantages of Duoflex Structural Waterproofing

### **a) Spreads Thicker**

The Duoflex SP Structural Waterproofing is applied at an average nominal thickness of 3mm Soprema require all applications to be reinforced, allowing for:

- A wider variety of substrate conditions.
- Increased crack-bridging ability.

### **b) Adheres Tenaciously**

Should damage occur, since water cannot run under the Duoflex Structural Waterproofing, water can be more quickly traced and easily repaired. Bonds to any sound concrete, brickwork or steel and readily conforms to any surface irregularities, protrusions, corners etc.

### **c)100% Solids**

Duoflex Structural Waterproofing contains no solvents. There are no two-part systems to mix, therefore no on-site curing requirements or limitations of use.

### **d) Cold Weather Application**

The Duoflex Structural Waterproofing system exhibits excellent low-temperature flexibility and adhesion characteristics. It can be readily applied in temperatures down to -15 oC on a clean, dry, frost-free surface.

### **e) Sets Rapidly**

The Duoflex Structural Waterproofing system is not affected by adverse weather, including rain, snow, or frost immediately after application. Once the membrane is protected, the deck can be opened to subsequent trades, speeding the job up.

### **f) Lapping**

Reheats when lapped with new material to form a completely monolithic bond. Perfect for phased construction or re-flashing later. There are no seams that can fail with the Duoflex Structural Waterproofing.

### **g) Special Characteristics**

Will selfheal minor damage whilst clean, dry and warm with limited pressure.

### **h) Reliability**

Proven protection against water intrusion in applications world-wide, the Duoflex Structural Waterproofing also has BBA approval for use as both damp proofing and as a roofing system.

Before the Duoflex Structural Waterproofing can be applied, the material must first be melted, then further heated to the required temperature and mixed to develop its full physical properties.

The Duoflex Structural Waterproofing system is supplied in solid blocks ready for onsite melting using a standard thermostatically controlled bitumen boiler.

The safe operating temperature for Duoflex Structural Waterproofing ranges from 155 oC to 180 oC (311 oF to 356 oF)

## ***Application and Performance Advantages of Duoflex Structural Waterproofing System***

**IN NO CASE SHOULD TEMPERATURES IN EXCESS OF 210 oC (410oF) BE IMPOSED ON THE MATERIAL. THE RESPONSIBILITY FOR THE SAFE AND PROPER USE OF A BOILER AND FOR CONTROLLING THE MEMBRANE'S TEMPERATURE WITHIN THE PROPER LIMITS BELONGS EXCLUSIVELY TO THE CONTRACTOR.**

### **Environmental Conditions**

The Duoflex Structural Waterproofing can be installed in a wide temperature range. Application below -15 oC (5 oF) (ambient temperature) is not recommended. The Duoflex Structural Waterproofing must be installed to a dry clean substrate. The application of the Duoflex Structural Waterproofing must not proceed during inclement weather. After rain at least one full day of good drying conditions must be allowed before the application of the Duoflex Structural Waterproofing can recommence. Duoflex Structural Waterproofing is not affected by rain, snow or frost immediately after its application.

## HEALTH AND SAFETY

### ***Common sense is your first line of defense against personal injury.***

Know the phone number and location of the nearest hospital (accident and emergency unit) and/or ambulance service in case of an emergency. Post the telephone numbers in a convenient location or carry them with you so you can get to them quickly.

Have a complete first aid kit on hand.

Have within reach a properly rated fully charged fire extinguisher (not water: should be foam, dry powder, or CO2).

### **Wear Proper Clothing**

- Appropriate work shoes, with thick rubber or composition soles (steel toe reinforcement is recommended).
- Properly fitting trousers without turn ups.
- A long sleeve shirt, buttoned at the cuffs and within one button of the collar.
- Gloves with snug fitting wristlets. No gauntlets.
- Goggles or face shields (where required).
- A hard hat to be always worn.

### **Melting Safety**

- Check with the boiler manufacturer for instructions covering the boiler's proper operating procedures, safety and maintenance before firing it up.
- A properly rated fully charged fire extinguisher should be within easy reach of the mixer (dry powder, foam or CO2 – not water).
- Protective clothing is essential when working around a mixer.

### **Solvents and Adhesives**

- All solvents and adhesives should be properly stored and kept in their original containers, with the original labels intact.
- Handle all solvents and adhesives with care. Familiarize yourself with the materials you will be working with beforehand. Know their hazards, any precautions which should be taken, and the first aid required when contact is made with the skin, eyes or when inhaled or swallowed.
- When working with or around solvents or adhesives, smoking should NOT be permitted.
- Only use solvents or adhesives in well-ventilated areas. If existing ventilation is poor, utilize fans to provide air circulation.
- Have a properly rated fully charged fire extinguisher within reach (dry powder, foam or CO2 –not water).

## TOOLS AND EQUIPMENT

- Boiler – Use a thermostatically controlled bitumen boiler to melt and subsequently reheat the Duoflex membrane system. The boiler must be capable of maintaining the membrane temperature between 155 oC to 180 oC (311 oF to 356 oF). Consult the boiler manufacturer for specific instructions which cover the boiler's proper operating procedures, safety and maintenance.

- Propane Gas (for boiler).
- Matches or flint lighter.
- Long handled dip thermometer (to check temperature of membrane).
- Handheld sprayer or roller (for primer application).
- Tools to open bags of Duoflex membrane.
- Pails with sturdy handles (horizontal deck work).
- Broom and shovel.
- 30m tape measure.
- Chalk line.
- Hammer.
- Stanley knives.
- Scissors.
- Cart to move pails of hot Duoflex membrane.
- Pointing trowel.
- Rubber squeegees.
- Cleaning rags.
- Cotton roller mops suitable for application of upstand detail of more than 1500mm high (300 or 450mm width rollers recommended).
- Air blower/compressor or industrial type vacuum cleaner (for cleaning deck).
- Hand spreader (3mm hardboard 200mm x 300mm) or short handled rubber squeegee for detail work and vertical applications.
- Thickness gauge (typically a metal tyre tread depth gauge)



## SUBSTRATES

### *In-Situ Concrete*

There are several different types of concrete (in-situ) used in construction. Some are acceptable substrates for the Duoflex Structural Waterproofing. Others are not:

#### **a) Structural Concrete**

Made of aggregates such as sand, gravel and crushed stone. Structural concrete will have a density of 2,160kg/m<sup>3</sup>-2,563kg/m<sup>3</sup> and will retain 3% to 5% moisture by volume when fully cured. An ACCEPTABLE substrate for the Duoflex Structural Waterproofing with certain limitations. The high moisture content requires a minimum curing period of 28 days to assure proper drying.

#### **b) Lightweight Structural Concrete**

Made of aggregates such as expanded shale, clay, slate or slag. Lightweight structural concrete will have a density of 1,930/1,980kg when fresh and wet and a cured density of 1,400kg/m<sup>3</sup>-1,840kg/m<sup>3</sup>, retaining 5% to 20% moisture by volume when fully cured. An ACCEPTABLE substrate for the Duoflex Structural Waterproofing with certain limitations. The high moisture content requires a minimum curing period of 28 days to assure proper drying.

#### **c) Lightweight Insulating Concrete:**

Made of aggregates such as vermiculite, Perlite, pumice, scoria or diatomite. Lightweight insulating concrete will have a density of 240kg/m<sup>3</sup> and will retain more than 20 % moisture by volume when fully cured.

This high moisture content can create bonding and pin holing problems, therefore lightweight insulating concrete is an UNACCEPTABLE substrate for the Duoflex Structural Waterproofing.

Some modified screeds may be applied to lightweight insulating concrete which are acceptable – see (d).

#### **d) Modified Screeds**

Some modified (latex/resin/polymer etc) screed toppings are ideal for use with the Duoflex Structural Waterproofing and may provide a suitable topping for lightweight insulating concrete as described in (c). Consult Flag-Soprema UK Ltd.'s Technical Services for further guidance.

### *Density*

Density is also a determining factor in the acceptability of concrete. Low density concrete less than 1,850kg/m<sup>3</sup> may create bonding problems if it continuously “dusts” due to its weak, non- durable surface. This property also makes a secure, tenacious bond difficult.

In-situ concrete surface should be finished to a rough texture to provide a mechanical bond for the membrane, but not so rough that the membrane cannot be applied at a continuous thickness across the surface.

As a minimum, a wood float finish is required, with a wood-trowelled finished preferred. A steel trowelled surface is NOT desirable.

Excessive bleeding caused by over-trowelling increases the water/cement ratio near the concrete surface, which can result in a weak top layer with poor durability. This layer is commonly termed “laitance”.

This weak concrete surface can inhibit the bonding of the Duoflex Structural Waterproofing system to the concrete and must be removed.

### *Curing Techniques*

Probably the most important factor is assuring that concrete will attain its greatest strength and durability is the extent to which it has CURED.

The curing process, known as HYDRATION, is especially critical during the first few days when the evaporation of water from the concrete is especially rapid. During this time, it is important to retain as much water within the concrete as possible. Several methods are available for doing this.

The following methods are preferred for providing the proper curing that is essential to the successful application of the Duoflex Structural Waterproofing.

#### **a) Water Curing**

Water curing is probably the most effective curing method. However, close continuous supervision is required to make sure that cycles between wetting and drying of the concrete are absolutely avoided, ie. it must be continuously wet.

#### **b) Wet Coverings**

Hessian or sacking type fabrics have been successfully used to keep a concrete surface wet during curing. The hessian must be carefully placed leaving no concrete exposed, and then kept wet.

#### **c) Paper Sheets**

Paper is a third means of curing concrete. Water pervious papers require the periodic addition of water to replace water lost through evaporation. Impervious papers require no additional water, acting as a vapour barrier and thereby preventing evaporation of the mix water.

#### **d) Plastic Sheets**

Like water-impervious paper curing materials, plastic sheets form a vapour barrier that seals moisture in. Its light weight makes plastic extremely practical and highly labour efficient.

### *Liquid Membrane Curing Compounds*

Liquid membrane curing compounds have become increasingly popular due to their ease of application and low material cost. Some are suitable for use with the Duoflex Structural Waterproofing, while others should be avoided. Ideally, the Duoflex Structural Waterproofing is best applied when traditional methods of concrete curing have been used (ie. water curing, wet coverings, paper and plastic sheets).

Most liquid membrane curing compounds form a film on the concrete surface which greatly retards the evaporation of the mix water.

The following details these products in relationship to their use with the Duoflex Structural Waterproofing.

#### **a) Wax Based Curing Compounds**

Cure only. They cease to be effective as curing agents after about 28 days yet take from 90-120 days to dissipate when exposed to the elements. The waxy residue is difficult to remove and will interfere with the subsequent bonding of the Duoflex Structural Waterproofing to the concrete. Wax based curing compounds are NOT ACCEPTABLE.

#### **b) Resin Based Curing Compounds**

Cure only. They form a film residue that can take 45-60 days to oxidise and flake off when exposed to the elements. A questionable bond is achieved between the Duoflex Structural Waterproofing as long as this residue is present. It can, however, be removed by brushing down the surface with a wire brush or washing the concrete with a light solution of muriatic acid or trisodium phosphate (TSP). The surface should then be rinsed and allowed to dry thoroughly.

Resin based curing compounds MAY BE ACCEPTABLE as a curing method but must be totally removed (as outlined above) before the application of the Duoflex Structural Waterproofing.

#### **c) Wax/Resin Based Curing Compounds**

Cure only. They are not suitable for use on concrete that is to receive a subsequent application of the Duoflex Structural Waterproofing. The wax component of this compound hampers the adhesion of any future coating. Wax/resin based curing compounds are NOT ACCEPTABLE.

#### **d) Acrylic Based and Chlorinated Rubber Based Curing Compounds**

Cure, plus harden, seal and dustproof the surface. However, they leave a PERMANENT film on the surface which may prevent the Duoflex Structural Waterproofing from achieving an adequate mechanical bond with the concrete surface. Acrylic based and chlorinated rubber based curing compounds are NOT ACCEPTABLE.

#### **e) Sodium Silicate Based Curing Compounds**

These compounds are recommended above any other liquid membrane curing compound for use with the Duoflex Structural Waterproofing system because they do not (when properly applied) leave a film or residue which can interfere with the Duoflex Structural Waterproofing's ability to bond to the concrete surface. These compounds react with the free lime and other materials in the concrete mix to form an insoluble gel within the pores of the concrete, which greatly retards the evaporation of the mix water and provides a hard, dustproof surface. ACCEPTABLE.

The use of any liquid membrane curing compound, in conjunction with the Duoflex Structural Waterproofing, must be approved in writing Soprema UK Ltd.

Consult the Technical Services Department of Soprema UK Ltd. when a liquid membrane curing compound is intended for use.

SUBSTRATES Continued

Form Release Agents

Form release agents are used to prevent concrete from sticking to the formwork and facilitate faster and cleaner stripping of the forms.

Form release agents over applied to a form may transfer to the concrete cast against it. This could cause problems for the Duoflex Structural Waterproofing from the standpoint of achieving a good bond to the concrete surface.

Soprema UK Ltd. does not recommend the use of any petroleum, wax, resin or silicone-based form release agents due to the potential adhesion problem if this agent transferred from the form to the concrete surface.

If a form release agent transfers to the concrete surface, the agent must be removed, as recommended by the manufacturer of the form release agent, prior to the application of the Duoflex Structural Waterproofing.

Frequent bond checks should be conducted initially and throughout the application of the Duoflex Structural Waterproofing to verify that a good bond is being obtained. See Method Statement for further guidance.

Precast Concrete

Pre-cast concrete is typically made of structural weight concrete and is generally an excellent substrate for the application of the Duoflex Structural Waterproofing.

Concrete Block Units

Concrete block units in foundation walls, planter walls, parapets etc are an acceptable substrate for the Duoflex Structural Waterproofing.

Profiled Metal Decks

Profiled metal decks may be overlaid with suitable plywood (or other suitable proprietary overlay boards – consult Soprema UK Ltd's Technical Department) and waterproofed with the Duoflex Structural Waterproofing as per the plywood specification below.

Painted/Coated Metal Surfaces

Paints and coatings should be removed from metal upstands/columns etc prior to the application of Duoflex Structural Waterproofing (In the case of intumescent coatings, advice should be sought from the Soprema UK Ltd's Technical Department).

Polyester powder coated metal is a suitable surface to receive the Duoflex Structural Waterproofing, provided the membrane is applied at its lowest workable temperature, not exceeding 155 0C.

SPECIAL CONCRETE SURFACE PREPARATION CLEANING

Typically, the cleaning of a concrete surface will consist of thoroughly sweeping the surface of all dirt and construction debris and then blow-cleaning to provide a surface acceptable for the application of the Duoflex Structural Waterproofing.

There are several types of surface contaminants that cannot be easily removed by sweeping or blow cleaning which can cause bonding problems between the Duoflex Structural Waterproofing and concrete, such as:

- Some form release agents
  - Some liquid membrane curing compounds
  - Oil spills or other surface contamination
  - Laitance
- See previous section on substrates*

Surface contamination, such as the residue of OIL spills or GREASE, will inhibit the Duoflex Structural Waterproofing from bonding to the concrete. The area contaminated by these materials must be properly cleaned before the application of the Duoflex Structural Waterproofing can proceed.

When any of these substances have been applied, or have transferred to a concrete surface, or when laitance exists, it must be removed in preparation for the application of the Duoflex Structural Waterproofing.

Chemical Cleaning

Chemical cleaning may be necessary as a preliminary step to blast methods of cleaning to remove oil, grease, and dirt. Scrub vigorously with solutions of caustic soda, trisodium phosphate or detergents especially formulated for use on concrete. Flush with water (not solvents) to rinse away all traces of both the detergent and contaminant. Solvents should not be used as a flush because they tend to dissolve and spread the contaminant.

Scarification

Scarring the concrete surface by mechanical means is helpful in removing thick overlays of dirt or weakened concrete (such as laitance). A water blast procedure should follow scarification to remove the aggregate that the process has loosened.

Grinding may be useful in small areas, or when the cleaned surface must be relatively smooth.

Blast Cleaning

Blast cleaning – whether wet or dry with a sand abrasive of high-pressure water jetting with no abrasive – is the most effective way to remove dirt, concrete laitance or other weak material.

Acid Etching

Once considered a reliable method for preparing a concrete surface, acid etching is not as dependable as mechanical cleaning methods and should only be used if no other alternative is possible.

Proper precautions and personal protective equipment should be used when working with harmful chemicals. Consult the specific chemical manufacturer for recommendations regarding the safe use of their product.

It is Clean ?

One final check to determine if the concrete has been properly cleaned is to apply a test patch of the Duoflex Structural Waterproofing to the concrete surface and check its adhesion. See separate method statement.

If a sound bond is achieved, the application of the Duoflex Structural Waterproofing can proceed. Frequent bond checks should be made during the application of the Duoflex Structural Waterproofing to ensure the integrity of the installation. See Method Statement for further guidance.

REPAIR OF SURFACE DEFECTS

Honeycombed and defective concrete areas must be chipped or removed down to sound concrete. Edges should be perpendicular or slightly undercut – NEVER feathered.

Latex modified repair mortar has been found to be an acceptable repair mortar.

Tie holes, after a thorough cleaning and dampening, should be filled with patching mortar.

Fins, protrusions or similar irregular projections from the surface should be removed by chipping, scraping or wire brushing. A reasonably flat surface is required so that the Duoflex Structural Waterproofing can be applied in a continuous monolithic coating.

Mechanical abrasion may be necessary to provide smooth and gradual transitions between offset surfaces.

STRUCTURAL LOADINGS

**It is imperative that the building owner or his advisors satisfy themselves that the structural deck is suitable to receive the dead load imposed by the Duoflex Structural Waterproofing and its associated surfacing, ballast and any additional live loads.**

DUOFLEX SP STRUCTURAL  
WATERPROOFING – BOND TESTING  
METHOD STATEMENT

The fundamental criteria for satisfactory bonding of the Duoflex Structural Waterproofing to concrete are that the concrete is free from dust, grease, dampness and laitance. Fully cured wood float finished concrete with a minimum density of 1850kg/m3 is ideal. Smooth faced concrete is also acceptable, provided it is not power floated, which may cause surface laitance. Metal surfaces must be thoroughly degreased.

However, the ability of concrete to accept the Duoflex Structural Waterproofing can be ascertained practically by conducting a bond test. A test should always be conducted on each area prior to the main material application. Conduct bond tests as far in advance of actual application, in case further curing or treatment is needed.

A bond test is executed by applying a small amount of membrane by squeegee onto the test area and allowing it to cool completely. Cut a triangular shaped incision through the membrane in the centre of the test area. If this triangular area of membrane can be peeled from the substrate easily, then the concrete is not ready. If it is not possible to pull the membrane away without distorting it, then the bond is deemed to be satisfactory.

Place some protection sheet or polythene over the test area to keep dust off, removing it only when the main material application takes place. The test material will reactivate and blend in with the subsequent application.

Normal curing time for concrete should be taken as 28 days. If such time is not available, then material can be applied after 14 days, subject to a satisfactory bond test. Application after less than 14 days is not recommended.

SECTION 2  
APPLICATION  
DUOFLEX SP STRUCTURAL  
WATERPROOFING SYSTEM:

## SURFACE PRIMER

The proper application of Duoflex Structural Waterproofing is important to the success of an installation. This success is enhanced by proper preparation of the substrate and membrane.

The substrate must be dry and clean of all surface contaminants, such as un-approved curing compounds, form release agents, oils, dirt etc. Any surface irregularities likely to inhibit the Duoflex Structural Waterproofing from being applied as a continuous monolithic membrane should be removed, and either replaced or properly repaired.

The applicator should thoroughly inspect the surfaces over which the Duoflex Structural Waterproofing is to be applied BEFORE commencing with the application. Any deficiencies found should be reported to the General Contractor so that they can be corrected. No work should begin until all the deficiencies reported have been corrected.

If the boiler and materials are to be placed on the roof or plaza, care must be exercised, in consultation with the General Contractor or Architects and/or Project Engineer, to ensure the weight of this material and equipment is safely placed so as to present no hazard to the structure.

The Duoflex Structural Waterproofing must be heated in a thermostatically controlled boiler to the temperature range of 155 oC to 180 oC (311 oF to 356 oF ) and slowly mixed. NOTE: THE MEMBRANE TEMPERATURE SHOULD NEVER EXCEED 210 oC (410 oF).

Clean an area slightly larger than what is expected to be waterproofed each day. This designated area should first be thoroughly swept with a broom to remove any loose dirt or debris, then blown clean using an air compressor. Blowing the area clean is the final step in removing as much of the dust and dirt as possible. Industrial type vacuum cleaners are also an effective means of cleaning a substrate.

All substrates which have been properly cleaned should then be primed with Soprema Elastocol 500 Primer. The primer includes an elastomeric polymer modified SBS compound. It is used to increase the bond of the Duoflex rubberised bitumen and the Flag-Soprema self-adhesive joint sealant to concrete or plywood structural decks.

The primer must be allowed sufficient time to thoroughly dry. Typically, 3-4 hours would be sufficient. However, the cooler the ambient temperature, the more time this will take. DO NOT APPLY MEMBRANE TO WET PRIMER.

Once the substrate preparation has been completed and the membrane has been heated to its proper temperature and mixed thoroughly, application can begin.

## DETAILS - VERTICAL SURFACE

Initial detail work is typically completed first before the membrane is applied to the field area of the deck.

It is advisable to pre-cut lengths of Sopralene 180-25 sanded bituminous membrane, prime all.

surfaces where required and allow to dry.

All surfaces to which the Duoflex SP waterproofing is to be applied must be clean and dry.

All transitions must be sharply formed having no irregular surfaces or edges.

One method for waterproofing very tall surfaces is to erect a scaffolding from which to work.

There are two methods commonly used to apply Duoflex Structural Waterproofing to vertical surfaces.

- Trowel method: using a wood hand trowel or spreader made of hardboard (approximately 200mm - 300mm) Duoflex membrane is poured into a trough from which it is brought up the vertical surface in an arc motion using the trowel or spreader. Typically, the membrane can be brought up to shoulder height quite easily. The trowel method must not be used above shoulder height.
- Roller method: using a large nap roller mounted on the end of a pole, the membrane can be rolled onto the vertical surface directly from a trough style container and rolled up the vertical surfaces. A minimum of three passes will ensure the nominal coating thickness of 3mm.
- On timber upstands apply the Duoflex liquid hot melt onto the upstands / details at a coverage rate of 3kg/2. Then after curing apply the Sopralene Flam 180 TF bituminous membrane and smooth out each detail area. All side joints should be a minimum 75mm overlap, then should extend and lap onto the flat roof area base by a minimum 150mm. A minimum 5mm bituminous bead should be extruded on all overlaps so that a full seal is achieved.
- Alternatively with Masonary Sopralene Flam 180 TF membrane can be torch applied directly onto the dry primed upstands and should extend and lap onto the flat roof area base by a minimum 150mm. A minimum 5mm bituminous bead should be extruded on all overlaps so that a full seal is achieved.

- Subsequently then following completion of the field area application Sopralene Flam 250 AF cap sheet layer is fully torch applied at the upstands and details on top of the Sopralene Flam 180 TF. A minimum 5mm bituminous bead extrusion is required at all overlaps and edges. and lap joints should be staggered by a minimum 300mm to the layer below. The Sopralene Flam 250AF should extend onto the horizontal mineral field area by a minimum 150mm base lap onto the roof ensuring a full bond is achieved, side laps to cover and overlap the selvage edge of the previous capsheet strip.
- Where terminating vertically, all upstands should be a minimum 150mm above the finished roof level and should be mechanically restrained beneath a termination bar and suitably pointed.



**DUOFLEX-SP STRUCTURAL/ROOFING  
WATERPROOFING – HORIZONTAL  
SURFACE**

The application of the membrane should be conducted in a carefully planned, methodical manner.

Prime all surfaces with Elastocol 500 and allow to dry.

- Roll out the SP Reinforcement Grid onto the dry primed surface in lanes allowing a minimum 75mm overlap onto each adjoining length. Position the Sopralene 180-25 sanded capsheet at a stagger of a minimum 300mm to the reinforcement grid below and roll out to the desired length required and then roll back in preparation for the Duoflex SP liquid waterproofing application. All side laps should be positioned equally, to give a minimum 100mm overlap and end laps at 150mm. Please ensure a stagger pattern is positioned on the end laps so that a build-up of materials is avoided. Carefully decant the Duoflex liquid hotmelt into spouted buckets from the thermostatic controlled boiler, all necessary protective clothing (PPE) should always be worn.
- The Duoflex liquid hotmelt can then be poured onto the SP Reinforcement grid at a coverage rate of 3kg/m<sup>2</sup>. The Sopralene 180-25 sanded capsheet can be rolled out onto the Duoflex liquid hot melt ensuring that all areas are fully bonded. All the joints should be completely sealed together by running the excess hotmelt down the overlap with a metal scraper.

**GREEN ROOF APPLICATIONS**

- Roll out the SP Reinforcement Grid onto the dry primed surface in lanes allowing a minimum 75mm overlap onto each adjoining length.
- Carefully decant the Duoflex liquid hotmelt into spouted buckets from the thermostatic controlled boiler, all necessary protective clothing (PPE) should always be worn.
- the Duoflex liquid hotmelt is poured and evenly spread with a squeegee onto the SP Reinforcement Grid and then left to cure ensuring a 3mm thickness throughout
- Sopralene Flam Garden 250 AF can also be torched applied to the surface of the cured surface of the liquid hotmelt once cured.

**Pitch Pockets**

In circumstances with penetrations through the roof and substrate structure, a pitch pocket may be suited better in achieving a secure watertight detail. After ensuring the pitch pocket locations are dry and primed, Duoflex liquid can be used to form the pitch pocket build up. Prefabricated once-bent galvanised steel angles are required to create an outer border to all sides of the pitch pocket detail. The horizontal leg of the metal angle should face outwards, and the metal angle should then be primed with Elastocol 500. Once dry and ready, pour in the Duoflex liquid compound in increments of 10mm thickness allowing each layer to settle and cure before the next one is poured. Typically, the Duoflex pitch pocket is formed at depth of 50mm above any protruding bolt heads.

**Rainwater Outlets**

Install the rainwater outlet of the required dimension prior to installation of the Duoflex SP liquid waterproofing. Dress the Duoflex SP and 180-25 membrane onto the outlet perimeter ensuring a full seal is achieved. If the outlets are exposed then the desired section of Sopralene Flam 250 AF will be torched applied and dressed around the outlet opening ensuring a secure seal is achieved.

**Rooflights**

Rooflights shall consist of a prefabricated timber, masonry, or concrete upstand kerb. Apply the Duoflex SP liquid waterproofing system to the upstand kerb prior to installing the specified rooflight.

**Gutters Internal gutters**

Shall be waterproofed in same manner as the main flat roof area, taking care to ensure all laps are fully sealed, including side laps at both sides within the gutter.

**SECTION 3  
POST INSTALLATION  
CHECKING PROCEDURE:**



### LEAK TESTING Preferred Method

On completion the integrity of the waterproofing must be tested by means of an electronic detector system to prove that the waterproofing is 100% free from punctures and defects. (The issue of the Soprema UK Ltd warranty is conditional upon the provision of a leak test certificate). The waterproofing contractor should include a sum for such a test within his quotation.

Alternatively, prior to the installation of the subsequent topping materials, the membrane installation, or sections thereof, on horizontal decks, should be water tested with 50mm of water for 48 hours.

Any leaks found should be located and repaired, and the area re-tested, then ensure that this area is signed off.

### REPAIR OF DAMAGED MATERIAL

Duoflex Structural Waterproofing membrane, which has been damaged during construction, can be easily repaired. The separation/protection layer should first be carefully removed, exposing not only the damaged membrane but also at least 300mm in all directions from it. If the area is dirty, it should be wiped off with a clean rag. Hot Duoflex rubberised bitumen can then be applied to the damaged area and the surrounding area to properly tie the new membrane into the existing membrane. Since Duoflex rubberised bitumen is a thermoplastic material, the heat from the new membrane will re-heat the existing membrane and fuse them together into one.

On completed installations where the topping materials have been installed over the membrane, if a leak should occur it can be easily traced since water cannot migrate between the Duoflex Structural waterproof membrane bonded tenaciously to a sound substrate. Once the damaged area has been located, the topping materials must be removed down to the separation/protection layer. The procedure for repair outlined above can then be followed.

### TOPPING MATERIALS Horizontal Waterproofing

Typically, once the applicator has installed the membrane and separation/protection layer, leak testing is conducted, and the subsequent topping materials are installed. There are several different types of topping materials and assemblies, which may be employed. A review of the topping assembly should be made prior to the start-up of a project. The Main Contractor should be advised that it is his responsibility to keep traffic over the membrane assembly only to those trades needed to install the topping material(s).

#### Vertical Waterproofing

On vertical waterproofing applications such as tunnel walls, foundation walls etc, the excavated earth is typically back filled against the membrane. It is important that an adequate protection layer is provided to ensure the backfilling operation does not damage the membrane.

Where it is considered necessary to relieve hydrostatic pressure, an appropriate drainage or filter layer should be incorporated against the vertically protected Duoflex Structural Waterproofing system prior to back filling.

#### Roofing

Duoflex Structural Waterproofing system is a "Protected Roof Membrane" which is meant to imply that the membrane is part of an inverted roof assembly where the insulation layer is installed above the membrane instead of below, as in a conventional roof assembly.

Typically, the Duoflex Structural Waterproofing system would be installed and protected with a separation/protection layer over which extruded polystyrene insulation is placed unattached, followed by a filter sheet and ballast.

Place Soprema Sopra XPS inverted polystyrene insulation directly over the protected membrane, stagger end joints and tightly abut all boards.

Place approved filter sheet loose laid directly over the Sopra XPS extruded polystyrene insulation, overlap all edges and ends recommended 300mm minimum. Extend the filter sheet 50-75mm above the stone or gravel ballast at perimeters and penetrations.

Cover the filter sheet with river washed stone or gravel ballast, as the filter sheet is being installed.

A row of paviours can be substituted for extra ballast around perimeter and at penetrations and drains. Use paviours in high foot traffic areas near roof access areas and to and round equipment.

Loose applied concrete paviours may be substituted for the stone or gravel ballast to provide added usefulness to the roof area and/or to provide a resistance to extreme winds.

It is the responsibility of the building owner or his representative to determine building structural capacity, and to consult Soprema UK Ltd. prior to the installation of the system, in the event of insufficient load bearing capacity.

There are also products which consist of extruded polystyrene with a nominal 9mm thick facing of latex modified concrete mortar. The boards have a cement grey surface. They have tongue and grooved edges along their length for interlocking and are installed in a staggered joint array. All such boards must be installed in strict accordance with manufacturer's installation guidelines.

Additional ballast may be required in instances of high wind uplift.

# SOPREMA ACCESS PROTECTION SHEETS

## STANDARD – ELASTOPHENE 180-25

A 2.6mm thick, SBS-modified bitumen felt with a non-woven polyester core to allow foot traffic over the Duoflex rubberised bitumen for a period of up to 12 months. (For longer periods, Sopralene Flam 250AF should be used.)

Roll length; 7m / 10m, Roll width; 1m, Weight 23/33 kg/roll.

## STANDARD – SOPRALENE FLAM 180 TF.

A 4,0mm thick SBS-modified bitumen felt with a talcum/sand surface. It has a non-woven polyester core that also has a high penetration resistance to allow heavy duty site traffic access over the Duoflex rubberised bitumen at details and upstand areas 6229, BS 8217 and other relevant Codes of Practice

Roll length; 8m, Roll width; 1m, Weight 40 kg/roll.

## HEAVY DUTY EXPOSED – SOPRALENE FLAM 250 AF.

A 4,7mm thick SBS-modified bitumen felt with a slate grey granular surface. It has a non-woven polyester core that also has a high penetration resistance to allow heavy duty site traffic access over the Duoflex rubberised bitumen. Due to its UV protection characteristics, it can be left exposed permanently in accordance with BS 6229, BS 8217 and other relevant Codes of Practice

Roll length; 8m, Roll width ; 1m, Weight 46 kg/roll.

## DUOFLEX GARDEN ROOT PROTECTION MEMBRANE

A Root Protection Membrane consisting of SBS elastomeric bitumen felt with a non-woven polyester core incorporating a root protection film in accordance with EN 13948. The membrane has a mineralised slate finish, and the underside is suitable for gas torch application, or direct bond, to the Duoflex rubberised bitumen.

Roll length; 8m, Roll width; 1m, Weight 40 kg/roll.

**Note: May require additional protection if exposure to heavy traffic/loads is anticipated prior to installation of coverings.**

## SUGGESTED MAINTENANCE SCHEDULE FOR FLAG-SOPREMA UK LTD. WATERPROOFING SYSTEMS

**GENERALLY, WE WOULD RECOMMEND THAT A FLAT ROOF BE INSPECTED AT A MINIMUM FREQUENCY OF TWICE A YEAR - IDEALLY JUST BEFORE AND JUST AFTER WINTER.**

## INTERNALLY:

- Check visually for any signs of condensation, presence of moisture or leakage (e.g. wet patches, stains etc).

## EXTERNALLY:

- Check visually for any loosened flashings at perimeters and penetrations.
- Check exposed membrane for any signs of mechanical or chemical damage.
- Remove any unnecessary debris from the roof area (especially objects which could cause damage to the membrane).
- Remove any blockages to outlet gratings/drainage points/gutters (e.g., leaves, litter, and sediment).
- Visually check exposed membrane laps for secureness.
- Inspect rooflights and other penetrations for any damage (e.g., cracks to glazing, missing vent tops), which could result in leakage or condensation.
- Check exposed membrane for any stress damage (e.g., ruckling or cracking of membrane).
- Check for any other building components for soundness (e.g., patent glazing, parapet walls etc.).
- Keep records of your bi-annual inspections for future reference.

## SPILLAGE:

- The following basic chemical products - diesel oil, fuel oil, kerosene, lubrication oils, vegetable oils and animal fats, affect modified bitumen roofings. In the event of spillage of any of these (or any other compounds not listed) consult Flag-Soprema UK Ltd. Technical Department for remedial instructions/ advice.

## LOADING:

- Modified bitumen waterproofing is designed to withstand the levels of foot traffic associated with regular roof maintenance. If any point loads (such as ladders) are exerted on the roof, they should be spread using a flat protection board. Where loads may exceed these, please contact Flag-Soprema UK Ltd.'s Technical Department for specific advice.

If it is found that remedial or maintenance work is thought necessary, please get in touch with the roofing contractor and/or our Regional Manager for your area. Where the work has been warranted always check with Soprema UK Ltd. that the proposed remedial work would not invalidate the warranty.

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**SOPREMA** group attaches great importance to quality and therefore operates in accordance with the internationally recognized quality system EN ISO 9001 - ISO 14001, where the system is independently audited and certified. **SOPREMA** group reserves the right for, according to the development of knowledge and techniques, without prior notice the composition and the conditions of use of its products.