

PRODUCTS USED:

- Elastospray® 1611/17
- MasterSeal® 550
- MasterSeal® GG 470

History of Soay

Polyurethane Foam:

Otto Bayer began working with polyurethane polymers in 1937 in Germany. His research was done in conjunction with David Eynon, President of Mobay, who brought the prepolyurethane polymers to the United States for further development. Mobay was a combination of two giants in the chemical business, Monsanto and Bayer. The support of Eynon, who encouraged innovators, was instrumental to the development of polymer technology in the United States. In 1953, the Blendometer was invented by Walter Baughman who allowed for the creation of the polyurethane foam.

SYSTEM DESCRIPTION:

The roofing system is based upon the use of a base layer of Elastospray® 1611/17 polyurethane spray in-situ foam, with a density of 45 Kg / m³, and a minimum thickness of 40 mm, which will produce rigid foam with closed cells, used as a thermal insulation, applied directly over the structural concrete roof slab laid to falls.

The spray applied polyurethane foam, shall be topped by a layer of MasteSeal® 550 (Dark Grey), two component, acrylic modified, flexible, Cementitious coating, at a coverage rate of 1.83 Kg / m² / Layer, to provide 2.0 mm DFT coating, which when cures, provides a hard wearing, seamless, waterproofing membrane.

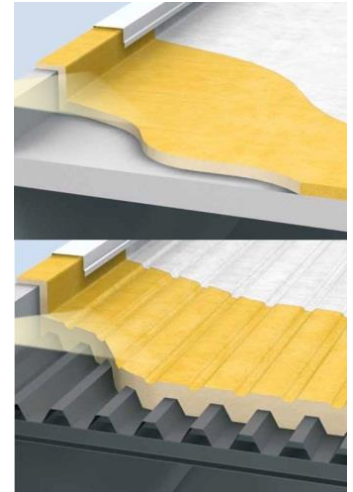
MasteSeal® 550 shall be protected by a single layer of a Polypropylene Geotextile fiber mat 150 gm / m², prior to the application of a sand / cement protection screed, with an average thickness of 75 mm.

The protection screed shall be once more topped by MasteSeal® 550 (White), two component acrylic, modified Cementitious, flexible waterproofing coating, at a coverage rate of 1.83 Kg / m² / Layer, to provide 2.0 mm DFT coating, as a final protective surface.

Master Builders Solutions Standard Roofing System

A New, Single Source, Roofing System

Provides complete protection for roof of buildings against moisture & heat transfer



Roof Waterproofing & Thermal Insulation System Works



Elastospray® 1611/17 spray applied over the concrete slab



Applying MasterSeal® 550 (Dark Grey) two component, acrylic modified, flexible, Cementitious coating



Water test & screed protection works



Joint Sealant & MasterSeal® 550 (White) final protective waterproofing coating



Why Spray Polyurethane Foam:

Comparison Between Spray Polyurethane Foam & EPS / XPS Foam	
Spray Polyurethane Foam	Polystyrene (EPS / XPS) Foam
Closed Cell Foam	Closed Cell Foam
Non-Permeable	Permeable Foam
Perm rate of 1 or less	Perm rate of 3 or higher
R- Value 7-7.5 per inch	R- Value 3.5- 4 per inch
Complete vapor barrier	Requires supplemental vapor barrier
Chemical process bonds foam to substrate	Adhesive is requested to bond foam to substrate
Resistant to mold and mildew	Susceptible to mold and mildew
Chemical resistant foam	Degrades if exposed to petroleum based adhesive / solvent
Less field labor	Increased field labor
Less field waste	Increased field waste
Thermally broken structural members	Structural members create thermal bridging
Complete thermal barrier	Thermal bridging
No off gassing	Contains benzene, a known carcinogen

Comparison between Conventional Torch Applied Bituminous Roofing Systems & Master Builders Solutions Standard Roofing Systems

Property	Conventional Torch Applied Bituminous Roofing Systems	Master Builders Solutions Standard Roofing Systems
Dubai Municipality / DCL Compliance	Unavailability of a conventional, torch applied, bituminous, waterproofing & thermal insulation system, which could be supplied by a single manufacture, complying with the thermal insulation standards set by Dubai Municipality.	The System is: <ul style="list-style-type: none"> » Supplied by a single source » Approved trained applicator & supervised by the manufacture. » Designed to suit the thermal insulation standards set by Dubai Municipality.
Heat Transfer through gaps & joints between boards.	Thermal insulation boards must be installed in two layers, with the two layers staggered applied, to prevent heat transfer through the joints. Also the maximum allowable gap width between boards must not exceed 5 mm.	Monolithic layer, spray applied without any joints that ensure complete protection against any possible heat transfer, as well as protection against possible leakages.
System Installation	Applied using a torch burner, used to heat the bitumen until it melts to adhere to the other melted overlap, which affects and ages the membrane, lowering the life expectancy of the applied waterproofing membrane.	Applied using a fully automated spray machine, equipped with most recent spray technology that allows the applicator to monitor the quality of the applied spray foam.
Warranty	The NRCA requires a minimum of two layer of bituminous membrane, applied over a 2.0% minimum slope to achieve a <u>10 Year Warranty</u> .	A 25 Year Warranty is provided by the applicator, who is trained, approved & supervised by MASTER BUILDERS SOLUTIONS Construction Chemicals.
Explosion Hazards	Torch burners used to weld bituminous membranes operate by the aid of butane cylinders, risking gas explosions.	Spray applied polyurethane machines are electrically operated, they are equipped with screens that show if the machine requires any service.
Workmanship	Quantity of the bituminous waterproofing welded joints will depend on the weather condition, which decreases in hot weather, as the torch increases the hot temperature around the technician. Installation rate < 150 m ² / crew / day.	Waterproofing coating is a two-component acrylic modified, flexible Cementitious coating, applied using Stiff Brush, Roller, or Trowel.



Maintenance

It is a loose laid system that consists of several joints, welded using a torch burner that does not have any QC / QA limitations. Application depends on the temper / state of mind of the applicator.

In the event of a leakage, it shall be very difficult to detect the leakage point. The lightweight sloping screed will be full soaked with water, and water will leak through concrete construction joints and other weak concrete / cracks.

To properly identify the damaged / leaking location in the membrane, all ballast / tile finish & protection layers must be removed to inspect the bituminous waterproofing membrane.

It is a fully bonded system that is joint free. Once the system is handed to the client, leakages will result only from seen damages (holes drilled through the roofing system for mechanical fixation of equipment).

In the event of leakage, it shall be through the same man made hole, which will be seen at the underside of the concrete slab as damp / wet spot, since horizontal movement / spread of leaking water will be restricted due to the closed cell structure of the polyurethane foam.

Repair will be exactly above the damp / wet spot, which will not cost the client more than 1.0 m² of roof finishes / tile ballast to be removed for repair, and then reinstalled.

Master Builders Solutions by MBCC Group

The Master Builders Solutions brand expresses MBCC's expertise in providing customized chemical solutions for new construction, maintenance, repair and restoration of structures.

Master Builders Solutions is built on the experience gained from more than a century in the construction industry. At the core of the Master Builders Solutions brand is the combined know-how and experience of a global community of MBCC construction experts, who connect with you to solve all of your construction challenges.

Further information is available at:

<https://www.master-builders-solutions.com/en-eg>

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