

Vol. 4

# TECHNICAL SPECIFICATIONS

“Being edited for incorporation”

# **WATERPROOFING GUIDELINES FOR NEW CONSTRUCTION PROJECTS FOR GOOD CONSTRUCTION PRACTICES**

as  
Part of Bidding Document

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## **1.0 Method Statement for applying Plaster**

### **1. Materials**

- Use good quality PPC based cement as per IS 1489 and sand for plaster as per IS 1542 to prepare the plaster mortar.
- Water content in the plaster should be controlled and ratio to be maintained as per the specification.
- The plaster mortar should be mixed with integral waterproofing compound to reduce its permeability and better cohesion reducing rebound loss in case of plaster. The material should confirm to water permeability test as per IS 2645:2003 where no leakage should occur.

### **2. Joint Filling**

- At the window frame joints, Silicone sealant should be applied to seal the gap.
- The separation gaps between concrete and masonry section should be properly filled with polymer modified mortar and open-woven fibre mesh to be applied before plastering

### **3. External Building Features- Chajja, Canopies, Overhangs etc.**

- Canopies to be designed 300mm from wall and in a slope so that water does not stagnate.
- Chajjas to be casted with concrete in a slope.
- Angle fillet to be provided at chajja to wall junction.
- Drip mould to be provided of size 15mm x 10mm at a distance of 25mm from overhang.

### **4. Surface Preparation**

- Surfaces to be plastered must be clean and free from dust, loose material, oil, grease, mortar droppings, sticking of foreign matter, etc.
- Raking out of joints should be carried out along with masonry to receive a good key.
- Any unavoidable projections in masonry and concrete surfaces shall be chiseled out.
- Thickness of one coat should not be more than 15mm and less than 8 mm for single coat finished plaster.
- Undercoats shall be scratched or roughened before they are fully hardened to form a mechanical key.
- Required concealing services must be completed and tested and no further cutting should be allowed.
- Repairs carried out to masonry or concealing work must be cured and dry.

- Any shrinkage crack on plaster surface should be properly cleaned and then filled with non-shrink acrylic crack filling compounds
- All plumbing lines should be kept away from the building surface to avoid seepage of water through the plaster.

#### **5. Application**

- Surface should be thoroughly cleaned and sufficiently damp prior to plastering.
- Before the plaster application, the bond coat of cement - polymer slurry to be applied
- Plaster to be applied when the bond coat is in tacky condition - do not allow it to dry.
- Plaster area must be provided with level dabs or spots allowing working and checking with 2-3 m straight edge. Plaster dabs are checked for plumb and level by the Engineer-in-charge or his representative.
- The required plaster thickness of first coat to be applied and at any case should not be less than 8 mm. Continuous curing should be done by sprinkling of water after setting of first coat.
- Second coat of plaster of 10 – 12 mm thick is to be applied above the first coat on next day.
- The plastering surface area should not be more than 15 sqm to avoid any shrinkage cracks. Joint should be provided at each 15 sqm or as directed by Engineer-in-charge.

#### **6. Curing**

- All the plastered surfaces must be wet cured properly for minimum 14 days period.

## **2.0 Method Statement for Waterproofing Treatment of Wet Areas**

**(Bathrooms, toilets, wash areas, kitchens, sinks, balconies,)**

### **1. Material**

The waterproofing material shall be a polymer modified cementitious coating or any other approved liquid applied seamless coating. The material should confirm to water permeability test (Depth of penetration at 5 bar pressure) where no leakage should occur after 24 hours as per EN 12390, part 8:2000 or as per IS 2645:2003 test methods.

### **2. Surface Preparation**

- RCC kerb of 100 mm high to be constructed at floor level at all masonry wall to prevent migration of moisture into dry areas.
- Waterproofing should extend up to 150 mm into dry area covering the kerb surface
- Angle fillet (corner rounding) of 50 mm x 50 mm shall be done using polymer modified mortar at all horizontal and vertical junctions (floor & wall junction) along with screed mixed with waterproofing compound.

- Angle fillet (corner rounding) of 25 mm x 25 shall be done using polymer modified mortar at all horizontal and vertical junctions (sunken floor, sunken bath tub etc.) along with screed mixed with waterproofing compound.
- Surfaces to be applied upon must be clean, reasonably dry, free from dirt, loose material, oil & grease and be as smooth as possible.
- Honeycombing in concrete should be filled with polymer modified grouts before applying any surface patch material.
- Slope of the surface to be checked before applying waterproofing material

### **3. Sealing the gap around plumbing fixtures**

- All PVC pipes should be wrapped with double sided bituminous tape, at the place where they go through the wall or floor.
- The gap between wrapped pipe and wall and gaps around Nahani traps, pipe outlets should be filled with ready to use free flowing non-shrink cementitious grout.
- All concealed pipelines should be filled with polymer modified mortar.
- Ensure the water tightness of plumbing system with pressure test and do any rectification for leakages if any.
- Complete all plumbing and sanitation work before commencement of waterproofing works

### **4. Waterproofing Application**

- Surface should be pre-wetted to make surface saturated dry (SSD) condition.
- Apply by brush or roller a coat of a polymer modified cementitious liquid applied seamless waterproofing coating at a specified coverage per kg to all required areas to achieve a thickness of 500 – 600 micron in one coat and allow the surface to dry for 4 -6 hours.
- Apply second coat in the opposite direction at the same rate. After the application of second coat, the total thickness of membrane should be 1 to 1.2 mm. The treatment is left as it is for 48 hours for air cure before carrying out ponding test.
- At the floor & wall joint junction provide a glass fibre mesh cut to size covering the fillet area laid to size and shape followed by 2<sup>nd</sup> coat of waterproofing for additional protection.
- Sprinkle coarse sand after the 2<sup>nd</sup> coat application while it is still wet for providing a key for subsequent tile adhesive material.
- The waterproofing shall be carried at least 300 mm on vertical surfaces above the floor finish level except the splash zone of shower where the waterproofing should be carried out to 1.8 to 2.1 m height in bathroom and toilets. In other wet areas the vertical surface should be waterproofed for a minimum height of 150 mm.

- The coating shall be applied to the internals of the down pipes for minimum 50 mm down to the floor outlet before laying of the tiles, bedding and floor traps.

#### **5. Ponding Test**

Ponding test shall be carried out at a depth of 50 mm for 48 hours to determine the water tightness after closing all the outlets. Necessary remedial actions should be taken for any seepage or leakage of water. The waterproofing shall be considered satisfactory, if no leaks or damp patches show on the soffit.

#### **6. Protective Screed**

- Upon successful completion of the ponding test, a layer of 10mm Cement/Sand (Ratio 1:4) protective screed, using an integral waterproofing compound shall be applied on top of the membrane.
- If the drainage pipes are laid on the floor the minimum thickness of screed should be 20 mm.
- The floor level should be provided with adequate slope considering the pipe thickness.
- Care shall be taken whilst laying the protective screed so as not to damage the waterproofing membrane below.
- The contractor shall take all measures necessary to prevent any damage to the membrane or protective screed during subsequent work.

### **3.0 Method Statement for Waterproofing Treatment for Flat Roofs**

#### **1. Surface Preparation**

- Roof slab must be of sound concrete and honeycomb should not be formed.
- Soundness of roof slab should be checked with rubber or hard nylon hammer and unsound concrete and cracks on the concrete surface to be properly treated with polymer modified mortar (PMM).
- Honeycombing of concrete should be filled with polymer grouts before applying any surface patch material.
- Stair cover or canopy slab should be given adequate slope so that water does not stagnate.
- Depending on quantity of rainfall minimum finished fall required according to BS6229 is 1:80. Rain outlet should be of 100 mm to 150 mm depending upon rainfall
- If area is less than 100 m<sup>2</sup> then minimum 1 outlet should be provided and if greater than 100 m<sup>2</sup> then at least 2 outlets should be provided.
- Rain water outlets shall be fixed in continuity of screed slope throughout the parapet wall.

- Service pipes should be fixed 50 mm to 75 mm away from face of the wall with clamps of anti-corrosive anchor fasteners.
- Solar panel if any should be aligned and fixed on 50 mm thick mortar bed platform.
- Air conditioning units should be aligned and fixed on a specified platform with detailing.
- All the terraces required to be waterproofed using heavy duty acrylic liquid applied coating shall be cleaned thoroughly to remove all loose particles before laying a concrete screed to slope.
- Concrete screed / brick bat coba shall be laid to slope as per the specifications of Engineer-in-charge over the terrace slab. The slope shall be maintained at 1:80 or as per the drawing and shall be cured for a minimum period of 15 days.
- Wherever the Brickbat Coba is specified, the terrace should be undercoated with elastomeric protective coating before application of minimum thickness 1 mm and minimum elongation of 80%.
- The top of screed surface shall be finished slightly rough and all the rain water down take pipes shall be fixed as per the drawing or instructions of Engineer-in-charge.
- Remove water from the terrace after its curing and leave the surface to get dried.
- Thorough inspection shall be done to locate / identify any shrinkage cracks. All major shrinkage cracks, if any, shall be filled with polymer-based crack filling ready to use paste form crack filling material up to 5 mm wide cracks and wider cracks need to be filled with polymer modified mortar.
- Angle fillet (corner rounding) of 75 mm x 75 mm shall be done using polymer modified mortar at all horizontal and vertical junctions (roof slab & parapet wall junction) along with screed mixed with waterproofing compound.
- Angle fillets to be provided and properly dressed with waterproofing materials at parapet to slab junctions, platforms for service units and upstands.
- Finally, clean the surface once again thoroughly to remove all dust and cement particles.

## 2. Liquid applied seamless coating for terrace

### 2.1 Material

The waterproofing material should **at least** satisfy following performance requirement as per the mentioned test standard/equivalent standard.

Properties	Test Method	Values
Hardness (Shore A)	ASTM D 2240 : 2002	80
Tensile Strength, N/mm <sup>2</sup>	ASTM D 412 : 2002	>1.2
Elongation at Break, %	ASTM D 412 : 2002	> 80

UV Resistant – Accelerated Weathering (2000 hours)	ASTM G 154 : 2000	No thermal degradation
Adhesion Strength, N/mm <sup>2</sup>	ASTM D 4541 : 2002	>1
Water Vapour Transmission, gm/m <sup>2</sup> /day	ASTM E 96 : 2000	15
Algae & Fungus Resistant	SS 345 : 1998	No algae & fungus growth
Crack Bridging	ASTM C 836 : 1995	Up to 2 mm width

## **2.2 Waterproofing Application**

### **2.2.1 Primer Application**

- Pre wet the surface prior to application of primer and allow surface water to evaporate to make surface saturated dry (SSD) condition.
- Apply acrylic based primer (diluted with water as per manufacture's specification) on the cleaned surface or as per manufactures specification to enhance the adhesion of the membrane to the substrate and blocking the surface pores.
- Allow the primer coat to dry.

### **2.2.2 Terrace waterproofing Application**

- Apply 1<sup>st</sup> coat of on the dried primer coat uniformly with a roller at coverage as specified by Manufacturer. Apply 2<sup>nd</sup> and 3<sup>rd</sup> coat at the same rate after drying of the previous coat to achieve a thickness of 1-1.2 mm in 3 coats.
- Roof in excess of area of 200 sq.m should be provided with reinforcing fabric mesh between 1<sup>st</sup> & 2<sup>nd</sup> coat.
- Make some square grid of 1m x 1m or 2 m x 2m for ensuring the consumption of right quantity of material as specified in the same grid.
- The drying time for each coat depends on the ambient temperature and can vary from place to place. At 30 degree C, the coat will dry up within 6 to 8hour.
- All the concrete / masonry pedestals present on the roof, constructed for supporting the water tanks or pipe lines or dish antenna/solar panel, etc., also should be coated with extra coat of same material incorporating reinforcing fabric.
- Allow the system to air cure for 7 days prior to carry out ponding test.

### **2.2.3 Application on Parapet walls**

- The application on parapet surface must continue over the parapet wall up to the top. If desired, one can terminate the coating at 300 mm height on the vertical face of a parapet wall at the drip mould, made in plaster. In absence of any such drip mould, the coating shall be extended till top of parapet wall.



- All rain water pipe ‘openings’ shall be coated with same waterproofing coating from inside to a distance of 50 mm.

### **3. APP Preformed torch applied membrane for large terrace<sup>1</sup>/for terrace garden<sup>2</sup>/for terrace of higher rainfall areas<sup>2</sup>/ for terrace of mechanical traffic<sup>2</sup>**

#### **3.1 Material**

APP torch applied membrane made from high-grade bitumen & selected polymers should be used. The APP modified bitumen should be coated to non-woven Polyester reinforcement to give high tear & puncture resistance. The thickness should be 3 to 4 mm as per the requirement. It should satisfy following performance requirement as per the mentioned test standard/equivalent standard.

<b>Properties</b>	<b>Standards</b>	<b><sup>1</sup>Values</b>	<b><sup>2</sup>Values</b>
Softening point, °C	ASTM D 36	≥ 150	≥ 150
Low temperature flexibility, ° C	ASTM D 5147	(-) 20	(-) 20
Heat resistance, compound stability @ 100 °C for 2 hours	ASTM D 5147	No flow	No flow
Tensile strength, N/5 cm	EN 12311-1		
Longitudinal		350 ± 150	700 ± 150
Transverse		300 ± 90	450 ± 90
Tear strength, N	ASTM D 5147		
Longitudinal		180 ± 50	300 ± 50
Transverse		200 ± 50	250 ± 50
Water absorption, % Wt @ 23 °C for 24 hrs	ASTM D 5147	3.2	3.2
Resistance to water pressure 5 bar/50 m	UEAtc M. O. A. T. 30	-	No leakage

#### **3.2 Application**

##### **3.2.1 Primer Application**

- Apply solvent-based bitumen primer on cleaned concrete surface as per Manufacturer’s specification to enhance the adhesion of the membrane to the substrate.
- Allow the primer coat to dry. The drying will generally depend on the ambient temperature

##### **3.2.2 Membrane Application**

- Unroll the APP membrane roll once the priming coat is dried from lowest sloped point of the roof terrace.
- Align the APP membrane roll correctly & re-roll it half in alignment before torching. Avoid shifting of the membrane while torching.
- Use gas burner to heat the terrace substrate & underside of the APP membrane to softening points. When the embossing disappears, roll forward & press firmly against substrate to bond from the lower end towards the higher end.

- Ensure sufficient bleed on side & end over laps. Once the half of the roll is torched properly to the substrate, unroll the balance roll and repeat the process.
- An overlap of 100-mm shall be maintained for all the continuing sides. Heating shall be done on both the membranes to be overlapped and pressed firmly with the help of round shape trowel. The care shall be taken to leave no gap at any point in the overlapped area. If noticed, reheating shall be done to seal it.
- All angles & abutments up stands should be sealed with extra care to ensure perfect bondage. Seal the edges well into grooves & protect with a Polysulphide sealant.
- In case of open drains running along the slab for water to get collected and then drained out through a down take pipe, the size and shape of the drain should be sufficient to allow the laying of membrane in the drain. In such case, the rectangular corner of screed and drain shall be chamfered for membrane to take smooth curve inside the drain. The membrane shall be screwed with GI screws to the drain wall along with aluminum or GI strip.
- The drain shall have an adequate slope towards the down take pipe (1:100), the same shall be ensured before starting application of membrane.
- In case of inadequate drain size (for fixing the membrane); the waterproofing of drain section shall be done with polymer modified bituminous coating, which is a cold applied waterproof coating. Apply 3 coats to cover the entire drain section and overlay with a screed of 20 mm thick mortar mixed with integral waterproofing compound to protect the surface. The plaster shall be finished smooth and cured for 7 days.

### **3.2.3 Termination of Membranes**

- The membranes shall be first laid up to the parapet wall junction and then shall be overlapped with another membrane (flashing) with an overlap of 100 mm and taken upward on the parapet wall up to a distance of 300 mm. This overlap shall be firmly sealed over the corner rounding or fillet area at the junction of parapet wall and slab.
- The rendering shall be done above this level till top of parapet wall to match the level of membrane and drip mould shall be created in the plaster at the place where membranes is terminated to drift the rainwater away from the membrane. Alternatively an aluminum or G.I. sheet flashing can also be fixed over the membrane, fixed with GI screws with the parapet wall.

### **3.2.4 Termination at the opening of rain water pipes**

Membrane should also be torched and glued to the inside of the rain water down take pipes

#### **4. Expansion Joint Treatment**

- In the case of large roofs with an expansion joints, the membrane application should be terminated at the joint.
- A curb wall of 100 mm thick shall be constructed on both sides of joint, which may be from 150 mm to 200 mm in height.
- The curb wall shall be plastered smoothly and corner rounding with polymer-modified mortar shall be done before terrace waterproofing applications starts.
- The joint shall be covered either with GI strip fixed on one of the curb walls while leaving other end free or by neoprene sheet.
- The expansion joint shall be filled with 2 part flexible Polysulphide Sealant in accordance with the product specifications.
- Prepare the joints maintaining depth to width ratio as 1:2.
- Insert back up material or filler board made from polystyrene to required depth
- Insert polystyrene rod as a bond breaker over back up material
- Use masking tape on the both edges of the joint to have proper finish

#### **5. Ponding Test**

Ponding test shall be carried out at a depth of 50 mm for 48 hours to check the water tightness of the system after closing all the rain water outlets. Necessary remedial actions should be taken for any seepage or leakage of water. The waterproofing shall be considered satisfactory, if no leaks or damp patches show on the soffit.

#### **6. Protective measure**

- No screed is required for normal foot traffic however movement of machinery & equipment are not allowed on the coated surface
- For movement of machinery & equipment, a layer of 12mm thick Cement/Sand (Ratio 1:4) protective screed, using an integral waterproofing as specified by manufacturer shall be applied on top of the membrane.
- The top screed over the waterproofing coating either should be casted in panels or a minimum joint of 12 mm by 12 mm should be created to allow thermal movement. The joints should be filled with elastomeric sealant.
- In case of APP torch applied glass finished membrane and non-foot traffic area the surface should be finished with aluminum paint.

- In case of APP torch applied glass finished membrane, the self-finished mineral surface provides a decorative and solar protective finish for the waterproofing membrane system.
- Suitable anti-root treatment shall be provided over the screed for terrace garden surface as per the consultant's specification.
- For terrace garden use APP modified bitumen torch-on, root resistant waterproofing membrane reinforced with spun bond non-woven polyester fabric.

## **4.0 Waterproofing Treatment for Corrugated Sheets (A.C/ G.I) Slopped Roof**

### **1. Material**

APP modified bitumen Torchshield membranes made from High-grade bitumen & selected polymers. The performance standard of materials as mentioned above<sup>1</sup>.

### **2. Application**

- Clean the surfaces thoroughly, as they should be free from oil, grease, dust, debris and unsound substrate.
- Apply solvent-based bitumen primer on cleaned & leveled surface as per Manufacturer's specification.
- Starting at low point from the roof, unroll the 1.5 -2.0 mm membrane after 1-2 hour of application of primer or once the primer has reached dry condition.
- Align the membrane roll correctly & re-roll it half in alignment before torching. Avoid shifting of the membrane while torching.
- Use gas burner to heat substrate & underside to softening points. When the embossing disappears, roll forward & press firmly against substrate to bond from the lower end towards the higher end. Ensure sufficient bleed on side & end over laps.
- Keep doing the above process until one half part of the roll torching is done. Afterward repeat the same process as explained above for the half-untorched roll.
- For other new roll to be torched keep an overlap margin for minimum 100-mm at both the side and lower end.
- Heat both the overlaps & use round tipped trowel to seal overlap. Excess compound should be smoothed & pressed into seam using hot trowel.
- In case on non-sanded membrane, sprinkle sand on the top surface by torching the top of membrane for better adhesion.
- Apply two coats of Aluminium paint over the finished membrane

## 5.0 Waterproofing Treatment over Basement

### 1. Material

For normal basement waterproofing, torch applied APP polymer modified membranes with modified bitumen having upper and lower surfaces laminated with polyethylene film can be used. The material properties, application procedure and protection measures should be followed as explained earlier for APP torch on membrane.

EPDM rubber based prefabricated membrane for high water table & long service life. It should satisfy following performance requirement as per the mentioned test standard/equivalent standard.

Properties	Standards	Values
Thickness, mm	EN 1849-1	1.14/1.2/1.5
Tolerance on Nominal Thickness, %	ASTM D 412	(+)10
Tensile Strength, min N/mm <sup>2</sup>	ASTM D 412	9
Elongation, Ultimate, min %	ASTM D 412	300
Tear Strength, min, (KN/m)	ASTM D 624	27
Factory Seam Strength, min	ASTM D816	Sheet failure at 24 kg
Brittleness Point, max (°C)	ASTM D 746	(-) 45
Tensile Strength, min, (MPa)	ASTM D 412	5
Elongation, Ultimate, min %	ASTM D 412	200
Tear Strength, min, (KN/m)	ASTM D 624	22
Linear Dimensional change, max, %	ASTM D1204	0.3
Resistance to water absorption: After 7 days immersion @ (70°C) Change in mass, max, %	ASTM D 471	1.2
Water vapour Permeance, Max, perms (Proc B or BW)	ASTM E 96	0.1

### 2. Surface Preparation

- Soundness of slab should be checked with rubber or hard nylon hammer and unsound concrete and cracks on the concrete surface to be properly treated with polymer modified mortar (PMM).
- Honeycombing in concrete should be filled with polymer grouts before applying any surface patch material.
- The pile heads should be cut and brought in same height followed by proper dressing with high strength polymer modified mortars or epoxy grout materials.
- The waterproofing method statement should include the detailing to cover the peripheries of all the upstands like Earth Rod, Pressure release pipes etc.

- The construction joints should be watertight with flexible waterbar.
- The raft surface should be thoroughly cleaned using a wire brush and any laitance on the surface is removed by chipping
- Dust, dirt, foreign matter or any debris is removed from the surface. Fine dust is removed using a fine bristled brush
- The substrate must be completely dry before installation of membrane.

### 3. Application

- Over the prepared substrate, install a minimum 150 GSM geotextile as a cushion layer.
- After installing the cushion layer, align the EPDM membrane and once alignment is done, install the membrane properly as loose laid.
- The overlap shall be of minimum 100 mm. The overlap shall be sealed with quick applied Seam Tape (tape overlap should be 175 mm).
- Before installing the seam tape, the seam area must be prepared by means of splice primer as per manufacture's recommendation to enhance the adhesion properties between two membranes.
- For any vertical surface a bonding adhesive should be used for fully bonding
- PU sealant should be used to seal at all termination of membrane and lap joint locations.

### 4.0 Protective Measures

- Once the membrane installation is over, a minimum 150 GSM geotextile to be placed to protect the membrane from mechanical damages.
- Over the installed system, 50 mm thick protection screed admixed with liquid waterproofing compound to be installed prior to reinforcement work.

## 6.0 Waterproofing Treatment on Retaining Structures

(Any water retaining structures, water tank, swimming pool etc.)

### 1. Material

For high water table areas crystalline system should be used. It should comprise of high quality cement, properly selected & graded inert aggregates, proprietary waterproofing active chemicals & additives should be used. The crystalline system should confirm to below properties.

Properties	Standards	Values
Water permeability	BS EN 12390 Part 8: 2000	Nil
Water pressure head, m	-	40 - 50
Rate of water penetration /week, mm	-	2

Two components cementitious coating system should be used for any other retaining structures, water tank, swimming pool etc. The following properties of cementitious coating should satisfy as per mentioned standard.

Properties	Standards	Values
Water penetration (5 bar pressure), %	BS EN 12390	1
Tensile strength, N/mm <sup>2</sup>	ASTM D 412	1
Elongation at break, %	ASTM D 412	> 120
Food grade certification	CFTRI certification	Passes

## 2. Surface Preparation

- Soundness of slab should be checked with rubber or hard nylon hammer and unsound concrete and cracks on the concrete surface to be properly treated with polymer modified mortar (PMM).
- Honeycombing in concrete should be filled with polymer grouts before applying any surface patch material.
- Provide angle fillet of 100 mmx100 mm at wall and slab junctions along with screed mixed with waterproofing compound.
- All PVC pipes should be wrapped with two sided bituminous tape.
- Fill the gap around PVC pipe and concrete with free flowing cementitious grout.
- Ensure that the surface should be sound, thoroughly prepared by mechanical surface scarification, shot blasting, etc. and vacuum cleaned to a finish of a sand paper to allow crystalline products to penetrate effectively.
- Remove dirt, laitance, loose particles, paints, etc., by means of mechanical grinding, sand blasting, pressure water cleaning or suitable mechanical means.
- Clean with water jet and make surface saturated dry (SSD) condition.

## 3. Application

- Mix the powder with one part of water as per Manufacturer's specification to form slurry and apply with brush on the surface in two coats. Apply the second coat while the first coat is still tacky
- Allow the coating to dry for 24 hrs and moist curing to commence after 24hrs of application. The curing has to be done for at least 7 days. Wherever possible ponding can be also done after 24 hrs of application of coating.

## 7.0 Waterproofing Treatment on External Wall Surfaces

### 1. Material

Elastomeric acrylic based waterproofing coating having crack bridging ability to achieve a thickness of 110 microns in two coats. It should satisfy following performance requirement as per the mentioned test standard/equivalent standard.

Properties	Test Method	Values
Tensile Strength, N/mm <sup>2</sup>	ASTM D 412 : 2002	>1.5
Elongation , %	ASTM D 412 : 2002	> 100
UV Resistant – Accelerated Weathering (2000 hours)	ASTM D 4587	No thermal degradation
Adhesion Strength, N/mm <sup>2</sup>	ASTM D 4541 : 2002	>1
Algae & Fungus Resistant	SS 345 : 1998	No algae & fungus growth
Carbon dioxide diffusion (equivalent air layer thickness), meter	DIN EN 1062-6:2002	55

### 2. Surface Preparation

- All new cement-sand renderings /concrete surfaces should be allowed to age minimum 28 days before surface coating.
- Cracks on the surface to be properly treated with polymer crack filling material after routing cracks in form of 'V' grooves.
- Remove dirt, laitance, loose particles, paints, etc., by means of pressure water cleaning or wire brushing.
- Clean with water jet and make surface saturated dry (SSD) condition.

### 3. Application

- Prime the surface with an acrylic based primer diluted with potable water as per manufacture's specification and allow the primed surface to dry for 2 to 3 hours.
- Apply two coats of elastomeric coating without dilution by a roller at a time interval of 5-6 hours.
- For enhanced protection, apply additional coat on rain lashing walls, chajjas and parapet walls, surfaces exposed to industrial environment & marine climate.