

#### **4.0 SPECIFICATION FOR KRUBBER® DampX, Damp Proof Course (composite DPC)**

##### **4.1 General**

This section covers the Composite Damp-proof course as a permanent physical barrier in substructure and superstructure applications under masonry walls at plinth and upper floors as well as under floors, to achieve a complete Damp proof envelope from capillary rise of a moisture. Composite DPC membrane barrier consist of elastomeric terpolymer core which is permanently integrated with fleece on both the sides. Fleece will serve dual purpose of providing bonding with mortar and protect membrane core permanently. Composite DPC membrane shall fully bond to mortars, concrete and perform monolithically and becomes structural integral.

##### **4.2 Description**

The purpose of the Composite DPC is to prevent moisture entering through capillaries into masonry walls from its base. Hence Composite DPC shall be applied underneath the masonry walls and turned up above the FFL. The Composite DPC shall be made up of a composite of elastomeric terpolymer damp proof membrane and geotextile fleece. Elastomeric terpolymer damp proof membrane shall always be fused with fleece on both the sides at factory level, thus permanently integrated and protected by fleece.

Installation of Composite DPC at junctions and corners shall be properly detailed and lined to avoid any dampness entry.

##### **4.3 Quality Assurance**

**4.3.1** Supply and install suitable products designed and manufactured specifically for application in composite DPC works having acceptable performances as mentioned in material specification.

**4.3.2** Execute all installation and testing under the direct supervision of an individual with recent continuous, acceptable experience in the installation of composite DPC works.

**4.3.3** Provide all personnel involved in composite DPC works installation with adequate training prior to beginning work.

**4.3.4** Installation records are to be submitted to the Engineer for approval with all relevant data for all checks etc. These records shall form a part of the submission to obtain approval to proceed with the installation subsequent layers of masonry walls.

#### 4.4 Materials

##### 4.4.1 KRUBBER® DampX Elastomeric Terpolymer Composite DPC membrane or equivalent

Elastomeric Terpolymer Composite DPC membrane shall be designed and installed to prevent entry of moisture into masonry walls. Composite DPC membrane shall be at least 1.02 mm thick and shall have a central elastomeric terpolymer core sandwiched and factory fused between two layers of fleece on either sides. Elastomeric terpolymer core is permanent moisture barrier, whereas fleece provides permanent protection to the inner elastomeric terpolymer core and can be fully bonded to the structure permanently. The composite DPC membrane shall comply and meet to following technical properties and characteristics:

**Table 4: Composite Elastomeric Terpolymer composite DPC membrane**

1. **Thickness (mm) ASTM D-412: (+15/- 10%) 1.02mm**
2. **Tensile Strength (MPA) ASTM D-412: 7 (Min)**
3. **Elongation @ Break (%) ASTM D-412: 300 (Min)**
4. **Angular Tear (kN/m) ASTM D-624: 26.27 (Min)**
5. **Temperature Resistance (°C): -40 to +130**
6. **Tensile Set (%) ASTM D-412: 10 (Max)**
7. **Brittleness Point Max (°C) ASTM D-2137: (-45)**
8. **Ozone Resistance ASTM D-1149: No Cracks**
9. **Heat Aging ASTM D-573:**
  - 9.1 **Change in Tensile (MPA) ASTM D-412: 6.3 (Min)**
  - 9.2 **Change in Elongation (%) ASTM D-412: 200 (Min)**
  - 9.3 **Change in Angular Tear (kN/m) ASTM D-624: 21.9 (Min)**
  - 9.4 **Change in Dimensions (%) ASTM D-1204: ±1**
10. **Water Absorption max, mass (%) ASTM D-471: +8, -2**
11. **Puncture Resistance (Kgs) ASTM D-5602: 20**

The above-mentioned material specification shall comply with the properties in ASTM D 4637 Standard spec for waterproofing membrane applications.

#### **4.4.2 Accessories**

Fixing and sealing adhesive material, overlap seams sealing, flashing, sealing flanges and preparation of corners and intersections etc. shall be made as recommended by the manufacturer of the composite DPC membrane.

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#### **4.5 Installation**

##### **4.5.1 Installation over plinth beam and underneath Masonry walls**

###### **4.5.1.1 Prerequisite**

The plinth beams shall be free from stagnant water, debris, oil spills, mud, muck, slush etc.

The beam and column concrete shall be cured enough before starting the damp proofing works.

The sharp matters from the workplace shall be removed and the workplace shall be barricaded.

Designated area shall be marked for damp proofing works and no other trades shall be permitted within that area.

Loading and unloading of material by other trades within the designated damp roofing workplace area shall not be permitted.

The site shall be lightened and dewatered enough to carry out the damp proofing works during execution.

###### **4.5.1.2 Substrate preparation**

All prerequisites shall be met prior to installation of the **KRUBBER® DampX elastomeric terpolymer composite DPC membrane** over plinth beam and underneath the wall or grade slab.

Any defects in the substrate need to be corrected and the final surface has to be prepared to meet the requirement.

###### **4.5.1.3 Placement and installation of KRUBBER® DampX elastomeric terpolymer composite DPC membrane**

Read instruction on the DampX composite DPC membrane to open the pack. The pack contains DampX roll, adhesive and application manual.

Check the alignment of plinth beam and upcoming wall under which the DampX is to be laid. The width of DampX roll is based on the width of wall and the FFL/skirting level on either side of the wall.

Lay DampX membrane over the plinth beam along the line of wall. It can be laid over a bed of mortar. All the overlaps of DampX membrane shall be at least 50 mm and sealed with Krubber adhesives. Masonry walls shall be constructed as per good construction practices with sound bonding mortars.

Continue masonry wall upward, Further, wall can be plastered as per construction sequence.

#### **4.5.1.4 Termination of KRUBBER® DampX elastomeric terpolymer composite DPC membrane**

DampX shall be terminated on vertical surface of masonry wall at least 30mm above FFL of tiling. It shall be bonded with Krubber adhesive and secured with K-Pins. Tile skirting can be directly adhered to the DampX as per usual construction practice.

On the vertical face of the external walls at Plinth level, the DampX membrane shall be extended 150mm above FFL on the external side. The termination shall be done by the metal bar anchored permanently to the wall with anchors and sealed.

#### **4.5.1.5 Junction of column/shear wall to floor slab**

All Junctions of column/shear wall/Mulians to floor shall be sealed with 300 mm strips of DampX bonded to junctions with an angle form along the periphery of column/shear wall. The horizontal leg of angle shall be minimum 50mm. On the vertical surface DampX shall be bonded to the floor slab with an adhesive. DampX shall be terminated till tile skirting level.

### **4.5.2 Installation underneath Masonry walls at various levels**

#### **4.5.2.1 Prerequisite**

The floor slab shall be free from stagnant water, debris, oil spills, mud, muck, slush etc.

The concrete shall be cured enough before starting the damp proofing works.

The sharp matters from the workplace shall be removed and the workplace shall be barricaded by the main civil contractor.

Designated area shall be marked for damp proofing works and no other trades shall be permitted within that area.

Loading and unloading of material by other trades within the designated damp proofing workplace area shall not be permitted.

The site shall be lightened and dewatered enough to carry out the damp proofing works during execution.

#### **4.5.2.2 Substrate preparation**

All pre-requisites shall be met prior to installation of the **KRUBBER® DampX elastomeric terpolymer composite DPC membrane** underneath the wall or grade slab.

Any defects in the substrate need to be corrected and the final surface has to be prepared to meet the requirement.

#### **4.5.2.3 Placement and installation of KRUBBER® DampX elastomeric terpolymer composite DPC membrane**

Read instruction on DampX composite DPC membrane to open the pack. The pack contains DampX roll, adhesive and application manual.

Check the alignment of upcoming wall under which the DampX is to be laid. The width of DampX roll is based on the width of wall. The DampX roll shall be extended on the either sides of wall width and thereafter shall be turned up and secured with special adhesive on wall till skirting level.

Lay DampX membrane underneath the wall along a line of wall. It can be laid over a bed of a mortar. All the overlaps of DampX membrane shall be atleast 50 mm and sealed with adhesives. Masonry walls shall be constructed as per good construction practices with sound bonding mortars.

Continue masonry wall upward, Further, wall can be plastered as per construction sequence.

#### **4.5.2.4 Termination of KRUBBER® DampX elastomeric terpolymer composite DPC membrane**

DampX shall be terminated on vertical surface of masonry wall atleast 30mm above FFL of tiling. It shall be bonded with Krubber adhesive and secured with K-Pins. Tile skirting can be directly adhered to the DampX as per usual construction practice.

On the vertical face of the external walls at various level, the DampX membrane shall be extended 150mm below FFL on the external side. . It shall be bonded with Krubber adhesive on the prepared RCC surface..

#### **4.5.2.5 Junction of column/shear wall/Mullions to floor**

All Junctions of column/shear wall/mullions to floor shall be sealed with 300 mm strips of DampX bonded to junctions with an 'L' angle form along the periphery of column/shear wall/mullions. The horizontal leg of angle shall be minimum 50mm. DampX shall be bonded with adhesive and terminated till tile skirting level.

#### **4.5.3 Protective measures**

Every care shall be taken to prevent any damage to the composite DPC membrane during or after installation. Any damages occurred shall be reported to the Engineer and repaired before the plastering and painting.

#### **4.5.4 Testing of Membrane**

Any overlaps in the installed composite DPC membrane shall be tested by **Seam Test with probe tester** and records of these tests shall be submitted by the Contractor to the Engineer. The purpose of the test is to detect any fish mouths at overlaps during and after installation of composite DPC membrane before laying any subsequent layers.

#### **4.6 Measurement and Payment**

The quantities of **KRUBBER® DampX elastomeric terpolymer Composite DPC membrane** to be paid for shall be measured by the unit of running feet or running meter Installed for the given width of DampX roll. The finished installed areas i.e. horizontal, vertical, etc. on to masonry walls and under floor etc. shall be measured after the fixing and finishing of the work and shall not be paid separately for overlaps, and any wastage etc.

Payment shall be for the installed area as shown on the design drawings in running feet or running metre for the given width of DampX Roll at the unit rates shown in the Bill of Quantities and shall not include overlaps and any wastage etc. The payment shall include all materials and work required to carry out the work in accordance to specifications and shown on the drawings or as instructed by the Engineer.

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