Technical Specification

13.17 Epoxy Polyurethane Flooring

Scope of work:
The scope work is laying of self leveling epoxy flooring generally consists of following steps

Surface Preparation

Epoxy Primer -
Epoxy Underlay
Epoxy Polyurethane Self leveling Coat

Application instructions:

a) **Surface Preparation:**
It is essential that surface should be sound, clean and dry surfaces in order that maximum bond strength is achieved between the substrate and the flooring system. All dust and debris should be removed prior to application of the product. All cracks, crevices and undulations shall be filled with epoxy based mortar.

b) **Primer application:**
Primer coat on the naked surface as a bonding coat and proper drying time should be given to carry out the Epoxy Flooring

c) **Epoxy Underlay –**
Generally material is supplied in pre-weighed packs (base and hardener & aggregate), which are ready for immediate on-site use. Part mixing of these components is not acceptable and will affect both performance and appearance of the finished floor. Mixing should be carried out using either a forced action mixer, or a heavy duty, slow-speed drill with proprietary mixing paddle attachment. The components should be mixed in a suitably sized mixing vessel.

- The base component should be added to the mixing vessel first and followed by the hardener and these two components mixed together for approximately 2 minutes until an even colour and texture is obtained.
- Thereafter, the contents of the graded aggregate pack should be slowly added and mixing carried out for a further 3 minutes until a completely homogenous material is obtained.

d) **Application of EPU**

Mixing
Epoxy polyurethane coating is supplied in pre-weighed packs ready to use on site. Solvent or thinners should not be added. A forced action mixer with a paddle fitted into a heavy duty, slow speed electric hand drill is recommended for mixing. Hardener component is mixed with Base resin in a suitable mixing vessel. The full colour paste is then added and mixed until an even colour is obtained. Finally the filler as supplied is added and mixed further for three minutes until homogenous lump free slurry is obtained.

Laying
The material is poured onto the primed substrate and spread to the required thickness with a steel trowel. Alternatively, a serrated trowel can be used. The resin floor should not be overworked but spread slowly and evenly. Immediately after spreading, the floor should be firmly rolled with a spiked roller to help release any entrapped air in the material and level any slight trowel marks. The floor should now self-smooth to an even coloured dense, impervious floor.
Rate
The rate shall include the cost of all labour and materials involved in all the above operations (including surface preparation) described above.

13.18 ANTI STATIC (CONDUCTIVE) FLOORING SYSTEM

Scope of work:

The scope work is laying of anti static (conductive) flooring system generally consists of following steps
Surface Preparation, Primer, Antistatic Under Coat, Antistatic Top Coat

NOTE: Moisture insensitive system is an optional only if the moisture content of the floor concrete is > 5

Sequence of Operation for Application of Epoxy Polyurethane Resin Flooring

Moisture Testing
Before the application of epoxy toppings, the concrete substrate shall be checked for moisture content with a Thermo-Hygrometer. For every 500 m², a minimum of 5 readings should be taken to assess the average moisture content in the substrate. Holes of 16-mm diameter should be drilled to a depth of 50 mm, with a drilling machine. Immediately a slotted sleeve with a cap is to be inserted. 24 hours later, the cap should be removed and the hygrometer's probe should be inserted in the hole and left in place for 1 hour. The meter is than attached to the probe to take the reading. Epoxy topping shall be taken up only if the RH is 75 or lower (5% Moisture content & below)

Surface Preparation
Surface shall be attended by Mechanical abrasion method by using Standard equipment. Dust and loose particles shall be cleaned using vacuum cleaners. Neither water wash nor acid etching should be used for cleaning.

Primer Application
The primer shall be solvent free, mixed mechanically using a slow speed heavy duty drilling machine (400 to 500 rpm) fitted with a suitable paddle to achieve homogeneous mix, and shall be applied on the prepared surface. The primer shall be applied in a thin continuous film using a stiff brush or roller over dry surface. Over-application and puddles should be avoided. Primer will act as a key factor for adhesion between the concrete and Epoxy / Polyurethane topping.

Putty Application
Putty shall be applied to fill the micro crevices. Putty shall be mixed and applied using metal float manually to the entire surface and after 24 hrs. Buffing machine shall be used to minimize undulation followed by vacuum cleaning.

Earthing
Charge dissipation is the measure of a floor’s ability to provide static electricity with a passage to ground potential. This can also be done by coupling the Conductive flooring with self adhesive copper tape @ 600mmx600mm grid, to the earthing point in the Epoxy POLYURETHANE system as shown below.

Application Of Undercoat
This provides a conductive passage to earth. Thus strict adherence to coverage rate is critical.

Application of Topcoat
The material shall be mixed to achieve a uniform homogenous mix is obtained and spread on the substrate using a notched trowel. The spread material should be rolled firmly using a spiked roller to remove entrapped air and then allowed to set for at least 18 hours.
Testing Of Conductivity

Metriso Megger is the instrument used for measuring surface resistance from point to point and point to earth

Physical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard</th>
<th>Requirement</th>
<th>Actual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive strength</td>
<td>BS63 19</td>
<td>50 N/mm²</td>
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<tr>
<td>Flexural strength</td>
<td>BS631 9</td>
<td>34 N/mm²</td>
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<tr>
<td>Tensile strength</td>
<td>BS631 9</td>
<td>16 N/mm²</td>
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<tr>
<td>Abrasion resistance</td>
<td>Fed. Spec. 141A</td>
<td>97 mg weight loss 0.03 mm depth of wear</td>
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<tr>
<td>Impact resistance</td>
<td>BS 8204 Part 1</td>
<td>0.2 mm indentation</td>
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Electrical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard</th>
<th>Requirement</th>
<th>Actual Value</th>
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<tbody>
<tr>
<td>Surface resistance</td>
<td>BS 2050</td>
<td>5x10⁴Ω to 1 x10⁶Ω</td>
<td>1 x10⁵Ω</td>
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<tr>
<td>Charge Decay</td>
<td>Fed test method 101 B, method 4046</td>
<td>5000V to zero in less than 0.1 seconds</td>
<td>0.01 seconds</td>
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</tbody>
</table>

Precautions to be taken for the protection and durability of floor. Caution Boards shall be displayed after completion of the work indicating the following:

1. Light foot traffic can fly only after 24 hours of finishing the floor.
2. However it can be subjected to regular traffic only after 7 days of finishing the treatment, by which time it will have fully cured.
3. Heavy objects or objects with protrusions shall not be dragged on the treated floor surface.
4. All trolleys moving on the floor shall have polyurethane wheels, which will not damage the floor system. Trolleys with MS or CI wheels shall not be used.
5. Hydraulic jacks having metallic pads shall be placed over rubber pads, during operation, to avoid any damage to the floor.
6. Any damage or indentation caused to the floor by objects falling on the floor shall be repaired suitably, as per guidelines from manufacturer.

Rate

The rate shall include the cost of all labour and materials involved in all the above operations (including surface preparation) described above.

List of Approved Vendor/Make

1. Epoxy Flooring – BASF, CIPY, FOSROC, SIKA, PIDILITE