



**PRODUCT STANDARD**  
EPOXY FLOORING SUITABLE FOR AIR CASTER  
MOVEMENT IN NEW TRANSFORMER BLOCK  
AT BHEL, BHOPAL

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BHEL, BHOPAL

**TECHNICAL SPECIFICATIONS**

**REV. 00**

**BRIEF TECHNICAL SPECIFICATIONS**

**Name of work: Epoxy/PU painting over newly constructed RCC flooring in New Transformer Block, suitable for the movement of Air caster.**

**(A). Technical requirements**

The technical requirements of work are described as follows:

The work of Epoxy/PU painting is required to be done over newly constructed RCC flooring in New Transformer Block, suitable for the movement of approx.500TAir caster. The approximate area is 6500 sqm. The Epoxy/PU painting must be suitable for work: The details technical specifications are as under.

1. Materials – Resins and Hardeners to be used should conform to the IS 9197-1979(Latest).
2. Testing for Epoxy Resins, Hardeners and Epoxy Resin compositions for floor topping should conform to IS 9162:1979(Latest).
3. Process involved in the Floor coating should conform to IS 4631:1986(Latest).
4. The coating shall have a compressive strength of 50 N/mm<sup>2</sup>, flexural strength of 30 N/mm<sup>2</sup> and abrasion resistance of below 60 mg loss, by Taber Abrasor method.
5. Impact load withstanding capacity needed is 500kg load on area of 1MX1M, to be dropped from height of 1M.
6. The floor surface should be airtight so as to enable forming of a load-bearing air film between the floor and the load carrier.
7. The floor surface should be smooth so to minimize the air consumption and the friction.



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8. The floor surface must be even (without inclinations) so that the load does not glide away because of low friction. (DIN 18202 for evenness requirement)

**Evenness Tolerance : 12mm in 10m length.**

**(B) Other Requirements**

The following activities are to be carried out and covered in the scope of work.

**1) Cleaning of surface:-**

Concrete floor, brush clean", check for coarse rough areas eventually to be repaired, check for humidity of concrete floor, if required the concrete floor may have to be dried by blow lamps etc or by alternate means.. The concrete must be clean, dry and sound before Epoxy coating is applied to it.

Surface preparation methods like sand blasting, shot blasting; scarification or surface grinding (to remove any undue protrusions) or by acid etching with Hydrochloric acid followed by thorough detergent and water wash shall be carried out so that a rough surface profile of 500-1000 microns is obtained. All dust and debris shall be removed by applying vacuum / solvent cleaning, as per site conditions.

- Clean means that there is no foreign matter such as dust, dirt, grease or oil on the concrete.
- Dry means no free water is present. Surface should have moisture content less than 3%.
- Sound means there is no laitance or weak surface skin on the top of the concrete.



Testing is done as directed by the BHEL and the test like Clean, dry and sound test should be conducted. Moisture test should be conducted by moisture meter or plastic sheet method.

## **2. Surface repair & levelling of the floor:-**

Check concrete surface for cracks,joints,potholes, etc. Open by means of an abrasive cutting machine, primer crack flanges and fill them with special resin. All construction joints should be taken care off, Cover cracks with glass fiber and synthetic resin.

### **i) Treatment of expansion joints:**

Expansion Joint, if needed, shall be cut by the applicator in the concrete @ 30m to the required depth & width. Then expansion joints edge shall be checked, if required to be repaired upto the correct width, clean all sorts of loose dust, oil grease etc, by means of vacuum cleaner, air blower and other mechanical tools. Then insert polystyrene based back up rod (high density) of approximate dimension i.e. around 30mm dia for 25mm wide joint in the prepared expansion joint, provide bond breaking tape on both sides of the joints and over the back up rod in the entire length of the joint. Apply compatible primer on both the sides of the expansion joint. Apply polyurethane based sealant with a shore hardness of approx 80 in the joint after proper mixing the same with the help of mechanical stirrer and apply by means of polysulphide gun. After finishing the tip surface, remove the tapes complete as per specifications and direction. **Expansion joint filling size: 25mm thick and 12.5mm depth.**



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ii) **Levelling of the floor:** The base concrete floor has to have a maximum allowable surface tolerance of  $\pm 2\text{mm}$ . If the actual average tolerance exceeds this value, (to be verified by applicator by taking dumpy-level measurements with their own equipment), then epoxy screeding to the required thickness to bring the level within tolerance limits, **is to be ensured** .

**APPLICATION PROCEDURE**

**(I) Primer:**

After the surface preparation to the required level, entire area should be provided with quick highly fluid, pigmented high solid epoxy/PU flooring primer with good substrate anchorage, fill all the pores and make the surface ready to receive the oncoming coat/ mortar.

**(II) Glass Fibre reinforced levelling layer:**

Applying a sandwich layer of glass fibre reinforced layer between two primer layers. Total thickness including the primer layer shall be 1000 microns. The glass fibre should also block impacts from falling tools through the coating material.

**(III) Coating or Laying of Epoxy/PU Mortar Screed:**

Providing and applying 5 mm thick high density/ highly abrasion resistant epoxy/PU resin floor based screed trowel led to a monolithic, joint- less flooring system' high resistance for impact load, extremely durable, very good resistance or abrasion, excellent bond to concrete & good resistance to chemicals including acids and alkalies. The screed shall be allowed to cure for 8 hours.

**IV) Self leveling Epoxy/PU top coat**

Providing and applying a 2000 microns thick approved coloured topping of self levelling epoxy/PU flooring. The self levelling top coat shall be suitably deaerated by using spike rollers to dislodge air bubbles to impart a defect free gloss top coating. The self levelling top coat shall have glossy finish and protect the concrete from oil / grease / water penetration and various chemicals. The colour will be approved by Engineer in charge (mod/civil). Also providing yellow banding for demarcating the area of size 100mm to 150mm width.



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- Cleanliness during floor coating has top priority.
- Contactor has to do the entire tests (with his own equipments & machines) in order to check the quality & thickness of each layer of floor coats.

Manager (MOD/Civil)

Signature of Contractor