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**TITLE: - PHENOLIC RESIN BASE HARD DRYING CLEAR VARNISH**

**TRE/382/03**

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**1. GENERAL:**

This specification covers the technical requirements of Phenolic resin base hard drying clear varnish having excellent resistance to moisture and humidity, can be applied by brushing or spraying.

**2. APPLICATION:**

Used for painting of pipes after pickling, painting inside surface of transformer tanks, radiator and on other metallic surfaces which are in contact with transformer oil.

**3. COMPLIANCE WITH NATIONAL STANDARDS:**

There is no Indian standard covering this material.

**4. SAMPLE FOR TEST:**

One litre of varnish shall be supplied for testing and approval purpose. Approval will include laboratory testing and shop trials.

**5. METHOD OF TEST:**

As stated against each clause.

**6. PROPERTIES:**

When tested in accordance with relevant parts and clauses of IS : 101, test sample shall show the following properties.

**6.1. General Condition:**

Uniform in appearance and free from defects like skinning when kept in closed container, livering (excessive viscosity built up) and hard settling.

**6.2. Colour:**

Clear Brown

**6.3. Clarity**

Clear & Transparent

**6.4. Finish**

Hard firmly adherent smooth film, free from sagging, wrinkling and orange peeling.

**6.5. Weight per 10 Litre at 27 ± 2°C**

9.0 ± 0.3 Kg

**6.6. Viscosity at 27 ± 2°C in FC4**

25 to 35 seconds.

**6.7. Gloss**

80 % Min.

**6.8. Solids content at 100°C**

45 to 50 %

**6.9. Flexibility & Adhesion**

8 mm, Min.

**6.10. Air Drying Time**

6.10.1 Surface Dry: 4 hours, max.

6.10.2 Hard Dry:

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Arun Khare (Sd)

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- 6.11 16 hours, max. at room temperature or 15 min at room temperature & thereafter 1 hr at 90 ± 10 °C in oven  
Thermal resistance.  
Suitable for 130°C continuous and 150°C intermittent operation.
- 6.12 Resistance to Transformer Oil at 130°C for 48 Hours  
No sign of flaking, blistering, softening, colour fading or other signs of deterioration of electrical properties of transformer oil.

**7 SHELF LIFE:**

When stored under cover in a dry place in the original sealed container under normal temperature condition the material shall retain the properties prescribed in this specification for a period of at least 12 months after the date of manufacturing which shall be subsequent to the date of placing order.

**8 TYPE APPROVAL:**

Sample for type approval testing shall be accepted only from those manufacturers whose manufacturing and testing facilities are considered satisfactory to ensure continuous supply of good product.

**9 TEST CERTIFICATE:**

Unless otherwise stated three copies of test certificate shall be supplied along with each consignment. In addition, the supplier shall ensure to enclose once copy of test certificate along with their despatch documents to facilitate quick clearance of the material. The test certificate shall bear the following information

- 1. TRE/382/03: Phenolic resin base hard drying clear varnish
- 2. BHEL Order No.
- 3. Batch No,
- 4. Date of Manufacture
- 5. Date of expiry
- 6. Test result of clause 6.

**10 PACKING AND MARKING:**

The material shall be packed in drums of 20 litre or any suitable sizes as per order and sealed. The drums are to be packed suitably to prevent damage during transit. Each drum shall bear the following information.

- 1. TRE/382/03: Phenolic resin base hard drying clear varnish
- 2. BHEL Order No.
- 3. Batch No.
- 4. Date of manufacturing.
- 5. Date of expiry
- 6. Supplier's / Manufacturer's Name & Grade if any
- 7. Quantity

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