



# CORPORATE PURCHASING SPECIFICATIONS

AA56132

Rev. No.05

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## OIL RESISTANT, AIR DRYING, SYNTHETIC ENAMEL

### 1.0 SCOPE:

This specification governs the quality requirements of Oil Resistant, Air Drying, Synthetic Enamel.

### 2.0 APPLICATION:

The material is intended for use on internal metallic surfaces of tanks/vessels, which comes in contact with transformer /mineral oil and meets oil resistant property. The material shall be suitable for use of any (compatible) primer.

### 3.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall conform to the following national standards, in general, and also meet therequirements of this specification:

IS 14947-2001: Enamel Synthetic, Oil Resistant, Air drying-Specification.

### 4.0 COLOUR:

As specified in BHEL order.

### 5.0 FINISH:

Smooth and semi-glossy to glossy

### 6.0 FREEDOM FROM DEFECTS:

The material supplied shall be free from defects like, hard settling of pigments excessive skinning & viscosity build-up on storage during its rated shelf life.

The dried coating of the paint shall be free from visible defects like, wrinkles, orange peel, colour fading, floating of pigments pin holes, surfaces haze, hard particles etc.

### 7.0 CHEMICAL COMPOSITION:

The binder of synthetic enamel shall essentially consist of oil-modified alkyd phenolic, free from natural resins or its derivatives or other suitable synthetic resin in the mixture of organic solvents. The type and content of the binder as determined by infrared spectroscopy or thin layer chromatography shall be strictly adhered to the type-approved sample in bulk supply. Supplier shall furnish a copy of spectrograph of each lot along with test certificate.

The enamel shall be suitably pigmented to meet the requirement of this specification and good quality extenders may be used, if necessary. The material shall be free fromhazardous constituents so as to meet the legislative requirements of ISO 14001.

The enamel shall be capable to produce a coating thickness of 30 microns per coat when applied by brush or air spray. The material shall be supplied in brushing consistency but shall also be suitable for application by air spray after thinning with suitable thinner.

Revisions:  
Clause 4 modified

**APPROVED:**  
INTER PLANT MATERIAL RATIONALISATION  
COMMITTEE – MRC(CPO+NM)

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## 8.0 TEST SAMPLES:

The material in the container shall be thoroughly mixed to homogenize the contents and 500ml of representative sample shall be drawn in clean and dried container and shall be kept in closed condition for testing purposes.

Unless specified otherwise, tests shall be conducted as prescribed in relevant part and section of IS: 101.

## 9.0 TECHNICAL REQUIREMENTS:

### 9.1. Drying Time (at ambient temperature)

- a) Surface dry : 3 hours, maximum
- b) Hard dry : 12 hours, maximum

### 9.2. Consistency

- a) Smooth and uniform and suitable for brushing and spraying as required
- b) Efflux time 80-120 sec.

### 9.3. MASS IN KGS PER TEN LITRES: 11 min.

### 9.4. Gloss at 60°: 60, minimum.

### 9.5. Impact Resistance (DEF 1053) : Shall pass the test.

### 9.6. BEND TEST: Shall pass the test with 6.25 mm, dia. round mandrel.

### 9.7. SCRATCH HARDNESS: Shall pass the test when panel is air dried for 7 days and tested at a load of 1500gms.

### 9.8. RESISTANCE TO TRANSFORMER OIL (90°C, 48 hrs):

When tested in transformer oil conforming to AA27101/IS: 335 at 90°C for 48 hrs, the film shall not soften nor there shall be major change in the colour. The increase in acidity and sludge content shall not be more than 0.1mg KOH/gm and 0.05 gm respectively. The electrical properties of the oil should not adversely be affected.

### 9.9. RESISTANCE TO HUMIDITY (7 DAYS CONTINUOUS EXPOSURE):

The panel shall not show any sign of deterioration and the metal surface show no sign of corrosion.

### 9.10. RESISTANCE TO WATER:

The coating shall not show any sign of deterioration when panel is tested as per procedure given in Appendix.

### 9.11. WATER CONTENT (For information only): 0.5% by mass, max.

### 9.12. Volume Solids: 35%, min.

## 10.0 TEST CERTIFICATES

Unless stated, three copies of test certificates shall be supplied furnishing following information:



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In addition, the supplier shall ensure to send one copy of test certificate along with the dispatch documents to facilitate quick clearance of the materials.

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BHEL order No. & Date:

Supplier's Name & address:

Identification/Trade mark, if any:

Batch/Lot No.:

Date of manufacture & expiry:

Quantity:

Test results of clause 7& 9:

Special Instructions, if any:

## 11.0 KEEPING PROPERTY

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

## 12.0 PACKING AND MARKING:

Unless otherwise stated, the material shall be supplied packed in air tight leak-proof metal containers conforming to IS: 1407 and IS: 2552. Each container shall bear the following information neatly written or pasted at suitable location.

## 13.0 ENVIRONMENTAL REQUIREMENTS:

The supplier shall furnish Material Safety Data Sheet (MSDS) covering all information relating to human safety and environmental impacts of the hazardous materials particularly during their transportation, storage, handling and disposal along with each supply.

Each container shall be marked with corresponding symbol and minimum worded cautionary notice for flammable / corrosive / toxic / harmful / irritant and oxidizing etc. as applicable

## 14.0 REFERRED STANDARDS (Latest Publications Including Amendments):

- 1) IS: 5
- 2) IS:101
- 3) IS: 335
- 4) IS:1407
- 5) IS:2552
- 6) IS:14947
- 7) DEF 1053
- 8) AA27101

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## APPENDIX

### TEST METHOD FOR RESISTANCE TO WATER

The enamel is coated on steel bars 12 mm diameters and length 90 mm with round ends. The surface of the bars should be cleaned from rust and the traces of previous coating if any, with the help of emery and trichloroethylene solvent. One coat of enamel is done on the bars and each layer is dried at ambient conditions for 8 hours so as to achieve a coating thickness of 30 microns, min.

The coated bars shall be dried at 110°C for 3 hours followed by cooling to room temperature before subjecting to test. At least two samples are kept in distilled water in a 250 ml. beaker kept at 60-70°C for 4 hours. This shall be followed by drying in air at room temperature for one hour. The tested bars are then examined for any deterioration or loss of adhesion of the coating. There shall not be any appreciable change in the colour of coating.