

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
RESEARCH DESIGNS AND STANDARDS ORGANISATION

No. RL/4.3.25/JEMU

Manak Nagar, Lucknow
Dated 13/21-2-1984

SPECIAL MAINTENANCE INSTRUCTION
No. ELRS/EMI/115

1. Title:

Use of Fire retardant paint for equipment compartment of EMU Coaches.

2. Application:

All Motor Coaches of EMUs.

3. Object of Special Instructions:

Code of prevention of fire of EMU coaches specifies use of fire retardant Paint for equipment compartment of EMU coaches (clause 1.13). In the absence of any suitable fire retardant paint EMUs were being turned out without being painted in equipment compartments. Necessity of painting equipment compartment was felt for protection against corrosion.

3.1 It was decided to compare the fire retardant and heat resisting properties of the following available special proprietary paints with ready mixed paint and aluminium paint for general purpose.

- i) Mica based fire retardant paint of M/s Eagle Paints.
- ii) Heat resistant Silicon Paint of M/s Asian Paints.
- iii) Fire resistant Paint, Light grey of M/s Jenson Nicholson.
- iv) Aluminium Paint for general purpose to IS: 2339.
- v) Ready mixed Paint ordinary.

3.2 For comparative evaluation, a test programme was drawn up and samples were tested in RD90. For preparation of specimens no primer was used. From test results, the following three paints have been found to be suitable for the time being.

- i) Heat resistant silicon paint by M/s Asian Paints.
- ii) Aluminium Paint general purpose to IS:2339-63.
- iii) Fire retardant Paint (Grey) of M/s Jenson and Nicholson.

Contd.....2/-

3.3 Further development work, evaluation of effect of primers etc. is proposed to be taken up in due course, by RDSO.

4. INSTRUCTIONS

As paints under (i) and (iii) above are proprietary Paints, and pending further development work by RDSO, it has been decided that Aluminium Paint to IS:2339-63 may be used for painting the equipment compartment of EMU coaches, provided that the paint used meets the requirements of the Tests stipulated in Special Test Programme at Annexure-I. Two coats are to be applied without primer.

5. Material Required:

Aluminium Paint for general purpose to IS:2339-63, which should meet the requirement of fire and heat resistance as per enclosed Test Programme.

6. Agency of Modifications

- i) Integral Coach Factory, Madras-38.
- ii) M/s Jessops, Calcutta.
- iii) All POH Workshops for EMUs.

7. Distribution:

As per mailing list attached.

Encl: Annexure-I.

Sd/-
(V.K. Dutt)
for Director General(EI)
13/2/84.

RESEARCH DESIGNS AND STANDARDS ORGANISATION

ANNEXURE-I

SPECIAL TEST PROGRAMME FOR ALUMINIUM PAINTS,
TO CHECK RESISTANCE TO FIRE AND HEAT

1. OBJECT

In order to assess the suitability of Aluminium Paint for use in equipment compartment of EMUs, the following tests will be done :-

- i) Test for Resistance to fire.
- ii) Test for Resistance to heat.

These tests are in addition to those prescribed in IS:2339.

2. MATERIAL REQUIRED:

Aluminium paint for general purpose to IS:2339 but with additional stipulation for resistance to heat and flame as per this Test Programme.

3. PREPARATION OF PANELS.

Apply two coats of paint on 150x100x1.6mm clean mild steel panel. Allow the paint to air dry in a horizontal position for 24 hours.

3.1 Six numbers of such panels shall be prepared - serially numbered 1 to 6 for identification.

4. TEST FOR RESISTANCE TO HEAT

4.1 This test shall be conducted on two panels - panels No.1 & 2.

4.2 Heat the panels in vertical position in an electric oven, the temperature of which is maintained as under :

300°C for 4 hours followed by 500°C for 1 hour.

Contd.....2/-

4.3 Remove the panel from the furnace, cool to room temperature and immerse the panels in water at room temperature for 24 hours.

4.4 Take out the panel and examine the surface of these panels with magnify glass after drying for 1 hour.

4.5 The material shall be deemed to have passed the test if the paint film remains adherent and shows no sign of cracking blistering or flaking. Formation of hair line is permissible and shall not be a cause of rejection.

5. TEST FOR RESISTANCE TO FIRE:

5.1 This test shall be conducted on the remaining four test panels as under :

5.2 Suspend the panel vertically in a chamber free from draught and place a Bunsen flame 40mm long, issuing from an orifice 8 mm in diameter at 45° to the panel. In case Bunsen flame is not available, a kerosene oil hand blow lamp may be used. The application of flame shall be as under :

On 2 panels say Nos. 3 & 4

Apply the flame for 30 secs. continuous and observe the surface. Apply 5 cycles - each cycle involving 30 secs. flame application followed by 30 secs. cooling with flame removed.

On 2 panels Nos. 5 & 6

Apply flame continuous for 3 minutes.

5.3 Examine the painted surfaces ~~xxx~~ for charring of paint.

The paint is deemed to have passed the test if no charring of paint surface is observed. However, slight discolouring/blackening is permissible and shall not be a cause for rejection.
