

INDIAN RAILWAYS



**PROCEDURE FOR PU PAINGING OF BOXNHL/BCNHL
WAGONS
DURING ROH AND POH**

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**PROCEDURE FOR PU PAINTING OF BOXNHL/BCNHL WAGONS DURING
ROH AND POH**

1. BACKGROUND:

- 1.1 This procedure covers PU painting procedure to be followed in BOXNHL & BCNHL wagons which are being attended to in workshops/ROH depots.
- 1.2 Feedback obtained from workshops where POH work of BOXNHL/BCNHL wagons are being attended to reveal that damages are occurring mainly on body panel, side & end top copings and other structural members. This necessitates extensive repair work/ replacement depending on the condition of the wagons. After such work has been carried out repainting becomes necessary.
- 1.3 Thus far RDSO has not issued any detailed guidelines regarding procedure to be followed for removal of old paints and application of new paint in areas that require attention.
- 1.4 Currently workshops are adopting painting of due POH wagons as per their own work methods. PU repainting, in under POH wagons, is therefore, being done on the existing paint surface, without the available paint being peeled off or any base surface preparation being done. Owing to the above, the efficacy of even the freshly applied PU paint, in POH wagons, is not found to be satisfactory.

2. PAINT SYSTEM:

Presently for painting of BOXNHL/BCNHL wagons only Poly Urethane (PU) paints are used. In BOXNHL/BCNHL wagons, the paint system to be followed is as per painting scheme prescribed in respective marking diagrams of BOXNHL/BCNHL wagons.

3. PAINT SCHEDULE:

PU painted BOXNHL/BCNHL wagons should be taken up for repainting as per the following schedules:

- 3.1 Touch up painting for minor damages (as per clause 3.1).
- 3.2 Wagons with faded/ peeled paint surfaces at several places / damaged/ heavily panel patched/ body repaired at several locations (as per clause 3.2).
- 3.3 Painting at Rehabilitation (as per clause 3.3).

3.1 TOUCH UP PAINTING FOR MINOR DAMAGES:

For wagons already painted with PU paints, if the condition of the wagon is such that it has scratches or minor damages at scattered locations, the touch up schedule given below should be followed:

- Clean/ Degrease the affected area of the wagon to remove oil, grease, dirt, dust etc, with Petroleum Hydrocarbon solvent to IS:1745-78 (or latest

revision), low aromatic grade 145/ 205 or any other suitable degreaser for IRSM:44 or IS:2062 E-450 (for BCNHL manufactured using IS:2062 E 450).

- Rub down the affected/ repaired portion with Silicon Carbide-150 Emery paper & clean the surface with compressed air/ water jet to remove dust particles / foreign materials and allow to air dry.
- Check the surface condition & measure DFT. Based on the DFT value, the following procedure to be followed:

3.1.1 If DFT is more than 150 micron:

- 3.1.1.1 If DFT is found between (185 to 220 micron), rub the affected area to get a DFT of approximate 185 micron and then apply one coats of PU paint of a minimum thickness of 35 micron to get a min. DFT of 220 micron.
- 3.1.1.2 If DFT is found between (150 to 185 micron), rub the affected area to get a DFT of approximate 150 micron and then apply two coats of PU paint of 35 micron thickness each to get a min. DFT of 220 micron.
- 3.1.1.3 The overall level of surface should not be less than or more than the previously painted neighboring area and the surface colour shall match with neighboring area.
- 3.1.1.4 The paint should be as per RDSO spec No. M&C/PCN/109/2009 or latest of PHIROZI BLUE shade (ISC.-176) for BOXNHL & BCNHL (manufactured with IRSM: 44) & of RED-OXIDE shade (ISC: 446) for BCNHL (manufactured using IS: 2062 E 450/ E/350).

3.1.2 If DFT is less than 150 micron:

- 3.1.2.1 If DFT is found between (80 to 150 micron), rub the affected area with emery paper no 280/320 to get a DFT of approximate 80 micron and then apply one coat of Epoxy Zinc Phosphate primer of a minimum DFT of 70 micron within two hrs. by brush/ spray & allow it to hard dry, to get a min. DFT of 150 micron.
- 3.1.2.2 If DFT is found between (10 to 80 micron), rub the affected area with emery paper no 280/320 to get a DFT of approximate 10 micron and then apply two coats of Epoxy Zinc Phosphate primer of a minimum DFT of 70 micron within two hrs. to get a min. DFT of 150 micron.
- 3.1.2.3 After getting a DFT of 150 micron, slight rub down the surface with emery paper no 280/320 & clean the surface with compressed air to remove dust particles/foreign particles then apply two coats of PU paint of 35 microns thickness each to get a min. DFT of 220 micron.
- 3.1.2.4 The overall level of surface should not be less than or more than the previously painted neighboring area and the surface colour shall match with neighboring area.
- 3.1.2.5 The Epoxy Zinc Phosphate primer should be as per RDSO spec No.

M&C/PCN/102/2009 or latest

- 3.1.2.6 The paint should be as per RDSO spec No. M&C/PCN/109/2009 or latest of PHIROZI BLUE shade (ISC.-176) for BOXNHL & BCNHL (manufacture with IRSM:44) & of RED-OXIDE shade (ISC:446) for BCNHL (manufacture with IS:2062 E 450/ E/350).

3.1.3 In case bare metal is visible or DFT is less than 10 micron, then following procedure to be followed:

- 3.1.3.1 Rub the affected area with emery paper no 280/320 to get the bare metal surface, apply one coat of Etch Primer to IS:5666-70 (with latest revision) to a minimum DFT of 10 micron within half an hour of surface preparation in case of IRSM:44 material only.
- 3.1.3.2 Within 02 hrs of surface preparation (coated with Etch Primer in case of IRSM:44 material/bare cleaned surface in case of other than IRSM:44 material) apply two coats of Epoxy Zinc Phosphate primer to RDSO spec No. M&C/PCN/102/2009 or latest by brush/ spray each coat having a DFT of min 70 micron and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 150 micron.
- 3.1.3.3 Slightly rub down with emery paper 280/320 & clean the surface with compressed air to remove dust particles/foreign materials. Apply two coats (each coat having a DFT of 35micron) of PU paint to RDSO spec No. M&C/PCN/109/2009 or latest of PHIROZI BLUE shade (ISC.-176) for BOXNHL & BCNHL (manufactured with IRSM:44) & of RED-OXIDE shade (ISC:446) for BCNHL (manufactured using IS:2062 E 450/ E/350) by brush/spray and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 220 micron.
- 3.1.3.4 It should be ensured that the overall surface level (after paint drying) should not be less or more than the neighboring (untouched-up) surfaces. Overall area of the surface and colour shall match with neighboring area.

3.2 WAGONS WITH FADED/ PEELED PAINT SURFACES AT SEVERAL PLACES / DAMAGED/ HEAVILY PANEL PATCHED/ BODY REPAIRED AT SEVERAL LOCATIONS:

For wagons already painted with PU paints, if the condition of the wagon is such that it is with faded/ peeled paint at several places/ damaged/ heavily panel patched/ body repaired at several locations the schedule given below should be followed:

- 3.2.1 In case of panel is patched or replaced with new panel, the painting procedure given at para 3.1.3 above shall be followed for patched panel /new panel.
- 3.2.2 In case, where paint is peeled off/Faded at several places consisting more than 50% surface area of side wall/ End wall, The complete side wall/ End wall

shall be repainted as per procedure given below:

- 3.2.3 Clean/ Degrease the complete area of affected Side wall/ End wall of the wagon to remove oil, grease, dirt, dust etc. with Petroleum Hydrocarbon solvent to IS:1745-78 (or latest revision) low aromatic grade 145/ 205 or any other suitable degreaser for IRSM:44 or IS:2062 E-450 (for BCNHL manufactured using IS:2062 E 450).
- 3.2.4 Rub down the older paint using Silicon Carbide-150 Emery Paper up to bare metal and clean the surface with compressed air/ water jet to remove dust particles/ foreign materials and allow to air dry.
- 3.2.5 Apply one coat of Etch Primer to IS:5666-70 (with latest revision) to a minimum DFT of 10 microns within half an hour of surface preparation in case of IRSM:44 material only.
- 3.2.6 Within 02 hrs of surface preparation (coated with Etch Primer in case of IRSM:44 material/bare cleaned surface in case of other than IRSM:44 material) apply two coats of Epoxy Zinc Phosphate primer to RDSO spec No. M&C/PCN/102/2009 or latest by brush/ spray each coat having a DFT of min 70 micron and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 150 micron.
- 3.2.7 Slightly rub down with emery paper 280/320 & clean the surface with compressed air to remove dust particles/foreign materials. Apply two coats (each coat having a DFT of min. 35 micron) of PU paint to RDSO spec no. M&C/PCN/109/2009 or latest of PHIROZI BLUE shade (ISC.-176) for BOXNHL & BCNHL (manufactured with IRSM:44) & of RED-OXIDE shade (ISC:446) for BCNHL (manufactured using IS:2062 E 450/ E/350) by brush/spray and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 220 microns.
- 3.2.8 Legends & other marking to be as shown in relevant Marking Drawing of BOXNHL/BCNHL wagons.

3.3 PAINTING AT REHABILITATION

For repainting of wagon during rehabilitation the following procedure is to be adopted:

- 3.3.1 Clean/ Degrease the affected area of the wagon to remove oil, grease, dirt, dust etc. with Petroleum Hydrocarbon solvent.IS:1745-78 (or latest revision) low aromatic grade 145/ 205 or any other suitable degreaser for IRSM: 44 or IS: 2062 E-450 (for BCNHL manufactured using 15:2062 E 450).
- 3.3.2 Shot blasting for BCNHL manufactured using 1S:2062 E 450 to be done to achieve surface finish of minimum Sa 2.5 as per ISO:8501-1 and dust particles on surface area to be cleaned by using compressed air or any other suitable means like brush etc.
- 3.3.3 Garnet blasting (wagon manufactured with IRS:M44) is to be done to achieve surface finish of minimum Sa 2.5 as per ISO:8501-1 and dust particles on surface area to be cleaned by using compressed air or any other suitable

means like brush etc. Apply one coat of etch primer to IS: 5666-70 or latest to a minimum DFT of 10 microns within half an hour of surface preparation.

- 3.3.4 Within 02 hrs of surface preparation (coated with Etch Primer in case of IRSM:44 material/bare cleaned surface in case of other than IRSM:44 material) apply two coats of Epoxy Zinc Phosphate primer to RDSO spec No. M&C/PCN/102/2009 or latest by brush/ spray each coat having a DFT of min 70 micron and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 150 microns.
- 3.3.5 Slightly rub down with emery paper 280/320 & clean the surface with compressed air to remove dust particles/foreign materials. Apply two coats (each coat having a DFT of min. 35micron) of PU paint to RDSO spec no. M&C/PCN/109/2009 or latest of PHIROZI BLUE shade (ISC.-176) for BOXNHL & BCNHL (manufactured with IRSM:44) & of RED-OXIDE shade (ISC:446) for BCNHL (manufactured using IS:2062 E 450/ E/350) by brush/spray and allow it to hard dry after each coat so as to ensure a minimum cumulative DFT of 220 microns.
- 3.3.6 Legends & other marking to be as shown in relevant Marking Drawings of BOXNHL/BCNHL wagons.

4.0 INFRASTRUCTURAL FACILITIES REQUIRED FOR PU PAINTING:

1. Emery paper-150/280/320/Grinding facility/wire brush.
2. Shot/ Grit/Sand/ Garnet blasting Booth for workshops where rehab is to be done only.
3. Fire fighting equipment's to be installed in the paint shed, near the paint booth.
4. Paint/grinding machines, material handling trolley and ladles.
5. ISO: 8501-1.
6. Personal Protective Equipment's (PPEs) such as nose masks, goggles, gloves, gum boots etc.
7. Quality measuring equipment's for painted wagon, such as:
 - (i) Surface roughness profile measuring equipment (as per ISO 8501-1).
 - (ii) Ford cup No. 4 (for measuring viscosity).
 - (iii) Alcometer (for DFT measurement)
 - (iv) Glossometer (for gloss measurement)
 - (v) Ladders.
 - (vii) Safety equipment's.