रेल पटरियों और वेल्डों की पेंटिंग
PAINTING OF RAILS AND WELDS

1. परिचय / Introduction

To effectively utilise the rails to the maximum possible extent, it is, necessary to paint the Rails and Welds. The Rails in areas prone to corrosion/ deterioration and welds need painting to increase their life for maintaining their health to desired standards.

Criteria for rail renewal are stipulated under Para 702(1) of IRPWM-2020. One of the criteria is “Wear on rails due to corrosion” and renewal may be required on account of corrosion of rails.

Corrosion is generally heavy in the following locations:-

- Platform lines where trains make prolonged halts.
- Sidings where saline or corrosive goods are dealt with.
- Near water hydrants due to insufficient drainage.
- Tunnels and deep cuttings.
- Areas near the sea coast.
- Industrial belts.



RAIL



WELD

Detailed guidelines for painting of rails and welds are,

2. रेल पटरी के लिए / For Rail

2.1 पेंट की विशिष्टि / Specification of Paint

Ready mixed paint, brushing bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-2017 (with latest amendments)

2.2 संक्षारण की रोकथाम / Prevention of corrosion

2.2.1 पहचान एवं माप/ Identification and measurement

- Areas prone to corrosion of rails shall be identified by the Principal Chief Engineer of the Railway on the basis of reports sent by Divisional Engineers.
- In corrosion prone areas identified in accordance with above Para, measurement of depth of corrosion both vertically and laterally (reduction in bottom flange width of rail), shall be done using straight edge and feeler gauge or any other suitable device at a fixed periodicity of once in a year on every 100 sleepers by removing Elastic Rail Clips and Liners and such measurements shall be recorded in TMS by JE/SSE/P.Way.
- For new line/gauge conversion projects, corrosion prone areas shall be identified by CAO(C) in consultation with Principal Chief Engineer.

2.2.2 संक्षारणरोधी पेंटिंग/ Anti-corrosive painting

In case of the new rails to be laid during track renewal/ doublings/ other construction projects in identified corrosion prone areas, anti-corrosive bituminous coating as per procedure mentioned in (2.3) below should be provided before laying in track. This should preferably be done in Flash Butt Welding Plants.



RAIL PAINTED IN TRACK

2.3 रेल पटरियों की पेंटिंग प्रक्रिया / Procedure For Painting of Rails

2.3.1 सतह की तैयारी / Surface Preparation

Surface preparation of rails shall be done, with the help of hand operated or power operated tools i.e. scrappers, wire brushes, sand paper, pumice stones etc. Wire brushing shall invariably be done at the end so as to obtain uniform rubbed surface.

The surface prepared shall be checked visually for uniformity of surface. Special care should be taken in surface preparation at weld collars and liner contact areas. Surface preparation should not be done when ambient temperature is below 10^0C or above 50^0C, in rainy season, during night, in winter before 8AM, in summer between 11AM to 3PM and in extremely windy/misty/dusty conditions. Chemical should not be used for surface preparation.

2.3.2 पेंट का उपयोग / Application of Paint

Painting should be done in two coats of thickness of 100 microns each by anti corrosive bituminous black paint conforming to IS: 9862 after an interval of 8 hours between two coats. All the Liners and Elastic Rail Clips shall also be painted with anti corrosive black bituminous paint after duly cleaning the surface.



RAILS PAINTED USING BITUMINOUS PAINT

2.4 रेल पटरी पेंटिंग की आवृत्ति / Frequency of Painting of Rail

Condition	Frequency
In identified corrosion prone areas, bituminous painting of rails shall be done on inside of gauge face including web and flange.	Once in a year
On non-gauge face side of rail including web and flange.	Once in three years
In other areas, wherever signs of corrosion are seen in isolated patches.	Prompt action for anti-corrosive painting shall be taken

3. वेल्ड के लिये / For Weld

3.1 पेंट की विशिष्टि / Specification of Paint

Ready mixed paint, brushing bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-2017 or bituminous emulsion to IRS: P-30-2020 High build epoxy paint conforming to RDSO specification no. M&C/PCN-111/2018 or latest.

3.2 ए. टी. वेल्डेड रेल जोड़ों के वेल्ड कॉलर की पेंटिंग प्रक्रिया / Procedure For Painting of Weld Collar For A. T. Welded Rail Joints

3.2.1 सामान्य संक्षारण के लिये संरक्षण/ To Protect Against Normal Corrosion

New Welded Joint	Old Painted Joint
Surface Preparation	
▪ Remove dust, loose rust and mill scale by wire brushing. ▪ Scrub welded area with water to make it free from slag and other water soluble compounds. Make it dry.	▪ Remove dust, dirt and flaked paint from the welded joint by wire brushing. ▪ Degrease the surface by petroleum hydro-carbon or any other suitable solvent, if oil or grease is present. Allow it to dry.
Painting Procedure	
▪ Apply one coat of ready mixed paint, brushing, bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-2017 on the welded area and 10 cm on either side. ▪ After eight hours drying, apply a second coat of the same paint.	▪ Apply one coat of ready mixed paint, brushing bituminous black, lead free, acid, alkali and chlorine resistant to IS: 9862-2017 or bituminous emulsion to IRS: P-30-2020 on welded area and 10 cm on either side. ▪ If required, a second coat of the same paint may be applied after a minimum of eight hours drying.
▪ Painting should be carried out by brush only.	



SURFACE PREPARATION



PAINTED WELD

3.2.2 गंभीर संक्षारण के लिये संरक्षण / To Protect Against Severe Corrosion

New Welded Joint	Old Painted Joint
Surface Preparation	
▪ Remove dust, loose rust and and mill scale by wire brushing. ▪ Scrub welded area with water to make it free from slag and other water soluble compounds. Make it dry.	▪ Remove dust, dirt and flaked paint from the welded joint by wire brushing. ▪ Degrease the surface by petroleum hydrocarbon or any other suitable solvent, if oil or grease is present. Allow it to dry.

Painting Procedure
Apply one coat of high build epoxy paint (two pack) conforming to RDSO specification no. M&C/PCN-111/2018 or latest on the welded area up to 10 cm on either side.

Note-

1. The epoxy based paint recommended is a two pack system with a pot life of around five hours. Hence prepare only that much quantity of paint which can be consumed in less than five hours.
2. The paint should be procured along with the thinner recommended by the manufacturer of the paint. No other thinner i.e. kerosene oil, etc should be used.
3. The painting shall be carried out by brush only. Brush shall be cleaned by the thinner after use.

3.3 ए. टी. वेल्डों की पेंटिंग की आवृत्ति/ Frequency of Painting of A.T. Welds

Condition	Frequency
Painting of weld collar on all welds to protect them against corrosion after the welding.	immediately after welding
In service painting (maintenance painting) of A.T. welds.	
In areas not prone to corrosion	Once in four years
At locations prone to corrosion	Every year

Corrosion is generally noticed on the web and foot of the rail. The frequency may be increased depending on the site conditions. On condition basis at locations which are prone to severe corrosion (areas of severe corrosion to be decided by territorial Chief Engineer/Chief Track Engineer).

4. पेंटिंग का रिकॉर्ड / Records of Painting

In addition to the regular inspection, it is essential that proper records of painting of rails and welds are maintained by the in-charge SSE/P.Way in TMS.

Painting done in the field in the track is only to be entered in tab rail painting under the drop down list of work on TMS.

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संदर्भ / REFERENCE

IRPWM-2020,
Manual For Fusion Welding of Rails by the Alumino-Thermic Process (Revised-2022).
Compilation By: Ajai Kumar Singh, SSE/P.way/CAMTECH.

हमारा उद्देश्य /OUR OBJECTIVE

To upgrade maintenance technologies and methodologies and achieve improvements in productivity and performance of all railway assets and manpower which inter alia would cover reliability, availability for use, utilisation and efficiency.

भारत सरकार - GOVERNMENT OF INDIA
रेल मंत्रालय - MINISTRY OF RAILWAYS

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कैमटेक/सि/ 2024 /पी आर डब्ल्यू/2.0
CAMTECH/C/2024/PRW/2.0
मार्च / MAR- 2024

An ISO 9001-2015 Certified Organisation
उच्च अनुरक्षण प्रौद्योगिकी केन्द्र
EXCELLENCE IN MAINTENANCE

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