

दक्षिणमध्यरेलवे / SOUTH CENTRAL RAILWAY



मुप्रधि/निर्माण/कार्यालय Construction/Office,
दरअनुभाग Rate Section,
रेलनिर्माणनिलयम Rail Nirman Nilayam,
सिकंदराबाद SECUNDERABAD-500 071.

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No.W.Con.496/PL/C/T&C/XIX/Vol.IX/ Painting of rails

Dt.29.03.2022

CVO/E/SC

Sub:- Painting of rails in construction projects - Reg.


Ref:- 1) CVO/Engg./SC's letter No.G.265/V/E/System Improvement, dt.02.02.2022 (F-1).

With regard to your letter cited in the reference above, a review on painting of rails in construction projects with respect to the provisions of IRPWM, ESO-59 and Policy guidelines of PCE office has been made.

In this respect, a letter of relevant instructions addressed to field Dy.CEs on the above subject is enclosed herewith.

Further, special conditions relating to painting of rails have been modified duly incorporating provisions for testing of paint and test checks by AXEN etc. as per PCE policy letter No.501/1/7/Vol.VII, Dt.8.4.2004. The same has also been enclosed herewith.

Encl: (a) Letter of instructions to field Dy.CEs on painting of rails
(b) Modified Special Conditions-Technical for Painting of Rails.


Dy.CE/C/Genl-I/SC

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No.W.Con.496/PL/C/T&C/XIX/Vol.IX/ Painting of rails

Dt.28.03.2022

**Dy.CE/C/I, III & IV/SC, NZB, KZJ, KZJ-II, NED, AK, BZA, GNT, TPTY, GTL,
Dy.CPM/WCSP/SC**

Sub:- Painting of rails in construction projects - Reg.

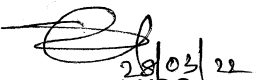
Ref:- 1) PCE policy letter No.W.501/1/7/Vol.VII, Dt.8.4.2004.
2) ESO-59

The subject of painting of rails in construction projects has been reviewed with respect to the provisions of IRPWM, Engineering Standing Order and Policy guidelines issued by Open Line.

- (1) As per para No.613(b)(i) of IRPWM, new rails being laid in doubling/tripling construction projects are to be painted with anti-corrosive painting (black bituminous paint conforming to IS 9862) only in identified corrosion prone areas. Corrosion prone sections have been mentioned in ESO-59. Henceforth, anti-corrosive painting for rails in doubling/tripling construction projects shall be done only in corrosion prone areas as identified in ESO-59. These instructions will not be applicable for rails already transported and painted.
- (2) For New Lines and Gauge Conversion projects and any other corrosion prone locations, painting of rails shall be taken up after obtaining the approval of competent authority in advance.
- (3) The special conditions-technical for painting of rails on cess adopted at present are modified duly elaborating various provisions of policy letter dt.08.04.2004 issued by PCE office and enclosed herewith for incorporation in future tender schedules. Some of the important clauses of the modified Special Conditions are as follows:
 - i. The representative samples from each Batch of paint shall be got tested by CMT/LGD or any other National Testing Laboratories at the cost of the Contractor. If the samples of paint tested doesn't confirm to ISI specifications, the whole lot of paint pertaining to that Batch shall be rejected.
 - ii. First coat of paint shall be done only after approval of surface preparation by SSE(P.Way)/AXEN. Each coat of paint shall be inspected and certified by SSE(P.Way)/AXEN before application of subsequent coat. The minimum thickness of each coat has to be recorded by SSE(P.Way) and test checked by AXEN.

This is issued with the approval of CAO/C/SC.

Encl: (a) ESO-59
(b) PCE policy letter No.W.501/1/7/Vol.VII, Dt.8.4.2004
(c) Modified Special Conditions-Technical for Anti-Corrosive Painting of Rails.


Dy.CE/C/Genl-I/SC

Copy to: (i) CE/C-I,II,III,IV,V,VI,P&S for information.

SPECIAL CONDITIONS-TECHNICAL FOR PAINTING OF RAILS ON CESS


(A) PAINTING OF NEW RAILS ON CESS

1.0 Surface preparation:

- (a) The surface preparation of rails is one of the most important pre-requisites for the painting to serve the purpose. Sufficient care should therefore be taken in preparing the surface. The surface shall be made free from oil, grease and dust. The surface shall be rubbed with wire brush and sand paper/emery paper. The tools used may be hand or power operated such as scrappers, wire brushes, emery/sand paper, pumice stones, brick bats etc. Wire brushing should invariably be done at the end so as to obtain a uniform rubbed surface. The surface prepared may be checked by visual observation for uniformity of surface
- (b) Surface preparation shall not be done unless the approved paints of sufficient quantities are available in stock at site. Special care should be taken in preparing the surface at the weld collars, liner contact areas and uniformity of preparation at these locations shall be attained to that of rest of the surface. Generally, weld collars and liner contact areas are considered most corrosive prone areas, from which fatigue failures develop.
- (c) Surface preparation/painting shall not be done in the following conditions.
- When the ambient temperature is below 10° centigrade or above 50° centigrade.
 - In rainy season.
 - During night.
 - In winter before 8.00 a.m.
 - In summer between 11.00 AM. and 3.00 PM on areas that are likely to be exposed to direct sun light.
 - Extremely wind/misty/dust blowing conditions.
- (d) Chemicals should not be used for surface preparation.

2. Painting Scheme:

- 1st Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.
- 2nd Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.


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- NOTE:
1. Surface preparation by way of cleaning, wiping, brushing may be required between successive coats to remove dust, mud, night-soil etc.
 2. The thickness of the film mentioned above is to be ensured at :
 - (i) Junction of web flange
 - (ii) Liner contact area
 - (iii) Flange curve near foot


3.0 Supply of paints:

Paints shall be supplied by the contractor against painting contracts. Paints manufactured by reputed firms and confirming to relevant IS standards alone shall be permitted to be used by contractors through composite contract involving supply and painting of rails.

- 4.1 Paints should be used within the prescribed shelf life from the date of manufacture. The quantity of paint procured should be such that it is fully used before the prescribed period for its use.
- 4.2 The Contractor/Supplier shall furnish to the Railway the date of manufacture of the paint as certified by the manufacturer. The labels on the containers should furnish information regarding the date of manufacture, batch no. etc.

5.0 Application of paint:

- (i) First coat of painting shall be done only after the surface preparation is approved by the SSE(P.Way)/AXEN. Paint shall be applied on dry surface free from any type of moisture and shall not be done under the conditions mentioned earlier in 1 (c) of Para (A).
- (ii) Paint shall be mixed well in the container before it is applied. Over mixing shall not be done. Visible air bubbles or foam formation shall totally be avoided.
- (iii) Brush shall not be less than 2" (5 cm.) in width and should have good flexible bristles. If a new brush is used, the same should be soaked in Raw Linseed Oil for at least 24 hours before using for the painting. The brushes shall be cleaned at the end of each day's work.
- (iv) Dust settled after scraping shall be cleaned before applying paint.
- (v) When the paint is applied by brush, the brush shall be held at 45° to the


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surface and paint applied with several light vertical/lateral strokes turning the brush frequently and transferring the paint and covering the whole surface. After this, the brush shall be used cross-wise for a complete coverage and finally finish with vertical/lateral strokes to achieve uniform and even surface.

- (vi) Rags, waste cotton, cloth or similar articles should not be used for applying paint.
- (vii) The coat of paint applied shall be such that the prescribed dry film thickness is achieved by actual trial for the particular brand of paint. The applied coat of paint shall be uniform, and free from brush marks, sags, blemishes, scattering, crawling, uneven thickness, holes, lap marks, lifting, peeling, staining, cracking, checking scaling, holidays and alleagatoring.
- (viii) Each coat of paint shall be left to dry till it sufficiently hardens before the subsequent coat is applied. Each coat of paint shall be inspected by SSE(P.Way)/AXEN and certified as satisfactory before applying the subsequent coat.
- (ix) The thickness of the dry film shall not be less than the specified thickness. If the thickness is found less than specified thickness, additional coat of paint has to be applied to bring it to the required thickness. The thickness shall be measured at various locations to ensure that the minimum prescribed thickness is attained all over the areas painted. Engineer-in-charge should satisfy himself that the thickness obtained is not less than that specified.
- (x) Painted surface shall be smooth and uniform in colour. The thickness of each coat of paint shall be measured by ELCO Meter.
- (xi) The time lag between successive operations indicated below shall under no circumstances be exceeded.
- (a) Between completion of surface preparation standard and the application of 1st finishing coat 4 hours
- (b) Bet. The 1st finishing coat and the 2nd finishing coat 7 days

6.0 Testing of the Paint :

The paints/painting shall be tested by the following instruments in the field by SSE(P.Way)/AXEN in addition to the tests conducted by CMT/LGD or any national Test house.

- (a) Weight per litre cup 100 ml. capacity stainless steel
(b) Ford Cup No.4


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- (c) Scratch Hardness Tester Hand Operated preferably with lighting arrangement.
- (d) Flexibility and adhesion Tester with ¼" (6.25 mm) dia rod.


Representative samples from each Batch of paint shall be got tested by either the Chemist & Metallurgist/Lallaguda (Secunderabad) or at any other National Testing Laboratories, whichever, is convenient at the cost of the Contractor. If the samples of paint tested do not conform to the ISI specifications, the whole lot of paint pertaining to that Batch shall be rejected.

(B) Painting of In-service Rails:

1. Surface preparation: The surface preparation may be carried out as described at Para(A)(1.0) as in case of new rails, except removal of loose paint/flaked paint also to be removed.
2. Painting Scheme :
 - (i) 1stCoat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.
 - (ii) 2ndCoat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.

(C) Maintenance of Field-cum-site Order Books:-

- (1)
 - (i) Field-cum-site order books shall invariably be maintained for the painting work. Two separate Field Books shall be maintained so that one Book can be with the Inspector concerned, while the other book accompanies the Bill and M.Book for checking and passing of the Bill. All the field books shall accompany the Final bill and they shall be finally filed in Dy.CE's Office.
 - (ii) Inspector-in-charge shall record certificates in both Field Books and M.Books on completion of each stage of work i.e. surface preparation, primer coats, 1st finishing coat and 2nd finishing coat in token of the completion of each stage of work confirming that each operation is done satisfactorily and completely. The minimum thickness of paint for each coat has to be recorded by SSE(P.Way) and AXEN shall test check the same.
 - (iii) The certificate to be forwarded by SSE(P.Way)/AXEN shall read as under:



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1st finishing coat of Km _____ to km _____
2nd finishing coat of Km _____ to km _____

is satisfactorily completed in full (except for-----)
The total quantity of paint consumed is _____ ltrs. And
the minimum thickness of the paint is _____ Micron”


A similar certificate shall be furnished for the surface preparation either.

(iv) Field-cum-site order Book shall contain the following information

- (a) Section, km. TP, LH/RH, Rail, Gauge/non-gauge face side.
- (b) Contractor's Name and Address: Details of Agreement.
- (c) Name of manufacturer of the Paint, Specifications, Batch No. Manufacturing Date, expiry date, Reference to Certificate by the Chemist and Metallurgist, Lallaguda or certificate issued by National Test House.
- (d) Date of commencement and completion of each of the following operations :
 - Surface preparation
 - Painting 1st Finishing coat
 - Painting 2nd finishing coat

- (v) (a) The paints supplied shall be taken into account by the SSE/P.Way and issue back to the agency for painting as per requirement.
- (b) The Agency on completion of the work shall return back the empty drums to the SSE/P.Way, who shall ensure that the empty drums are kept safe for a minimum period of 3 months after completion of work and thereafter return the same to Stores/Shop them duly obtaining concurrence from AXEN.

(2) Results of tests conducted by SSE/P.Way on Paint shall also be recorded in the Field/Site Order Books. A minimum of two tests per batch of paint shall be conducted at random.


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