

M/s. COATING & FOAMING INC.- DIU

CF: CPCC

Cement Polymer Composite Coating System for Reinforcement

C.E.C.R.I Karaikudi Method

CPCC System consists of a Primer Coat and a Sealer Coat

Advantages:

Simple to apply and the coated bars can be cut & bent. Cost effective.

Surface Preparation:

The Steel bars shall be cleaned by sandblasting to the near white metal.

Application of Coating:

The primer coat shall be applied to the cleaned surface as soon as possible after cleaning (as above) and before 4 hours, either by brushing or dipping. Apply Sealer Coat after 30 minutes of application of Primer Coat. Air Cure for minimum 6 hours before the coated bars are put to use.

Stacking:

Keep the Coated bars in the yard on buffer material placed at suitable intervals. Do not keep the coated bars one over the other or directly on the ground.

Safety:

Closed sandblasting unit shall be used.
Face masks, hand gloves & gum shoes shall be used.

Handling & Transportation:

Coated bars shall be securely bound with adequate buffer material & bent bars shall be supplied with canvas cover. While unloading proper support shall be provided with nylon strings in between.

Patch Repairing:

Damaged areas shall be cleaned thoroughly, mechanically and apply Primer Coat (as applied at beginning).

Cutting / Bending / Welding:

Bend coated bars gradually. Cut ends shall be coated with Primer & Sealer Coat. Binding wires shall also be coated with the same formulation.

Solvent:

CF: Sol-CP is to be used as solvent for primer and seal coat.

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TECHNICAL INFORMATION ABOUT PRODUCT:

The Coating system consists of a primer and a sealing coat.

- a) An improved formulation for a RAPID SETTING PRIMER useful for corrosion protection of reinforcing and prestressing steel.

Indian Pat. No. 481/Del/93, dt. 13.05.93.

- b) An improved coating composition for corrosion protection of reinforcing and prestressing of steels.

Indian Pat. No. 259/Del/92, dated 25.03.92.

- c) The Primer and Sealing products have Thermoplastic Acrylic Resin as basic raw material.

- d) The Primer has rapid Setting property. The specification of primer are as under:

- i) % of Solids : 30%
- ii) Coverage : 160 cc/m²
- iii) Colour : Dark Brown

- e) The Sealing Product is formulated with Resin mixed with Cement as a pigment. The specification of the product are as under:

- i) % of Solids : 30%
- ii) Coverage : 300 cc/M²
- iii) Colour : Olive Green

The OPC Cement of IS 269-1990 grade is to be used.

It is a Passivating -cum- barrier type of coating and the product is formulated in such a way that due to elasticity and flexibility of the coating, the treated bars can be cut and bend afterwards.

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SPECIFICATION FOR THE COATED REBARS

Name of the process : Cement –polymer composite coating system for the corrosion protection of Reinforcing and prestressing steel.

Specifications

- (i) Bond strength
(The bond strength of the coated rebar in 7 days cured M20 concrete) : 1.2 N/mm²
- (ii) Flexibility of the coating
(The flexibility of the coated rebar under mandrel test) : Not-affected
- (iii) Thickness of the coating : 150 ± 25 microns
- (iv) Hardness of the coating
(Pencil Hardness) : Passed 7 H
- (v) Salt spray test : Passed 1000 hrs.
- (vi) Impressed voltage test : Passed 1 hour critical test.
- (vii) Resistance to sulphate : 10,000 ppm.
- (viii) Resistance to chloride
(by Anodic polarization test) : 10,000 ppm
- (ix) Shelf-life of the coated bars : 6 months
- (x) Resistance to UV Rays
(As per field exposure test on coated prestressing strand): Not-affected
- (xi) Abrasion resistance
(As per ASTM D 4060/84)
Using CS10 wheel 1 kg load
For 1000 cycles : Weight loss 70 mg
(Allowable weight-loss 100 mg)
- (xii) Stress corrosion cracking test
(As per FIP-200 hrs test in 20% NH₄CN Solution) : Passes

For details call us or write us.

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TECHNICAL INFORMATION ABOUT CPCC SYSTEM

The coating system consists of a primer and a sealing coat with the following patents.

- i. An improved formulation for a rapid setting primer useful for corrosion protection of reinforcing and prestressing steels.
Indian Pat. No. 481/Del/93, dt.13.05.93
- ii. An improved coating composition for corrosion protection of reinforcing and prestressing steels.
Indian Pat. No. 259/Del/92, dt.25.03.92

CPCC treatment is the best option for the corrosion protection of steel in concrete. Adequate quality control measures as per the CECRI code of practice may be followed. However following suggestions are to be considered.

1. Coating material:

Use of excess solvent will spoil the coating material. The minimum solid content is to be maintained as per the following.

Primer

1. Percentage of solid content 45% ± 5%
(lower limit can be preferred only during dip application)
2. Theoretical coverage per liter 12-15 m²
3. Colour Straw berry
4. Drying time 30 minutes
(During winter and rainy season longer drying time shall be allowed)

Sealing Coat

1. Percentage of polymer content 40% ± 5%
2. Theoretical coverage per liter 5-8 m²
3. Colour Olive green
4. Drying time 30 minutes
4. Curing time 12 hrs
(During winter and rainy season longer drying time shall be allowed)

Note :

1. During application of coating system moisture content shall be avoided.
2. After 24 hrs of application of sealing coat the coated rod can be stored under open atmosphere.
3. Care shall be taken to avoid damage of the coating during stacking.

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4. The prescribed solvent system from the licensee is to be used to adjust the solid content in the paint pool for loss of solvent due to evaporation.
 5. The solid content can be slightly varied by 5 % from the prescribed for dip coating.
 6. Excess pigment will also cause cracking of the coating while bending.
- 2. Surface preparation:**
Surface preparation required only removing the rust product on the steel reinforcement. Excess blasting on the surface of the steel shall be avoided. Moisture content on the blasted surface will affect the adhesion of the coating. Area used for sand blasting operation shall be properly covered to avoid moisture entry. After sand blasting the surface of the steel shall be cleaned with dry air.
- 3. Primer application**
Primer coat shall be applied on the prepared surface of the steel rebar within four hours of the sand blasting. The coated surface shall be stored on the wooden blanks under the shelter. Care shall be taken to avoid moisture contact on the coated surface.
- 4. Sealing coat application**
Cement polymer sealing coat shall be applied over the primer coated surface* minimum 30 minutes after the application of primer during summer season. During monsoon and winter season the inter coat duration shall be extended for obtaining touch dry of the primer coat. Coated reinforcements are to be properly stored under shelter atleast for a period of 6 hours. The cured coated specimens can be stored at the open atmosphere.
- 5. Storage and handling**
Cured CPCC coated specimen shall be stored and handled as per clause 6 in the Code of practice for corrosion protection of reinforcing steel using CPCC system, prepared by CECRI. However proper storage of coated rods in the open atmosphere without shelter will not make any adverse effect.
- 6. Patch repairing**
No rods left uncoated before concreting. Damaged portions due to handling shall be made patch repair in accordance with clause 7 in the Code of practice for corrosion protection of reinforcing steel using CPCC system.

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