

Anti Corrosive Treatment for Reinforcement Bar with Inhibitor Solution (Indian Patent No. 109784/67)

C.E.C.R.I. Karaikudi Method



CSIR/CECRI
Know-How

Approved by PWD, CPWD, DDA, DTTDC, INDIAN RAILWAYS, M.O.S.T. (Appendix - 1000-1) & Standardized by IS 9077

Corrosion in reinforced concrete structures is the major cause of premature failure of infrastructures like flyovers, concrete bridges, buildings etc. The most prevalent deterioration mechanism of reinforcement corrosion involves contact of steel with depassivating anions such as chloride & sulphate or the reduction of pH in concrete as a result of carbonation of the cement binder. The crucial characteristic of corrosion mechanism is that hydrated iron oxide compounds formed due to corrosion occupy greater volume than original reactants (metallic iron). As the volume of accumulated corrosion product increases, pressure is generated within the concrete, which may ultimately exceed the tensile capacity of concrete and result in cracking, delamination and spalling.

CLEANFLO INDIA (P) LTD, formerly known as Deioners Speciality Chemicals (P) Ltd. Is the licensee of Central Electrochemical Research Institute (CECRI), Karaikudi, Tamilnadu, a National Laboratory affiliated to CSIR, for their process of Inhibitor solution Indian Patent No.109784/67, that provides protection to reinforcement bars against corrosion

Corrosion inhibitor solution for reinforcement bar is a mixed type of inhibitor which retards anodic as well as cathodic reactions and forms impervious layer on metal surface.

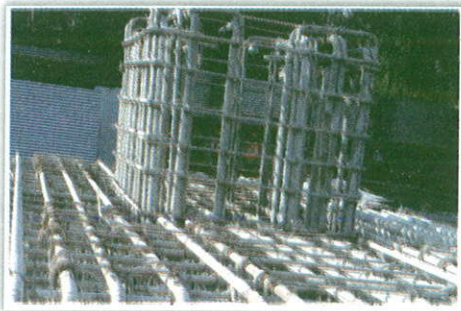
3. Creates adherent, thin protective film on metal surface.
4. It scavenges the oxygen dissolved in pore solution, thus directly reducing the corrosion rate.
5. The barrier film blocks contact of depassivating anions i.e. chloride & sulphate with metal surface.

All the above function result in increasing chloride threshold value, reducing corrosion rate, thereby minimizing the corrosion and ensuring increased life of reinforcement structures.

Achievements: Inhibited Cement Slurry Coating as per CECRI - Karaikudi method, having IS Code No. IS-9077 has achieved recognition from major Govt. Infrastructure development authorities of India including Indian Railways, Metro rail, P.W.D., NHAI etc.

SITE ARRANGEMENT REQUIRED

- i. A drying platform is required for drying of treated bars
- ii. Storage room for the chemical
- iii. Miscellaneous items like bucket, brushes, cotton waste, gloves, weighing balance etc. are required at site.
- iv. M.S. tank of suitable size for coating (for dipping method).



COATED BAR IN USE



COATED BAR IN USE



BARS AFTER TREATMENT

PRODUCT SPECIFICATION:

- Appearance : Clear colourless liquid
- pH : 12.75 ± 0.25
- Specific gravity : 1.04 ± 0.02

ADVANTAGES:

Application of corrosion admixture to reinforced structure surface results in following advantages

1. The inhibitor maintains high alkaline atmosphere around the metal surface, in concrete, therefore controls corrosion due to carbondioxide.
2. It increases resistance of natural passivating film on the metal surface to breakdown by chloride

APPLICATION

- Remove loose rust / iron oxide remenants, if any, on the bar using iron brush.
- Make slurry of cement by adding inhibitor solution to ordinary Portland cement in the ratio of 0.5 to 0.6:1.
- Apply uniform coat of slurry on surface of reinforcement iron & steel by brushing or dipping.
- Keep the coated bars for drying on the drying platform. Apply second coat of Inhibited Cement Slurry as above after 12 to 24 hours interval and again dry the bars.

The TMT, CTD bars can now safely be used in reinforcement work.

Caution : If reinforcement bar is to be bent or be given some specific shape, this must be done before applying the inhibited slurry. If it is done after inhibitor application it would result in breakage of film then again touching will be required. The treated bars must be handled and stacked carefully.

FACILITIES

It is needless to mention here that all Cleanflo products are being manufactured at our most modern manufacturing unit strictly as per relevant standards. The products, right from raw materials to finished products, are subjected to strict quality control checking. The raw materials are being procured from genuine manufacturers. The finished products undergo batch-wise testing at our site lab.

HANDLING AND PRECAUTIONS

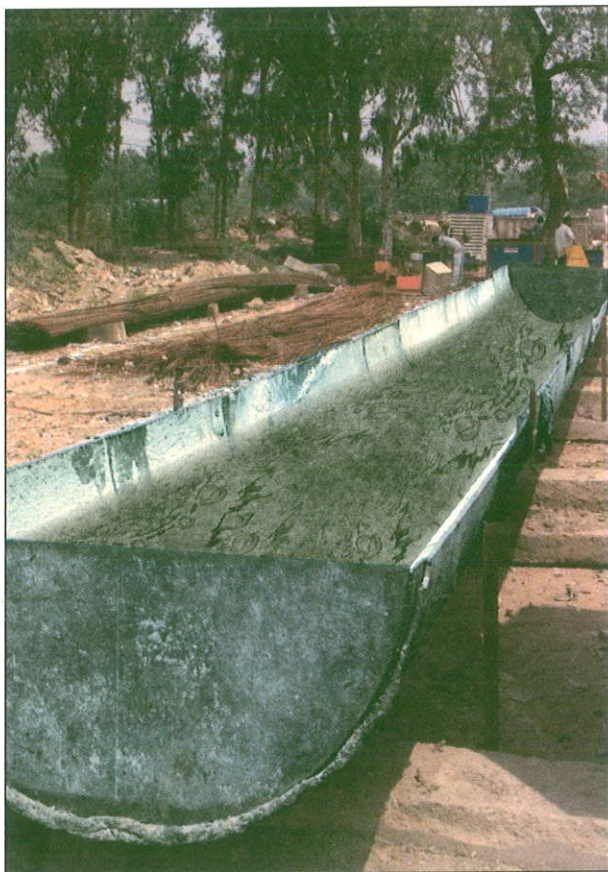
- Keep the container closed when not in use.
- Keep away from direct heat and sunlight in a shaded area.

BULK SUPPLY

Bulk deliveries can be offered against ready stock from our centrally located delivery points at Northern part of India, through own delivery vans & Tankers

PACKING & MARKING

Normally, in 220 kg HDPE drums duly sealed. Each and every drum indicates batch number, date, month & year of manufacturing, net weight, tare weight, patent no. etc.



M.S. TANK REQUIRED FOR COATING



REINFORCEMENT BAR AFTER COATING LYING AT YARD



FOR FURTHER DETAILS, CONTACT :

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