

Vector®

Norcure® Re-alkalization

Electrochemical re-alkalization process for carbonated concrete structures

Description

Norcure re-alkalization is a treatment which a) restores the alkalinity of carbonated concrete and b) reinstates the passivity of steel reinforcement. Re-alkalization is carried out by temporarily applying an electric field between the reinforcement in the concrete and an externally mounted anode mesh. During the process an alkaline electrolyte, such as sodium or potassium carbonate solution, is transported into the concrete, increasing the alkalinity of the cover zone. At the same time, electrolysis at the reinforcement surface produces a high pH environment. This process returns the steel reinforcement to a passive condition.

Advantages

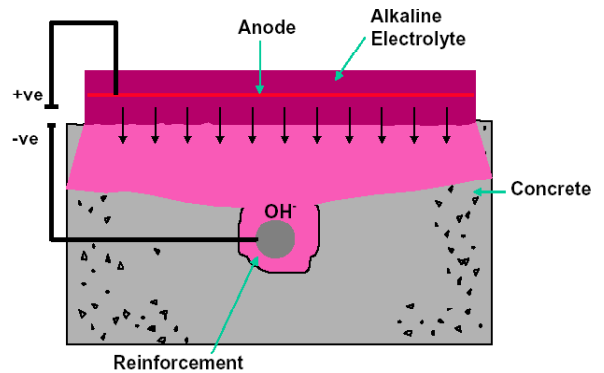
Norcure re-alkalization offers major advantages over other methods of concrete repair.

- The cause of corrosion is addressed and removed.
- The success of the treatment is documented on-site.
- The rebars are passivated throughout the treated area, not just in isolated areas.
- The non-destructive nature of the treatment results in vastly reduced concrete break-out, which means:
 - Major time-savings
 - Less noise, dust and environmental pollution
 - No need for expensive structural support
 - Reduced risk of inducing micro-cracks
- The Norcure re-alkalization process is silent.
- The need for permanent electronic monitoring is eliminated.
- Architectural and exposed aggregate finishes can be maintained.
- Fixed prices can frequently be offered.

General Technical Specification

The Norcure re-alkalization treatment is carried out in full accordance with the Operators' Manual. To obtain a comprehensive guideline specification for the Norcure Chloride Extraction process, contact Vector Corrosion Technologies.

Anode	Metallic mesh temporarily mounted on concrete surface
Cathode	Existing steel reinforcement
Electrolyte	Sodium or potassium carbonate solution
Current density	1 A/m ² of concrete surface
Treatment time	Three to seven days
Applied voltage	Between 10 and 40 V DC



Norcure Re-alkalization process mitigates corrosion in carbonated concrete structures

Preparation Prior to Treatment

- Any existing surface finishes shall be removed.
- Any cracks, spalls and delaminations shall be located and repaired using an approved cementitious mortar.
- All metallic features on or near the concrete surface shall be located and insulated, or removed.
- The thickness of the concrete cover shall be determined and built up to 10 mm if necessary.
- Reinforcement continuity shall be examined and, if necessary, improved to give full continuity.

Treatment

- Treatment sections shall be identified to ensure even current distribution within each section.
- Electrical connections to the reinforcement shall be established.
- Test locations for concrete sampling shall be determined and marked.
- The chosen anode system, consisting of an anode mesh and an alkaline reservoir, shall be installed.
- Electrical connections to the anode mesh shall be established.
- The leads from the reinforcement shall be connected to the negative pole of the rectifier unit(s).
- The leads from the anode mesh shall be connected to the positive pole of the rectifier unit(s).
- The voltage shall be adjusted to give approximately 1 A/m² of concrete surface.
- Current, voltage and efficiency of the anode system shall be controlled and, if necessary, adjusted throughout the treatment.

Post-treatment

- When sufficient re-alkalization is achieved, the anode system shall be removed and the concrete surface cleaned and allowed to dry.
- If required, the concrete surface shall be treated with an

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Vector products are provided with a standard limited warranty against defects for a period of 12 months from the date of the sale. To obtain a complete copy of Vector's limited warranty, contact Vector or visit www.vector-corrosion.com/warranty.pdf. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. For professional use only; not for sale to or use by the general public.

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