

# Norcure<sup>®</sup> Realkalisation

**The Norcure realkalisation system is an electrochemical treatment for reinstating passive layer around steel reinforcing**

## Description of alkaalisation

Norcure realkalisation is a non-destructive treatment which:

- Restores the alkalinity of carbonated concrete; and
- Reinstates the passivity of steel reinforcement
- Increases structural service life

Realkalisation is carried out by applying a safe electric current between the reinforcement in the concrete and a temporary, externally mounted anode mesh. During treatment, an alkaline electrolyte solution is transported into the concrete by a process of electro-osmosis, increasing the alkalinity of the cover zone. At the same time, electrolysis at the reinforcement surface produces a high pH environment, which re-passivates the steel reinforcement.

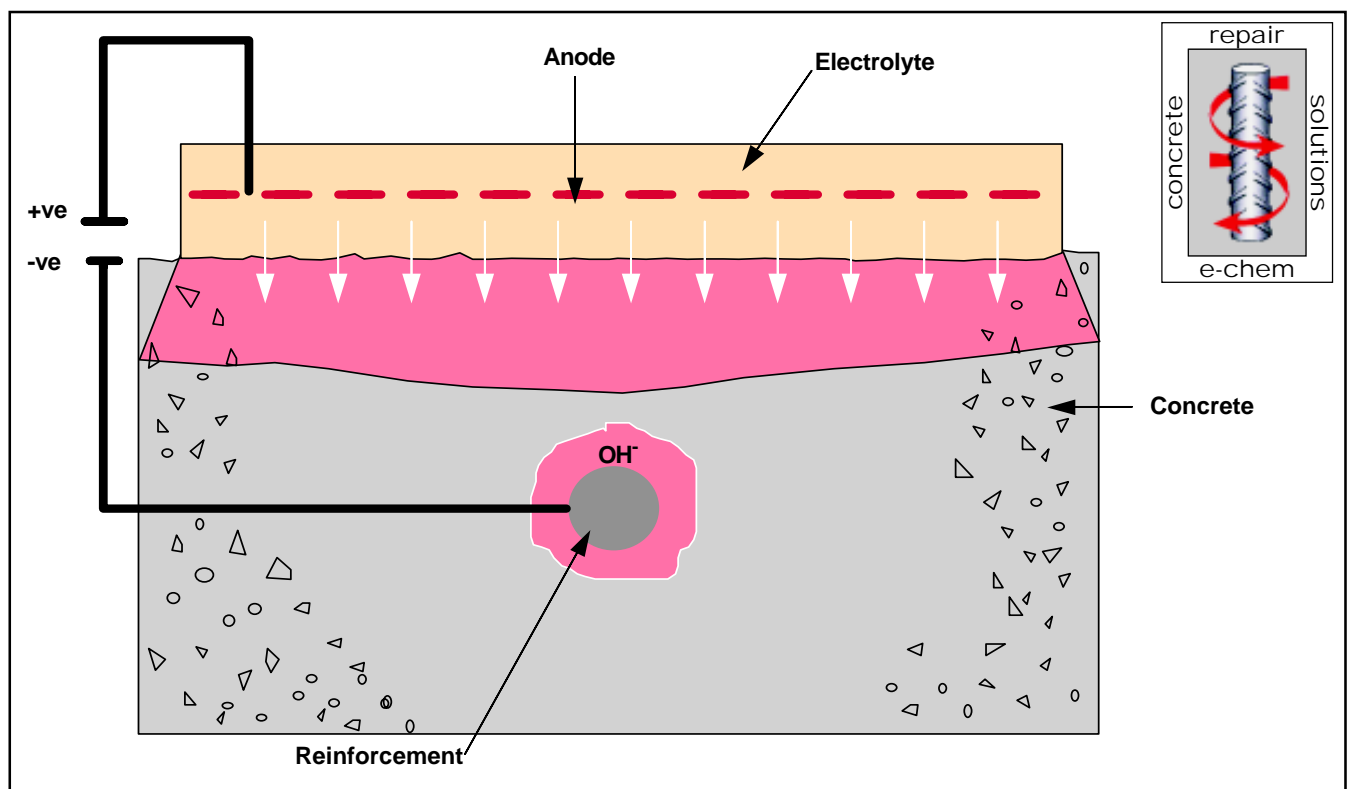
## Advantages

Norcure realkalisation offers major advantages over other methods of concrete repair.

- The cause of reinforcement corrosion is addressed and removed

- The success of the treatment is easily provable by simple tests
- All rebar within the realkalised treatment zone is re-passivated
- The non-destructive nature of the treatment which means:
  - major time-savings
  - no noise, dust or environmental pollution
  - no need for expensive structural support
  - no risk of inducing micro-cracks
  - minimal disturbance to structure users or residents
- The realkalisation process is silent
- The need for permanent electronic monitoring is eliminated
- Architectural and exposed aggregate finishes can be maintained

## Mechanisms of realkalisation



# Norcure® Realkalisation

## General technical specification

<b>Anode</b>	: Conductive mesh temporarily mounted on concrete surface
<b>Cathode</b>	: Existing steel reinforcement
<b>Electrolyte</b>	: Norcure ERA electrolyte, an aqueous pH controlled solution
<b>Current density</b>	: Typically 1 A/m <sup>2</sup> of concrete surface
<b>Treatment time</b>	: Typically 7 - 10 days although dependant upon steel and concrete density
<b>Applied voltage</b>	: Between 10 and 40 V DC
<b>pH restoration</b>	: > 10

## Preparation prior to treatment

- Any existing surface finishes shall be removed
- Any special characteristics of the concrete/structure shall be determined
- Any cracks, spalls and delaminations shall be located and repaired using an approved product from the Renderoc Xtra range
- All metallic features on the concrete surface shall be located and insulated, or removed
- The thickness of the concrete cover shall be determined and built up to a minimum of 25 mm if necessary
- Reinforcement continuity shall be examined and, if necessary, improved to give full continuity

## Treatment

### Installation

- 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 mesh shall be connected to the positive pole of the rectifier unit(s)
- A voltage shall be adjusted to give approximately 1 Amp per square metre of concrete surface
- Current, voltage and efficiency of the anode system shall be controlled and, if necessary, adjusted throughout the treatment

### Testing

- Concrete samples shall be taken at intervals to determine the degree of realkalisation
- Phenolphthalein indicator shall be used to measure the depth of realkalisation.

### Post-treatment

- When sufficient realkalisation is achieved, the anode system shall be removed and the concrete surface cleaned and allowed to dry
- If so required, the concrete surface shall be treated with an approved, compatible, protective/decorative coating system

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