

## HIGH PERFORMANCE, NON-SHRINK, CEMENTITIOUS MICRO-CONCRETE

### Description

NIROCON MICRO HP is High performance micro-concrete, supplied as a ready to use dry powder which requires only addition of clean water at site to produce a free flowing non shrink repair micro concrete. This is a cementitious material, with additives, which impart controlled expansions characteristics in the plastic state while minimizing water demand. This is specially designed for repairs to damaged reinforced concrete elements, particularly where area is restricted and where vibration of the placed material is difficult or impossible. It is suitable for placing in nominal thickness of 25mm to 200 mm. But for larger repairs (more than 100 mm thickness), the NIROCON MICRO HP may be modified by the addition of 5mm to 12mm clean, graded, saturated surface dry aggregates at site. For exceptionally large repairs, the local NCL office shall be consulted.

### Uses

NIROCON MICRO HP is used for repairs to damaged reinforced concrete elements, particularly where access is restricted and where vibration of the placed material is difficult or impossible.

Typical applications are:

- Extensive repairs to beams, columns and other structural elements.
- Repairs to industrial structures
- Repair of structural members subjected to repetitive loading.
- Jacketing of beams, columns and other structural elements for strengthening.

### Advantages

- Can be pumped or poured into restricted locations.
- Flow able mortar hence does not require compaction - faster and easier placing.
- Develop high early and ultimate strengths.
- Offers excellent resistance to moisture ingress.
- Impermeable to aggressive elements.
- Makes repaired sections highly durable
- Contains no chloride admixture.
- Rapid strength gain to facilitate early reinstatement.
- Unique expansions system compensates for shrinkage and settlement in the plastic state.

### Characteristics

Appearance	Grey powder
Water/powder ratio, by weight	0.14
Fresh wet density	2300 kg/m <sup>3</sup>

Compressive strength, (ASTM C109, 7cm cube)	25 MPa at 1 Day 40 MPa at 3 Days 55 MPa at 7 Days 70 MPa at 28 Days
Expansion characteristics (ASTM C827 - 1987)	Unrestrained expansion: 1 to 4%.
Tensile strength	3.5 N/mm <sup>2</sup> @ 28 days
Flexural strength (BS4551 - 80)	8 N/mm <sup>2</sup> @ 28 days

### Directions for use

#### Surface Preparation

Correct substrate preparation is critical for optimum performance.

The prepared surface should be structurally sound and free from contaminants. Remove concrete that has been saturated with oil or grease. Simple light sandblasting will not provide a sufficient profile for most repairs.

Depending on the substrate condition and environmental requirements, use an effective method for removal of weak concrete such as, wet grit blasting, high pressure water jetting and needle scaling.

Saw cut the boundary of repair area perpendicular to the surface to at least 20 mm depth and remove concrete within the saw-cut boundary at least to that depth. Where saw cutting is not possible, after material removal, prepare the edge of the repair area vertical.

Prepare the final surface free from dust and debris and to a rough profile with at least 5 mm level difference between surface troughs and peaks.

Where rebars are corroded, cut back the concrete to at least 20 mm behind rebars. Grit blast around the rebars to remove corrosion products. Replace the affected part of rebar if the diameter after grit blasting is found reduced by more than 20% of the original diameter.

**Note:** It is recommended that the decision on replacement of rebars is taken based on the advice of the structural engineer responsible for the works.

For superior protection from corrosion in aggressive environments, coat the rebars with NIROZINC PRIMER – the zinc rich primer in environments not laden with chlorides. Saturate the prepared surface with clean water for at least one to two hours before applying the mortar.

### Formwork

Proper design of formwork is essential for effective repair.

The forms must be of good quality, treated with a chemical release agent such as NIROMOULD for smooth release, provided with water drain holes, strong and well braced to withstand the fluid pressure of the mortar until it hardens.

If required, consult NCL representative for advice.

### Mixing:

Mechanical mixing is necessary. Use a slow speed electric drill fitted with a spiral paddle for 1-2 bags mixing. For larger batch size, use a pan type mixer, or a tilting drum type mixer.

Place approximately 80% of the water in the mixer. Keeping the mixer running, add NIROCON MICRO HP slowly. Mix for 3-4 minutes or until a lump free mix is obtained. Add the remaining water while continuing to mix until the desired consistency is achieved.

### Water requirement

Consistency	Min. water content per 25 kg	Max. water content per 25 kg
Pourable	13% (3.25L)	15% (3.75L)

If ambient temperature is >30°C, use chilled water and condition the bagged product in an air-conditioned store prior to use. Maximum mixed temperature should be no more than 35°C. NIROCON MICRO HP can be used when the ambient temperature is between 5 and 40°C.

### Placing

Place the mixed mortar within 20 minutes by pouring or pumping. Place continuously into the pouring hopper of the formwork until completion. Do not vibrate NIROCON MICRO HP.

Strike off the formwork after 1 - 3 days.

For repairs beyond 100 mm in thickness, extend 25 kg of NIROCON MICRO HP with up to 25 kg of 5-12 mm sized, washed, saturated surface-dry (SSD), graded, low absorption, high density aggregates. Please consult your local NCL representative for advice.

### Packaging

NIROCON MICRO HP is supplied in 25 kg moisture resistant bags.

### Coverage

Each bag of NIROCON MICRO HP when mixed with 3.5L of water yields approximately 12.5L.

Actual yield per bag will depend on the consistency of NIROCON MICRO HP and quantity of coarse aggregate added.

### Technical support

NIRMAN CHEMICALS provides technical advisory



COMPLETE CONSTRUCTION CARE

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### Storage and Shelf life

services for on-site assistance and guidance on mix design, optimum dosage evaluation of trials.

Store under cover, out of direct sunlight and protect from extremes of temperature. In tropical climates the product must be stored in an air-conditioned environment.

Shelf life is 6 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging.

For specific storage advice consult our local NIRMAN CHEMICALS representative.

### Safety precautions

NIROCON MICRO HP should not be swallowed or allowed to come into contact with skin and eyes. Avoid inhalation of vapours and ensure adequate ventilation. Suitable protective gloves and goggles should be worn. Some people are sensitive to resins and solvents. Resin Barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream followed by washing with soap and water - do not use solvent. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately - do not induce vomiting

### Fire

NIROCON MICRO HP is not flammable.

### Cleaning of Tools

Clean all tools and equipment with water immediately after use. Hardened material can be removed using mechanical means.

### Note

All Technical Data Sheets are updated on regular basis; it is the user's responsibility, to obtain the most recent issue.

Field services where provided, does not constitute supervisory responsibility, for additional information contact our local NIRMAN CHEMICALS representative.

### Disclaimer

Whilst any information contained herein is true, accurate and represents our best knowledge and experience, no warranty is given or implied with any recommendations made by us, our representatives or distributors, as the conditions of use and the competence of any labor involved in the application are beyond our control.



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