microconcrete with Crystalline Cappillary waterproofing action

Durapatch - CWS.

An ISO 9001: 2008 Certified Company.

CONDURA
Construction Chemicals Pvt. Ltd.

Durapatch - CWS

Technical Data Sheet

General purpose, non-shrink, cementi-tious micro-concrete with Crystalline Cappillary waterproofing action

Uses

Durapatch CWS 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.

It is suitable for various structural strengthening measures such as encasement build-ups, jacketing etc.

Advantages

Gaseous expansion system compensates for shrinkage and settlement in the plastic state.

Can be pumped or poured into restricted locations.

Highly fluid to allow for placement without vibration.

Pre-packed to overcome site-batched variations.

Rapid strength gain to facilitate early reinstatement.

High ultimate strengths and low permeability of cured repair.

Contains no chloride admixture.

Description

Durapatch CWS is supplied as a ready to use blend of dry powders which requires only the site addition of clean water to produce a free-flowing non-shrink repair micro concrete. The material is based on Portland cements, graded aggregates and fillers, and additives which impart controlled expansion characteristics in the plastic state, while minimising water demand. The low water requirement ensures high early strength and long-term durability.

For larger repairs, the mixed **Durapatch CWS** may be modified by the addition of 5mm to 12mm clean, graded, saturated surface dry aggregates at site. For exceptionally large repairs, the Condura office shall be consulted.

Technical support

Condura offers a technical support package to specifiers, end users and contractors as well as technical on-site assistance in locations all over the country.

Design criteria

Durapatch CWS can be applied in sections upto 100mm deep. For larger sections, the addition of approved aggregates may be required. This will depend on the specific configuration of the repair location. it has self Crystalline Capillary waterproofing action Condura office shall be contacted for further information.

Properties

The following results were obtained at a water:Powder ratio of 0.16 @ 30°C.

Test	Typical result at 30° C
Compressive strength (N/mm²) (Tested on 70.7mm cubes as per BS 4551-80)	
1D / 3D / 7D / 28D	10 / 30 / 40 / 50
Tensile strength	2.0N/mm² @ 28 days
Flexural strength (BS4551 - 80)	5N/mm² @ 28 days
Young's Modulus	25 kN/mm²
Expansion characteristics (ASTM C827 - 1987)	Unrestrained expansion 1 to 4%.
Pressure to restrain Plastic expansion	Approx. 0.004N/mm².
Coefficient of thermal expansion	10 - 12 x 10^{-6} / °C.
Thermal conductivity	1.5 W/m°C
Fresh wet density (Mixed density @27°C)	2100 - 2200 kg/m³

Specification clauses

Performance specification

The fluid micro-concrete repair material shall be a single component, cement based, micro-concrete Crystalline Capillary waterproofing action to which only the site-addition of clean water and approved graded coarse aggregates where specified shall be permitted. The micro concrete shall contain no metallic aggregates, or chloride sand shall be shrinkage compensated in the plastic state.

Condura Construction Chemicals Pvt. Ltd.
www.condura.co.in
Email : Info@Condura.co.in

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The micro concrete in the flowable consistency should achieve a compressive strength of not less than 10N/mm^2 after 24 hours, 40N/mm^2 after 7 days and 50 N/mm^2 after 28 dyas at 30^{0}C. Most importantly, the cured microconcrete shall contain no metallic aggregates, or chlorides and shall be shrinkage compensated in the plastic state. The unrestrained expansion shall be between 1 - 4%. The flexural strength shall not be less than 5 N/mm^2 @ 28 days. The microconcrete shall have a coefficient of thermal expansion similar to that of the host concrete. The mixed density of microconcrete shall exceed 2100 kg/m^3 at 27^{0}C.

Supplier specification

be carried out using **Durapatch CWS**, manufactured by Condura

All microcreting (specify details and areas of application) must

applied strictly in accordance wtih the manufacturer's technical datasheet.

Application instructions

Preparation

The unrestrained surface area of the repair must be kept to a minimum. The formwok should include drainage outlets for pre-soaking and, if beneath a soffit, provision for airventing. Provision must also be made for suitable access points to pour or pump the mixed micro-concrete in place.

Defective concrete surfaces must be cut back to a sound base. Smooth surfaces should be mechanically roughened. Corroded reinforcing steel should be exposed around its full circumference and cleaned to remove all loose scale and corrosion deposits. It is important to clean the steel to a bright condition. Grit-blasting is recommended.

One coat of Condurabond:AR should be applied on the reinforcing steel. If any discontinuity in the applied film is noticed, one more coat has to be applied.

Several hours prior to placing, the concrete substrates should be saturated with clean water. Immediately prior to placing, any free water should be removed.

Alternatively, all prepared concrete substrates should be primed using Condurabond:AR Acrylic polymer bonding aid.

Note : For repair sections generally deeper than 100mm it may be necessary to mix the **Durapatch CWS** with properly graded 5mm to 12mm silt-free aggregate to minimise temperature rise. The quantity of aggregate required may vary depending on the nature and configuration of the repair location. The typical results with a few aggregate proportions, for various applications are furnished below for guidelines.

Typical results of **Durapatch CWS** with graded coarse aggregates of maximum size 12mm.

Durapatch CWS : Coarse aggregate (SSD) (By weight)
1 : 0.75

Water: Powder ratio (By weight)	0.16

Compressive strength (N/mm^2)

1 D	3 D	7 D	28D
15	35	45	55

Workability	Flowable

Note : W/P shall not be increased under any circumstances.

Estimating

Packaging

Durapatch CWS is supplied in 25 kg moisture resistant bags.

Yield

Approximately 13.0 litres per 25 kg bag. Actual yield per bag will depend on the consistency of Durapatch CWS and quantity of coarse aggregate added.

Storage

Shelf life

6 months if kept in a dry store in the original, unopened bags. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced.

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