Microcon bond UWG

Microcon bond uwg *constructive solutions* Antiwashout, non-shrink, high strength cementitious micro concrete for underwater repairs

Uses

Microcon bond uwg shall be used as a free flow or pumped material to repair deteriorated underwater or tidal zone concrete structures without significant 'wash-out' of the cement phase. Applications include quay pillars, bridge columns, concrete piling and dams.

Advantages

Shrinkage compensation : Gaseous expansion system compensates for shrinkage and settlement in the plastic state, associated with conventional cement repair materials.

Anti wash out : No risk of significant wash-out of cement phase when placed under water. Displaces water effectively.

Low porosity : Better steel protector than concrete.

High bond strength : No primer required.

High early strength : Facilitates rapid installation and early operation of plant.

Durability : High early and ultimate strength combined with exceptional resistance to attack by freeze/thaw cycling.

Reliability : Factory controlled, prepacked components. Only the addition of water is required on site.

Chloride free : Composition allows high early strength development without the use of chlorides.

Standards Compliance

Microcon bond uwg is tested using the appropriate sections of the following specifications :

BS 1881- 1983

BS4551 - 1984

BS4550 : Part 3 - 1978

Description

Microcon bond uwgis supplied as a ready to use dry powder requiring only the addition of water to produce a free flowing,

non shrink, repair material which exhibits exceptional resistance to 'washing out' of the cement phase when placed in stationary or moving water. The material is a mixture of specially processed cement, with carefully graded fine aggregate. Additives impart controlled expansion, water reduction and anti-washout characteristics.The aggregate grading is designed to aid uniform mixing, minimize segregation and bleeding whilst assisting the flow characteristics.

Technical Support

The company provides a technical advisory service supported by a team of specialists in the field.

Properties

Compressive strength : To simulate site conditions, compressive strength test cubes were cast under water and under restraint. (at 300C) (Cube size :70.6mm)

Compressive strength (N/mm2)

(BS1881-1983)

1 day 3 days 7 days 28 days

15 30 44 53

Tensile strength : To simulate site conditions, direct tensile specimens were prepared under water and kept under restraint. The specimens were cured submerged for 14 days at 300C at the time of test. The tensile strength of the specimen exceeded 3 N/mm2.

Flexural strength : 6.5N/mm2 @ 7 days (BS4551 - 1980) 7.5N/mm2 @ 28 days Pullout bond strength : 6N/mm2

Density of hardened material : 2100 kg/m3.

Setting time : Dependent on temperature. Typical values (at 300C) are as follows :

Initial Final :Setting time 4 hrs 6-8 hrs

Expansion characteristics : Controlled expansion occurs in the unset material to ensure that the material when cured,will continue to occupy its original volume within the confines of the void in which it was placed.

Specification clauses

Performance specification

All underwater repairs (specify details and areas of application) must be carried out with a prepackaged cement based product, which shall be mixed with water on site at a

Water Powder ratio of 0.22. The grout must not bleed or segregate, must be iron-free and chloride free. Expansion of 1 - 4% shall occur while the grout is plastic by means of a gaseous system. The grout shall contain special admixtures to minimise washout in underwater applications. The compressive strength of the grout must exceed 12 N/mm2 @ 1 day, 40N/mm2 @ 7 days and 50N/mm2 at 28 days. The

density of the hardened microconcrete shall not be less than 2100 kg/m3.

Supplier specification

All underwater repairs (specify details and areas of application) must be carried out using Microcon bond uwg applied strictly in accordance with the manufacturer's technical data sheet.

Application instructions

Preparation

Substrate must be clean and sound. All loose material must be removed. Substrates which are permanently immersed should be sand blasted or cleaned with a high pressure water jet. Non-immersed or intermittently immersed substrates can also be prepared using these techniques. Depending on the

circumstances, scabbling or bush hammering may be appropriate. Inview of the fluid nature of Renderoc UW, all shuttering must be leakproof. This can be achieved using foam rubber sealing strips at the edges.

Mixing

The quantity of water required to achieve a fluid consistency must be accurately measured for each mix. Each 25 kg bag requires 5.5 litres of water.

A mechanically powered mixer must be used. Ensure that the machine capacity and the number of operators is adequate to enable grouting to be carried out as a continuous operation.

The specified amount of water shall be placed in the mixer. Microcon bond uwgpack is opened in the mixer and added slowly while mixing continuously. When all contents are added, mixing shall be continued for a minimum of 5 minutes making sure that a smooth, even mix is obtained. (Fluidity increases with increased mixing). The mixed material shall be passed through a 5mm sieve to remove any lumps prior to placing.

Important : The need to observe the accurate gauging of water addition and the stated mixing time should be stressed to all operators and, wherever possible, included in specifications.

Placing

The mixed material shall be placed within 20 minutes of mixing to gain full benefit of the expansion process.

Continuous material flow is required and the material should be poured or pumped through a flexible tube, minimum diameter 50mm, to the lowest point in the form. At the start of the operation, the material flow should be restricted in order to avoid any water entrapment. The bottom of the tube may

be raised as necessary to reduce any back pressure but should not be raised above the level of the material.

Application thickness

Microcon bond uwgmay be placed in thicknesses upto 80mm in one pour when placed above water. When placed under water, the heat sink effect in this environment permits thicknesses upto 150mm to be placed. For thicker sections upto 200mm above water and 400mm under water, it is necessary to fill out Microcon bond uwg under water microconcrete using a clean, rounded and well graded aggregate in the size range 2mm upto 10mm. The quantity of aggregate added should not exceed 1 part aggregate to 1 part Microcon bond uwg by weight. For such mixes a concrete mixer must be used. Unrestrained surface area should be kept to a minimum.

Curing

Curing will not be required in intermittently or totally submerged situations. However, when cast above water, all exposed surfaces should be thoroughly cured.

Microcon bond uwg

Cleaning

Because of its water resisting properties, equipment used for Microcon bond uwg underwater microconcrete will be harder to wash than with a cementitious grout. Use of hot water greatly

reduces the time required for cleaning. Do not use hot water for mixing with Microcon bond uwg .

Estimating

Packaging and coverage

Pack Yield

Microcon bond uwg25 kg 14.5 litres

Storage

Shelf life

6 months shelf life if kept in a dry store in sealed bags.

Precautions

Health & Safety instructions

Microcon bond uwg is alkaline in nature. Gloves should be worn.

Splashes of grout to the skin or eyes should be washed off with clean water. In the event of prolonged irritation, seek medical advice.

Fire

Microcon bond uwg is non-flammable.