

Talrakcrete® UW

High strength underwater cementitious microconcrete for repair with anti-washout & non-shrink properties.



The Construction Alchemists

Description

Talrakcrete® UW is rapid strength gain, single component, permanent concrete repair micro-concrete for under water repair and strengthening of re-inforced concrete members. It can be placed in the form-work installed underwater with nil or minimal underwater washout of cement phase. It displaces water as it fills the form-work and sets into a hard mass underwater. It is designed for placement in tidal and submerged zones. Talrakcrete® UW gives corrosion protection for steel reinforced structures with bipolar corrosion inhibiting technology makes it a special product for using in the sea water applications include quay pillars, etc.

Features & Benefits

- Bipolar corrosion inhibiting technology.
- Single component for easy of use.
- Rapid set underwater placement.
- Minimal washout.
- Salt water resistant.
- Chloride and sulphate resistant.
- High early strength.
- Placed in the formwork, manually or through guided pipes and tremie

Primary Application

Talrakcrete® UW micro-concrete is used to repair and strengthen the deteriorated concrete members lying underwater or tidal zone. When placed underwater the cement paste will not have any significant washout of cement phase. The product can also be used in sea water for under water strengthening of marine structure. Talrakcrete® UW retard corrosion of rebars as it has corrosion inhibiting additives in it.

Standard Compliance

Talrakcrete® UW is suitable for using as per the guidelines of ACI 546.2R-10

Technical properties

Compressive Strength

Age (days)	24 hrs	3 days	7 days	28 days
Compressive strength (MPa)	15	30	44	53

Tensile Strength : 3.0MPa

Flexural strength : 6.5MPa @ 7 days
7.5MPa @ 28 days

Pullout bond strength : 6.0MPa

Setting Time:

Initial	45 mins
Final	60 mins

Design Criteria

Talrakcrete® UW is 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 stagnant or flowing 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. Hardened micro-concrete provides protection against re-bar corrosion in a chloride ion environment.

Specification Clause

All underwater repairs (specify details and areas of application) must be carried out with a prepackaged cement based product Talrakcrete® UW, 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 micro-concrete shall contain special admixtures to minimize washout of cement phase underwater. The compressive strength of the micro-concrete must exceed 12MPa at 1 day, 40.0 MPa at 7days and 50MPa at 28days. The density of the hardened micro-concrete shall not be less than 2200 kg/m³.

Application Instruction

Surface 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, scrubbing or bush hammering may be appropriate. In view of the fluid nature of Talrakcrete® 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 should be accurately measured for each mix. Each 25 kg bag requires 3.75 to 4 liters of water depending upon the consistency required.

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. Talrakrete® UW pack 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). If any hydrated lumps are found in the pack the entire pack shall be discarded.

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, of minimum diameter of 50mm, The mixed micro-concrete shall be poured in to the form-work along its internal wall to allow displacement of water without entrapment of air. It can be used with fabric forms. The bottom be raised as necessary to reduce any back pressure but should not be raised above the level of the material.

Application Thickness

Talrakrete® UW may be placed in any thicknesses under water, the heat sink effect the heat of hydration is minimum. however, for thicker sections up to 200mm above water and 400mm under water, it is necessary to fill out Talrakrete® UW underwater micro-concrete using a clean, rounded and well graded aggregate of 2mm to 10mm as per IS :383. The quantity of aggregate added should not exceed 1 part aggregate to 1 part Talrakrete® UW 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.

Estimating Packaging

Talrakrete® UW is supplied in 25kg bag.

Yield

Talrakrete® UW : 14.5ltrs

Storage

Talrakrete® UW has a shelf life of 6 months if kept in dry store in original, unopened containers. If stored at high temperature and/or high humidity conditions the shelf life may be reduced.

Precautions Health & Safety Instructions

Eye contamination must be immediately washed with plenty of water and medical treatment sought.

Important note :

Talrak products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Talrak endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

Ref : TCC/TDS/RE59 - R I



Talrak Construction Chemicals Pvt. Ltd.

An ISO 9001:2015 Certified Company

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