BASF
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EMACO™ S46 T

Dual-shrinkage compensated, micro-concrete for concrete repairs

Description

EMACO S46 T repair micro-concrete is a dual shrinkage-compensated, high flow, high strength formulation for structural concrete repairs. EMACO S46 T is suitable for placing in nominal thickness of 25mm to 200 mm.

When mixed, applied and cured in accordance with the manufacturer's instructions, EMACO S46 T provides a durable, strong structural repair fully compatible with host concrete.

Uses

EMACO S46 T is the ideal material for vertical or horizontal structural repairs wherever the thickness of repair is more than 25mm thick and use of pourable mortar is preferable to hand or machine applied repair systems. 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

- Dual shrinkage compensated.
- One component – only addition of water
- Quality controlled – Uniform, predictable results
- No additional bonding agent required
- Impermeable to aggressive elements.
- Pourable mortar – faster and easier placing

Typical Properties

Appearance	: Grey powder
Water/powder ratio, by weight	: 0.14
Fresh wet density	: 2250 kg/m^3
Compressive strength,	: 15 MPa at 1 Day
(ASTM C109, 7cm cube)	: 25 MPa at 3 Days
	: 35 MPa at 7 Days
	: 40 MPa at 28 Days

Specification Clause

The duel shrinkage-compensated, cementitious micro-concrete shall be EMACO S46 T, high flow, single component cementitious formulation. The repair micro-concrete shall have compressive strength minimum of 25 MPa at 3 day and 40 MPa at 28 days. The repair mortar shall not require polymer bonding agent as primer.

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 CONCRESIVE ZRi – the zinc rich primer or with STRUCTURITE 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 RHEOFINISH 202 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 BASF representative for advice.

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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 EMACO S46 T 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. EMACO S46 T 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 EMACO S46 T.

Strike off the formwork after 1 - 3 days.

For repairs beyond 100 mm in thickness, extend EMACO S46 T 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 BASF representative for advice.

Subsequent protective finishes:
Depending on the environment of the structure, protect the entire structure with MASTERSEAL 200 H or PROTECTOSIL BH N protective systems. Where it is necessary for aesthetic reasons to retain natural concrete background the use of MASTERSEAL 550 is recommended.

Curing
Apply a uniform coat of MASTERKURE 181 (see separate data sheet) by roller or low-pressure spray immediately after striking formwork.

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

Coverage
Each bag of EMACO S46 T when mixed with 3.5L of water yields approximately 12.5L.

4 bags of 25kg will be sufficient to cover 1m^2 area at an average 50mm thickness.

Packaging
EMACO S46 T is supplied in 25kg bags.

Storage and Shelf life
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 please consult BASF's Technical Services Department.

Safety precautions
As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs (which can also be tainted with vapour until product fully cured or dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from children and animals. Reseal containers after use. Do not reuse containers for storage of consumable item. For further information refer to the material safety data sheet. MSDS available on demand or on BASF construction chemicals web site.

Note
All BASF 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 your local BASF representative.

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