

MASTERFLOW™ 46UW

Non-shrink, cementitious grout for underwater applications

Description

MASTERFLOW 46UW is a ready to use, cementitious grout, which on mixing with the specified quantity of water provides a flowable grout with high resistance to cement wash-out when placed under water, with high early and final strength characteristics. To compensate for shrinkage, the grout is designed to undergo controlled expansion in the plastic state.

Uses

MASTERFLOW 46UW is recommended for repairing structures under water and in tidal zone by grouting. The grout is suitable for use under both stationary and moving waters. Applications include:

- Underwater micro concrete for Repairs
- Repairs to bridge and jetty piers
- Repairs to concrete piles
- Strengthening of piers by jacketing
- Repair of pier footings damaged by scouring
- Grouting of sluice gate guides

Advantages

- Shrinkage compensated
- Resists cement wash out
- Free flowing - optimum contact area
- Resists ingress of water borne corrosive agents
- Good bond strength
- Pre-packed and pre – formulated

Typical Properties

Aspect	: Grey Powder
Fresh wet density	: 2,200 kg/m ³
W/P ratio, by weight	: 0.18
Pot life	: 30 Minutes at 25 ^o C
Compressive strength	: 25 MPa at 3 Days
	: 35 MPa at 7 Days
	: 50 MPa at 28 Days
Application temperature	: >10 ^o C
Density (wet)	: 2.0 kg/litre

Specification Clause

The micro-concrete for underwater repairs shall be MASTERFLOW 46UW, cementitious, anti-wash out formulation. The product shall set underwater and achieve minimum of 25 MPa compressive strength at 3 days & 50 MPa at 28 days. The fresh wet density shall not be less than 2200 kg/cum at 0.18 w/p ratio.

Directions for use

The application of MASTERFLOW 46UW requires the services of professional divers, trained in the tasks to be performed.

Surface Preparation

Correct substrate preparation is critical for optimum performance.

Surfaces should be structurally sound, clean, and free from loose particles, barnacle growth, or any other contaminant.

Remove cement laitance, mould release agent, curing membrane, and other contaminants from the surface using pneumatic tools, manual wire brushing or other such effective methods.

Roughen concrete profile to a surface level difference of at least 5mm between trough and ridge.

Repair any cracks using an underwater grade crack injection system. Contact your local BASF representative for advice.

Formwork

Proper design of formwork is essential for effective grouting.

The formwork can be made out of timber, steel, closely woven cloth or any other suitable material depending on the circumstances. Where the profile and shape of the underwater repair are not important, cloth forms can be used. The forms must be grout tight, strong, and well braced to withstand the water pressure and the fluid pressure of the grout till it sets.

Provide for adequate gap between the formwork and the substrate to accommodate tremmie pipe, while repairing a vertical surface.

Seal all the gaps in the formwork and those between the formwork and concrete surface, with a suitable under water setting material or with MASTERFLOW 46UW mixed to a stiff consistency.

Mixing

Mechanical mixing is necessary. For a large batch use an approved grout mixer and for a small batch (up to two bags at a time), use a heavy-duty, slow speed (approx. 600 rpm) drill fitted with a grout stirrer.

Ensure that the mixing capacity is adequate for grouting continuously to completion as interruptions in grout placing could result in air pockets and cause blockage in the tremmie pipe used for placing.

Place approximately 80% of mixing water in the mixer. Keeping the mixer running, add MASTERFLOW 46UW slowly. Mix for at least 3-4 minutes until a lump free mix is obtained.

Add the remaining water while continuing to mix until the desired consistency is achieved. Sieve the grout free from lumps.

Placing

Place the mixed grout within 30 minutes after mixing.

MASTERFLOW 46UW can be placed to a thickness of up to and 150mm under water in a single pour.

Note: In case of thicker section above 150mm add 5mm – 12mm sized aggregates. The ratio of aggregated added to MASTERFLOW 46UW shall not exceed 1:1 by weight.

Using a tremmie pipe, place MASTERFLOW 46UW into the space confined by the formwork within the pot life of the mixed material (when the mixed grout is still fluid). Where situation demands, use double diaphragm air operated pump to pump the grout directly into the tremmie funnel. A hand operated pump or manual placing can also be employed.

Note: The pump is required only to convey the grout from the mixing site to the placing site and not to build up pressure.

It is necessary for the grouted region to be periodically inspected for any leaks during and immediately after grouting by a trained diver. Any leaks should be stopped by stuffing cotton rags or by applying EMACO S90 (underwater repair mortar).

Curing

Curing is not required for underwater placed grout.

Cleaning

Use hot water to clean tools and equipment before the grout hardens.

Coverage

Each 25kg bag of MASTERFLOW 46UW, when mixed with 4.5L of water shall yields 13.4 L of grout.

For one cubic metre of grouting 75 bags of MASTERFLOW 46UW shall be required.

Packaging

MASTERFLOW 46UW is available in 25 kg 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 advices 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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