

# Expanmortar\* LAUW

Single component free flowing micro-concrete for under water applications

## Uses

The high fluid nature of Expanmortar\* LAUW obviates the need for compaction and vibration and are most suitable for under water application or in tidal zones, suitable for but not limited to, large concrete repair sections under water, upstream of barrages, quay wall in tidal zone, anchoring of rock/soil, micro pilling, dam's spillway, precast panels gapes, barrages gates repair, offshore structures repair etc.

- Under water repair zones with restricted access or congested reinforcement
- Under water reinstatement of large, structural sections of concrete
- Micro-piling to stabilize concrete structure or soil
- Offshore areas where chloride and carbon-dioxide resistance is required
- Filling of well / pits / cable ducts under water
- Protective concrete cover on metal pipeline under water

## Advantages

- Dual expansion system compensates for shrinkage in the plastic and hardened states
- Low alkali content minimizes risk of alkali-silica reaction
- No risk of significant "wash-out" of cement phase when placed underwater
- Exceptional bond to concrete substrates without the use of independent primer/bonding agent
- Suitable for placement by pumping or pouring techniques into restricted locations
- Self-compacting nature eliminates honeycombing / voids and displaces air without vibration, high workability, especially required for micro pilling to flush-out the first pour.
- High strength and low permeability provide maximum protection against carbon-dioxide and chlorides, even under submerged condition
- Pre-bagged to overcome site-batched variations – only the site addition of clean water is required
- Contains no chloride admixtures

## Description

Expanmortar\* LAUW is supplied as a ready to use dry powder which requires only the site addition of clean water to produce a free - flowing, shrinkage compensated micro-concrete suitable for large volume concrete repairs or new structural elements.

Expanmortar\* LAUW is a blend of cement, graded fine aggregate, chemical additives which impart controlled expansion, high range plasticizers and anti cement "wash-out" additives.

## Properties

The following typical results were obtained at water to powder ratio of 0.18 and temperature of 25°C.

Test method	: Typical result
Permeability (DIN 1048 Part 5)	: < 5 mm
Flexural strength (BS 1881: Pt 117)	: 6 N/mm <sup>2</sup> at 28 days
Compressive strength (BS 1881 Pt.116 1)	: 35 N/mm <sup>2</sup> at 3 days : 45 N/mm <sup>2</sup> at 7 days : 55 N/mm <sup>2</sup> at 28 days
Wet density	: 2240 - 2285 Kg. / m <sup>3</sup> Depend on water contents

**Note:-** The low permeability of Expanmortar\* LAUW retards chemical attack in aggressive environments. The cured micro-concrete is resistant to acid gases, chloride ions, oxygen and water. For specific data regarding chemical resistance, contact the local Expanchem office.

## Design criteria

Expanmortar\* LAUW is designed for large volume repairs typically in excess of 30 mm deep. The product can be applied at sections generally up-to 350 mm thick although greater thicknesses may also be achievable dependent on the repair geometry. Attention to the basic design criteria given below should ensure that the full benefits of this technology are gained in use:

### Recommended limits for a single application are:

Concrete repair min. thickness	: 30 mm
Concrete repair max. thickness	: up-to 350 mm
Micro pilling bore diameter	: 75 – 350 mm
Micro pilling depth	: up-to 20 mt.

For large sections pouring, 10 mm down silt free crush in SSD conditions can be use to minimize the exotherm and to make micro concrete economical, trials must be conducted prior to the application at site to determine flow of micro concrete, workability and strength, addition of crush should not exceed 1 : 1 powder crush ration.

## Water addition

Water addition = 3.60 – 4.00 liters / 20 kg bag Under no circumstances should part bags be used or additional water be employed. Either of these two actions will adversely affect material performance, automatically invalidating Expanchem's standard product guarantee.

## Mixing and placing

For best results a mechanically powered grout mixer should be used. It is essential that machine mixing capacity and labor availability is adequate to enable the concreting operation to be carried out continuously; this may require the use of a holding tank with provision for gentle agitation to maintain fluidity.

Refer to your local Expanchem office for the method statement specifying surface preparation, priming, mixing, application, and cleaning methods.

Measure accurate quantity of water for each 20 kg bag into the mixer, slowly add the Expanmortar LAUW whilst mixing continuously, when all the powder is added mix continuously for 3 – 5 minutes ensuring a smooth even consistency is obtain.

## Placing of micro-concrete

Place the micro concrete within 15 – 30 minutes of mixing to gain the full benefit of the flow and expansion process, continuous material flow is essential, the mixed material should be poured from the highest level of formwork opening or pumped through a tube / pipe for micro piling, the minimum diameter of pouring pipe should not be less than 50 mm.

## Cleaning of equipment

Because of anti-wash properties of the material, it is difficult to clean the material from equipment; use pressure hot water and hard brush for the cleaning of equipment, cured or hard material should be removed mechanically.

## Removal of form work and curing

Remove the form work when the material is finally set, curing will not be required if the material is poured under water, if the poured section is out of water or exposed should be thoroughly cured with water or apply curing compound immediately after removal of formwork, the selection of curing compound, please consult with local Expanchem office for suggestion.

## Limitation

Expanmortar\* LAUW should not be applied if the water temperature in below 5 °C and falling.

Make sure that formwork is leak-proof because Expanmortar LAUW is a free flow micro-concrete. Expanmortar\* LAUW should not be part mixed. Unrestrained area must be kept as minimum as possible, for advise on unrestrained area please contact local Expanchem office.

## Estimating

### Supply

Expanmortar\* LAUW : 20 Kg Bag

### Yield

Yield / bag approximate : 10.50 Ltr. (Mixed material)

Actual yield is depending on water contents. It is recommended, that site trials must be conducted to ensure actual yield of the material per bag.

## Storage

### Shelf life

Expanmortar\* LAUW has a shelf life of 12 months; if kept in a dry environment, in its original, unopened packing. If stored in conditions of high humidity and/or temperature, the shelf life of Expanmortar\* LAUW will be reduced to as little as 6 months.

## Precautions

### Health and safety

Expanmortar\* LAUW contains cement powders which, when mixed with water or upon becoming damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of the dust and contact with the skin or eyes. Wear suitable protective clothing - eye protection, gloves and respiratory equipment (particularly in confined spaces).

The use of barrier creams to provide additional skin protection is also advised. In case of contact with the skin, rinse with plenty of clean water, then cleanse thoroughly with soap and water.

In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately - do **not** induce vomiting.

### Fire

Expanmortar\* LAUW is non-flammable and thus presents no fire hazard. For further information, please refer to the Product Material Safety Data Sheets.

### Additional information:

Expanchem has comprehensive range of products for underwater applications, consult local Expanchem office of guidance and selection of correct product and application method:

- Under water concrete admixture
- Under water anchoring grout
- Under water non-shrink grout
- Under water micro-concrete
- Under water epoxy coating
- Application guides for underwater application

\* Denotes the trademark registered

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