

Basilisk MR3 Application Instructions

Basilisk Repair Mortar MR3 (MR3) is a cement-based ready-mix repair mortar with self-healing capacities for durable and structural repair of concrete structures. MR3 is particularly very suitable for repair of leakage cracks and surfaces. This manual describes the application steps for repair with Basilisk MR3. This manual only acts as a product specific addition to already existing national and international norms and guidelines for concrete repair (e.g. Eurocodes, ASTM, etc.).

General Concrete Repair

There are many different standards and guidelines for concrete repair and maintenance, but generally we can consider the following steps to give a complete guideline for concrete repair and maintenance (if addressed in the correct order):

1. Determine the cause(s) of damage
2. Evaluate the extent of damage
3. Evaluate the need to repair
4. Select the repair method and material
5. Prepare the existing concrete for repair
6. Apply the repair method
7. Cure the repair properly

Steps 1 - 3 are basic general steps to determine and evaluate the damage. Steps 4 – 7 are considered more product specific steps, which is why these will be addressed more specifically for doing repairs with Basilisk MR3.

Repair methods

Based on the performance characteristics as described in EN 1504-3, Basilisk MR3 is suitable for the following repair principles:

- 3.1 Concrete restoration by applying mortar by hand.
- 3.3 Concrete restoration by spraying mortar.
- 7.1 Increasing cover to reinforcement with additional cementitious mortar or concrete.
- 7.2 Replacing contaminated or carbonated concrete.

Preparation of existing concrete for repair

Preparing the existing concrete for repair is very important for accomplishing durable repairs. This step involves removing all the deteriorated and damaged concrete and leaving a sound surface for the repair material to bond to.

There are international and national norms and guides that describe the procedures for the preparation of concrete repair. This manual describes the basics, but must always be considered together with the national norms and guidelines.

In general the following steps should be followed for a durable concrete repair:

1. Weak, damaged and deteriorated concrete, and where necessary sound concrete, shall be removed;
 - a. If corrosion to the rebar has occurred due to carbonatation or hazardous substances the concrete surrounding the corroded rebar should also be removed.
2. Preparation of concrete surface;
 - a. Creating sufficient bonding surface/ roughening.
 - b. The substrate shall be free from dust, loose material, surface contamination and materials which reduce bond or prevent suction or wetting by repair material.
 - c. Actively leaking surfaces or cracks should be temporarily (for at least 24 hours) stopped by using quick-cement or injection material to prevent the, to be applied, mortar from washing out.
3. Preparation of steel rebar (if necessary);
 - a. Remove corrosion residue from rebar.
 - b. Scale, mortar, concrete, dust and other loose and deleterious material which reduce bond or contribute to corrosion shall be removed.
4. Preparation of bonding surface;
 - a. Pre-wet surface with water: the concrete substrate shall be well pre-wetted but free from water on the surface at the time of the application.
 - b. MR3 may also be applied as a scratch coat. This is simply a very wet coat made up by mixing a small amount of the MR3 repair product with water (approximately double the amount as specified for normal use) until a soupy consistency is obtained.

Application of Basilisk MR3

Mixing of Basilisk MR3 Repair Mortar

Mixing: Mix Basilisk Repair Mortar MR3 mechanically until a homogenous mix is obtained. Mixing time depends on type of mixer: approximately 3 minutes, after a 90 sec rest mix for an additional 1 minute. Use of a contra twin mixer is advised. Never mix less than a full bag.

Water dosage: 3.8 - 4.2 L / 15 kg depending on the desired consistency. Use tap water.

Workable time: ≥ 30 minutes @ 20 °C.

Applying mortar by hand

Basilisk Repair mortar MR3 shall be worked into the prepared substrate and shall be compacted without inclusion of entrapped air pockets and in such a way that the required strength is achieved and the reinforcement (if present) is protected against corrosion.

MR3 is to be built up in layers with a maximum of approximately 30mm thickness. Where the application of layers is interrupted and layers cannot be applied wet-on-wet, surface treatment for bonding to the previous layer shall be same as described for the preparation for the existing concrete.

Applying mortar by spraying (shotcrete)

Basilisk Repair Mortar MR3 may be applied through a wet shotcrete method. For wet mix shotcrete, the mortar-mix is first conventionally mixed with water, and the resulting mortar is then pumped to the nozzle, where compressed air propels the wet mixture onto the desired surface. When using this method, it is always advisable to use trained workers and to perform test placements.



Curing of repair

Proper curing is critical to long-term repair material performance. For MR3 it is especially important to stop it from drying out within the first 24 to 48 hours. Different methods for curing may be used; such as:

- Use of a curing compound (keep in mind this may effect bonding of future coatings or additional repair layers).
- Active wetting with water.
- Or plastic foil to limit evaporation of water.