

## A3 FF

**Bemix A3 FF is a pumpable expanding mortar, based on a low-alkaline and sulfate-resistant cement with cold-weather additives, used for underpouring and filling where there is a requirement for curing at low temperature. Applications include fence posts, machine underpourings, anchorages and bridge bearings. Cures in sub-zero temperatures without heating. Approved under AMA Anläggning 23 for use down to -10 °C. Approved for concrete repairs according to EN 1504-6.**

### Work description

#### Casting

##### Preparation:

The concrete substrate must be clean and free of dust, damaged concrete, grease or other contaminants that may impair adhesion. Substrate with a roughened and raw surface with closely spaced irregularities provide better adhesion. Clean the substrate carefully and if possible pre-water 24 hours before casting. Remove surface water immediately before casting. Do not water when casting in minus degrees. At freezing temperatures, the surface must be defrosted, and ice and melt water removed.

##### Mixing:

Do not mix by hand. The best mixer is a rapid mixer type Rojo 50 or automatic mixer. For smaller quantities, mixing with a drill and mixer attachment works well. Mix to an even and clump-free consistency. Always pour in the water first. Use a graduated mixing vessel and ensure that the temperature of the mix is 20 °C. The mixed concrete must be used within 20 minutes.

##### Casting:

The mix must be poured into the mould continuously and as quickly as possible. There must be no interruptions until casting is finished. The mix should only be poured into the mould from one side so as to avoid air pockets. Ensure that the mould does not leak. Where large areas are to be underpoured, the concrete should be pumped on site for the best result. The mix hardens and cures without heating even if the temperature of the mix itself drops well below 0 °C.

##### Reinforcement:

To avoid cracks etc. due to drying out, reinforcing steel is laid in the concrete in cases such as: with thick underpourings, when the underpouring is long such as with rail underpouring, when the underpouring goes outside the slab, with in-situ casting or where there is a risk of rapid drying out. The reinforcement is laid in the mould/formwork before casting with the recommended covering layer.

##### After treatment:

Concrete that needs to be removed is scraped off with a finishing trowel once it has hardened sufficiently. The work can be made easier by pushing a sheet of metal down onto the concrete to form a limitation and assist chiselling.

##### After-curing:

Free and unprotected surfaces are protected immediately after casting so that shrinkage and dehydration cracks do not occur. At air temperatures below 5°C, curing may take place by remaining form or covering without water addition and may last the entire first week. Watering should not be done when casting in minus degrees. After formwork is removed, exposed surfaces can be protected with membrane insulation.

##### Removing formwork:

If there is a risk of drying out the formwork should remain in place for a week. Otherwise the formwork can be removed the day after casting.

##### Anchorage:

The work must be carried out according to EN 1504-10 and the surface structure and cleanliness of surfaces in anchoring holes and slots must comply with 7.2.2, 7.2.3 and 7.2.5 and shall be suitable for the anchoring material.

##### Preparation:

Drilling is done at an angle to the surface, including for vertical surfaces. The drill hole should be the diameter of the item to be

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embedded plus 25 mm and the drill used must meet the requirements according to 1504-10 and also EN 1881 and create a surface roughness of the concrete substrate. When a hole has been drilled, it is cleaned out with compressed air and finally carefully plugged before the next hole is drilled. The drill hole is filled with water at least 24 hours before installation. Clean out the hole with compressed air immediately before installation. There must be no free water in the hole before installation. After the hole has been blown clean, installation must be done immediately. The bolt to be embedded must be free of loose rust, oil, grease or other contaminants.

#### Installation:

With vertical holes, the concrete is held down in the hole with the aid of a funnel, for example. The bolt is then pushed carefully down into the hole with a backwards and forwards motion so that air bubbles are pressed out of the concrete. The entire hole must be full of concrete after the bolt has been installed. The bolt is held in place for support. The support must not be allowed to get stuck.

#### After treatment:

The support can be dismantled the day after casting.

#### After-curing:

When after treatment is done protect free surfaces from drying out. Use a water mist and protect with plastic sheeting. Keep damp for the whole first week. After formwork is removed, exposed surfaces can be protected with membrane insulation. Watering should not be done if applying in minus degrees.

## Technical data

Technical information for P marking		
Property	Declared value	Method
General		
Consumption	25 kg gives approx 12.5 litres ready mix	
Binder type	Cement, Cem II/A-V 42,5 N –NSR MH/LA	
Stone max	4 mm	
Layer thickness	Non-reinforced 20–150 mm	
Chloride content	<0,03 %	SP-metod 0433
Max water addition	3,1 litres per 25 kg	
Wcr with max water addition	< 0.31	
Rec.Lowest application temperature	-10°C (Weather and wind must always be taken into account)	
Fresh mortar		
Consistency after 5 min	≥ 350 mm	SP method 1651
Water separation		SS 137540
Fill properties	≤ 50 st 20–200 mm <sup>2</sup>	SP 1614
	None > 200 mm <sup>2</sup>	SP 1614
Setting time	4.5–5.5 hours	SS 137126
Shrinkage after 231 days	≤ 3 ‰	SS 137215
Air content	2–6 %	EN 1015-7
Expansion after 1 and 24 hours	0–1 %	SS 137540:2008

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Cured mortar		
Frost resistance, 56 cycles, flaking	Very good	SS 13 72 44 IA
Compressive strength at 20 °C		
After 24 hours	> 20 MPa	EN 196-1
After 7 days	> 45 MPa	
After 28 days	> 60 MPa	
Compressive strength at –10 °C		
After 3 days	> 10 MPa	EN 196-1
After 14 days	> 20 MPa	
After 28 days	> 30 MPa	
Exposure class	XC4, XS3, XD3, XF4, XA2	SS 137003:2015

## Packaging

The product is supplied as standard in 25 kg bags and in 1000 kg big bags. The 25 kg bags consists partly of recycled plastic and will be recycled as soft plastic or according to local instructions in the municipality.

## Storage

25 kg bags will be used within 24 months of the date of manufacture given on the pack. Store in a dry place. Big Bags use within 6 months from the date of manufacture.