Installation Guidelines for Concrete with Crystalline Admixture

This document outlines the correct procedures for placing concrete containing a crystalline admixture to ensure watertightness and long-term structural durability. Proper installation practices are essential for the activation of the admixture and for enabling the self-healing of microcracks.

Note: Primostar focuses on installation techniques that ensure a watertight and durable structure — regardless of the concrete manufacturer or mix design.

1. FORMWORK:

Formwork panels must be installed tightly to prevent concrete leakage. The bottom edges of the formwork must be additionally sealed.
Depending on the type of form tie used, an appropriate watertight solution must be applied:

- For formworks with spacer tubes, use BEKINA® BeSealed UFO seals.
- After casting, the tie rod spacer tubes must be closed on both sides with BEKINA® BeSealed tie tube plugs.
- In the case of the Peri Maximo system, after removing the formwork, close the tie points with BEKINA® BeSealed Peri Maximo plugs.

2. CONSTRUCTION JOINTS:

When building a watertight structure, it is essential to ensure that all construction joints are equipped with suitable waterstops. It is recommended to use WPM® waterstop profiles, such as WPM® Metal Sheet Waterstop 80R, 125R, 125L, and other WPM® products developed based on these, including WPM® Formwork Waterstop and WPM® Crack Inducing Waterstop.

The waterstop system must be continuous and free of interruptions — all joints and overlaps must be sealed watertight. If the structure design does not allow for the use of a metal waterstop, the construction joints must be sealed using an appropriate hydrophilic joint tape from BEKINA® BeSealed or an injection hose system from WFP.

3. CONCRETE COMPACTION:

The concrete mix design and the method of adding the crystalline admixture are determined according to the specific instructions provided by the concrete plant. This guideline focuses on the placement and compaction of concrete on-site to achieve the density required for the proper activation of the admixture and to ensure a high-quality final result.

Concrete compaction is one of the most critical stages of the placement process — it increases the density of the concrete, thereby improving its strength, frost resistance, watertightness, and overall durability. Proper compaction is also essential when high surface quality is required.

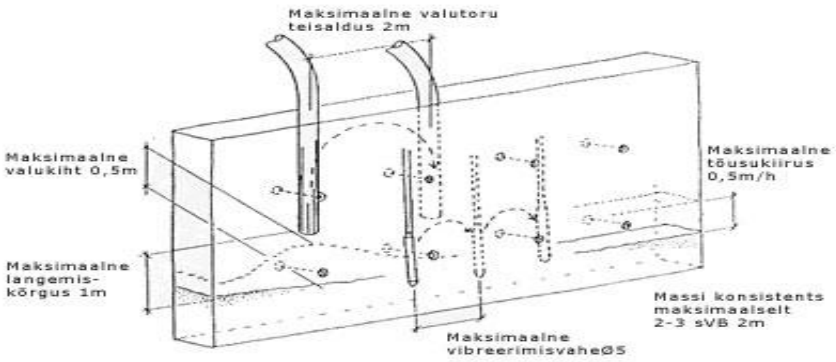
3.1 COMPACTION OF VERTICAL STRUCTURES:

The casting area must have sufficient lighting (at least 2–3 light sources) to ensure visibility down to the bottom of the formwork.

The concrete free-fall height must not exceed 1 meter — this can be achieved by using a tremie hose or by inserting the pump hose directly into the formwork.

Concrete must not be directed at an angle toward reinforcement or formwork surfaces to avoid segregation — the mix should be poured vertically into the bottom of the form and onto previously placed concrete.
Casting should be carried out in uniform layers of 30–50 cm, each layer compacted progressively throughout the formwork.

Compaction must be performed using an internal (poker) vibrator, moving it systematically so that the spacing between insertions does not exceed 300–400 mm, with a vibration duration of 15–20 seconds per point.
When compacting the upper sections of vertical elements, it should be noted that air escapes more slowly — additional vibration must be carried out promptly while the concrete is still in a plastic state.



Compaction of wall concrete. The same principles apply to columns.

3.2 COMPACTION OF HORIZONTAL STRUCTURES:

The size of the internal (poker) vibrator must be selected according to the dimensions of the structure.

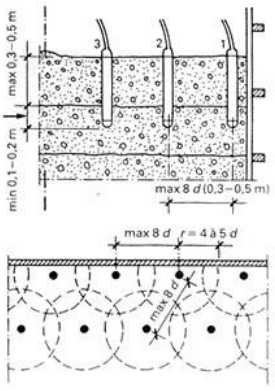
Compaction should be carried out approximately 1.5–2 meters away from the point of concrete placement.

The vibrator should generally be held vertically; for thinner slabs (less than 250 mm), an inclination angle of up to 45° is acceptable. A horizontal position of the vibrator is ineffective for compaction and may cause segregation.

The vibration time must be sufficient but not excessive — for example, approximately 10 seconds for a 250 mm slab, and 15–20 seconds for a 250 mm wall or column.

When casting in multiple layers, allow the vibrator head to penetrate at least 200 mm into the previous layer under its own weight.

Compaction should be performed systematically in a grid pattern, with insertion points spaced approximately 400–600 mm apart.



Systematic Compaction of Concrete In the illustration, d represents the diameter of the vibrator head, and r indicates the effective radius of vibration.

4. CURING

After concreting, the concrete must be kept adequately moist for at least 7 days. It is recommended to use water curing, plastic sheeting, or suitable curing compounds. Proper curing promotes the active performance of crystalline admixtures and facilitates the self-healing of cracks.

5. STANDARDS

All work shall be carried out in accordance with relevant standards and the manufacturer's instructions.

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6. VISUAL GUIDELINES

When installing, it is important to follow a few basic principles:

- The correct overlay is at least 7 cm and at most 10 cm. The overlay is fixed with clips or screws (see pictures). Screws may only be used on the outer edge of the profile!
- The network of waterstops in the structure must be connected continuously without interruptions.
- Do not damage the Waterstop.
- The depth of the metal sheet waterstop installation must be at least 3 cm inside the concrete.