Preliminary remarks

· Unfavourable construction site conditions such as low temperatures, high humidity, an excessively high w/c ratio and high layer thicknesses delay drying and strength development. This is not the responsibility of the manufacturer.
· MULTIBETON has no control over the correct and therefore successful application. A guarantee can only be given for the quality and grade of our products within the framework of our General Terms and Conditions of Business, Delivery and Sale, but not for successful processing. The product must be tested for suitable application in your own trials.
When producing and laying as a heated screed, the instructions of DIN 18560-2, DIN EN 1264-4 and the individual technical data sheets of the flooring manufacturers must be observed. This applies in particular to the creation of expansion joints in heated screeds. MULTIBETON recommends that expansion joints in heated screed surfaces are secured against vertical movement and displacement using expansion anchors in accordance with the recognised rules of technology.

Production of accelerated hardening cement screeds

The consistency must be stiff-plastic to plastic. If the mixture is too soft or contains too much water, the screed will achieve lower strengths. This can lead to increased shrinkage cracks, deformation and cupping. The screed will not be ready for covering until later.

The strength and the lower residual moisture, which is important for readiness for covering, depend on the following factors:

· Insufficient compaction results in lower screed strength.
· Low or extremely high ambient and subsoil temperatures as well as high relative air humidity (> 70 %) sometimes result in slightly longer curing and drying times of approx. 1 – 4 days when dosing for readiness for covering after approx. 14 days. When accelerating/dosing to 7 days, the time required to reach readiness for covering is extended by approx. 1 – 2 days. This information refers to a comparison with ambient conditions at +20 °C and a relative air humidity of 60 %.
· Air exchange from the 2nd day after screed laying is essential.
· Screed surfaces must not be partially or fully covered during the curing process until they are ready for covering.
· The readiness for covering may only be determined using a CM measuring device. Electronic measuring devices are not permitted.
· The required screed thickness is based on DIN 18560. All information on readiness for covering refers to a construction height of 50 mm for unheated screed constructions and a maximum of 65 mm for heated screed constructions. With higher construction heights, the time required to reach readiness for covering is extended.
· Grading curve A/B, 0 – 8 mm, for the production of screed concrete in accordance with DIN 1045-2.

Cold rules

The installation of cement screeds poses a risk at low temperatures. The cement industry specifies a minimum temperature of ≥ +5 °C for processing. Below this temperature limit, cements react only very slowly or not at all. The desired strength and other screed properties are not achieved.

Summary of the MULTIBETON cold rules:

· Inform the building owner/client in writing about the risks of screed installation in cold weather. If screed installation in cold conditions is expressly insisted on without additional measures, this must be ordered separately.
· Control the temperature of the mixing area and building in such a way that the cement, aggregate and screed cannot freeze or fall below +5 °C.
· The use of heating lances to heat the screed sand has little effect apart from partial overheating of the sand (often 80 °C within a radius of approx. 25 cm) and varying degrees of drying. Differences in dryness and temperature can in turn lead to different mortar consistencies, different initial reactions of the cement and thus to strength and drying problems.
· The temperature in the building must not fall below +5 °C (for accelerated screeds until they are ready for covering). A maximum temperature of +15 °C and a humidity of over 45 % are recommended for additional heating. This avoids shock effects, excessively rapid surface drying and excessive deformation.
· Operation of underfloor heating is not recommended - even at flow temperatures of +15 °C to +20 °C. Operating underfloor heating systems during installation often results in large deformations at joints and edges. Moderate heating by other means is more appropriate.
· Extreme caution with large winter heating systems! “Forced heating” in the building causes the floor to dry out too quickly. High temperatures and powerful fans lead to harmful air movements. Select the air flow and temperature so that the screed is not damaged.
· Temper the building structure at least 5 - 6 days before screed installation. This preliminary run is absolutely necessary for sufficient temperature equalisation in cooled buildings.
· Under no circumstances should fire-dried sand be used for the production of mineral screeds.
· The use of antifreeze in the screed is expressly not recommended.
· Example: At a starting material temperature of 0 °C, +30 °C warm water increases the screed mixture to only +1.6 °C. At this temperature, neither cement nor additives react. Neither cement nor admixtures react at this temperature. On the other hand, warm water is suitable for cleaning the machine and tools.
· Additives and cement must not be stored in the vehicle overnight in frosty conditions.
· Temper MULTIBETON screed emulsions with warm water. At temperatures of around +15 °C to +20 °C, MULTIBETON screed emulsions have an optimum degree of viscosity and are fully effective.

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After installation

The client is responsible for ensuring that the appropriate climatic conditions are maintained. To this end, please observe the following rules:

- The air must be renewed. High humidity prolongs hardening and drying times.
- 24 hours after laying the MULTIBETON screed emulsion, ensure that there is sufficient ventilation and air circulation. To do this, open all windows and doors wide for 20 to 30 minutes, 3 to 4 times a day.
- 48 hours after the screed has been laid, the functional heating of the underfloor heating system can begin. In principle, it is not necessary to heat the screed to dry it out. It supports the drying process. Before the floor covering is laid, however, the underfloor heating must be turned on and off for the first time.
- The screed must be protected from frost throughout the drying phase.
- After laying, the screed surface must be protected from water until the floor covering is laid. Danger: the action of water during the freshness or setting phase of the screed leads to sandy screed surfaces and impedes drying.
- Screeds can be walked on 24 hours after laying. The load-bearing capacity for normal site traffic after 2 days is ensured by the 5 to 7 day acceleration process. This means that rolling loads, such as hand wheelbarrows, are possible. Manual forklift traffic is only possible once the final resistance (designed for this purpose) has been reached. This means that rolling loads, such as those from hand wheelbarrows, are possible. Manual forklift traffic is only possible once the final resistance (designed for this purpose) has been reached. Exception: MB-PVP screeds. In this case, it is possible to drive on the surface of the screed with forklift trucks after 3 days. Danger: premature loading causes damage to the surface and structure of the screed and encourages cracking.
- Screeds must not be covered during the entire drying process. Danger: Storing building materials on the screed, even partially, e.g. for interior work, delays drying and can lead to incorrect moisture measurement results.
- Shocks and vibrations to the screed must be avoided before it is ready for covering.

  The edge insulation strips should only be cut off by the floor layer or tiler once the levelling has been completed for flooring work or grouting for tiling work. Danger: Premature cutting of the edge insulation strips leads to soiling or filling (e.g. with flooring installation materials or grout) of the edge joint. This leads to sound bridges and cracking.
- Forced drying, e.g. using condensation dryers, is only possible 14 days after installation at the earliest. This also applies to the use of ventilation fans for air circulation.

  Danger: Premature additional drying and air circulation cause additional high deformation of the screed. Particularly in the area of joints, this often leads to bulges that can no longer be corrected, accompanied by a possible height offset between the screed fields. At the same time, there is an increased risk of cracking.
- For the functional heating programme, the specifications in the functional heating protocols must be observed and adhered to without night setback. This favours the drying process of the screed. With underfloor heating, ventilation is particularly important to ensure that the very high room humidity is constantly removed from the building (shock ventilation). To do this, open all windows and doors wide for 20 to 30 minutes 3 to 4 times a day. Windows and doors must not be covered from the outside, e.g. with construction foil, which would prevent the exchange of air. Danger: If the room is not ventilated or not ventilated enough, the high room humidity will condense as condensation on the screed. This slows down the drying process considerably. The desired readiness for covering is not achieved.
- Floor covering works may only be started after the screed has reached its readiness for covering. Residual moisture may only be determined using the CM measuring method. Moisture measurements of screeds with electronic measuring devices do not lead to meaningful or assessable moisture contents due to the electrical conductivity – even of the hardened/dried screed mortar. Danger: Incorrect or improper measurements can falsify the actual water content and cause considerable damage if the screed is covered prematurely.

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