



Concrete Plant International  
Worldwide English Edition



4 | 2023

[www.cpi-worldwide.com](http://www.cpi-worldwide.com)

REPRINT | CONCRETE PRODUCTS & CAST STONE

Production boards as the base for product quality

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# Production boards as the base for product quality

■ Sven Beisel, Wasa AG, Darmstadt, Germany

To meet the ever-increasing demands on quality and dimensional accuracy of all types of concrete blocks, there are various possibilities to improve the production processes. The production board is an essential part of the production process. Besides the best possible vibration transmission and bending resistance, it is also important to obtain the maximum service life from a production board. Here, the priority is a clean and joint-free surface, among other things. This is to ensure a flawless stone underside.

From the tried and tested wooden panel made of individual planks to the jointless surface, all production board share one common feature: they need to be cared for. We all know it from our personal experience - when we buy a new mobile phone most of us quickly acquire a protective cover and a screen protector to shield the expensive item. This is a precautionary measure to counteract unavoidable wear and tear. It is the same with the production boards. These should be optimally cared for from day one. The production board's surface deserves special attention. This has a significantly longer service life if it is permanently cleaned and maintained.

A board sweeping brush should be present in every system to remove small impurities and keep the surface clean and well-maintained from day one.

This special brush is usually installed before turning the production boards. In the process, the brush must be adjusted according to the on-site conditions and undergoes permanent maintenance and functional testing. The focus is on trouble-free operation and continuous effective brushing and cleaning of the production board surface. If the brush does not work or is worn out, this will cause insufficient cleaning or, in the worst case, no cleaning at all. Checking the proper functioning of the brush should therefore be part of the daily maintenance routine. Here it is important that the brush has sufficient contact with the production boards and that these are actually clean after the brushing process. A worn brush should be replaced immediately - this avoids additional costs, poor production board surfaces and inadequate stone undersides.



*Cleaning line*

Depending on the production board different types of brushes are required. Some production board types require steel brushes, while for others nylon or a nylon/steel mixture is sufficient.

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If the brush does not work or is not available in the first place, concrete product residues may remain on the surfaces of the production boards. As the mould is lowered and touches the residual concrete directly, these residues are pressed into the surface of the production boards by the high pressure of the mould webs and the vibration. This happens regardless of the production board type. Gradually, concrete residues accumulate right under the mould frame, so that after some time the mould no longer sits correctly on the production board. This ultimately will cause faster wear of the mould, resulting in even more damage to the surface of the production board.

### Release agent

In many cases, for proper cleaning, the use of a release agent is also necessary, but in any case advisable. However, this depends considerably on the concrete mixture used, its moisture content and the product size. For smaller and drier products, a release agent may not be necessary, but in many cases it is advisable to use one. There are many suppliers, even at the local level, who can advise on this issue. Where testing of a release agent prior to use is desired, a release agent sample may be submitted to the production board manufacturer for assessment. This makes it easy to test whether the release agent has a negative effect on the production board. However, this can only determine whether the release agent attacks the production board surfaces. On the other hand, it is impossible to determine whether the tested oil has the ascribed properties (separating effect, etc.). This must be tested on site at the concrete block plant without exception. When using a release agent, make also sure that the spray nozzles are working properly, are not clogged and are adjusted according to their spray angle so that the spray mist actually wets the entire boards surface.

### Storage of production boards

The storage of the production board is also an important issue. Depending on the type of boards, the requirements are different. The supplier of the production board will provide the information.

Wooden and full-plastic production boards, for example, should not be exposed to direct sunlight. This means that the piles must be covered or should be stored under roof. Wooden boards - if they are still damp due to production - should also not be left stacked for too long, as the wood could rot. In most plants, the empty production boards remain in the curing chamber during winter. While this is fine for most board types, it is very risky for wooden pallets. This is because wooden boards dry quickly and gaps appear in the surfaces, causing problems when production is resumed. Therefore, the manufacturer's recommendations for the storage of the production boards during longer production interruptions must be observed.

### Board turner

The majority of plants around the world have a board turner to turn the production boards after each production cycle.

This procedure has proven to be advantageous. Using this device, the production boards can be used on both sides. The spray units moisten the wooden production boards on both sides, which results in an even and easily regulated moisture content.

With the board turner, ensure that it will not allow the production boards to hit too hard when placing them on the conveyor system (that is, after the turning process). A frequently observed problem in many, especially older, plants. In most cases, fitting a hard rubber element in front of the steel arms already ensures a more careful handling of the production board. This system component is usually also quite noisy. For example, new turning devices that descend gently can help to reduce the noise level in the production hall.

If the surface of the production board already has a build-up of concrete slurry or cleaning was neglected, there are options for restoring a clean and functional surface here as well.

### Concrete scraper

A large part of possible build-up on the surface of the production board can be removed with a concrete scraper unit. As the name suggests, this involves scraping the slab and removing the unwanted build-up. The scraper unit is installed as part of in the circulation plant and is usually equipped with spring steels that can be easily replaced after wear. Again, regular inspection and maintenance is essential, as incorrect adjustment can damage the production board surface.

The scraper unit is a possible variant if board care was not optimal - but is not recommended for all production board types, as it could damage some surfaces. In any case, it is advisable to discuss the use of a scraper in advance with the production board manufacturer.



Scraper unit



*Acrylic structure**Concrete structure**Hedgehog roller*

In the case of thicker build-ups, which can form a layer of several millimetres, it is possible to break them up with a roller to sweep off the loosened residue afterwards with a cleaning brush. This roller device is also installed directly in the circulation plant and is usually one of the last options for removing the superstructure. The so-called hedgehog roller is not a permanent part of the system and should also only be used if there is a very heavy build-up that cannot be removed by conventional means. Again, this tool is not suitable for all production boards; it is essential to consult with the production board manufacturers.

If the above-mentioned possibilities are combined, this is called a cleaning line. Here, the scraper unit is installed before the board is turned, followed by a board sweeping brush. This ensures a clean surface after each pass and prevents build-up in the first place.

In the case of a build-up that can no longer be removed, for example due to spraying of hydrophobic agents (acrylates) for stone protection, or also in the case of a hardened concrete layer after insufficient, unsatisfactory or delayed cleaning, there is a final solution to restore a clean surface. The built-up layer can be restored to virtually its original state by grinding the production board. Beware that this solution approach cannot be carried out for all types of production boards without risk of damage. Moreover, regrinding is not always economical. This is especially true for inexpensive wooden boards or also many wooden polyurethane coated boards, because these often must be re-coated with PU after grinding. This involves high costs. For solid plastic boards, on the other hand, grinding is a very economical solution,

because the homogeneous solid material means that no post-treatment is required after grinding. Possibilities and limitations should be detailed in advance.

In the case of minor damage, in addition to surface maintenance, there is also the option of restoring it to its original condition with a repair kit. However, only minimal damage can be repaired. The corresponding repair kits are available with instructions, so that the repair work can easily be performed in the factory itself. In the case of major damage, there is usually the option of a repair at the manufacturer's plant, naturally always under the aspect of cost-effectiveness.

On the whole, a little effort, the right precautions and a keen eye on the means of production can save a lot of time, trouble, energy - and ultimately money.

#### FURTHER INFORMATION



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