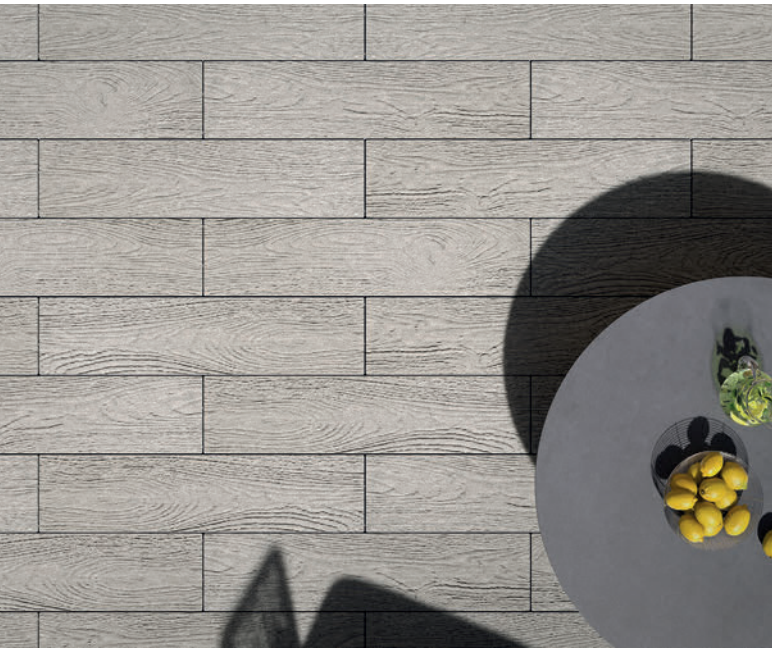
SR Schindler, 93057 Regensburg, Germany

Precondition for value-adding processes for concrete products

Value-adding, no matter for green or cured products, in general makes sense only with double layer products or products consisting only of facemix. Double layer products consist of backmix made of cheap material like sand, cement, water and stone of minor quality and facemix made of superior material like white or grey cement, water and aggregates (natural stone) like granite, quarz, basalte, marble etc. The backmix layer serves only as carrier for the facemix layer. By value-adding processes these aggregates get exposed and treated that the beauty of natural stone becomes visible and the surface feel soft and more comfortable. Apart from the appearance of value added products, the treatment by shotblasting also cares for anti-slippery surface and protects the product surfaces by coating from environmental impacts like contamination by jawing gums etc..

The demand for value added products in privacy as well as in public domain is constantly increasing because compared with natural stone or ceramic products, concrete stones, slabs, curbstones, wall stones etc. are lower priced and easier to lay. Due to their robustness, they are appropriate for outdoor and indoor application.



Timber appearance of slabs

Modes of Value-adding

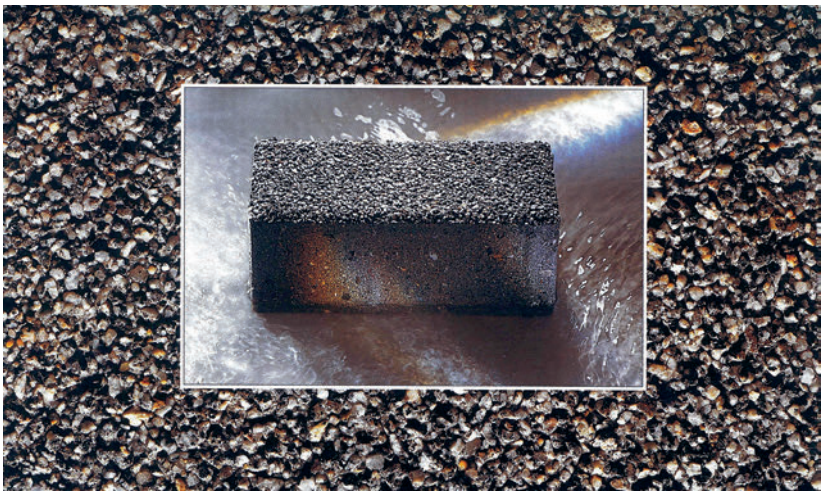
Value-adding of green products

During production of paving stones or slabs in a stone making machine also coloring of product surface is possible by adding 2-3 additional color pigments to the grey concrete.

Upon production of slabs in a hermetic press coloring or marbleizing of facemix can be done by an additional small machine which gets connected with the press, respectively the facemix doser. In standard execution this machine is executed with 2 containers for feeding of 2 liquid colors.

Colored hermetic slabs

Washed hermetic slab



Washed paving stone

Directly after production either in hermetic press or in a stone making machine the green products can be washed. By washing the surplus of cement gets removed and thus the aggregates protrude and get rinsed and dried afterwards. This process brings out the brilliance of the aggregates and avoids slickness of product surface. For washed surfaces the aggregates have to have a sufficient grain size that they do not fall out of the cement bed when during washing cement gets partially removed.

Value-adding of cured products

Compared to value-adding of green products there are much more possibilities of value-adding with cured products which get treated mechanically and/or chemically.

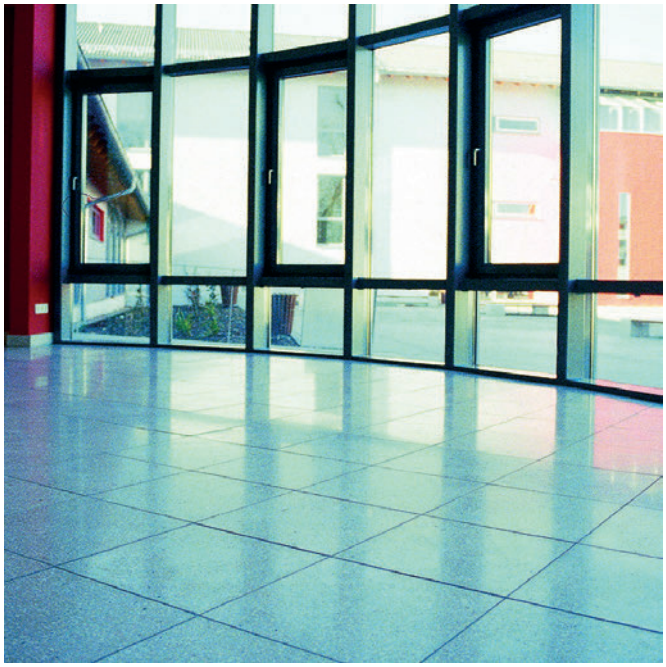
The most common value-adding processes for pavers and slabs:

- Grinding
- Shotblasting
- Curling
- Impregnating / Coating
- Printing

Grinding

Upon grinding the concrete products get treated by special milling and grinding tools in wet or dry process. During this process material gets removed and the aggregates get cut. The grinding range goes from only slightly ground up to highly finished depending on the machine stations used and the parameters (i.e. belt speed, rotation speed of grinding discs) set. For products which are only slightly ground additional shotblasting and/or curling after the grinding process are recommended.

Ground products with colored aggregates show a high brilliance, while grinded grey products look very elegant and premium. Furthermore, a ground surface is easier to clean than a non-treated surface. Due to this reason ground products are quite often used in public areas, i.e. airports, hospitals and shopping malls.



Ground slabs for indoor area

Shotblasted slabs

Shotblasting

Shotblasting with steel or stainless steel balls exposes the aggregates by partial removal of concrete in which the aggregates are embedded and roughens the surface. Shotblasted products that way are anti-slip and thus well suitable for outdoor areas.

Shotblasting can be done after rough grinding or before curling but can be also a sole value-adding process. Process parameters like belt speed, rotation speed of turbines, ball size etc. can create different product surfaces and thus enlarge the product portfolio.

Curling

After shotblasting the next step is curling which applies a mat gloss on the product surface and comfortable haptics. With

Textured curled slabs

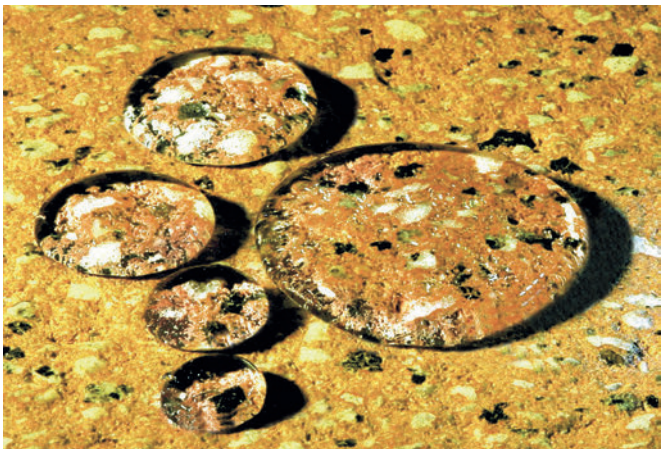
this process the surplus concrete gets removed by means of rotating brushes and the aggregates get exposed and slightly polished. Also textured products where grinding does not make sense can be curled.
Curling, however, is not only a value-adding method but is highly recommended also before coating and printing. By means of brushes and high performance cleaning which is installed at the exit of the curling machine the residual dust gets removed from the surface. The dust-free surface makes the penetration of coating agents in the facemix more effective. Proper coating is a precondition for long-lasting surface protection and durable printing.

Impregnating / Coating

Coating is the final step of value-adding and serves as protection of finished products against climatic conditions and contamination, respectively for easier cleaning. In relation to the chemical agents used the application of primer and sealer gets done either by spraying nozzles or rollers. Infrared or UV modules care for preheating and drying.

Printing

Printing is a very elaborate process which requires research in laboratory, a close cooperation with color supplier and supplier of printer. Priming before printing and coating afterwards are obligatory.



Coating serves as protection of finished products against climatic conditions and contamination

Additional treatment options for pavers, wall stones, palisades and block steps

Bush hammering

If the ambient architecture requires a rustique and/or historical appearance the value-adding processes bush hammering, aging, splitting and edge treatment for pavers, wall stones, palisades and block steps are recommended.

Colored pavers with aged surface

Bush hammered pavers with broken edges.

Aged pavers (foil for surface protection used)

Split wall stones with split capstone

Split wall stones with untreated edges (straight edges)

Upon bush hammering and aging the product surface gets treated by mechanically driven tools (hammers). During the bush hammering process the product surface gets roughened and the upper edges get chipped off. Upon aging only the upper edges get chipped off and the surface remains untreated. To avoid hammer marks on the surface during aging a moving foil runs between product surface and hammers.

Splitting

For imitation of natural stone walls and old natural pavers splitting is the appropriate method. By means of splitting knives from top and buttom, working as pincer principle, the products get broken.

Edge treatment

Since the broken products show straight edges which look unnatural especially for wall stones and palisades up to 12 edges can be treated with rotating chains by the edge treatment machines (1 machine for horizontal edges and another one for vertical edges). That way the products look then like a natural broken stone. ■

Split wall stones with column with treated edges

SR SCHINDLER

SR SCHINDLER sponsored the free download possibility of the pdf of this article for all readers of CPI. Please check the website *www.cpi-worldwide.com/channels/topwerk* or scan the QR code with your smartphone to get direct access to this website.

FURTHER INFORMATION

SR SCHINDLER

SR Schindler
Hofer Straße 24
93057 Regensburg, Germany
T + 49 941 696820
info@sr-schindler.com
www.sr-schindler.com