NATURE WANTS TO DO A WHITEWASH JOB ON YOU.

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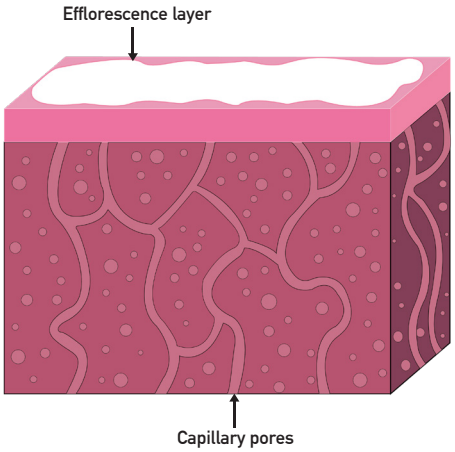
Beautify your world

When white patches start to appear here and there on the surface of your coloured stone pavers or bricks you may think that it's all over with your attractive path, terrace or veneer. More than likely you'll blame it on the manufacturer. Unjustifiably in most cases, because this so-called efflorescence is a natural phenomenon.

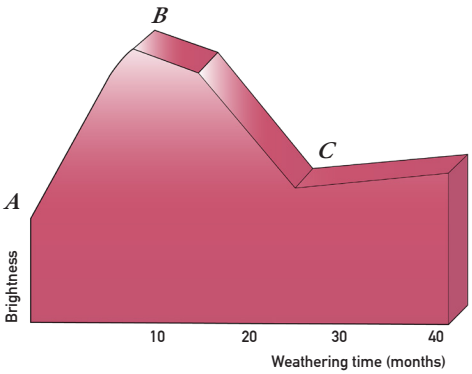
Efflorescence is perfectly natural

Coloured paving stones are made of concrete, a purely natural product. Concrete consists of sand, gravel, cement and water, with the cement being produced by burning together, among other things, alumina and lime. As with all natural raw materials, the composition of these substances can fluctuate, depending on their origin. Water in the form of rain, condensation or dew penetrates into the pores of the concrete and dissolves part of the lime. The solution diffuses to the surface, the water evaporates and leaves behind a barely soluble, white film of lime. Since the lime content of the concrete can vary and the weather conditions (rains, snow, draughts, cold, heat etc.) differ everywhere, the level of efflorescence can also fluctuate considerably. The chemical process which the lime undergoes during weathering is not over when it reaches the surface of the paving stone. Here, it is slowly degraded or washed away by the rain so that, in the end effect, the efflorescence disappears after a while by itself. As only the lime which is not firmly bound by the other raw materials in the concrete can move to the surface, the phenomenon does not usually recur once it has disappeared. That is why there is no need to replace the stones or take other measures against the efflorescence.

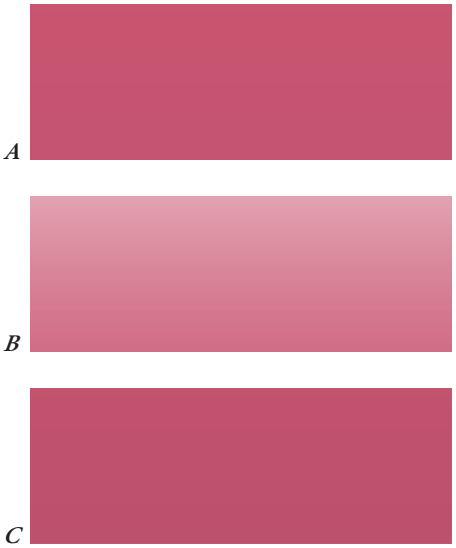
Schematic drawing of efflorescence on a paving stone.



Average development of lime efflorescence. Points A, B and correspond to the pavers show below.



Extreme example of efflorescence on concrete block in a laboratory test.



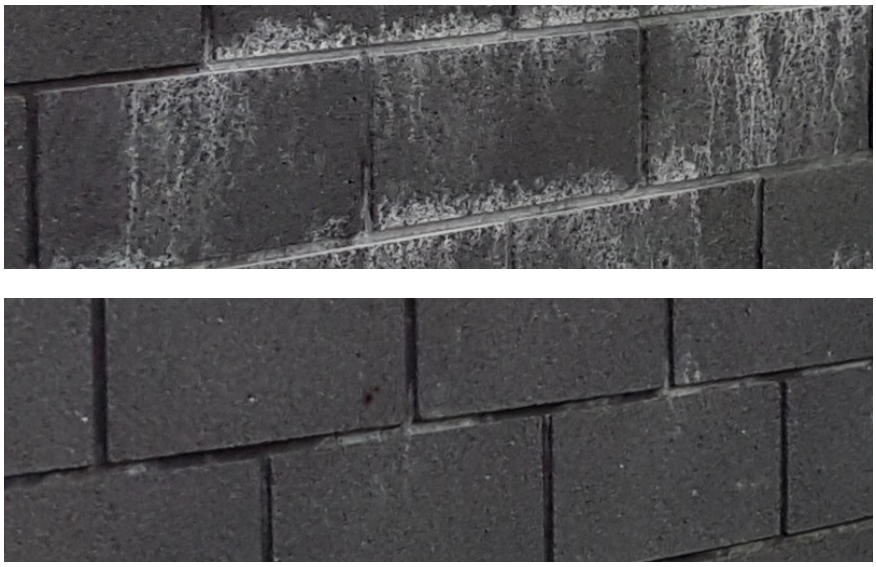
Can efflorescence be nipped in the bud?

Care during the manufacture of the coloured paving stones or bricks is the best recipe. Sufficient compaction of the concrete prevents excessive amounts of open pores which open the way for water to penetrate inside. In addition, setting the concrete in a humid atmosphere can reduce the tendency to efflorescence.
As packaging films promote the formation of condensation, the paving stones should not be stored for too long under these conditions.
Strict quality control and close cooperation between our technicians and the manufacturers have proved highly successful. Constant trials with artificial weathering systems, investigations with various setting methods and other tests have helped the manufacturers to improve the quality of their coloured paving stones or bricks.
However, even with all these precautions, there is as yet no economically viable method for reliably preventing efflorescence.

Some more examples of efflorescence on coloured concrete paving and brick.

Efflorescence doesn't last forever

Rain usually washes the efflorescence away again in about 1 or 2 years. Anyone not wishing to wait that long can use dilute hydrochloric acid (1 part hydrochloric acid, 5 parts water) as a quick remedy. This has the additional advantage of washing out the lime in the upper layers of the concrete. However, the stone surface becomes rougher and the shade changes slightly. The acid should be washed off thoroughly with water afterwards.



Picture, centre: Artificial efflorescence on concrete bricks.
Picture, bottom: The same bricks after weathering for 1 year.