

## REMOVING EFFLORESCENCE

This bulletin addresses concerns and questions about efflorescence and mineral film discoloration on Portland cement grout.

Efflorescence is a mineral deposit that sometimes leaches or migrates to the surface of the grout. These minerals occur naturally as part of the Portland cement which is mined and processed from the ground. Additional minerals can also come from the water source used with the grout or placed on top of the grout for maintenance. Although unsightly, the mineral deposit can be removed with a proper washing with a mild acid solution.

Efflorescence can form shortly after grouting, resulting in a brand-new installation that may look splotched or completely covered with a white crust or film, to the dismay of the owner and those associated with the installation.

Many kinds of salts have been detected in samples of efflorescence. These include sodium sulfate, potassium sulfate, sodium carbonate, calcium sulfate, sodium bicarbonate and calcium carbonate.

These salts are found in cement and may also be found in the water mixed with the grout. Custom® Building Products incorporates chemicals within the grout to minimize the effects of efflorescence, but efflorescence cannot be totally eliminated. Grout mix consistency, evaporation conditions, and actions/events beyond grout manufacturer control influence the occurrence of efflorescence.

Because jobsite conditions change from one application to another, it is important to adjust grouting techniques.

Dense bodied tile (porcelain), polymer-modified setting mortar, and dense substrates prolong the time grout takes to become firm before clean-up. Water mixed with the grout has nowhere to go but upward, and will carry minerals to the grout surface. A wet grout mix and/or clean-up before grout is properly firm will create the conditions for efflorescence to occur, especially in cooler conditions [50° - 70° F (10° - 21° C)] or when temperature swings occur during the grout's initial stages of curing.

Efflorescence removal as well as minor grout haze may be achieved with TileLab® Sulfamic Acid Cleaner. Sulfamic acid is a mild, odorless acid that is intended for use with non-acid sensitive veneers such as ceramic or porcelain tile.

Grout must cure a minimum of 7 days before acid cleaning. A mixture of 1/2 lb. (.23 kg) of Sulfamic acid crystals to one (1) gallon (3.78 L) of very hot clean water is recommended. Always test in a small inconspicuous area and allow to dry completely prior to treating the entire installation.

SATURATE the area to be cleaned with clean water and let soak for 1 hour. Now wipe up all excess water and apply the acid solution. Pour enough acid solution on the grout to puddle in the joint and scrub it with a stiff nylon bristle brush. After scrubbing let acid set on grout for approximately 5 minutes then scrub again. Then wipe up all acid solution with clean rinse water.

As a final rinse it is necessary to neutralize the acid. This can be done by mopping or sponging with TileLab® Marble & Stone Cleaner Concentrate. Let dry a minimum of 12 hours before applying any sealers or colorants.

Always observe product precautions and wear appropriate safety equipment. Acid cleaners must not be used on soft natural stone such as Marble, Limestone or Travertine installations. Non-acidic cleaners must be used for these acid sensitive materials. Contact Technical Services for recommendations.

Never seal grout that is not satisfactory in color, hardness or appearance. Normal sealers are not designed to correct a "problem" grout job. Application of sealers over a "problem" grout will only tend to enhance the grout problem and prevent usage of simple corrective measures.

### **ADDITIONAL EFFLORESCENCE INFORMATION IS AVAILABLE FROM THE FOLLOWING ASSOCIATIONS:**

TCA Manual, Document A-7

MMSA Bulletin No. 6 and No. 9

Portland Cement Association: Efflorescence

If you require further assistance or additional information please contact Technical Services.



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