

## **EFFLORESCENCE: A simple Explanation, A Simple Solution**

### **What is Efflorescence?**

Efflorescence is a deposit of soluble salts, usually white in color, which sometimes appears on the surface of masonry or concrete construction. Often efflorescence is apparent just after the structure is completed, when the builder, architect and owner are most concerned with the appearance of the new structure.

There is no need to panic; however this phenomenon has a simple explanation and an equally simple solution. A combination of circumstances causes efflorescence:

1. First, there must be soluble salts in the masonry.
2. Second, moisture must be present to pick up the soluble salts and transfer them to the surface.
3. Third, some force, evaporation or hydrostatic pressure must cause the solution to move.

If any one of these conditions is eliminated, efflorescence will not occur. In most cases, salts that cause efflorescence come from construction materials, masonry units or mortar.

There are occasions when efflorescence occurs from a chemical reaction between the chemicals in the materials and the chemicals in the atmosphere. Efflorescence is particularly affected by temperature, wind and humidity. It is more common in the Western States during the winter months when more rain is present and a slower rate of evaporation allows migration of salts to the surface. Moisture may also enter a masonry wall due to vapor from the interior of a building and accumulate within the wall as it condenses, or rainwater may enter the masonry during construction. Proper protection can help alleviate this problem.

### **Will Waterproofing Cure Efflorescence?**

Waterproofing materials are designed to inhibit efflorescence by preventing rainwater from entering the wall. However, they have no effect on efflorescence caused by construction moisture.

Efflorescence is a normal construction "phenomenon". Once the building is waterproofed we can expect a certain amount of efflorescence caused by residual construction moisture. Once that efflorescence is removed we expect no new efflorescence. In other words no new water is allowed to enter the walls.

Waterproofing materials are designed to prevent the formation of efflorescence caused by rainfall. They are not designed to "hold in" efflorescence caused by construction moisture as this "holding in" could cause pressure buildup in the wall, causing spalling of the surface.

### **How to Remove Efflorescence?**

We recommend a light dry sand blast where possible or removing the white powder with a stiff bristle (not wire) brush. Also recommended is the use of high-pressure chemical cleaning equipment designed to energize the water by heating it. The force of the hot water and chemical hits the substrate with needed impact to remove efflorescence and mortar stain without damaging the masonry surface.

### **Preventing Efflorescence From Coming Back.**

Allow masonry to dry sufficiently before applying waterproofing! Three or four days may be required, depending on weather conditions. In general the safest practice is to apply waterproofing as soon as the surface is dry to a depth of at least one half inch. Residual moisture in the wall will escape to either the inside or outside, (the warmest side). Efflorescence deposited on a waterproofed surface is more easily removed. In addition, new waterproofing will penetrate through existing efflorescence.

If, however, a building is erected during late spring, or early summer, a more practical approach is to delay waterproofing until after the walls have thoroughly dried and have been cleaned. Naturally, "dry" cleaning is preferable. If efflorescence reappears, it tells you that there is leak in the building. When the leak is found and repaired, the cause of the efflorescence problem is removed.

**For technical services, please call Combocrete International Products Company at**

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