

## CONCRETE COMMUNICATIONS

AQURON AQUATICS DIVISION

AQURON'S PROGRAM FOR EFFLORESCENCE CONTROL

To solve the problem of efflorescence, we must have at least a basic understanding of how it develops and thereby establish methods to prevent this unsightly condition from starting and reoccurring.

Efflorescence is a deposit, usually white in color that appears on the surface of concrete, masonry, and tile surfaces from soluble salts in the concrete, masonry units, or mortar and grout in CMU and tile applications. For efflorescence to exist at all, you must have a number of items present:

- 1. Soluble salts in the mix that can come from calcium, potassium, sodium, magnesium, or iron, or a combination of any or all of the above, and others.**
- 2. Moisture to dissolve the salts.**
- 3. Hydrostatic pressure, gravity, or evaporation to move the salts to the surface.**
- 4. Final evaporation of the moisture leaving the salts on the surface.**

Efflorescence is usually more noticeable after a winter season since the evaporation rate is slower than in the summer. A slower evaporation rate in the winter allows more salts to appear on the surface. In our experience, the most difficult condition occurs when calcium hydroxide, a product resulting from the reaction of cement or lime and water, combines with carbon dioxide in the air and forms calcium carbonate and is left to harden. The faster the efflorescence is removed, the better the results. If left to harden, the efflorescence is extremely difficult to remove. Buildup can then form a tube or tunnel back into the structure from which the efflorescence will continue to flow and leach out. It is like a super highway for the deposit of the white, flaky residue. Existing efflorescence should be removed before the appearance problem also becomes a more serious issue that may break or crack tile or concrete.

Recognizing the origin or the efflorescence problem, the staff of the Aquron Aquatics Division has identified three basic areas that should be addressed to prevent efflorescence in typical pool construction:

- 1. The basic shell core of concrete, whether Shotcrete, Guniting, or poured concrete.**
- 2. The plaster coat.**
- 3. Mortar and grout in a tile application especially in a raised spa or vanishing edge design where water is constantly in motion over the surface.**

## **Aquron Aquatics Division**

### **Aquron's Program for Efflorescence Control**

**The basic concept is to stop the water from moving through the system**, thereby preventing the salts from going into solution. Aquron has two products to address the above three conditions:

#### **1. AQURON CONCRETE POOL SHELL PROTECTOR (CPSP)**

CPSP – applied with an airless sprayer, atomizes the product, penetrates 3 – 5 inches into the concrete, reacts with the alkalinity in the concrete and changes from a liquid to a solid hydro-gel inside the concrete, waterproofing the system. It is not a surface sealer; it however conditions the surface of the concrete to create a better bond for the plaster coat.

#### **2. AQURON MGS-MORTAR AND GROUT SOLUTION**

This liquid material is first mixed into the water before using it in the formation of mortar and grout; densifying and waterproofing the mortar and grout.

The program for control of efflorescence in pool construction therefore begins with the following steps:

#### **1. Spray the Shell**

Using the Aquron Concrete Pool Shell Protector (CPSP); spray the concrete shell at the rate of 150 SF/Gal in accordance with the CPSP Application Manual. For best results, spray the CPSP the morning after the pool has had the Shotcrete or Gunitite applied.

#### **2. Spray the Plaster Coat**

Using the Aquron Concrete Pool Shell Protector (CPSP); overspray the plaster coat with a light application at the rate of 300 SF/Gal. For best results, wait 24 hours before filling the pool. As with the Concrete Shell, this spray application can be applied the day after the plaster process has been completed. It is also believed that this application, as it strengthens the plaster coat, will also have the effect of stabilizing the coloring pigments used in the mix.

#### **3. Mortar and Grout in Tile Application**

Using the Aquron MGS-Mortar and Grout Solution; mix at the rate of 2.5 ounces of MGS- Solution to 1 Gallon of potable water prior to mixing with sand and cement. This will prevent water washing over a vanishing edge from leeching out any soluble salts.

Efflorescence is a condition that is readily seen in water features; however, use of the Aquron products has many other benefits as well. Contact your Aquron Representative for further details on how our products may help you.

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