Q: What is Efflorescence?

A: Efflorescence is a fine, white, powdery deposit of water-soluble salts left on the surface of masonry as the water in the salty solution evaporates. These efflorescent salt deposits tend to appear about a month after the building is constructed, and sometimes as long as a year after completion.

Efflorescence is not a simple subject. Three conditions must exist before efflorescence will occur.

- *First*: There must be water-soluble salts present somewhere in the wall.
- *Second*: There must be sufficient moisture in the wall to render the salts into a soluble solution.
- *Third*: There must be a path for the soluble salts to migrate through to the surface where the moisture can evaporate, thus depositing the salts which then crystallize and cause efflorescence.

All three conditions must exist. If any one of these conditions is not present, then efflorescence cannot occur. Even if soluble alkali sulfates exist in a masonry wall, before the sulfates can cause efflorescence the salts must be dissolved into solution by water. If no moisture reaches the sulfates then they cannot be rendered into solution and migrate to the surface where the water will evaporate, leaving the sulfate salts on the surface to crystallize and become efflorescence. Attention must be given to preventing any soluble alkaline sulfates from being rendered into solution by water.

The next critical concern is to prevent any water from penetrating into the masonry wall where it could cause efflorescence. This can be done with good architectural details and quality masonry construction. Designing with overhanging eaves, copings, and flashings, and careful attention to landscaping and sprinklers will reduce the chances of water entering the wall.

As mentioned earlier, for efflorescence to appear, the alkali sulfates must be able to travel through the pores in the masonry to the surface. If the natural pores in the wall can be reduced, it becomes harder for the salts to migrate through to the surface. Grout admixtures that claim to inhibit efflorescence can also be used. These chemical additives claim to improve the flow of the grout mix while decreasing the water content. They also claim to reduce voids in the grout due to shrinkage.
Special care must be taken when using these grout admixtures. Individual manufacturers have developed them and their actual contents are protected trade secrets. The manufacturer's recommendations must be closely followed.

To summarize, three conditions must exist before efflorescence can occur. If any one of these three conditions is eliminated, there should be no efflorescing of masonry walls.

Recommendations:

1. Reduce soluble alkali sulfates.
2. Use good details to prevent water from entering the masonry.
3. Use good construction practices to eliminate migratory paths for moisture.
4. Cure and seal new stucco with a water-repellent, breathable sealer such as SRK's StuccoCure.
5. Remove efflorescence on painted masonry, then prime with SRK's Stucco Recover, and paint with a 100% acrylic latex exterior paint.