February 10, 2007

Re: Efflorescence

With the high amount of rain we sometimes can experience in California, the Residential Plastering Association of California (RPAC) has put together this letter in an attempt to educate and explain the multiple causes of efflorescence in stucco.

During periods of damp and rainy weather, home and building owners may notice a white powder on their exterior wall surfaces. Efflorescence or Alkali is the term used to describe the whitish bloom or salts that appear on exterior stucco, brick, concrete walks, driveways and masonry surfaces. The dictionary defines efflorescence as the growth of salt crystals on the surface due to the evaporation of salt laden water, a flowering, or blooming of powdery crystalline deposits. This condition may appear during wet weather or when a concrete masonry surface receives water from a concentrated source such as a sprinkler.

When the condition appears on stucco, it is important to realize that the white crystalline bloom is not the result of faulty materials or improper application, but rather a deposit of mineral salts from a variety of possible sources.

Tom C. Geary, consultant to the plastering industry, points out in his article (available at www.stuccoguru.com) - Efflorescence: “Efflorescence is a deposit of mineral salts on the surface of concrete, plaster or masonry that may be composed of varying mixtures of carbonates, sulfides, chlorides, and other salts of calcium, sodium and related metals. The deposits may be soluble or insoluble in acid or water after it is formed.” He goes on to describe their source. “What is the source of whitish bloom that arises to the surface? All materials commonly used in making a plaster mix carry some water-soluble salts such as the water, cements, lime and clay, if used. Even rainwater carries dissolved sulfates from the air into concrete or plaster, which may travel to the surface and appear as a coating. The leaching action of mix water and curing water that might be applied to the wall could later bring the dissolved salt to the face of the wall. Some of the chemical salts that appear on the surface may combine with the carbon dioxide of the air to form carbonates.” Mr. Geary went to note that soils could also carry excessive amounts of soluble mineral salts that may rise into concrete or stucco that is in contact with the ground or ground water.

Efflorescence as a problem has been studied and reported for more than 100 years. The reports agree that efflorescence originates from more than one source and may be comprised of more than one or two compounds.

Efflorescence or Alkali has been a problem for many years in stucco, brick, masonry and concrete. In dry, arid areas, such as Southern California, we tend to forget about it until we have periods of heavy rain and efflorescence occurs. Efflorescence is not due to application or faulty materials, but rather the migration of mineral salts from a wide variety of sources including soil, rain, and mix water.

We hope this letter will help educate homeowners and homebuilders about the causes of efflorescence. Also available is a copy of the Stucco Manufacturers Association article regarding efflorescence and within the article are remedies that can correct the problem. If you have any further questions regarding this issue, please feel free to contact any of the RPAC member companies.

Sincerely,

Residential Plastering Association of California