

Efflorescence is a discharge of mineral salts deposited to the surface of concrete, masonry, stucco or EIFS. The chemical composition is a varying mixture of carbonates, sulfides, sulfates, chlorides and other salts of calcium or sodium.

These salts are typically harmless to the wall system and to the integrity of the material. The issue is rather cosmetic. Efflorescence can be removed and the earlier, the better. Staining can occur in the finish wall if the efflorescence sets for long periods of time. Darker colors tend to show stains more readily than lighter colors, which may require color adjustment.

Lime, cement, sand, mix water and even rainwater carry variable amounts of nitrates, sulphates and water-soluble salts from the air. In most cases the amounts are very small, and efflorescence is not an issue. Some soils carry an excessive amount of soluble mineral salts and can be brought up the wall by capillary action.

What causes efflorescence? Rains or cool damp weather followed by a warming sunshine is the most likely time for efflorescence to appear. A lime plaster that stays wet or damp will allow the salts to slowly dissolve and rise to the surface by water or evaporation. Many consultants see efflorescence leeching from a hairline crack in a stucco wall and assume that large volumes of water are flowing behind the plaster wall and washing the efflorescence to the surface. That is not the case. Typically, rainwater runs down alongside the wall, and some penetrates. Cracks will absorb moisture but rarely allow more than an incidental amount of moisture into the system. Cool weather keeps the area wet and allows the water-soluble salts to be drawn out when the sun warms the wall. When evaporation is complete, the salts stay on the surface.

How to remove efflorescence: The first attempt consists of dry brushing the white powder off the wall. This will not always work. In most cases, it will be necessary to wash the wall with an acid wash, a vinegar solution or a product specifically designed to remove efflorescence. Products specifically designed to remove efflorescence are safer and therefore rather recommended for public use. Muriatic acid (hydrochloric acid) also works well and should be mixed in a ten to one (10:1) ratio with water. Ten parts water to one-part muriatic acid. Extreme caution must be exercised when using muriatic acid. This acid is extremely corrosive. Use a mask, protective clothing, eye wear, and rubber gloves. And protect surrounding areas.

Always pre-wet the wall, starting from the bottom to the top. If the solution runs off on concrete or asphalt, this area must be pre-wet and rinsed thoroughly with clean water. Once the wall is wet, a Hudson type sprayer can be used to spray the solution. A stiff brush can be dipped into the acid wash to lightly scrub the affected area starting from the bottom up. It is recommended to wash the entire wall section to an architectural break as the solution wash may slightly lighten the color of the finished wall.

Caveat about dark colors: The reason for the increase in efflorescence with darker colors has to do with higher surface temperature during a warming trend and after a cool damp weather. Dark colors absorb more heat than lighter colors. The heat absorbed by a dark color will cause higher surface temperature even in mild climates and this in turn can cause a faster and deeper rate of evaporation of moisture. The moisture that evaporates may be loaded with mineral salts. Stronger evaporation can deposit more of these salts on darker colors. Some preventive measures that can help reduce the likelihood of efflorescence. The finish could be protected with a clear, permeable sealer like SILACRETE, which will act as a non-intrusive barrier against moisture.