

EFFLORESCENCE

Efflorescence is a common condition that can appear on cement-based surfaces such as stucco, masonry, and concrete. It shows up as a white, crystalline residue on the surface (Figure 1). While it can be visually concerning, efflorescence is usually a cosmetic issue, not a coating failure. Understanding how and why it occurs helps set proper expectations and guides appropriate coating selection and application practices.



Figure 1

Efflorescence occurs when water moves through a cement-based substrate, dissolves naturally occurring salts within the material, and carries them to the surface. As the water evaporates, the salts are left behind, forming the visible white deposit. Efflorescence most commonly appears during cool, damp weather followed by drying conditions, often shortly after construction or coating application, particularly in spring or fall.

Why Efflorescence Occurs

Water is the driving force behind efflorescence, which forms through two primary mechanisms:

- **Primary efflorescence** occurs during the early curing stage of cementitious substrates. Excess moisture in freshly placed stucco or masonry can migrate to the surface as the material cures, carrying salts with it.
- **Secondary efflorescence** occurs after the substrate has cured and is later exposed to moisture from rain, condensation, or surface wetting. Water enters the substrate—often through hairline cracks or pores—and then moves back to the surface as the wall dries, depositing salts as it evaporates.

In many cases, the water does not come from behind the wall. Instead, it runs down the face of the surface, is absorbed into small cracks or openings, and then migrates outward during drying. Dark-colored finishes can increase the visibility and intensity of efflorescence because darker surfaces absorb more heat, which can speed evaporation and draw more salts to the surface.

Correction

Efflorescence should be addressed as soon as practical, starting with the least aggressive cleaning method. Power washing is generally not recommended for efflorescence removal, as high pressure can drive water into the substrate, increasing the likelihood of recurring efflorescence and potential surface or coating damage. In many cases, dry brushing followed by rinsing with clean water is sufficient. If deposits persist, use a water-vinegar solution or a product specifically made to clean efflorescence,

following label directions. Stronger acid solutions should be used only with caution and appropriate safety measures. Areas should be pre-soaked with clean water to prevent staining of unaffected areas. Apply the acid/water solution by brush or low-pressure spray, and rinse thoroughly and quickly with clean water.

Repeat applications may be needed for severe cases. In some situations, a residual stain may remain and may require repainting once the salts are removed and the surface has fully dried.

Prevention

While efflorescence cannot always be eliminated, good building practices and proper coating application can significantly reduce the likelihood and severity.

Efflorescence is driven by water moving through masonry, so moisture control is the first priority. Make sure water drains away from walls and foundations, keep gutters and downspouts working, and fix common water sources such as leaking irrigation, failed flashing, unsealed penetrations, and cracked joints. Where possible, seal control joints and transitions, and keep sealant and waterproofing in good condition to limit water entry.

Before painting, allow the substrate time to cure and dry, and confirm it is ready to coat. New concrete and masonry should be properly cured, and surfaces should be clean and free of dust, laitance, and existing salt deposits. When needed, check surface alkalinity (such as with pH testing) and address issues before coating.

Coating selection is equally critical. Use primers and coatings intended for concrete and masonry, and follow the recommendations for surface preparation and film build. In higher-risk exposures, choose products with better resistance to alkalinity and intermittent moisture. Even with the right products, avoid coating damp surfaces or areas with ongoing moisture intrusion, since salts can continue to migrate and reappear.

Finally, keep expectations realistic: if moisture is still moving through the wall, efflorescence may return. Long-term control requires finding and correcting the water source and maintaining the wall system to keep it as dry as possible.

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