

## ALKALI BURN

Alkali burn—also referred to as pH burn—is a condition that occurs when highly alkaline masonry substrates degrade the paint film. It is most commonly associated with fresh concrete, mortar, stucco, and cementitious siding, and it typically presents as fading or loss of color, blotchy or uneven appearance, and in more severe cases, premature chipping, flaking, or peeling.

### What Causes Alkali Burn

The underlying cause is the high alkalinity present in fresh or recently installed cementitious materials. Portland cement-based substrates contain lime and other alkaline compounds, and when they hydrate (mix with water) they can reach very high pH levels. Until the substrate has cured and the alkalinity has dropped, the surface can remain chemically aggressive and may degrade certain paint binders—especially oil-based and vinyl acrylic coatings. Elevated alkalinity can also react with alkali-sensitive organic colorants, causing noticeable color shift and washed-out or “burned” areas (Figure 1). Even after initial curing, moisture intrusion can reactivate residual alkalinity and contribute to related issues such as efflorescence, blistering, and peeling.



Figure 1

### pH Scale

pH indicates how acidic or alkaline a material is on a scale from 0 to 14 (Figure 2). A value of 7 is neutral; values below 7 indicate increasing acidity, and values above 7 indicate increasing alkalinity. pH is logarithmic because each 1-unit change represents a tenfold change in acidity or alkalinity. That means a pH of 10 isn’t just slightly more alkaline than pH 9 — it’s ten times more alkaline. Likewise, a pH of 12 is 100 times more alkaline than pH 10.



Figure 2

## Prevention

Prevention starts with confirming the substrate is suitable for painting. As a general guideline, masonry should be allowed to cure for at least 30 days, and the surface pH should be checked and confirmed acceptable before coating whenever possible—using a pH pencil (Figure 3) or similar field test method as a quick screening tool. When early coating can't be avoided, use a high-quality primer designed to block or resist alkaline attack and help manage efflorescence migration. Topcoat selection also matters: high-quality water-based finishes typically offer better resistance to alkaline environments than oil-based or vinyl acrylic systems. Color selection should also be considered under high-pH conditions, since some organic colorants are more prone to alkali-related fading or discoloration. Proper surface preparation further reduces risk by removing efflorescence and other contaminants, ensuring the surface is clean and dry, and repairing cracks or openings that allow moisture intrusion.

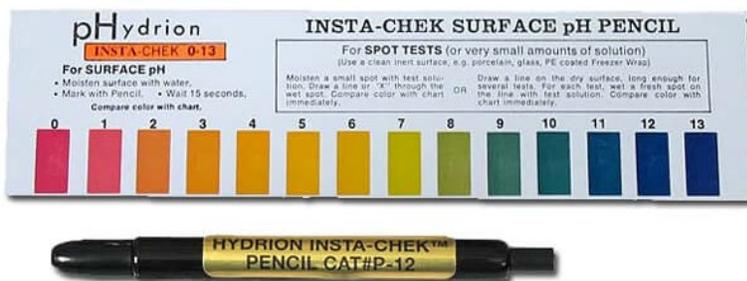


Figure 3

- To measure surface pH, wet the surface with distilled water.
- Draw the pH pencil across the surface.
- After about 15 seconds, compare the color change to the reference chart.

## Corrective Action

If alkali burn has already occurred, remove the damaged coating by scraping or other mechanical methods, then clean the substrate to remove any remaining lime deposits or efflorescence before recoating. Once the surface is dry and the pH is confirmed to be acceptable, apply an alkali-resistant masonry primer and finish with a high-quality water-based topcoat. This process increases the chance of achieving uniform color and maintaining long-term adhesion in the repaired area.

## Key Takeaways

Alkali burn is a preventable condition caused by coating highly alkaline masonry substrates before adequate curing. Fresh cementitious materials can exhibit extreme pH levels that can attack susceptible binders and react with certain organic colorants, leading to discoloration and, in severe cases, film failure. Cure time, pH verification, appropriate primer selection, and use of alkali-resistant coating systems are the key controls for achieving consistent appearance and long-term performance on masonry.

### *Where Color, Creativity & Chemistry Meet!*

2020 E. Orangethorpe Avenue • Fullerton, CA 92831  
(714) 680-3800 | [www.vistapaint.com](http://www.vistapaint.com)  
©2026 Vista Paint Corporation. All rights reserved.

Follow us

