Paver Efflorescence

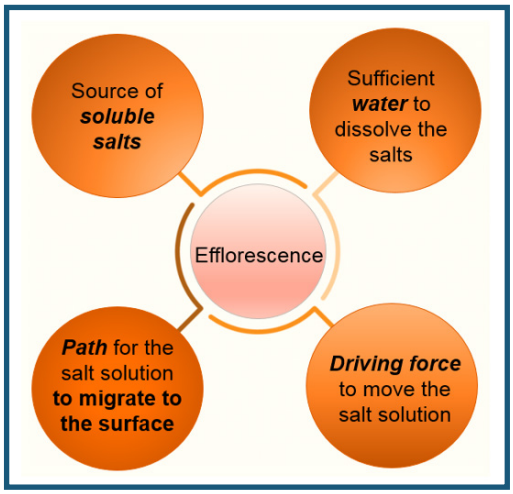
Troubleshooting Guide for the Sales Team

Highlights

This guide describes how efflorescence occurs and what to do when dealing with efflorescence issues in the field. Understanding the **four factor mechanism** and root causes of efflorescence is essential to minimizing its occurrence and preventing recurrence.

Efflorescence occurs when water containing dissolved salts is brought to the surface of pavers. The water evaporates and the salts are left on the surface as a white haze or layer.

The four factors are **simultaneous conditions** that must exist for paver efflorescence to occur. Therefore, if any of the factors is missing, efflorescence will not occur.



Troubleshooting

1. Evaluate each of the four factors to find the root cause
2. Propose solutions
3. Implement the solution and determine successs
4. ***Remember: if the root cause of the problem is not addressed it will likely come back!***

Questions	Deeper Dive
Is this a new occurence	• When did it first occur • Before or after installation • Were polymer sands used
How old was the system when it first appeared	• What has changed: new irrigation, landscaping, fertilizer, deicing salts
Did it appear after a change of season or exposure	• Unusual wet or cooler weather
Is the paver system well maintained	• Are drains clear and working properly. • Is there new settling or low points with ponding water. • Are there chips and cracks • Are the joints clear and within tolerance.

CMHA Paver Guides

***CMHA** PAV-TEC-002*

Construction of Interlocking Concrete Pavements provides construction guidelines for design professionals and contractors

https://www.masonryandhardscapes.org/resource/pav-tec-002/

***CMHA** PAV-TEC-006*

Operation and Maintenance Guide for Interlocking Concrete Pavement

https://www.masonryandhardscapes.org/resource/pav-tec-006/

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The Four Factors	Potential bad actors	What to look for (and ask about)
Sources of Soluble Salts	• Salts in the pavers • Underlying soils and groundwater • Fertilizer appllied to landscaping • Deicing Salts • Improper cleaning materials & methods • Increased solubility in cooler weather	• Pavers stored on the ground during construction, exposed to soil and dirt. • Lush turf in contact with pavers, efflorescence in areas in proximity to landscaping. • Pavers in freeze thaw environments, use of deicing salts. • Pavers that have been aggresively cleaned, cleaning materials residue. • Weather report from prior months showing cooler weather.
Sufficient moisture	• Prolonged periods of wet weather, especially during Spring and Fall • Irrigation • Poor drainage leading to ponding water on the surface and/or beneath the pavers • Colder weather (<50° F, 10° C) to help dissolve the salts • Improper installation methods or materials, especially improper base materials	• Pavers should be left in cube and covered when stored on the jobsite. • Weather report from prior months showing high rainfall over past weeks or months • Irrigation spray directed over, or draining onto pavers. • Slope of less than 2%. • Low points with ponded water or areas stained from prior ponded water. • Improper drainage: blocked drains, high drains. • Impervious surface beneath pavers e.g. concrete or asphalt. • Bedding sands that include excessive fines, waste screenings, reground concrete or stone dust.
Pathways	• Pavers with open surface texture and void structure	• Pavers manufactured with high absorption and low density.
Driving Forces	• Temperature changes between day and night (e.g. during Spring and Fall) • Humidity changes e.g. alternate dry and humid days • Evaporative winds	• Weather report from prior months showing cooler weather and high rainfall over past weeks or months. • Weather report with high winds.

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