

# REMOVING EFFLORESCENCE – FROM GRC PLANTERS

## What is Efflorescence?

Efflorescence is a white, salty looking material that appears on the surface of GRC planters that is aesthetically unattractive and dulls pigmented coloured finishes. Efflorescence is normally a build-up of calcium carbonate crystals, which are not water soluble. These crystals are formed after a water-soluble substance called calcium hydroxide, a by-product of the concrete curing process, naturally secretes from the planter walls and chemically reacts with the carbon dioxide in the air.

## Preventing Efflorescence

Satu Bumi's CityScape commercial planters are manufactured with several efflorescence preventing measures. These measures include the addition of high grade pozzolan, acrylic polymer and a Xypex waterproofing additive in the pre-mould mixing stage of their manufacture, and the application of quality-controlled curing, an internal waterproofing membrane, and an external water-resistant sealant in their post-mould manufacturing stage. Therefore, it is uncommon for any significant efflorescence to appear on Satu Bumi CityScape planters. However, there are some circumstances where efflorescence can occur, and it should be removed.

## How to Remove Efflorescence

The best approach to remove efflorescence will depend on the level of efflorescence involved. However, as a basic principle, since efflorescence is not a water-soluble substance, it is generally not effective to simply wash it off with water. Therefore, there are three approaches that we would suggest for removing efflorescence: -

### For light efflorescence

The best way to remove a light level of efflorescence is to: -

- a. Ensure the area with efflorescence is dry and clear of any dirt, loose concrete, or glass fibres.
- b. Apply a weak acid to chemically breakdown the calcium carbonate crystals from which the efflorescence is made. The weak acid can be white vinegar diluted by 50% with water.
- c. Allow the weak acid time to dissolve the efflorescence crystals. This may take half an hour or more. However, don't allow the planter to

- completely dry while the acid is still on the planter.
- d. Dislodge the broken-down residue with a firm bristled brush. Do not use a steel bristled brush.
  - e. Wash the residue off with water.
  - f. Because the surface of the planter will be wet during the removal process, it will be difficult to view the breaking down of the effloresce crystals or how well the process has gone. Therefore, you will have to allow the planter to dry, after removal of the acid, to see the results.
  - g. This process may need to be completed several times to get the best results and the acid dilution may need to be increased slightly each time if the crystals are not dissolving. However, avoid being too aggressive too quickly with the acid dilution to avoid edging the face coat surface of the planter.
  - h. Also, it is not recommended to mechanically remove light efflorescence with a tool or sandpaper because you are likely to damage the face-coat surface of the planter.

### **For medium efflorescence**

The best way to remove a medium level of efflorescence is to: -

- a. Use the same method as described above for the removal of light efflorescence. However, instead of using a weak acid, use phosphoric acid diluted by 90% with water.
- b. It is important to add the phosphoric acid to the water, NOT the other way around.
- c. Protective clothing, gloves, and a face and/or eye mask should be used.
- d. Apply the diluted acid mix to the planter surface gradually whilst scrubbing the surface with a firm bristle brush to dislodge the efflorescence crystals. Do not use a steel bristled brush.
- e. Wash the planter surface with plenty of water.
- f. Because the surface of the planter will be wet during the removal process, it will be difficult to view the breaking down of the effloresce crystals or how well the process has gone. Therefore, you will have to allow the planter to dry, after removal of the acid, to see the results.
- g. This process may need to be completed several times to get the best results and the acid dilution may need to be increased slightly each time if the crystals are not dissolving. However, avoid being too aggressive too quickly with the acid dilution to avoid edging the face coat surface of the planter.
- h. Also, it is not recommended to mechanically remove medium efflorescence with a tool or sandpaper because you are likely to damage the face-coat surface of the planter.

## For heavy efflorescence

The best way to remove a heavy level of efflorescence is to: -

- a. Carefully scrape off any heavy build up of efflorescence with a steel-edged tool.
- b. Avoid touching the surface of the planter to avoid unnecessary damage to the planter surface.
- c. Follow the same steps used for the removal of medium efflorescence.

## Replacement of External Sealant

The process of removing efflorescence from GRC planters will also remove their external sealant. However, the external sealant is important in avoiding freeze/thaw cracking and moss or algae build up on the planter surface. Therefore, it is recommended that the planters should be re-sealed, after removal of the efflorescence, with one of the following sealants: -

- “SureSeal Ezy-As 1-2-3” or,
- “SureSeal Graffiti Seal” if the planters have been externally sealed with a graffiti protecting sealant.

## Addressing the Cause of Efflorescence

A light level of efflorescence can occur over time on most GRC planters due to the nature of concrete. This is normal and is easily removed. However, if there is a medium or heavy level of efflorescence, the most common reason for this is blocked or impeded drainage. This will usually become obvious because the efflorescence will become less and less evident moving towards the top of the planters due to the rise and fall of the undrained water.

When planter drainage is blocked, water can fill or “pond” in the planters. However, planters are not normally sealed as ponds. They are typically sealed with the expectation that the water will drain. Therefore, if water ponds in planters, the water will find ways to penetrate the internal sealant over time. When it does, the water will eventually penetrate the planter walls taking efflorescence with it. To fix this problem, the planter drainage should be cleared to stop the ponding.

In addition, automated watering systems are notorious for creating planter ponding. Therefore, it is strongly recommended that when planters with significant efflorescence are also connected to an automatic watering system, the automatic watering system should be turned off until the drainage is cleared.

## ■ Efflorescence on Pigmented GRC Planters

When GRC planters have an integrated pigment coloured finish (i.e., the pigment colouring is included in the mix of the concrete and not simply applied to the surface, e.g., charcoal), the planters may appear to fade over time. However, this is generally not the case because most quality pigment colouring is UV resistant and therefore does not fade. What is probably happening is that small amounts of light coloured effloresce, which typically may not be noticeable on a standard grey concrete finish, are seeping from the planters. When combined with the pigmented background of the planters this efflorescence makes them look faded. Therefore, to bring back the full colour of the planters, you simply need to remove the efflorescent with the process described above for the removal of light efflorescence.

## ■ Disclaimer

The information in this document is provided in good faith. However, Satu Bumi assumes no responsibility for the results of the practical application of this information unless the application is provided directly by Satu Bumi employees or parties contracted directly by Satu Bumi.

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