



INFORMATION SHEET

BUILDING SERVICES

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DEALING WITH EFFLORESCENCE IN MASONRY

Efflorescence typically occurs when excess salts within the concrete or cement mortar is leached to the surface due to water transfer. It is typically seen as white salt deposits on the surfaces of concrete pavement or mortar between bricks or tiles.

Efflorescence normally occurs within the first year after construction and typically is only an aesthetic concern and does not pose any structural threat to the concrete or mortar.

Excess salts may come from either concrete or mortar with a high level of Portland cement that will contain high levels of calcium which creates the salt, or from impurities in the sand in some cases.

Generally a reasonable amount of water is required for the formation of calcium carbonate (white salt deposit). The carbonation process occurs when carbon dioxide and calcium hydroxide physically meet within the masonry and seep to the surface where calcium carbonate is formed.

PREVENTION

There are generally three methods of which can assist in preventing efflorescence:

- **Selection of ingredients** – Using ingredients which have minimum quantities of salts (eg. ensuring clean sand is used) can reduce the potential for deposits. Blended cement contains smaller amounts of calcium than Portland cement. The use of tools and mixers should also be well cleaned and free from rust.
- **Control of Moisture** - Moisture penetration into the masonry and mortar should be controlled or minimised. Masonry should be covered with polythene sheeting. Mortar joints that are exposed to weathering should be tooled to produce a smooth weather resistant surface. It is also important to minimise premature drying when curing by avoiding exposure to wind and excessive temperature immediately after casting.
- **Surface Treatment** - The use of water-repellent material such as silicone will restrict the entry of water and may minimise the formation of efflorescence. ***However, water-repellent material may prevent moisture escaping and cause problems such as crystallization of excessive salt beneath the surface which will trigger spalling or flaking within porous and soft masonry.***

REMOVAL

Generally knowing if the salt deposits are soluble or insoluble is the first step of removal:

- **Soluble salt deposits** can be removed by dry brushing with a stiff-bristled brush immediately after deposition. Using water in conjunction with brushing may cause salt deposits appearing again. Repeat dry brushing is an ideal treatment for eliminating this forming of efflorescence.
- **Insoluble salt deposits** can be removed using diluted acid such as hydrochloric acid to remove calcium carbonate efflorescence. Great care must be taken using this method as it may cause discolouration of the surface. The diluted acid solution should not be more than 2% (1:50) or 5% (1:20) in concentration. **Precaution should always be taken at all times when dealing with acid.**

HIA members can contact HIA Building Services staff for more information
on 1300 650 620 or hia_technical@hia.com.au.

DISCLAIMER - The above is intended to provide general information in summary form. The contents do not constitute specific advice and should not be relied upon as such. Formal specific advice should be sought by members with respect to particular matters before taking action.

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