KEIM Mineral Paints – Technical Digest

Efflorescent Salts

1. The Problem

It is common in buildings for soluble efflorescent salts to be present within the masonry. The behaviour of salts can seem unpredictable since they can remain dormant for long periods and then suddenly become active. The effects of soluble salts are linked with wetting and drying cycles.

The network of pores within a mineral substrate allows moisture vapour to pass through, in which salts, in varying quantities and types, can then become dissolved. As drying/evaporation occurs at the masonry face, this causes the salts to crystallise out, often producing the white crystals known as efflorescence on the surface. While these fluffy white crystals can appear dramatic, they are relatively harmless compared to hidden salt crystallisation (cryptoflorescence) which can occur within the pores below the masonry surface. If salts are not able to pass out of the surface they can accumulate in these fine pores which eventually get broken apart by the expansive forces of the crystal growth, causing the surface to decay and the render/masonry to 'blow'.

The movement of these salts should slow and eventually stop (as long as the water movement issue is resolved) but there is not really an effective way to completely stop them, however we have a two primers, namely Keim Silan Primer and Keim Silan 100, which have been successfully used on projects in the past, to slow the passage of salts in order to allow them to 'breathe' through the substrate without damaging the applied paint finish. The success of this is very much dependent on the extent and type of salts and unfortunately will not be able to stop damage to the substrate, if the levels are excessively high. Any badly affected areas may need to be treated as an ongoing maintenance issue.

2. Remedial Advice

Our advice would firstly be to brush any efflorescence from the surfaces with a stiff brush and remove the salt laden materials from the building. Any areas of blown/damaged substrate should then be hacked out to a sound edge and patch repaired. All newly repaired areas must be allowed to dry out for a minimum period of 15 days prior to the application of Keim Mineral Paints. Ensure that any paint materials left remaining and the underlying substrate is sound and adhering well.

Keim Silan Primer/100 should then be flood coated onto the bare patches only with a brush. Within a period of between 2-6 hours (Keim Silan Primer) or 4-12 (Keim Silan 100) - these times are critical, do not leave longer than 6/12 hours - Keim Mineral Paint should be applied as per the original specification.

In order for Keim to achieve its permanent bond with the surface it is essential that the following recommendations are followed.

- all areas to be decorated should be free from all surface contaminants, sound, dry and dust free
- materials must not be applied at temperatures below 5°C nor those in excess of 30°C

- materials must not be applied if it is raining or if there is an immediate likelihood of rain

- Keim Mineral Paints should be applied onto wind dry surfaces where the moisture content on or near the surface (to a depth of 5mm approximately) should be no greater than 18% by volume. For on-site purposes a moisture reading may be employed to give a qualitative reading – if the reading is in the green zone decoration may proceed

- always maintain a wet edge and work materials out well

- when ordering reference to the project should be made, to ensure that in the event of re-ordering a colour match can be supplied

Reference – http://www.buildingconservation.com/articles/salts/salts_masonry.htm

For further information regarding salt effloresence, remedial recommendations and primer suitability please contact our sales office sales@keimpaints.co.uk or 01952 231250.