Site practice & troubleshooting

EFFLORESCENCE

What is efflorescence.

The appearance of salt deposits on the surface of brickwork. They can derive from the brick body, mortar or contamination from other materials or ground water.

Cause & effect.

Salts within brickwork are dissolved by water which is introduced during construction or from rain. Shrink-wrapped packs of bricks can develop efflorescence if in contact with damp ground and condensation forms within packs. As the brick or brickwork begins to dry out the solution of salts will be drawn to the surface where the salts become more concentrated as moisture evaporates. This tends to be most prevalent when temperatures reach optimum levels for drying, i.e. Spring onwards.

Efflorescence is most prevalent in the early life of the building, particularly the first year. In many areas it will not reappear after the first year, and in those situations where it does, it will be less evident than the initial occurrence.

It commonly occurs in spring, following wet winter working conditions, when the building dries out for the first time.

Visible as a harmless deposit of soluble material on the surface of brickwork, its texture may vary from light and fluffy to hard and glassy depending on its composition. The deposits consist of natural occurring soluble salts which vary considerably throughout the country, not only within the clays used for the manufacture of bricks but also in the constituents necessary for the production of the mortar i.e. sand and cement.

Apart from the salts derived from the bricks and mortar, almost any salt can form efflorescence if it is introduced as a contamination from external sources. The quantities of salts involved are small and a tiny percentage of soluble sulfates in the bricks or the cement is sufficient to account for the amount of efflorescence usually seen.

Prevention.

Little, if any, masonry is immune from the potential effects of efflorescence. Factors that influence the occurrence of efflorescence are:

- *Design and detailing, e.g. lack of protection from sills and copings.*

- *Site practice, e.g. failure to protect unused bricks and newly built brickwork e.g. not affixing gutter downpipes, leaving cavities open to the elements.*

- *Site inadequacies -failure to observe design requirements e.g. inadequate formation of d.p.c detailing.*

- *Site exposure - specific building elevations can be more at risk than others by their position in relation to prevailing wind and rain conditions. Also particular areas of exposed brickwork, e.g. parapets.*

Attention must be given to these aspects in order to minimise the risk of efflorescence. Guidance on detailing and protection is given in the Design of masonry structures: EN 1996 and Recommendations for the design of masonry structures: PD 6697.

Efflorescence during construction can be minimised by maintaining a high standard of workmanship. Items for particular consideration include the following: