Expansive Particles

The presence of expansive particles such as Gypsum, Siderite and Lime containing compounds in clay deposits, is quite common in the brick industry.

Occurrence is usually controlled during factory processes as the particles are either ground too finely during clay preparation to cause problems, eliminated during firing, or are situated well beneath the surface of the brick where they are quite harmless.
Occasionally, due to a combination of factors, small particles can be deposited on or near the surface of the brick face.
After firing, when the brick absorbs moisture, a chemical reaction takes place. The particles swell which may cause portions of the brick face to "pop" off. The results are small pits in the surface of the brick with a white (lime) or purple (siderite) spot in the centre.

Expanded lime particles

This is not uncommon. It is strictly an aesthetic issue and will not affect the structural integrity of the brick. It is only the loss of a small portion of the surface of the brick and the exposure of the differing body colour underneath which causes concern.

'Surface blows' usually occur during construction due to hydration, or in the first few months of the life of the brick once it has come into contact with moisture, whether in the form of rain or general atmospheric damp conditions. It is unlikely to continue to develop for much longer after the occurrence has been noticed.

The appearance of brickwork is not covered in BS EN 771-1 since it is not performance related. However, BSI have published PAS 70, A Publicly Available Specification which is intended to cover aspects of aesthetics.

The PAS includes the recommendations that all brickwork should be viewed from approximately 3 metres away, and deliveries of bricks should be compared to a reference panel agreed by all parties at the start of work, thought to be representative of current production and quality. Appearance of brickwork will vary significantly with the type of clay brick chosen. NHBC guidelines suggest 10m as a viewing distance and also suggest the size of expansive particles or chips is limited to 15mm in diameter.

To overcome the aesthetic issue, the following remedial treatment can be performed.

The expanded particle is drilled out to provide a more substantial key for a filling material.

The depression is then filled with a suitable material, such as a compound of a cementitious/resin nature, which is coloured to closely match the original brick colour and additions of various sands etc are used to provide a similar texture.

The filler is then cured and if any further work is required to more closely resemble the brick surface, (wire brushing, usually on rusticated bricks) this is then done. The whole surface of the brick including the filled area is then tinted and, in many cases even from a distance of a few inches, the repair is not noticeable.

For further help and advice contact the **Technical Services Helpline** on **0870 903 4017**.

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