

Cracking in Bricks and Brickwork

The appearance of cracks in brickwork can generally be divided into two categories. Firstly cracks that appear in walling due to structural reasons, secondly, cracks that are already visible in the face of individual bricks prior to laying or which may subsequently appear in service.

Structural Cracking of Brickwork

When cracks appear in continuing stretches through bricks *and* mortar it is usually a sign that there has been some sort of structural movement. This could be due to numerous different means such as soil movements, tree roots, impact damage, structural loading, chemical changes i.e sulphate attack, vibration or physical changes i.e temperature (thermal expansion & contraction) and moisture movement.

Most buildings will tend to develop cracks in their early years and this should be expected and allowed for in their design. Most will be less than 5mm wide and will create little problem.

The cause needs to be addressed before any decision on repair can be tackled. This may be necessary for structural stability or for aesthetics only.

The likelihood of water penetration may also be increased in some instances as significant cracks in mortar will speed up ingress during periods of wind-driven rainfall.

Cracking can often occur due to differential movement between different brick types or different materials bonded into the same structure i.e combining decorative string courses contrasting in colour with the main brickwork. Mixing concrete products or stone with clay bricks can also cause problems unless the differential movement is accommodated.

Inadequate provision of movement joints is possibly the most common cause of cracking in cavity wall construction. Compared to solid wall construction, single leaf masonry will move more rapidly with temperature changes. Retrospective movement joints can be formed by cutting

through brickwork but this is messy, unsightly and far more expensive.

Provision should be incorporated during construction. Ibstocks Design Guide 'Designing for Movement' details recommendations and Codes of Practice.

Furthermore, adding lime to the mortar specification will help retain a degree of elasticity so the inevitable settling of new brickwork can be accommodated with minimal disruption to the joints.

More information on mortar specification can be found at the Mortar Industry Association.

www.mortar.org.uk



Inadequate provision for movement causing cracking in a short return.

Cracks in Brick Faces / Firecracks

Dependant on clay and the manufacturing process, the finished appearance of clay brick can vary greatly. Some products contain cracks of varying degree (sometimes referred to as firecracks) as an inherent feature.

Firecracks are usually visible on the product as delivered, however, they can be masked by the texture and surface sands used in the manufacturing process becoming visible after bricks are laid as a result of natural weathering of exposed brickwork.



Firecracks in clay brick. Cracks do not extend into the mortar joint suggesting their presence when built in.

The appearance of brickwork will vary significantly with the type of clay brick chosen.

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. The 'aesthetic characteristics' should be assessed upon delivery.

NHBC guidelines suggest 10m as a viewing distance, cracks should not be 'significant' and brickwork viewed as a whole and not on an individual basis.

During construction, bricks with questionable defects should be put aside by the builder for inspection.

The presence of such cracks is not detrimental to the brickwork performance. They should not increase in size or affect durability. It is highly unusual to carry out any form of remedial work in these situations, however, if it is considered that the cracks are deep or extensive, the normal remedial treatment would be to fill the cracks with a compound of a cementitious/resin nature which is coloured to closely match the surrounding brickwork with the addition of various sands etc to provide a similar texture.

If there is doubt as to whether cracking in brickwork is due to surface firecracks or structural movement always consult the manufacturer or a structural engineer.

For further help and advice please contact Ibstock's **Design & Technical Helpline** on **0844 800 4576**.