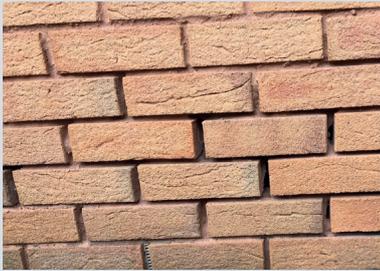


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Section of wall during repointing process.

Repointing external brickwork

General information

Mortar in poor condition can lead to a loss surface wall strength, although this is unlikely to result in overall loss in strength.

Furthermore, the majority of relatively recent construction, utilises cavity work and therefore the inner skin and strength is less liable to be affected. The erosion of mortar may occur by the incorrect use of pressure cleaning of fresh mortar in new masonry can also affect the strength of new construction and must be avoided. Note that pressure cleaning is dealt with separately in MPA Mortar Data Sheet 14.

This current data sheet sets out the assessment of the need for repointing, the choice of the mortar mix to be used and the application methods.

Identifying the need for repointing

A visual inspection of a property may show various factors indicating a need for repointing. These can include spalling at the edges of bricks, powdery or detaching mortar, eroded and recessed, or sections detached from the mortar bed joints, rain penetration and cracking.



Section of wall requiring repointing. Image courtesy of Neil Beningfield.

With properties of up to two storeys in height, failed pointing is unlikely to affect a wall's overall structural integrity. However, a structural survey may be required on taller buildings as measures beyond repointing may be necessary.

BRE document GRG24 states that, *halving the mortar's compressive strength reduces the brickwork strength by only 15%. While brickwork strength is negligibly affected by unfilled perpends, deeply recessed bed joints can reduce compressive strength by about a third and lateral strength by up to a half.*

The check list shown below may be of assistance.

- Are the bricks in good enough condition to justify repointing?
- Could the poor condition of the brickwork be caused by the corrosion of wall ties, active settlement or sulfate attack? Any of these conditions would make repointing an inappropriate solution.
- If the mortar lacks cohesion in the body of the joint; the brickwork is distorted; there are other identified reasons to question the structural stability; and the walls are more three or more storeys, a formal structural assessment should be commissioned.

- The structural assessment may recommend one or more of the following:
 - Removal of samples from the inner leaf of the outer leaf or middle third of solid walls to determine the mortar strength used.
 - Estimation of the masonry strength where stresses are greatest in the wall construction.
 - If there is distortion in the masonry, identify what may be needed to be done in addition to repointing to avoid rebuilding. This could include lateral restraint or application of additional ties.

The repointing mix

The mix must take account of the existing brick and mortar strengths as well as any likelihood of frost occurring before the repointing has hardened. Too strong a repointing mix can damage the surrounding brickwork so is not a means of achieving a durable and weatherproof result.

The accompanying table provides mix guidance. [add hyper.](#)

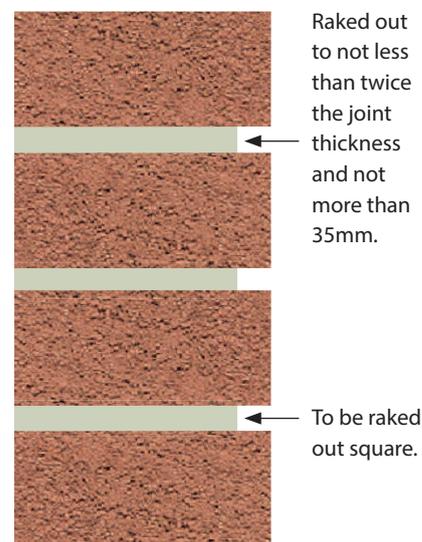
A mix should be selected on the basis of the existing strength of the bricks and the mortar. Using a mortar mix that is stronger than the existing may spall bricks, especially if the repointing is shallow. Indeed, a cement-rich mix can shrink away from the bricks, producing cracks, resulting in rain penetration.

Well-graded washed sand with no clay fines should be used in the repointing mix and there should not be a high water-to-binder ratio. As long as air content is kept below 20%, an air-entraining agent may be used to improve plasticity and frost resistance.

How to repoint

- Decide if there is any reason for restricting the area to be repointed at any one time. This could be decided upon by such factors as localised high stresses on some of the brickwork or if some joints have been eroded by more than 25 mm. If so, rake out and repoint no more than three courses high by three stretchers long at any one time.
- Rake joints squarely to a depth of twice their width - about 15 - 25 mm but never more than 35 mm (see Figure 1).
- Using a soft brush, clean dust and debris from raked joints.
- Spray raked joints with water to ensure they are moist to ensure that the repointing bonds well.
- For site mixed mortar, mix the repointing mortar accurately as it should be small enough to be used within two hours.
- If using pigment do not exceed specified amounts, usually up to 10% by weight of cement.
- Repointing mortar must be applied firmly. When repointing deep joints, the process can be handled in two stages to ensure good compaction.
- Protect newly repointed areas as necessary until hardened - 7 days.

Figure 1



References

BS 4551-1:2005	Methods of testing mortars, screeds and plasters
BS5628	Code of practice for use of masonry: - Part 1: 1992 Structural use of unreinforced masonry Part 2: 1995 Structural use of reinforced and prestressed masonry Part 3: 1985 Materials and components, design and workmanship
BRE document	Good Repair Guide 24 (GRG24)
Brick Development Association	Design note 7, 2011 Microsoft Word - DN7 final 01.2011 (brick.org.uk)
MPA Mortar cross ref.	MPA Mortar Data Sheet 14



MPA Mortar is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and industrial sand industries.

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