

Guide to best practice for external rendering

DATA SHEET
14



General information

The method of use and properties of factory produced rendering mortars are given in data sheet no. 4 of this series 'Factory produced mortar for external rendering'. This data sheet covers potential problems that, although rare, may occur and it should be read in conjunction with data sheet no. 4.

Render is applied to external walling to cover various substrates. The function of external rendering is usually to provide resistance to wind driven rain, but often it is also used to enhance the appearance of a structure. Problems with render can usually be avoided if the recommendations as to design, specification, materials and workmanship, as given in codes of practice BS 5262, BS 5628 and BS 8000 are followed. Particular attention should be given to:

Design	functional requirements; exposure conditions; substrate type; architectural detail; desired appearance
Specification	strength; mix composition/designation; thickness; number of coats;
Materials	specify correctly and obtain from an MIA member supplier; store to avoid contamination and protect from the elements
Workmanship	preparation of substrate, to include cleanliness, key and suction; consideration of weather conditions; application; curing

This data sheet details remedies to some of the most common difficulties encountered:

1 Breakdown of adhesion of undercoat to substrate

Possible cause	Remedy
1.1 Very high suction of substrate	Remove loose render, control substrate suction (e.g. use a spatterdash or stipple) and re-render.
1.2 Low suction substrate due to high density or water saturation	Remove loose render. Test substrate for moisture content and suction. If due to high density, apply a bonding agent. If caused by water saturation, identify reason for saturation and correct as necessary. Allow to dry out. Use a spatterdash or stipple and re-render.
1.3 Sulfate attack on bond between substrate and cement based plaster. N.B. Sulfates will only attack cement in water saturated conditions	Remove loose render. Identify reason for water saturation and correct as necessary. Allow to dry out. Remove any deposit by brushing and re-render with appropriate designation material.
1.4 Excessive thickness	Remove loose render. Re-render with coats of recommended thickness.
1.5 Application of a rendering coat which is too strong for substrate. Faces of blocks or bricks may have been removed with the render	Remove loose material, including any loose substrate. Re-render with a weaker mix. For very weak substrates consider the use of a render support system.
1.6 Contamination of Portland cement with gypsum plaster. Under damp conditions, this will degrade due to sulfate reaction and expansion	Remove all render. Brush off all dust from the substrate. Re-render with cement based material. Renders containing gypsum should not be used.
1.7 Application of a finishing coat which is too strong for the backing coat	Remove loose material. Re-render with an appropriate designation material.

2 Breakdown of adhesion of final coat to undercoat

Possible cause	Remedy
2.1 Application of a final coat which is too strong for the undercoat	Remove all loose render. Re-render with a weaker finishing coat.
2.2 Lack of adequate key on undercoat	Remove loose render. Provide undercoat with adequate key and re-render.

3 Crazing of rendering

Possible cause	Remedy
3.1 Application of a final coat to an undercoat which has not dried out sufficiently.	Remove final coat, ensure adequate key and re-render.
3.2 Use of a final coat too rich in cement.	Remove final coat, ensure adequate key and re-render.
3.3 Application of a final coat to a cement based undercoat which has lost too much water before setting completely.	Remove final coat, ensure adequate key and re-render. If the backing coat is too soft and dusty, it may be necessary to remove and re-render completely.
3.4 Overworking, causing excess laitance to be drawn to the surface.	Remove final coat, ensure adequate key and re-render.
3.5 Use of loamy (dirty) sands in undercoat. (Loamy sands cause high drying shrinkage and should not be used for rendering).	Remove undercoat, ensure adequate key and re-render using correct sand (now known as fine aggregate).

4 Pronounced cracking

For an accurate appreciation of the problem it will be necessary to determine the depth of the cracks and specifically to see whether the cracking is confined to the render or whether it also passes into the substrate.

Depth of crack	Remedy
4.1 Render only. This may be due to drying shrinkage or other movement of the substrate.	Small areas can be renovated by use of fillers.
4.2 Render and substrate. This is likely to be due to structural movements.	Seek the advice of a Structural Engineer or Designer.

5 Efflorescence on finish

Possible cause	Remedy
5.1 Efflorescence may occur on walls that are, or have been, excessively wet.	Prevent further ingress of water. Allow to dry out. Remove deposits by brushing. See data sheet no. 8 for further details.

References

BS EN 998-1	Specification for mortar for masonry - Part 1: Rendering and plastering mortar
BS 5262	Code of practice for external renderings
BS 5628-3	Code of practice for use of masonry - Part 3: Materials and components, design and workmanship
BS 8000-10	Workmanship on building sites - Part 3: Code of practice for plastering and rendering
PD 6678	Guide to the selection and specification of masonry mortar

British Standards are currently being revised in line with European requirements. The new standards are at varying stages of preparation and/or publication, for a full list of British and new European Standards see the MIA data sheet of technical references.



There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet mortar. Wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing wash immediately with soap and water. For eye contact immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water.

The relevant codes of practice, standards and statutory regulations must always be observed.

The information in this data sheet may be freely copied with acknowledgement to the Mortar Industry Association. Current issue numbers of all MIA publications are available from the MIA website.



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