

KNOWLEDGE MANAGEMENT

RENDERING ON SUBSTRATES

This knowledge management article provides additional guidance on the use of rendering on different substrates. It is important that all workmanship carried out during construction be completed in accordance with the relevant tolerances. The article covers:

1. General requirements
2. Rendering directly onto masonry outer leafs to cavity walls
3. Render cladding systems onto timber / steel framed structures
4. Direct Rendering onto Insulated Concrete Formwork Structures (ICF)
5. Rendering on External Wall Insulation systems (EWI or EWCS)
6. Rendering below Horizontal DPC level- ALL Cases (i.e. within 150mm of the adjacent ground level).

1. 'GENERAL REQUIREMENTS' (ALL SUBSTRATES)

Site made render is only acceptable on well-prepared masonry substrates where strict control over workmanship can be demonstrated and the correct selection of materials can be assured. The Developer will be required to provide a site specific 'Design specification and quality process' document to detail the proposed render specification, application requirements and detailing proposed.

Site made render solutions will not be acceptable on projects where the render is to be applied on the following substrates:

- render board
- render carriers
- hollow clay brick /block units, or
- Insulated concrete formwork (ICF).

Pre-bagged and blended (factory made) render is the preferred solution and ensures a consistent mix of render components during installation. Pre-bagged and blended (factory made) render must comply with BS EN 13914-1:2016 AND be CE marked. Developers will need to provide evidence of this to their surveyor.

General render notes (all substrates):

- Render failures are generally due to poor workmanship, inadequate preparation of substrates, poor detailing or inadequately trained personnel applying the render or failing to follow the correct render specification by using alternative inappropriate / substandard materials or mix ratios.
- Gypsum based renders are not covered by BS EN 13914 (See Section 1 Scope) and should not be used unless the product holds a third party product approval (BBA or BDA) for the intended use and confirms adequate durability will be achieved.
- Render is generally not considered 'waterproof', therefore water seepage can be expected through the render to the substrate / cavity i.e. The render is only considered as contributing to towards the 'weather resistance' of an external wall and not considered as providing an impermeable cladding. Therefore, all substrates must be constructed to prevent moisture reaching the internal finishes.

Examples of this are the rendering applied to:

- Masonry outer leaf of a masonry cavity wall
- A suitable render board (third party approved) or carrier system with a drained cavity (and vented for framed structures) provided to separate and protect the substructure
- All substrates must be in a sound condition and be suitable to receive the render. A substrate should not consist of differing material e.g. concrete blockwork with clay facing bricks.

2. RENDERING DIRECTLY ONTO MASONRY OUTER LEAFS TO CAVITY WALLS:

The following is acceptable in all exposure zones:

Site made render (subject to the general requirements above) and pre bagged and blended (factory made) render may be used on cavity masonry walls with a minimum 90mm thick outer masonry leaf, minimum 50mm wide clear residual cavity and a 100mm minimum inner leaf. Note: For cavity insulation requirements, please refer to our Technical Manual.

Where render is applied to a masonry outer leaf to a timber frame or light steel frame structure:

- A drained (and vented, if timber/ SIP framed) cavity will be required between the frame and outer leaf and,
- A breather membrane must be provided to protect the main structural frame as a second line of defence.

For our warranty purposes, all externally rendered cavity walls (masonry outer and inner leaves, or masonry outer and framed inner structures) must be provided with a suitable cavity tray, stop ends and weep vents over all external wall openings, flashing abutments and horizontal cavity barriers. The weep vents must be provided as a specific warranty requirement (regardless of the render type, British Standards or manufacturer's guidance) and must not be blocked or covered over by the render.

3. RENDER CLADDING SUPPORT SYSTEMS ONTO TIMBER / STEEL FRAMED STRUCTURES:

Only pre bagged and blended (factory made) render complying with BS EN 13914-1:2016 must be used and evidence of CE mark provided (Site made renders are not acceptable) .

A drained (and vented, if timber/ SIP framed) cavity must be provided between the external cladding and the structural frame of the building, and a breather membrane must be provided to protect the main structural frame as a second line of defence

A vertical DPC should be inserted between the metal render carrier and any vertical rail/ batten support.

In addition, the render must be supported by either A) or B) below,

A. Render carrier boards

The render boards must be proven to meet a relevant BS EN standard, CE marked, and

- The performance criteria of the board (based on testing from the relevant BS EN standard) must be declared to prove it is suitable for use as a direct render board. (E.g. BS EN 12467 for fibre cement boards), and

- A Third party product approval certificate for the board must also be provided to demonstrate the render board will achieve a 15 year minimum life expectancy and proven to be suitable for use in the expected wind driven rain exposure zone of the project.

Notes:

1. BS EN standards or CE marks alone are unlikely to confirm the durability period and maximum wind driven rain exposure category a board can achieve – and will not be shown in the CE marking. Therefore, a third party product approval certificate (BBA or BDA) is required to confirm these performance requirements.
2. A Third party product approval certificate for a combined render and render board 'system' may be acceptable providing the scope of the certificate clearly states the limitations of use.
3. Evidence from the pre-blended and bagged (factory render) manufacturer is required to confirm the render is compatible with the render board.
4. MgO boards are not accepted for use on projects covered by our warranty.

B. Metal render carrier systems

The carrier system must be stainless steel in accordance with EN 10088-1 (austenitic steel) or zinc coated steel in accordance with EN ISO 16120-2 and EN 10346.

Where sited in a coastal location a higher grade A4 stainless steel should be used. (See Appendix B, Technical Manual)

4. DIRECT RENDERING ONTO INSULATED CONCRETE FORMWORK STRUCTURES (ICF):

A render directly applied to an ICF structure to provide a weather resistant cladding to the ICF, will not be acceptable and alternative solutions must be made. Typical alternative solutions are:

- A pre bagged and blended (Factory made) render complying with BS EN 13914-1:2016 on a carrier system with a drained cavity behind and a breather membrane provided as a second level of defence to the ICF structure, or
- An Impervious cladding system provided (with appropriate cavity provision as required by the Impervious cladding system), or
- An independent masonry external cladding with a 50mm minimum cavity is provided, or
- An independent cladding system, with a separating cavity complying with our Technical Manual requirements and a breather membrane provided as a second level of defence to the ICF structure.

The 'exception' to the above where a direct applied render system may be acceptable for warranty cover on an ICF, is as follows:

The ICF structure must:

- Have a suitable third party product approval, and
- The ICF system manufacturer is a full member of the Insulated concrete formwork association (ICFA), and
- The ICF system has been accepted by the Premier Guarantee Innovations Team.
- In addition, the render must have a valid and current third party product approval (BBA or BDA) confirming it has been assessed to provide the weatherproof protection to an Insulated Concrete Formwork substrate consisting of EPS etc.
- Or, there is a combined named Render and ICF system which jointly hold a valid and current third party product approval (BBA or BDA)

In addition to the above requirements:

- The third party product approval must confirm the render finish will provide the 'weather resistance' to the ICF for a 15 year minimum life expectancy /durability, and
- The third party product approval certificate clearly identifies the maximum wind driven rain exposure zone* permitted by the assessment, and
- The render manufacturer provides a project specific specification for the render installation, and
- Installers trained and approved by the render manufacturer should only install the render finish.

*Note: If the project location is situated in a wind driven rain exposure zone exceeding that stated in the third party product approval, the rendering manufacturer must also:

- Provide confirmation at completion to the warranty provider, that the installation meets the project specific specification.

In all other situations, a render directly applied onto an ICF structure to provide a weather resistant cladding will not be acceptable.

5. RENDERING ON EXTERNAL WALL INSULATION SYSTEMS (EWI OR EWCS)

A third party product approval such as BBA, BDA is required for the combined render and insulation system and must clarify which substrate has been assessed for the EWI / EWCS System to be applied to (i.e. for a masonry or framed substrate).

Please Note: ETA documents do not generally state the maximum UK exposure zones they have assessed the system for. The ETA documents usually only say the system (including the render) improves the thermal performance of the wall and contributes towards weather resistance.

Therefore for warranty purposes:

For installing on a masonry substrate:

- The masonry wall should be thick enough to meet PD6697 for a given exposure zone.

For installing on a framed structure:

- A drained (and vented) cavity will be required as well as a breather membrane installed to protect the framed structure. Take caution though, as an EWI / EWCS may not be acceptable for use in external walls in buildings over 11m / 18m high. (Scotland/ England/ Wales)

6. RENDERING BELOW HORIZONTAL DPC LEVEL – ALL CASES (I.E. WITHIN 150MM OF THE ADJACENT GROUND LEVEL)

- The horizontal DPC must form a break in the render system
- Renders used below the DPC will only be considered if the render manufacturer provides a site-specific specification for this.
- Renders/ boards to be used within 150mm of the adjacent ground level, to have third party approval for use in this location.