Monocouche
Best Practice Guide
For New-Build Housing

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This best practice guide is split into three separate sections for ease of use:

- For The **Designer**
- For The **Site Agent**
- For The **Applicator**

Avoiding cracking

Visible cracks in render are unsightly and although not hazardous to the construction of a building, they do reflect badly on the workmanship and overall aesthetics.

Cracking can be caused by a variety of factors including excessive porosity of the substrate, shrinkage within the substrate, reflective cracking, lack of reinforcement or incorrect movement joints. By following the best practice in this guide the designer, site agent and contractor can avoid cracks to ensure a flawless façade.

The BRE A+ Green Guide rated **weber.pral** monocouche render is ideally suited to fulfil and exceed the principle requirements of rendering, particularly in new construction. It is manufactured from carefully selected and graded aggregates to minimise drying shrinkage of the applied render. Providing that good practice, appropriate design and suitable preparation are undertaken the render will be fully bonded and restrained by the substrate and will not crack.

There are a number of key elements in design of the construction that should be acknowledged prior to render and within the application of the product. To support our key house building partnerships we provide services to assist in achieving a successful rendered construction.

For the Designer

To avoid the risk of cracking, it is essential that certain design considerations are taken into account. This section, aimed at the building designer, focuses on good practice in design.

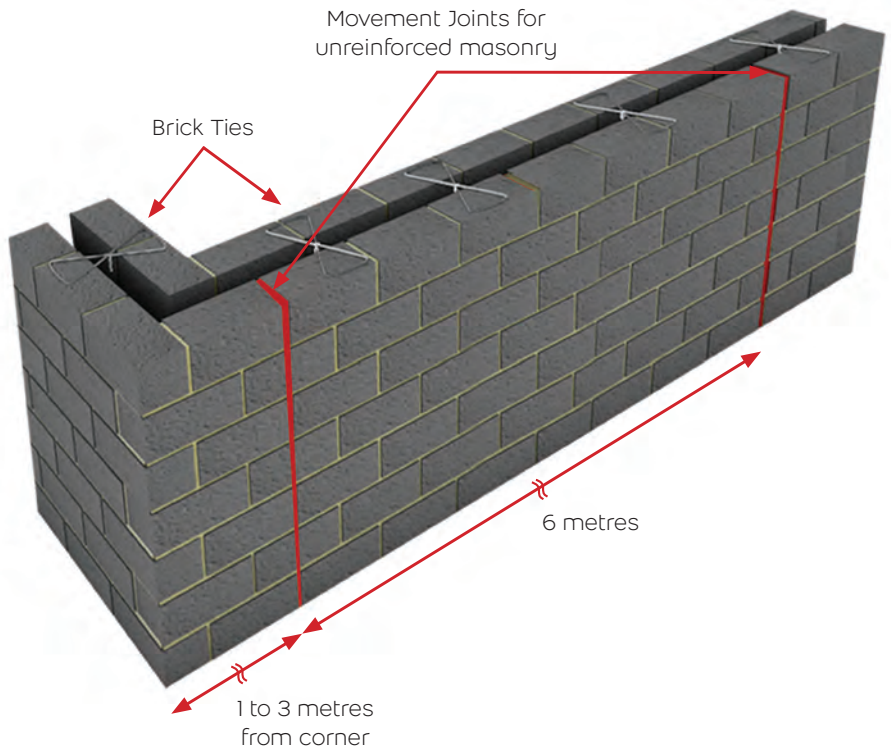
Substrate Choice

The choice of substrate to receive a render finish is important to maximise bond and help reduce cracking.

The main factors to consider when choosing a substrate to be rendered are:

- **Strength** – the substrate, including joints, must be stronger than the render and should be able to adequately support and restrain it.
- **Suction** – good adhesion of a render is dependant on good porosity of the substrate. If the suction is too high the render will not hydrate sufficiently. If it is too little there will not be a good bond.
- **Texture** – to ensure a good bond the substrate should have an open texture, otherwise **weber.rend aid** will need to be used.

Typically, a medium-density (1350–1450kg/m³, 3.6–7.3kN), general purpose, concrete block with a mortar cement:lime:sand ratio of 1:1:6 will satisfy these requirements. If other substrates are considered it is recommended to contact Weber's technical team for design advice.



Movement Joints

The use and placement of movement joints is essential to avoid cracking. Guidance on the placement of movement joints should be obtained from the specified block manufacturer.

This advice should be used in conjunction with BS EN 1996(EC6) Code of practice for design of masonry, BS 6093:2006 + A1:2013.

Code of practice for design of joints and jointing in building construction, and the Concrete Block Association's guide to movement control. The main areas to include movement joints are as follows, however this will vary depending on the type of block and construction type:

- Changes in the wall height or thickness
- Changes of loading
- Abutments of walls and junctions with dissimilar materials
- Zones that are 1 to 3 metres from corners
- Up to every 6 metres for unreinforced blockwork
- To break up masonry panels so they do not exceed a length:height ratio of 3:1

The adequate use of movement joints will help reduce stress build up in the substrate and thus reduce the risk of cracking. Movement joints must also be followed through the render.

For the Designer

Mortar Bed Reinforcement

The use of mortar bed reinforcement helps increase the resistance of substrates to cracking and therefore it is essential that it is specified in the building design. There are a large range of masonry reinforcement products designed specifically to control cracking in masonry as covered by BS 5628 Part 3. It is imperative that the type of reinforcement used is structural quality (ladder type).

Mortar bed reinforcement can be used to reduce the frequency of movement joints as well as improving the lateral stability of the wall.

However, mortar bed reinforcement is not a substitute for using movement joints. The examples below show how movement joint frequency can be reduced when using mortar bed reinforcement:

- If a movement joint is planned for every 9 metres, mortar bed reinforcement will be needed every other bed joint i.e. 450mm for the entire 9 metre length.
- If a movement joint is planned for every 12 metres, mortar bed reinforcement will be needed every bed joint i.e. 225mm for the entire 12 metre length.

Where there are slender panels or panels with large openings, extra mortar bed reinforcement should be considered.

Include mortar bed reinforcement in the two courses above and below openings such as windows to dissipate the extra stresses created around these typical weak zone.

Mortar bed reinforcement should be used to reinforce the two courses above doorways.

For the Site Agent

To avoid the risk of cracking, it is essential that certain build considerations are taken into account. This section aimed at the site agent focuses on good practice when building the substrates that are to be rendered.

Storage of Blockwork

The most common cause of cracking results from the initial drying out of background materials. The BRE publication Understanding Dampness (BR466) states that where a concrete block has moisture content greater than 12% by volume, action is required. This must be reduced below 8% before excess shrinkage will subside.

Blocks that are left out uncovered during inclement weather will absorb moisture and exceed 12% moisture. If the moisture content is above 12% the blocks must be allowed to dry before use. To avoid these problems the blocks should be covered with waterproof sheeting when stored on site.

Mortar Mixes

A significant proportion of masonry contraction is due to the mortar. The effects of this shrinkage and the stresses caused can be reduced by ensuring mortar joints are weaker than the masonry units. Typically a mortar with a cement:lime:sand ratio of 1:1:6 will be suitable. If the strength of the mortar is too strong it will cause large amounts of stress to build and will cause the blocks to crack.

Mortar Bed Reinforcement

Mortar bed reinforcement should always be used above and below openings as highlighted on the opposite page. Incorporating mortar bed reinforcement will significantly reduce the risk of cracking.

Bekaert Brickforce: **www.bekaert.com**

Best Practice Presentations

A 45 minute presentation is available covering the most pertinent points of rendered masonry, ideally suited for Design / Technical teams and Site / Project Management. Weber can visit your offices to explain 'Best Practice' in detail, sharing recommendations covering the façade solution, design, construction & render installation in accordance with the relevant Codes of Practice and European Standards. Saint-Gobain Technical Academy facilities can be made available as required.

Tool Box Talks

Weber can visit new site starts and conduct briefing sessions for site staff, block layers and render contractors, to ensure everyone is familiar with best practice. Materials can also be made available for use on site to remind everyone of the core best practice principles. This is backed up with proactive on-site support service and periodic visits throughout the installation by a Weber Application Manager.

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For the Site Agent

Building Practice

Infilling or coursing with dissimilar materials should be avoided. Different types of blocks expand and contract at different rates creating increased stresses which can cause cracks to develop.

Blockwork should be laid in a regular brick bond pattern and perp joints should not clash.

Protecting the Substrate

Once the blockwork has been built and is awaiting rendering, temporary guttering socks should be used to direct rainfall from areas of the wall.

If one area of the wall is allowed to become soaked while the adjacent area is dry, the differential movement will cause stresses to increase and cracks to form.

For the Applicator

To avoid the risk of cracking, it is essential that certain considerations are taken into account prior to and during the application of render. This section, aimed at the monocouche applicator, focuses on good practice when preparing a substrate and applying the monocouche render.

Suction Control

Good porosity of the substrate is essential for the render to achieve a good bond. However, if the substrate is too porous it will not allow the render to hydrate sufficiently and if it is too little there will not be a good bond. If either of these situations occur the following best practice should be followed:

- High porosity – this is particularly the case with low density blocks. The substrate should be lightly sprayed with a fine mist of clean water evenly before the render is applied. Saturation should be avoided as this will cause excessive shrinkage.
- Low porosity – this is particularly the case with concrete or brickwork. **weber.rend aid** should be used to provide a controlled level of porosity and a mechanical key.

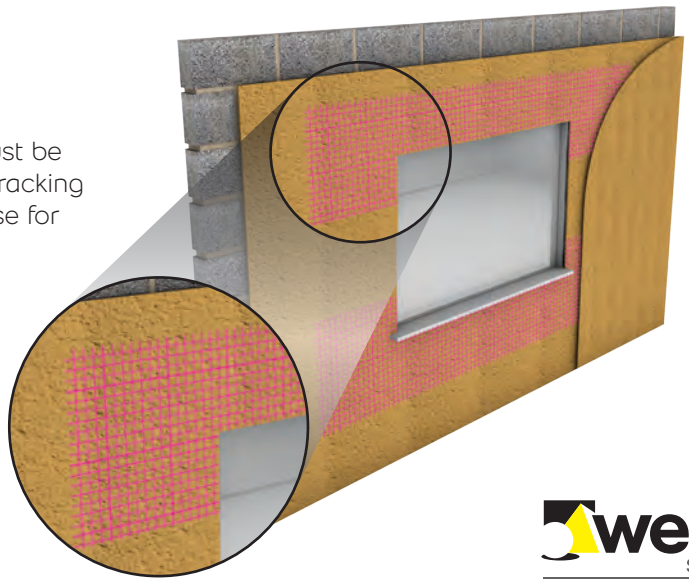
Movement Joints

Any movement joint within the substrate must be followed through the render to ensure that cracking is prevented at that point. This is also the case for compression joints.

Using Weber Standard Mesh Cloth

The ability of the render to distribute and resist stresses can be enhanced by the inclusion of **Weber Standard Mesh Cloth**. This should be applied at typical stress points in the substrate such as above and below openings such and windows and doors, and at junctions of dissimilar materials e.g. ring beams. Mesh should also be used around crack inducers such as weep holes.

The mesh should be cut into strips that extend past the junction or point of weakness by approx. 500mm and pressed evenly into the freshly applied render using a trowel or spatula, ensuring no contact with the substrate. A further layer of render should then be applied to encapsulate the mesh.



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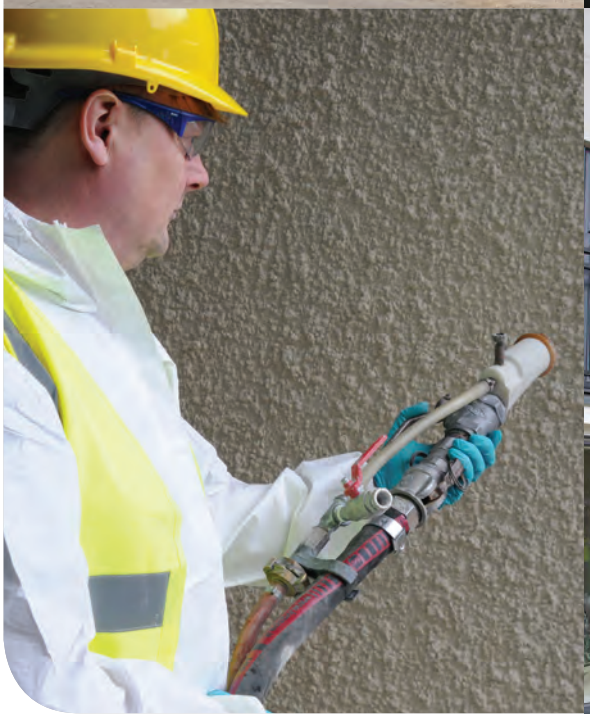


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