

# External Rendering

Externally rendered Celcon blockwork as an outer leaf of a cavity wall - or as a solid wall where exposure conditions allow - are recommended constructions. The choice of block type and render specification should reflect the exposure conditions and whether the cavity contains insulant or not (see TSD/45, page 3 of this data sheet). Work should comply with the relevant Codes<sup>[1], [2], [3]</sup> and the following is a summary of their principal recommendations.

## **BLOCKWORK** – for all types of rendering

**Movement Joints:** Clause 5.4.2<sup>[1]</sup> advises that for all masonry work, movement joints may need to be provided. For an outer leaf or solid wall of rendered blockwork bed joint reinforcement should be provided at openings (clause 5.4.5<sup>[1]</sup> and Figure 4<sup>[2]</sup> and the need for any movement joints considered at the design stage. Specific recommendations will depend on the circumstances, and each situation should be assessed on its own merits. See the *Celcon Book of Blocks* (at [www.hhcelcon.co.uk](http://www.hhcelcon.co.uk)) for general advice on Accommodation of Movement.

**Mortar:** For 'traditional' (10mm thick) joints overstrong mortars should be avoided. Recommended mixes are given in the *Celcon Book of Blocks*. Generally, lime based mixes are preferable as these give a better bond than can be obtained with air-entrained mortars of similar compressive strength. In external situations, lime based mortars can also give higher resistance to rain penetration (clause 5.5.4.2.2<sup>[1]</sup>). Where a non-lime mix is to be used the appropriate proportions by volume are given in Table 14<sup>[1]</sup>

**Site Practice:** All blocks (as with other materials) should be protected. Keeping the blocks dry will ensure minimal drying out movement.

## **RENDERS** – a) 'Monocouche' and other proprietary systems

From our own involvement with several (e.g. Alsecco, Sto, Weber-sbd) we know they are familiar with the application of their products onto Celcon blocks. Depending on the supplier, some use only approved applicators whilst some will also supply their materials for others to apply and offer a site advice service plus Data and Specification sheets.

## **RENDERS** – b) traditional sand:cement mixes

**Application:** Refer to the table on page 3 as to whether the Rendering should be applied DIRECT to the blockwork or via a CARRIER system (in which case the guidance below will not apply).

**Mix:** Renders should not be stronger than the backgrounds onto which they are applied (clause 6.2.2<sup>[2]</sup>). A 1:1:6 (cement:lime:sand) mix is recommended for use on aircrete blocks. In sheltered or moderate exposure conditions a 1:2:9 mix may be used on Solar blockwork. Equivalent mixes using masonry cement and sand or Ordinary Portland Cement and sand with a plasticiser are given in our Technical Manual. See also clause 6.17<sup>[2]</sup> and the mortar specification code<sup>[3]</sup>.

Each successive coat should be weaker / thinner than the previous one (clause 6.18.1<sup>[2]</sup>).

**Aggregates:** The use of a properly graded sand is important. Traditionally, the coarsest and sharpest sand which can be conveniently handled should be used for undercoats. Advice on ordering rendering sands is given in PD 6682-3:2003.

**Thickness of Coats:** As already noted, successive coats should be weaker / thinner than the previous one. See clause 6.18<sup>[2]</sup>, Table 5<sup>[2]</sup> and under "Undercoats" below.

**Preparation:** The background should be adequately prepared. Unless appropriate precautions are taken, work should be carried out only under suitable weather conditions (clause 7.4.1<sup>[2]</sup>).

## RENDERS – b) traditional sand:cement mixes (cont'd)

### Preparation (cont'd)

**Joints:** Where mortar joints have not been recessed during construction, raking out will provide a mechanical key thus improving the render bond. For Thin-Joint constructions, where recessed joints are not practicable, an external-use grade bonding agent or Spatterdash render coat may first be applied to the wall.

**Surface condition:** The wall should be cleaned of any dust, loose particles and contamination which may have occurred during construction (clause 7.4.1<sup>[2]</sup>). In extreme cases of bad site storage or wet conditions where fungi or algae may have formed on the blocks, the surface must first be treated with a fungicide, applied in accordance with the manufacturer's instructions.

**Movement joints:** Any joints present in the wall should be continued through the render finish. Proprietary types of external-grade stop bead incorporating a cover strip are available for this purpose (Figure 5<sup>[2]</sup>).

Before work is commenced, particularly in warm weather, it should be ensured that the wall is not too dry (clause 6.2.3<sup>[2]</sup> and Table 4<sup>[2]</sup>). If workability of the render is impaired, the wall should be wetted as described in our Book of Blocks (see also clause 7.4.2<sup>[2]</sup>).

**Undercoats** (clause 6.18.4<sup>[2]</sup>) should be combed or scratched (clause 7.8.3.(b)<sup>[2]</sup>) not only to provide a key for the following coat but also to reduce the 'sheet' strength<sup>[4]</sup>. The previous<sup>[5]</sup> advice of "not less than 8mm nor more than 12mm thick" should be heeded as anything thicker than this can give rise to a risk of de-bonding due to 'sheet' strength<sup>[4]</sup>. Newly applied rendering should be kept damp for the first few days (clause 7.8.2<sup>[2]</sup>) and the next coat should not be applied until the undercoat has adequately cured (clause 7.8.3(c)<sup>[2]</sup>).

**Final Coat:** Where a proprietary type of finish is used, it should be applied strictly in accordance with the manufacturer's instructions. For traditional finishes (floated, scraped, textured, etc.) guidance is given in clause 6.18.5<sup>[2]</sup>. It should be noted that: "*Cement-rich and/or lime-rich steel-trowelled finishes are particularly liable to craze...leaner mixes with a scraped, textured or other rough finish are highly resistant to this defect*" (clause 6.19<sup>[2]</sup>). Dry dash and roughcast finishes require a strong render mix. Such finishes are not suitable on Solar blockwork but they may be used on Standard and Hi-Seven provided a 1:1:6 (or equivalent) mix is used. Most finishes (i.e. texturing, painting etc.) should not be applied until the top coat has dried out, but dry dash and roughcast is part of the top coat and should be applied whilst the top coat is in a suitable state to receive the aggregate to allow adequate embedment.

**Bonding and Waterproofing agents:** Providing the work and materials comply as above, the use of a bonding agent should not be necessary other than as noted above under 'Joints'. The use of unsuitable waterproofing additives can have an adverse effect on the bond of the render coats (clause 5.1.3<sup>[2]</sup>).

For further help see *BRE Digest 410 and BRE Good Building Guide 18* or contact

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<sup>[1]</sup> BS 5628-3:2005 *Code of practice for use of masonry – materials And components, design and workmanship*

<sup>[2]</sup> EN 13914-1:2005 *Design, preparation and application of external rendering and internal plastering*

<sup>[3]</sup> EN 998-1:2003 *Specification for mortar for masonry – Rendering and plastering mortar*

<sup>[4]</sup> "Rendering Skill", Concrete Forum, Jan.1989, pub. British Cement Association.

<sup>[5]</sup> BS 5262:1991 *Code of practice for External renderings*

## External rendering onto Celcon blockwork

External Block type	Exposure conditions	CAVITY wall construction with		SOLID external wall
		clear cavity or partially filled with insulant	cavity fully filled with insulant	
<b>SOLAR</b>	Up to and including MODERATE	a	b	a
	SEVERE	b	b	a
	VERY SEVERE	b	b	Not suitable
<b>STANDARD and HI-STRENGTH</b>	Up to and including MODERATE	a	a	a
	SEVERE	a	b	a
	VERY SEVERE	b	b	Not suitable

a) Apply the render in accordance with Data sheet REN/1195 (see page 1, under "RENDERS (b) traditional sand:cement mixes.")

NOTE: Where provision for movement has NOT been made in the blockwork (i.e. neither vertical movement joints and/or bed joint reinforcement) then consideration should be given to the use of a carrier system - see (b) below

b) Apply the render via a carrier system e.g. 'Rendalath' ([www.brc-special-products.co.uk](http://www.brc-special-products.co.uk)). When using a metal carrier system work should be in accordance with EN 13914-1:2005 *Design, preparation and application of external rendering and internal plastering* in particular clause 7.4.3.1