

## **Render on Cob - Guidance notes for Application**

Cob is a very simple (and efficient) form of construction that has probably been around forever in some form or other. Structures are formed of earth (normally of a high clay content), with some straw and sufficient water to make the mixture readily workable. The exact ingredients are prone to change along with the many different names given to the various techniques of earth building within the UK, depending on where you are in the Country and who you are talking to, yet they all follow the same, very simple principle which has often been tried and tested over many generations. Once built they are then often covered with some form of protection, normally a render coat. \*

\* Note: Many earth structures were simply lime washed without a render, having received a good hat and a worthy pair of boots - (An adequate eaves overhang with a stone built plinth.)

### **Choice of materials**

Given the yielding nature of the material used to create the building, the choice of binder is crucial to the performance of the render. Cementitious or non-breathable renders should be avoided at all costs. We only advocate a lime render onto cob and the following notes are offered as a general guide and not intended as prescriptive for all applications. The following is written with St.Astier NHL 2 (feebly) hydraulic lime or EcoMortar type F render in mind but are appropriate, in principle, to a non hydraulic (lime putty) render. We would rarely if ever, recommend anything stronger than an NHL2 for rendering onto cob. In the event of any queries regarding binders please do not hesitate to contact your St. Astier distributor for further guidance and advice.

### **Preparation**

The factors controlling a successful render onto cob will be preparation, and most importantly the control of suction, a detail requiring attention at all times. The cob will need to be reasonably sound and free of all vegetable matter, with a surface sound enough to receive a render coat. Very often cob that has been poorly protected is likely to be very soft and friable at the surface. Brush off this loose material. If necessary consolidate the surface by brushing on a lime water (NHL 2 or NHL 3.5 diluted 1:10 with clean water and applied twice at few hours interval).

**Dubbing out:** any depressions or hollows requiring dubbing out should be carried out using NHL2/sharp sand 1: 2 mix. Allow sufficient time to set, 4 days or longer if dubbing out is deep. Provide adequate keying to large daubed out areas.

**Suction control:** at least 48 hours prior to the render application, a hose fitted with an attachment capable of delivering a fine mist spray should be used to quench the walls. Simply damping down will not suit as cob is normally a material capable of absorbing large amounts of moisture and if high suction is not controlled there will be a failure. The damping down should be carried out in a controlled manner using a cautious spray delivery at all times to achieve 'even' saturation over the whole area, without washing material out from the wall. Note: Over saturation can result in a 'loss' of bond for the render.

The initial dampening should be followed by as many further applications as appropriate, at least until there is a run off of excess water down the wall in the form of moisture beads. This pre wetting should continue right up to the application of render. There are no hard or fast rules as to the exact amount of dampening or the number of applications that will be required: too much is likely to result in a loss of wall material, with a reduction in bond for the render, too little will result in very rapid absorption of the mortar's water resulting in de-bonding and cracking of the mortar. Either way, failure to address this issue from the outset is highly likely to result in a failure. Common sense is very much the policy for the dampening operation.

**Reinforcement:** it is often suggested that chicken wire or such like, should be fixed to the cob as a carrier for the render. We would advise against this, being of the opinion that it is totally unnecessary and technically incorrect. The render should be simply applied (cast on, harled) straight onto a well-prepared surface. However, we would recommend the addition of fibres or hair (for traditionalists) into the mix, as this will offer much improved tensile reinforcement to the render as well as helping to control cracking.

Over demanding structural cracks, where movement is likely, should be repaired before any rendering is attempted. An appropriate reinforcing net material in the render base coat placed over the repaired cracks can be used to good effect. This approach is very subjective with differing criteria or factors relevant to each situation and further advice should be sought from the appropriate source if it is a likely structural problem, or an unfamiliar technique.

**Thickness of Render:** the thickness of the render should be determined by such factors as location, exposure and other relevant points that are likely to have a bearing. Different buildings will have differing criteria, with all factors requiring consideration prior to determining the render thickness. However, given that its function is to act as a protective, sacrificial coat to the earth construction, a sufficient thickness could be as little as a single cast on coat of 3 - 5 mm thick, using a St. Astier NHL 2. Cob can be placed under stress as a result of excessive loading from very thick render coats with a desire for flat and true surfaces something of a fools errand. Dubbing out, if necessary, should be carried out as preparatory work, with larger repairs carried out using cob blocks or other appropriate materials. Adequate time should be given to allow these areas to accept a render coat.

### **Application**

#### **First Coat (bonding coat) 1 : 2 / Lime (NHL2) : sharp sand**

The bonding coat should be cast or harled on, thus improving the bond between render and substrate, at a thickness of 3 - 5 mm, well mixed to a consistency to suit the desired method of application (spray application is a stiffer mix than hand thrown). The grit in a good sharp sand will improve the keying in a cast on coat that has been left rough. Once applied this coat should be left to harden for a minimum of 3-4 days and protected properly to exclude direct sunlight and drying winds. See "[Protecting Lime Mortar](#)".

#### **Second Coat (Undercoat/scratch coat) 2 : 5 / Lime (NHL2) : sharp sand**

The scratch coat should not be applied for at least 3 - 4 days (or more, depending on atmospheric conditions) after completion of the first coat. Once again pre wetting is very important prior to application. If using a laying on trowel apply using firm and even pressure. The coat thickness should be even and once applied should not be overworked. In simple terms "lay it up and leave it alone." Thickness not exceeding 15 mm. Keying is best achieved by providing a crisscross pattern of a 2" (or thereabouts) diamond pattern.

On completion provide adequate protective and curing measures. Any initial shrinkage taking place in the drying out phase can be dealt with by dampening the affected area and rubbing back using a plasterers wood float. This will need to be carried out within the first 24 hours. Pressing the float home evenly and firmly in a close circular motion. Re-key as necessary.

Proper protection, the addition of reinforcing along with regular humidifying (using a fog mist spray), will all greatly reduce the amount of shrinkage likely to take place.

## **Top Coat 2 : 5 / Lime (NHL2) : sharp sand or EcoMortar (premixed)**

The most beneficial and traditional finish for cob is a roughcast (harling, spatter dash etc.) and this should be carried out by operatives skilled in this technique. A flat smooth finish (coloured if desired) can be achieved using a normal NHL2 finishing mortar or EcoMortar F. The thickness of the final top coat is crucial and should not be applied any greater than 5 - 8 mm.

Overworking mortars results in free lime and fines being pulled to the surface thus affecting the properties and visual appearance of the work.

Protect and cure for 7 - 10 days, longer if the weather dictates. See "[Protecting Lime Mortar](#)".

The choice of sand in the top coat is important, dependant on the finish required. A roughcast finish will require a grittier sand, smoother finishes require well graded fine sharp sands, silt and clay free (see also General Guidelines: [Sands for Lime Mortars](#).)

As for all NHL 2 renders, do not work in temperatures above 30°C or below 8°C and never when frost is forecast during the curing period.

Our document "[General Guidelines - NHL Renders](#)" contains further notes on protection and good working practice. See also "[Protecting Lime Mortar](#)".

**For further Guidance, contact your St Astier Distributor.**

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