

Plastering with St. Astier Hydraulic Lime

Using St. Astier NHL plastering mortars instead of non-hydraulic putty mortars reduces the working time by about 50%. NHL mortars offer similar vapour exchange qualities as putty mortars but are more robust, can be sprayed and used for decorative plasterwork without the addition of gypsum. Requiring less after care than putty, it can be applied in 2 coats on good level backgrounds.

Mortar

Plastering in hydraulic lime mortar normally consists of two or three-coat work. Lime plaster made with feebly or moderately hydraulic lime and sand is the basis for this guide. This type of lime sets and hardens predominantly by a hydraulic set and re-absorption of Carbon Dioxide from the air. By its nature the drying and absorption process is slower than gypsum plasters, therefore lime plaster curing should not be hurried allowing approximately 7-14 days per coat depending on the hydraulic lime used.

Background

For plastering on the hard, the background will normally be brick or stone. The surface should be clean, free from dust and any organic materials such as lichens etc. Test the surface of masonry backgrounds for dust by applying a piece of masking tape to the background and immediately remove, examine the sticky side for traces materials that may affect the bond between the plaster and the wall.

Internal walls can be uneven and rough, often with areas that have been altered. Different background conditions are therefore common and this needs to be addressed before plastering. Deep holes, wide joints or pockets should be daubed out in thin layers of mortar with pinnings tightly bedded in mortar, keyed and left to cure. The aim of preparing the background should be to achieve a surface that can take a first coat of consistent thickness, and to provide an adequate key for this first coat. The quality of preparation work is vital to the quality of the finished job. Suction between the first coat and the wall (and between all subsequent coats) is the primary means of bonding although a physical bond is also important. Different materials have different levels of suction, so for instance where a door way has been knocked through a stone wall and the edges built in brick, the brick may well have a different level of suction to the stone. Understanding and controlling suction is important for successful work.

For wood lath and plaster work, laths should be fixed by butt and break joints to joists or battens securely fixed back to wall or ceiling, with gaps between the laths of approximately 5/16" – 3/8" (8 - 10mm). The support battens or ceiling joists should be spaced so that the lath does not give unduly in the centre. Wide spacing of battens or joists may require intermediate support or thicker laths. Sawn or riven laths (traditionally hand made) should be thoroughly damp before fixing. Dry laths swell when wet mortar is applied to them, sometimes causing the laths to bow in or out. Nails for fixing laths should be thin shank to avoid splitting the ends. Building paper and insulation is occasionally placed between laths and outside walls to comply with current building control requirements, this will have an effect on the drying rate and prevent proper rivet formation when fixed hard against the back of the lath. If building paper and insulation are essential, use moderately (NHL 3.5) or eminently hydraulic lime (NHL 5) for the first coat as

they have faster natural sets, maintaining at least a 3/4" (20mm) gap between the paper and the lath.

First Coat or Scratch Coat

Plastering mix is made with NHL 3.5 or NHL 2 in a 1:2 ratio with well-graded sharp sand #6 (3.5mm) down.

Plastering mix is mixed before use as described in the Mixing Mortar Data Sheet, mixing mortar. Hair or fibre reinforcement (if desired, but not necessary with hydraulic limes, except on lath work) is teased into the mortar and repeatedly chopped and turned until a good even distribution is achieved. The hair should be long and strong, free from lumps and clumps. Fiber reinforcement should be alkali resistant. It should be abundantly visible as a beard around the edge of an inverted trowel full of mortar.

When working on the hard the first coat of mortar should be applied by throwing (a spray gun can be used) or with a laying-on trowel on to a dampened but not wet background at approximately 3/8" – 1/2" (9 - 12mm) thick (generally hair or reinforcing is not required on the hard). The plaster coat should not be straightened.

For application onto laths, mortar should be trowel applied as evenly as possible and pressed home to form rivets between and behind the laths. The coat should cover the lath by approximately 5/16" – 3/8" (8-10mm).

Any initial shrinkage that takes place in the drying out phase, should be lightly floated back. Tighten the entire surface in with a cross grained wood float, closing back by further dampening and tightening in a close circling motion.

Key the surface with a comb, or with a lath scratcher for plaster on laths, taking care not to score too deeply. In the case of lath work ensure that scratching is across, not in line with the lath. Thereafter if necessary control the rate of drying out by misting the surface with clean water or lime water, until all shrinkage has stopped and the mortar has hardened sufficiently to receive the second coat. Do not over-wet the surface (if water droplets appear on the surface it is over-wet). Plastering on laths may take longer to dry as there is no suction of moisture into the background.

Second Coat or Brown Coat (this is the straightening coat)

Using the same mortar as the plaster coat and following the same method of mixing, apply with a laying-on trowel to a dampened background. At this stage, if straightening is necessary, fill out irregularities in thin layers and apply the floating coat to the desired line using battens or dabs. Maximum thickness should be 1/2" – 5/8" (12- 16mm) in one pass. Tighten in as before with a cross-grained wood float and key lightly to receive the finish. Any irregularities in the background must be made good at this stage. It will not be possible to straighten the finish coat due to its thinness.

Setting Coat or Finish Coat (hair is not required)

Finishes are generally made with NHL 2 in a 1:2 or 1:2.5 ratio with well graded sand.

For fine finishes, such as interior, the finish coat is made with NHL 2 in a 1:1 with fine silica sand #20 - #200 (0.8 to 0.075mm), clean and free from silt or clays.

Better finishing will be achieved by re-working the setting mix the day after.

Apply with a laying-on trowel in two passes to an overall thickness of 1/16" (2mm) maximum, slightly **less is better**. Tighten in with a cross grained wooden float, dampening as necessary as the set takes up. Setting mix sets by suction from the background. The final finish is produced by trowelling the surface with a steel float and dampening as necessary. Finish in one direction, usually top to bottom.

Patching finished lime plaster into a repair requires care. The finish is sand based and will abrade and degrade existing edges leading to a dull surface around the repair. A clean break of a few mm is necessary around the patch and this can be filled later with NHL 2 made into a putty (no sand added) when the patch is fully hardened.

Decoration

Paint finishes should only be applied to fully dry and set work. Lime paint, lime wash distemper and casein paints are traditional finishes for new work.

Protection

Work should never be undertaken in frosty conditions or where the temperature is likely to fall below 45⁰F during the execution of the work or until the mortar has hardened. Protection should remain in place for as long as possible (see data sheets on setting / curing times for individual limes). Ensure that the rate of drying is consistent and that strong drafts are excluded from the working area. This is particularly important where a building has windows removed or doors open. Never force the drying by introducing forced or excessive heating. If heating is required to maintain a proper working temperature use propane heating, this has the effect of producing both moisture and heat simultaneously. Ensure the temperature is adequately controlled.

Good Working Practice

Adequate preparation and protection are essential. Due care and attention should be applied to all work. Sample panels should always be done, allow sufficient time.

This document is a guide only and is not intended to be a specification. Its purpose is to provide the reader with helpful information that may assist in determining the correct choice of materials, methods of application and the best working practice. The guidelines refer to our experience with St. Astier NHL binders and some recommendations might not be applicable to other products.