Limetec Mortars, Plasters and Renders

Introduction

In the UK, lime has been used as a binder in mortars and plasters since the Romans brought the technology with them 2,000 years ago.

150 years ago, Portland cement was considered a specialist's material. However advances in industrial processes and the demand for faster building changed the market conditions and cement became the primary binder for mortars. Portland cement performs well in mass concrete and engineering structures, but where flexibility and vapour permeability are required, hydraulic limes produce superior mortars, plasters and renders.

During the last 25 years, Lime has enjoyed a steady revival for repairs to historic buildings. The soft, porous and flexible nature of lime mortars and plasters is now universally recognized as being vital to maintain the traditional breathing performance of old buildings. In addition, an increasing number of architects, engineers, surveyors and builders are now beginning to realise that lime has many benefits to offer in new construction.

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The Benefits of Lime

There are sound arguments for using lime mortars in new build, relating to both performance and ecological issues.

These include:-

• Using lime based mortars and plasters reduces the need for expansion / movement joints
• It uses less energy than cement to produce
• It re-absorbs some of the CO2 given off during the firing process when it sets
• It allows masonry to be recycled when the building comes to the end of its life. There would be no supplies of second hand bricks if old buildings hadn't been built with lime
• It enables low energy, sustainable materials such as water reeds, straw, hemp, coppiced timber and clay to be used as construction materials as the lime breathes and keeps them dry
• Aesthetically, lime has contributed massively to our townscapes by enhancing the beauty of the materials used in construction.

The energy produced from non-renewable sources consumed in building services accounts for about half of the UK's emissions of carbon dioxide (CO2). The contribution to this by the cement industry is significant. It is estimated that cement production represents around 8.3% of man-made CO2. A change from cement to hydraulic lime could therefore make a major contribution to the reduction in CO2 levels.

There has never been a better time to be using lime. There is now a British Standard BS EN 459-1 that recognises lime as a binder in its own right. The Department of Trade and Industry has invested hundreds of thousands of pounds funding research into the future of hydraulic limes in the building industry. This has provided vital information showing that hydraulic lime produces mortars which are more durable than cement based mortars and which have greater resistance to the effects of frost and salt action. This research has led to the publication of a 'Best Practice Guide' for hydraulic limes and a technical note to complement BS 5628 is on the way.

Mortars

When hydraulic lime is specified on a new build project, it is often viewed with suspicion by contractors as its gauging and mixing with sand to make a mortar requires care and experience to get consistent results.

Lime Technology (working with CPI EuroMix) has developed a solution to this problem in the form of dry, pre-mixed hydraulic lime mortar, produced using factory precision batching techniques to tried and tested recipes gained through years of experience.

For large projects and building developments, mortar can be supplied in silos which can hold up to 22 cubic metres or 30 tonnes of dry mix. The silo is fitted with a control panel and 'high shear' mixer that regulates water input and mix flow producing constant mortar at the touch of a button. For smaller projects, the mortar is available in 25kg bags and can be mixed in a conventional drum mixer.

Limetec mortars

There are three standard mortars which cover a range of likely applications both for conservation and new build. These are as follows: -

Limetec eminently hydraulic mortar
For use where a higher level of durability is required i.e. masonry exposed to severe weather

Limetec moderately hydraulic mortar
For most normal applications i.e. cavity brickwork, blockwork and stonework

Limetec feebly hydraulic mortar
For use with softer bricks and stone, solid wall construction and conservation masonry.

The use of dry mortar and silo technology now allows lime mortar to compete on an equal footing with cement mortars – the argument for using lime has never been so strong!

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Mortars - Product Data

Manufacture

Limetec mortars are manufactured using a blend of limes. They comply with the durability requirements of BS5628: Part 3:2001. Mortar strengths are measured at 91 days as opposed to 28 days as lime mortars gain strength more gradually compared to Portland cement based mortars.

Materials used conform to the following standards: -

Sand BS EN 13139:2002
Natural hydraulic lime (NHL) BS EN 459: Part 1:2001
Calcium lime (CL90) BS EN 459: Part 1: 2001

Limetec mortars are manufactured using factory batching techniques. Raw materials and end products are subject to regular quality control procedures and testing. The materials are weighed and mixed under computer controlled conditions with rigorous quality control procedures.

Mortar Mix Proportions

Eminently hydraulic mortar mix proportion 1:2
Will reach HLM2.5 (class III) at 28 days and HLM5 (class II) at 91 days (high resistance to freezing and thawing, high resistance to sulphates).

Moderately hydraulic mortar mix proportion 1:2¼
Will reach HLM1 (class IV) at 28 days and HLM2.5 (class III) at 91 days (good / high resistance to freezing and thawing, high resistance to sulphates).

Feebly hydraulic mortar mix proportion 1:2¾
Will reach HLM0.5 (class V) at 28 days and HLM1 (class IV) at 91 days (poor resistance to freezing and thawing, good resistance to sulphates).

Sprayable Plasters and Renders

Limetec's range of lime plasters and renders not only offer sustainable benefits, breathability and flexibility of lime, they can also reduce site times by a massive 75% when compared to traditional application techniques.

They both contribute to a healthy internal environment and are economic, practical alternatives to plasters and renders containing gypsum or patent cements that have little or no vapour permeable qualities. They are designed for spray or hand application as a two coat system. Suitable substrates include brickwork, blockwork or concrete.

All limetec plasters and renders: -

- Are available as dry powders in 25kg bags
- Conform to mortar category CSII according to BS EN 998-1
- Contain hydraulic lime as the bonding agent
- Are water vapour permeable (breathable)

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Sprayable Plasters and Renders - Product Data

Limetec basecoat

• Universal plaster for interiors, exteriors and for rooms with high humidity
• Can be machine or hand applied
• Aggregate size 0-2.2mm

It is a general purpose lime render designed for spray and hand application onto masonry substrates such as brickwork, blockwork, concrete and render backgrounds. It can be applied in all internal and external areas including wet rooms. Limetec basecoat provides a robust background for finishing coats and tiling work in bathrooms. It can also be used as a finishing coat and for setting render beads. Limetec Basecoat has a good workable consistency for machine or hand application. Once dry, it provides a hygienic, purely mineral, water resistant wall surface with excellent water vapour permeability.

Limetec Internal Finish

• Smooth, fine finish for internal plaster work
• Can be hand applied
• Aggregate size 0–0.3mm

It is a fine finish internal plaster – the ideal surface finish for Limetec Basecoat and other conventional cement and lime based render backgrounds. Limetec Internal Finish produces a smooth matt finish to wall surfaces. It can be painted with all types of natural and synthetic paints or covered with wallpaper. It has good workability and is very easy to apply. Limetec Internal Finish does not need 'polishing' and offers total working time flexibility for the user. It is also water vapour permeable.

Limetec Bonding Mortar

• Smooth, fine finish bonding mortar for internal and external areas
• Can be hand or machine applied
• Aggregate size 0-0.6mm

Limetec Bonding Mortar can be applied to all standard backgrounds, except gypsum, as a bonding mortar to prepare difficult backgrounds for the application of lime plasters and other conventional plasters. Limetec Bonding Mortar is also suitable as a robust plain finish render with good adhesion performance on to existing façades.

Roughcast Render

• Creates roughcast textured finish
• Suitable for external areas
• Can be machine or hand applied
• Aggregate size 0-4mm

It is a mineral, roughcast render for use as a finish onto Limetec basecoat and all standard mineral basecoats, reinforced meshing coats of insulation and ETICS, salt retention renders and fillers. Creating a roughcast, textured finish, it is frost and weather resistant and has a much lower susceptibility to defects than conventional renders.

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