Lime Putty Plaster Installation Guide

Product Name: **Lime Putty Plaster Base and Finish Coat**

Manufacturer: Lancaster Lime Works

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Product Description:

Lancaster Lime Works Putty Plasters are a non-hydraulic plaster that is pre-mixed with lime, sand and water. It is made by mixing our high-calcium (98%+), High PH (12+), carbonating, high surface area, low magnesium, (slaked) lime putty (calcium hydroxide) with properly graded aggregate. Designed to replace historic lime-sand plaster. With high plasticity and superior workability, it forms a strong suction bond with masonry units, wood lath and ensures excellent tensile and compressive strength.

The plaster will keep indefinitely in the original container as long as carbon dioxide is excluded. Our lime putty plasters require exposure to Carbon Dioxide in the presence of moisture to harden.

Our lime putty plasters help control the humidity of the internal environment and resists mold and mildew all while being 100% natural with no cellulose, chemicals, bonding agents, gum binders, latex or out-gassing.

Depending on installation techniques and the skill of the installer, the finish coat can be used to make a wide variety of historic plasters including Tadelakt, Marmorino and Venetian plaster. It is also used in the installation of Fresco work. The base coat can be used as a finish coat if a semi-textured finish is desired.

Important notes:

Preparation of the plaster, the substrate as well as protection and care after installation are just as important as correct application techniques.

There are three main requirements for successful lime putty plaster installation. They are as follows:

1) A firm and strong background
2) A textured background
3) A porous background
4) Proper installation

Lime Putty Plaster requires a solid, textured and porous background for them to properly adhere. Do not use bonding agents.

Preparing the Mix:

The plaster needs to be 'knocked-up' - a process of mixing, beating or turning which will energize the lime and release some water. Only the minimum amount of water should be added if required to make a workable mix as the plaster should be used as stiff as possible.

For knocking up a single bucket of plaster at a time use a heavy-duty right-angle drill with an egg beater type mixer attachment and mix for approx. 3-5 minutes. A mixer that does not beat the mortar will not work. For large quantities of plaster, a top loading - forced action mechanical mixer that "stirs" rather than "lifts" is the ideal way to 'knock-up' the lime plaster. Put the plaster into the mechanical mixer and mix for approx. 5 minutes before using.

If a bell mixer is used, it should be left turning for long enough to achieve a suitable consistency without adding water (20-30 minutes).

If more water is required, it should be added CAUTIOUSLY as too much water will render the plaster as too heavy, will take longer to dry and have more cracks that will need compressed.

For all types of mixing methods, the indication that the mortar has been knocked up sufficiently is when it will stick to your tools without falling off when they are in an upside-down position.

Hair is required for installation over wood lathe. A generous amount of hair must be used, (Actual amount needed will vary depending on installation techniques). Gently tease hair in towards the end of the 'knocking-up' process – avoid hair balls.
If using polypropylene fiber in the base coat of plaster you will need approx. 2 oz (two tightly packed cups) of per five gallon bucket of plaster. (Again, actual amount needed will vary depending on installation techniques).

Image of wood lathe that is ready to plaster.

Preparing the Surface:

Masonry surfaces must be clean and free of dust and loose material. The surface must be rough enough to allow the lime putty plaster to key into them. If wood lathe is used it must be applied firmly and securely with gaps between each piece.
Pre-wet porous absorbent surfaces such as stones bricks laths by spraying with clean non-chlorinated water, (usually 2 or 3 times) before application. The substrate must be wet enough when sprayed with water that the plaster does not flash dry when installed. It is critical that the installer understand that lime putty plasters are a carbonating type of material - which means they absorb carbon dioxide in order to set. This carbonation process takes place as the water leaves the plaster and the carbon dioxide is pulled into the plaster.
If the plaster dries out before it carbonates, the plaster will fail. Therefore, the surface must be thoroughly wetted before applying the plaster to avoid the moisture in the plaster being immediately absorbed into the dry substrate, and the plaster drying too quickly.

Applying the Plaster:

Fill in any extra deep spots on the substrate with base coat plaster (haired) where necessary before applying the first coat of base coat plaster. This will create a semi-even surface so each subsequent coat of lime plaster can then be applied at the same even thickness. This first (dubbing) coat should be left to harden before applying the first base coat.

About 3 oz of hair cut into approx 2" lengths per five gallons of plaster.

Thickness of Coats:

When lime putty plaster is applied onto stone/brick/lath internally, it is usual to apply three or four coats.
- The (first) Lime Base Coat Plaster with hair is used for the scratch coat 3/8” thick.
- A floating (second) coat is applied on top of the scratch coat 3/8” thick.
- The Lime Topcoat Finish Plaster (third and perhaps fourth coat) should be applied in two thin coats totaling approx. 1/8” thick each coat depending on the type of topcoat used.

First/Base Coat:

After the plaster preparation has been completed, apply the first coat of Lime Base Coat Plaster (scratch coat with plenty of hair) with a steel float evenly. Firmly push the haired plaster thru the gaps in the lath to ensure there are consistent “nibs” at the back of the lath. This ensures the plaster has a good finger hold on the wood lath as well as firmly pushing the aggregate together to ensure a secure base. When it has firmed up, scratch the plaster (to about 1/8-3/16” depth) diagonally using a wire scratcher. This could be the same day or up to a week or more depending on drying conditions. This coat takes up any shrinkage and may crack. You need only worry if the plaster becomes detached from the background. Overworking this coat with the steel trowel can cause it to become detached.

TThis is the backside of a properly applied lime putty plaster on wood lathe

Scratching the base coat.

Second Coat:

After thoroughly pre-wetting the first coat of plaster, apply the next "floating" coat (with no hair) in the same method and thickness (3/8") as above including the following:

The second coat (floating coat) needs to be floated and **compressed** while the plaster while it is still soft enough to take the indent of your thumb. This will compress the plaster to avoid shrinkage cracks as well as flattening the wall. It should be carried out using either a straight grained (for uneven surfaces) or cross grained (for flat walls and ceilings) wooden float, **not a plastic float or steel trowel**.

A sandy textured finish is desired when prepping the second coat for finish plaster.

Floating and compressing is hard physical work, sometimes a little water sprayed onto the surface can help the process but be careful not to add to much water before it has fully carbonated.

After the floating coat has been floated and the plaster has firmed up, use a Scarifier (wire comb) to form the key for the finish coat. You can also use a wood float with small nails or screws in it that barely protrude thru. Then rub the surface of the plaster with the float in small, circular motions to achieve a key depth of not less than 1/16”- 1/8”. The surface of the floating coat (second coat) should be scraped down with the side of the trowel and then brushed to remove loose material whilst still green (holding moisture). This will remove loose particles of aggregate and will keep them out of the finish coat of plaster.

Finish Coat:

Several types of lime plaster topcoats can be applied after the float coat has cured. The following is a general guide for topcoat installation. Specifics will vary depending on the exact material and finish desired. It can take a lifetime to perfect the installation of putty finish plaster finishes.

Before applying the finish coat of plaster the wall should be thoroughly wetted again. The Lime Putty Plaster Finish Coat should be applied at about 1/16" - 1/8" thick onto the surface of the float coat. When this has firmed up use a damp sponge float to work and compress the finish coat. If required, wet the surface before working it with a sponge float, by misting with water, however over-wetting should be avoided because it will draw too much lime to the surface.

Lightly work the topcoat of plaster to the desired type of finish using a stainless trowel. Artistic approaches by skilled craftsman who are familiar with finishing lime plasters will differ. Often for super fine plaster surfaces multiple coats of lime finish plaster are used with varying ingredients, pigments, and techniques to achieve the desired finish. A Tadelakt Stone can also be used to achieve a smooth finish without leaving burnish marks.

Installation and Finishing of 100% natural Lime Putty Plaster Finish Coats require skill and practice to achieve professional results. We highly recommend mock-ups before tackling an entire area.

Protection of the Installed Plaster:

Allow each coat to 'go off' before applying the next one.

As a guide, it takes one-two weeks for the first coat, one week for the second, and a few days for the finish coat. This will vary considerably depending on weather conditions and substrate. Each coat should be hard enough to resist indentation from a knuckle, but be soft enough to scratch with a fingernail.

Protect new work as conditions dictate e.g. for hot, dry or windy weather, damp hessian and plastic sheeting may be required to prevent direct sun and rapid drying. However, lime putty plaster will not set up if it stays continually wet. It will set up thru several cycles of wetting and then allowing the plaster to slightly dry. Gentle spraying may be necessary if areas of plaster are drying too quickly. In hot and dry conditions a gentle but complete wetting of the plaster should be done several times to keep the plaster from flash drying.

Note:

Often the upper portion of the wall needs to be treated differently than the bottom of the wall when monitoring moisture as moisture tends to gather at the base of the wall. Therefore different elevations on the wall may need different levels of protection and moisture.

Do not use dehumidifiers and heaters to speed up the set. Good, even drying and ventilation is key, accelerated drying will prevent carbonation and will cause the plaster to fail.

Gentle heat may be used cautiously in cold, damp buildings. Protect new lime plaster from frost. Work should **not** be carried out when temperatures are likely to fall below 41°F before carbonation has taken place. (water starts to freeze at 39 degrees). If work must continue in cold temperatures, although not advisable, the area should be fully enclosed and well-circulated even heating supplied.
Protect from rain - heavy rain can wash the lime out, or at least, draw it to the surface before the render has carbonated. A new render should be protected until surface carbonation has taken place.

After Care:

Your finished lime plaster will care for your building for years to come as it helps control the humidity of the internal environment and resist mold and mildew. It gives a beautiful finish that no modern plaster can replicate. If desired, you can finish it with a 'breathable' and preferably a limewas or milk paint, your choice will depend on the level of durability, required vapor control and desired aesthetic.

Lime plaster should never be covered with latex or oil paints or coatings.

Approximate coverage rates:

One 5-gallon bucket of base coat covers approx. 12-15 ft² when applied at 3/8" thick (The coverage of the base coat when used on lath will be less depending on installation techniques)

3 oz of polypropylene fiber or animal hair per five-gallon bucket of plaster for use over wood lathe or unstable surfaces. (More should be used depending on installation techniques.)

One 5-gallon bucket of Lime Putty Plaster Finish Coat covers approximately 125-175 ft² per bucket.

Storage of Plaster:

1. Store the plaster covered with water and airtight in original buckets.
2. Nothing chemically changes in the lime plaster if it freezes, however you risk the bucket breaking due to the expansion when water turns to ice.
3. Plaster with natural hair must be used within a week otherwise the high PH of the lime will digest the hair.
4. Premixed lime plasters and mortars will compact over time, although still very usable, they will take more effort to 'knock up'. For easier results use as soon as possible.

Additional Information:

The application of lime putty plaster is more involved than using conventional modern plaster. It is highly recommended to use a plasterer who is experienced in the use of lime putty plasters or at the very least they should have some practical hands-on installation experience. We highly recommend asking potential plaster contractors to perform a mockup before entering into a contract with them. As it is not possible to cover every point in detail here, when further guidance is needed after following the advice herein, please contact Lancaster Lime Works.

We provide training for contractors, home owners and specifiers which can save much time on-site as well as ensuring a successful project.

Custom plaster mixes are available.