



LP-20, LP-20M, LP-20S

Lime Putty Products

Lime Putty

Lime Putty is a non-hydraulic binder used primarily for Historic Restoration and plastering work. Lime was the primary masonry binder material used prior to the 1800's, and its use continued, along with other systems, into the 19th and 20th centuries. In these later periods, it was more commonly used in combination with various types of cements and pozzolans, rather than as the solitary binder.

Lime putty was typically prepared by slaking quicklime at the job site. In the early 20th century, dry hydrated lime powder became widely available, and it was favored for its ease of use and transportation.

Chemistry:

Lime Putty is made by burning limestone at temperatures range from 1650°F (900° C) to 1900° F (1025°C). The resulting quicklime is then slaked with water to form a hydrated lime. Dispersion in additional water forms lime putty. The resulting lime putty product complies with the requirements of ASTM C1489.

Limestone + Heat $-CO_2 \rightarrow$ Quicklime

REF: ASTM C5

Quicklime + Water \rightarrow Hydrated Lime

REF: ASTM C207

Hydrated Lime + Excess Water \rightarrow Lime Putty

REF: ASTM C1489

After Application:

Lime Putty or Hydrated Lime + $CO_2 \rightarrow$ Carbonated Lime (Limestone)

In the United States and Canada, lime has been produced from a variety of sources. In most areas, it was produced from limestone with a high magnesium content. Though seashells provided a limited source of calcium carbonate for so-called "high calcium" lime in certain coastal areas during the colonial period, and some limestone deposits in North America are in the high calcium category (<5% magnesium carbonate), most lime used on this continent was produced from dolomitic lime (>35% magnesium), just as it is today.

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Lime Putty of either variety offers low compressive strengths and high vapor permeability, extended working times, and excellent workability. Edison Coatings lime putty products are **MADE IN THE USA.**

Where to Use

Lime Putty was traditionally used in masonry mortar, interior and exterior plasters, limewash and other applications. The primary advantages of using lime putty revolve around its enhanced workability.

Alternative Products

Spec Joint 46 Type L: Lime-sand mortars, where the convenience and economy of a dry mortar mix are desired.

Rosendale 17L: Hydraulic lime mortar, where positive hydraulic setting characteristics and earlier resistance to rain and frost are desired.

Composition

LP-20 is prepared to order from dolomitic and high calcium limes as required. **LP-20**, in turn, can be compounded at the factory with precisely proportioned selected aggregates and mineral pigments as required to replicate historic mortars (**LP-20M**) and stuccos (**LP-20S**). These are also prepared to order to meet particular project specifications.

Preparation

For Masonry: Protect work from harsh direct sunlight, wind and rain, and freezing temperatures. Protect sills, ledges, windows, doors, and projections from droppings and splatters. Do not use tape or adhesives on any masonry surface. Prevent mortar from staining the face of the masonry and or other surfaces to be left exposed.

For Masonry Repointing: Remove all existing cement mortar and deteriorated lime mortar. Rake to the depth required to reach sound mortar, leaving a clean square face at the back of the joint, to which ever depth is greatest (1 inch, 1 ½ times the width of the mortar joints, or until cohesive existing mortar is encountered). Care should be taken not to damage historic masonry surfaces and masonry joints should not be widened. Debris should be removed by brushing, vacuuming, and/or pressurized air. If there is evidence of moisture retention or rising damp, it may be necessary to allow the structure to “dry out” before repointing. If this is not done, lime leeching may occur, causing failure of the placed mortar and staining of the masonry.

Control substrate absorption by wetting masonry units or surfaces prior to application. Surfaces and/or units should be cool and damp (but not glistening wet or “holding water”) to prevent premature drying of mortar. On highly porous substrates, dampening should begin on the day prior to application. Control absorption by thoroughly dampening substrate by fine mist spray (depending on conditions this may entail dampening for additional time). Ensure there is no standing water or over-saturation before application. If, prior to dampening, the substrate is retaining moisture, it may be attributed to various conditions which would need to be corrected before work begins. Issues such as roofing, masonry detailing, gutters and drainage, etc. should be addressed prior to product application.

Mixing Directions

LP-20M and LP-20S are provided in Ready-To-Use form and require no further additions of other materials. Materials should be agitated prior to use to assure that no segregation of aggregates has occurred.

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LP-20: Mix 1 portion of Lime Putty with determined portions of clean, well-graded sand (Do not exceed 1 part lime to 2.5 parts sand.) Using a shovel or hoe, chop the two components together until lime putty is coarsely distributed throughout the mix. Beat or ram the lime putty and sand together with a pestle or “beater” and turn until the mix is to desired consistency. Take care when adding water as too much water will expand the mix and may cause potential problems such as shrinkage cracking and diminished freeze-thaw resistance.

For Mechanical Mixing in a roller pan mixer: Add sand, then lime putty followed by additional water if necessary to achieve desired consistency. Due to the level of water retention in lime putty, in most circumstances additional water will not be necessary. **Lime Putty Mortars should not be mixed in a standard paddle mortar mixer. See “Reworking” below.**

Application

For Masonry Repointing: Joints greater than ¾” should be re-pointed with an initial lift to bring the joint depth to a uniform thickness. Pack mortar firmly against the previously placed mortar by applying firm pressure to ensure close contact between the lifts. If pointing in lifts, roughen the surface to provide keying between applications and allow mortar to become thumbprint hard prior to reapplication. When finishing mortar joints it is often preferable to match the original joint profile.

Reworking: It is possible for Lime Putty mortars to be re-worked and reused for extended periods of time, if properly stored in tightly closed, air-tight containers, with no direct product contact with the empty head space. If material has been exposed to air for too long, it may have already carbonated, making it unusable. To re-work lime putty mortars, chop and beat (see Mixing Directions for Mortar or Plaster) the mortar until the material reaches a workable consistency. Lime Putty Mortars can be re-worked in a standard paddle mortar mixer if necessary.

Curing Time: Mortar work should be protected from sun, wind, and rain for at least 7 days. Mortar work should be protected from freezing temperatures for at least 28 days. In some cases mortar work may need to be protected from freezing temperatures for several months.

Coverage:

Each 5-gallon pail contains approximately 0.6 cubic feet of material.

Clean Up

Ensure that all work is properly protected prior to cleaning. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis, and with a trowel, strike off minor dabs of adherent mortar from masonry faces. After mortar has achieved thumbprint hardness, lightly brush masonry to remove small mortar burrs from joints and masonry edges. Manual cleaning of masonry can be effective by using water and soft bristled brushes to remove mortar smears. After the mortar has been allowed to cure light pressurized spray (less than 300 PSI) can be used with caution due to the fact that over saturation of the masonry could lead to moisture migration. If chemical cleaning is necessary, contact cleaning compound manufacturer for directions when cleaning pure lime mortar and test the treatment in small inconspicuous areas to determine its effectiveness and to ensure no damage occurs. Tools can be cleaned using conventional methods and properly protect any unused product from moisture and freezing. Opened containers of lime putty should be stored by pouring one inch of water to “seal” the putty, in the pail. This putty should last indefinitely.

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