Edison Coatings, Inc.

LP-20, 20M, 20S

Lime Putty Products

DESCRIPTION:

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.

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.

TYPES:

LP-20 Series Products are based on non-hydraulic lime dispersions created from limes of various chemistries and sources.

- ***LP-20*** is a series of pure lime putty products.
- ***LP-20M*** is a series of ready-to-use lime putty mortars.
- ***LP-20S*** is a series of lime putty plasters and stucco mixes.

CHEMISTY:

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

Photo: Edison Coatings LP-20 lime putty was used in the repointing of the masonry base of the U.S. Capitol Dome.

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 → Quicklime (ASTM C5)
- Quicklime + Water → Hydrated Lime (ASTM C207)
- Hydrated Lime + Excess Water → Lime Putty (ASTM C1489)

After Application:

- Lime Putty or Hydrated Lime + CO_2 → 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 (35% magnesium), just as it is today. 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**.

ALTERNATIVE PRODUCTS:

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

E-NHL 20M, 35M and 50M: Hydraulic lime mortars, where positive hydraulic setting characteristics and earlier resistance to rain and frost are desired. Based on E-NHL 2, 3.5 and 5, respectively.

COMPOSITION:

LP-20 is prepared to order from either dolomitic or high calcium limes as specified by the purchaser. ***LP-20M***, 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.

COMPRESSIVE STRENGTH:

LP-20 mortar and stucco strengths are dependent on aggregate size grading and proportioning. A typical dolomitic lime putty mortar with 2½:1 aggregate to binder ratio and with well graded sand will develop compressive strength on the order of 2 MPa (approx. 300 psi) in 35 days.

APPLICATION: PREPARATION

For Masonry Construction: 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.

For Stucco & Plaster Applications: 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 plaster. 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.

APPLICATION: MIXING

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 or settling has occurred.

LP-20: Mix 1 portion of Lime Putty with determined portions of clean, well-graded sand (Do not exceed 1 part lime to 3 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 for initial mixing. See "Reworking" below.**

APPLICATION: INSTALLATION

For Masonry Repointing: Apply in lifts no greater than ¼" thickness. Pack mortar firmly against the previously placed, pre-dampened 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.

For Plaster/Stucco: Scrub a water-thinned mixture of ***LP-20S*** (10-25% water addition) into the predampened surfaces to improve bond and follow immediately with application of a first lift on undiluted material. Lifts should not exceed 3/8". Maintain the plaster in a damp condition to avoid plastic shrinkage and cracking. Apply subsequent lifts as required once the prior lift has achieved thumb-print hardness.

Reworking: It is possible for Lime Putty products 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, as these products only react with air. 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 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 and plaster work should be protected from direct sun and rain for at least 7 days. All 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. **Wet/Dry curing by light misting with water several times per day or by wet burlap method is required for a minimum of 72 hours after application.** Longer curing is recommended to improve long term performance. Over misting can cause efflorescence or lime blead.

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 full cure is achieved in the mortar, masonry can be cleaned of excess dirt with ***E-Wash 30*** light detergent based cleaner.

STORAGE AND HANDLING:

Store material in dry area. Avoid skin and eye contact and avoid breathing dust. Observe all safety and handling guidelines as detailed in the Safety Data Sheet supplied with this product. Properly stored, closed buckets have almost infinite shelf life if a 1" layer of water is applied to the top surface after use.

Keep tools clean and wet during use, and clean up immediately after use. Keep packages closed when not in use.

For further information or assistance, contact Edison Coatings.

FOR COMMERCIAL AND INDUSTRIAL USE ONLY

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