



HERITAGE NATURAL HYDRAULIC LIME BINDER

NHL 3.5

Product Data Sheet

Description and Use

Heritage Natural Hydraulic Lime Binder – NHL 3.5 is a natural lime binder used to blend bedding and pointing (tuckpointing) mortar, and plaster and stucco. NHL 3.5 is selected to match the performance characteristics of traditional mixes, that facilitates safe and durable repairs of masonry buildings originally constructed without portland cement.

This single component binder is and ready to be blended with aggregate. Formulated only from naturally pozzolanic lime, Heritage Natural Hydraulic Lime Binder – NHL 3.5 contains no cements, polymers, or admixes of any kind. Mortars and plasters mixed from NHL 3.5 are strong yet more permeable and flexible mixes than modern portland cement mixes, providing outstanding protection of masonry units from damage caused by building movement, thermal expansion/contraction, freeze-thaw cycles and salt migration (efflorescence).

NHL 3.5 is recommended for applications in areas of severe exposure, such as wall parapets, chimneys, basements and masonry elements exposed to severe weather. NHL 3.5 is suitable for low-fired historic masonry units with high rates of initial absorption. This product is moderately hydraulic (as indicated by the 3.5 rating). Characteristics of moderately hydraulic lime include a typical range of 12% to 18% of active hydraulic components (clay and/or silica). Moderately hydraulic mixes can be re-worked up to 16 hours after initial mixing and expands slightly during the curing process. Hydraulic lime contains only trace amounts of soluble salts. This reduces the risk of sulfate damage and alkali silica reaction.

Repairs to load-bearing masonry should only be attempted using appropriate materials, tools and techniques and only by educated/trained installers. Many homeowners can successfully execute pointing and small repairs. Structural repair conditions should be evaluated by professionals. Installation guides and training/certification, offered by US Heritage Group, are strongly recommended for all installers.

Features and Benefits

- Authentic product formulation ensures compatibility with historic masonry units and mortar.
- USHG provides unmatched product and project support, for one pail or hundreds, to ensure excellent results for every installation.

Sales, Product and Project Support

US Heritage Group supports, sells and ships all products directly to ensure we consistently deliver the highest quality results possible. Contact USHG for a variety of support services:

- Specifier education
- Project-specific technical advice
- Specification guides and support
- Custom color and aggregate matching
- Installation guides and training

Product Standards (Conformance)

EN 459	Natural Hydraulic Limes
ASTM C1713	Mortars for the Repair of Historic Masonry
ASTM E2260	Guide for Repointing Historic Masonry
NPS Preservation Brief #2	Repointing Mortar Joints in Historic Masonry Buildings

Packaging and Coverage

55lbs. bag	2.5 Cubic Feet of Mortar* 2 Cubic Feet of Plaster*
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*Estimates based on standard mix ratios, actual yield may vary

See USHG **Installer Guide to Products and Services** for unit coverage and cost estimations

Limited Warranty

U.S. Heritage Group, Inc. warrants this product to be of merchantable quality when used or applied in accordance with the manufacturer's instructions. This product is not warranted as suitable for any purpose or use other than the general purpose for which it is intended. Liability under this warranty is LIMITED to the replacement of the product (as purchased) found to be defective, or at the shipping companies' option, to refund the purchase price. In the event of a claim under this warranty, notice must be given in writing to U.S. Heritage Group, Inc., 3516 North Kostner Ave., Chicago, IL 60641. THIS LIMITED WARRANTY IS ISSUED AND ACCEPTED IN LIEU OF ALL OTHER EXPRESSED WARRANTIES AND EXPRESSLY EXCLUDES LIABILITY FOR CONSEQUENTIAL DAMAGE

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Surface Preparation

Successful installation of NHL materials rely on proper surface preparation that involves careful evaluation and cleaning of substrates. For additional surface preparation details see **Heritage Natural Hydraulic Lime Mortar** or **Heritage Natural Hydraulic Lime Plaster** datasheets then contact USHG with project-specific issues.

1. Clean the substrate as needed to remove soiling, efflorescence, coatings, etc.
2. Remove and repair or replace any unsound masonry units and bedding mortar.
3. Clean surfaces to remove all dust and debris.
4. Dampen substrate to surface-saturated dry condition
5. Protect installation area from rain, sun, high winds, extreme hot and cold temperatures before, during and after application.

Mixing Proportions

NHL 3.5 binder should be mixed with sands conforming to ASTM C144. If color is to be added to the mixture, iron oxide based masonry pigments should be used and comprise no more than 10% of the total weight of binder in the mix design. The proper mix ratios should be based on the existing materials and the onsite conditions.

1. Typical mix design for hydraulic lime mortars is 1 part NHL 3.5 to 2.5-3 parts sand.
2. Typical mix design for hydraulic lime plasters is 1 part NHL 3.5 to 2-2.5 parts sand.

Mixing Instructions

Proportions of ingredients must be measured by weight or precise volume to ensure a consistent mix ratio. Using shovelfuls to measure ingredients will lead to inconsistency in the mix formulation. After all ingredients are properly measured, the material must be blended in a dry mixer for at least 10 minutes to ensure even mixing and distribution. After dry mixing is complete, the material should be mixed with water according to the instructions in the **Heritage Natural Hydraulic Lime Mortar** or **Heritage Natural Hydraulic Lime Plaster** datasheets.

Application

See **Heritage Natural Hydraulic Lime Mortar** or **Heritage Natural Hydraulic Lime Plaster** datasheets for information on the proper installation techniques of NHL 3.5 material mixes.

Cleaning

This section applies only to removal of installed mortar residue. Masonry should be cleaned before application. Do not use metal scrapers or brushes. Do not use acidic or alkaline cleaners.

1. **Immediately after installation of mortar during thumbprint hard and surface dry condition:** thoroughly clean the exposed masonry surfaces of excess mortar. Use dry wood scrapers, stiff-nylon or fiber brushes. Do not use water to clean uncured mortar!
2. **During initial damp curing conditions and period:** Allow the mortar to time harden and test to check that cleaning can be accomplished without surface erosion or lime-run. Dampen with water then use wood scrapers, stiff-nylon or fiber brushes.
3. **After initial curing period:** Use appropriate masonry cleaner following manufacturer instructions.

Curing

NHL 3.5 mortars and plasters cure by hydration through reaction with water and by carbonation through reaction with carbon dioxide. Uninterrupted execution of the curing process, immediately after installation, is essential to achieve proper mortar performance. Protect material from driving rain, sun, high winds, and temperatures above 90 or below 40 degrees during initial curing cycles. NHL 3.5 must be protected from freezing for 28 days after installation.

1. Dampen fresh mortar or plaster using pump sprayer or garden hose on mist setting.
2. Repeat the misting procedure if the wall begins to dry out.
3. Keep mortar or plaster damp for the first 3 days after application.

Storage and Shelf life

Save any unused dry material and store it in an airtight and waterproof container. Protect from freezing, extreme heat, moisture and direct sunlight. The material can be kept in the original factory sealed containers for 6 months. Dispose of containers with any material that has hardened.