

ROSENDALE



NATURAL CEMENT PRODUCTS®

Masonry Mortar 12M

Rosendale Natural Cement-Based Mortars for Repointing or Rebuilding of Historic Masonry

DESCRIPTION

ROSENDALE 12M is a series of custom-matched, pre-packaged natural cement-based masonry mortars for repointing or rebuilding of historic masonry. The mortars are prepared on a project-by-project basis in conformance with specified mixes and/or traditional recipes for natural cement mortars, the most widely used hydraulic mortars in 19th century North America. Mortars based on natural cement have endured for more than 150 years, even under severe coastal and seawater immersion service exposures, and feature high vapor permeability, tenacious adhesion and low modulus of elasticity.

Rosendale 12M mortars are custom designed and produced to meet the requirements of each project. Matching aggregates are incorporated in the formulations to provide authentic reproduction of original materials.

FEATURES

ROSENDALE 12M offers long-term performance features which are unique to natural cement products, including:

- **Fast Initial Set:** Typical initial set time is 20-60 minutes. Time of setting can be prolonged by incorporation or post addition of **SYSTEM 22** set retarding admixture or by use of mixtures containing higher proportions of hydrated lime.
- **Moderate Strength:** Compressive strength is controlled by proper proportioning of cement, aggregates and lime (if any). Depending on the specific proportions of each formulation and aggregate grading, compressive strengths at 90 days may be adjusted from 500 to 3500 psi. Unlike lime products, which set only at the surface and then require long periods of time for deeper reaction with atmospheric carbon dioxide, natural cement is a true hydraulic cement, achieving full-depth set within minutes or hours.
- **Water Resistance:** Natural cement mortars withstand severe wind-driven rain exposures within a short time of application, facilitating installation. They are also suitable for water immersion when unmodified with lime.
- **Early Freeze Resistance:** Natural cement mortar that will not be subjected to saturated conditions while frozen requires only a relatively short period of protection from

freezing. This facilitates installation over the course of a much-extended working season in northern climates, as compared with lime and hydraulic lime products. For applications involving exposure to freezing while saturated, consult Edison Coatings for mix design guidance.

- **Low Modulus:** Unlike Portland cement-lime mortars which tend to embrittle with time, natural cements continue to relieve stress and remain mechanically compatible with masonry substrates, even after more than a century of performance. **Rosendale 12M** mortars can provide long service life without cracking or delamination from masonry units.
- **High Permeability: Rosendale 12M** provides high rates of moisture vapor transmission, assuring that buildings and structures will “breathe”, and avoiding moisture entrapment.
- **Customization:** Natural cement mortars were historically formulated in proportions ranging from all-cement binder without lime, for the most severe exposures, to 80-90% lime binder gauged with 10-20% natural cement for applications where lime mortars benefited from faster set and cure without compromising lime performance properties. For mortars formulated with natural cement as the primary binder, addition of up to 50% lime was considered acceptable without seriously compromising performance. **Rosendale 12M** mortars are quickly and economically produced on a made-to-order basis for each project, to meet the optimum performance levels of each application.

APPLICATIONS:

- **Rosendale 12M** mortars may be formulated and used as authentic duplicates of original, historic mortars for the thousands of surviving buildings and structures originally built using natural cement mortars.
- **Rosendale 12M** mortars may also be used in applications where original mortars were entirely lime-based, in situations where adverse weather, reduced curing requirements and faster resistance to rain and frost are required.
- **Rosendale 12M** mortars also offer excellent repair/rebuilding alternatives for older structures originally built with portland cement-based mortars. Early portlands (1870’s-1920’s) were significantly different from today’s modern cements, and Rosendale 12M mortars can be more compatible with these original materials.

FORMULATION:

- **Rosendale Natural Cement Products®** are made from authentic natural cement, produced from argillaceous limestone extracted from quarries and mines used during the 19th Century to produce historic natural cement materials.
- **Lime** incorporated in **Rosendale 12M** mortars can be customized to meet individual project requirements, though historic engineering mortars were sometimes based on natural cement without lime. Hydrated dolomitic building lime meeting the specifications of ASTM C207 Type S or SA, or high calcium limes meeting the requirements of ASTM C207 Type N may be incorporated. Lime can also be omitted in order to allow on-site addition of lime paste (putty) or field-hydrated quicklime.
- **Sand** incorporated in **Rosendale 12M** mortars is also customized to meet individual project requirements. Sands are routinely customized to match original sands as closely

as possible in color, size and composition. Unless otherwise specified, sand blends for bricklaying and repointing mortars are formulated to meet the requirements of ASTM C144. Mortars for stone setting utilize sand blends meeting the requirements of ASTM C404.

INSTALLATION:

ROSENDALE 12M natural cement mortar is used in accordance with traditional masonry practices. These practices are taught to masons and restoration contractors in the course of hands-on training workshops, which are offered on a regular basis. On-site training services are also available.

Generally, workability of natural cement mortars, stuccos, grouts and concretes is excellent, and many tradesmen have expressed preference for working with natural cement over portland cement-lime combinations. Proportioning guidelines are different from modern cement materials, however, and misproportioning will diminish performance. Consult Edison Coatings, Inc. for guidance on proper proportioning of natural cement mixtures.

General installation guidelines are typical of all traditional masonry materials. Substrates must be sound, clean, roughened and properly prepared. Thorough pre-wetting of substrate is required to assure that the mortar will not dry too quickly. **ROSENDALE 12M** must be mixed with clean water, and water addition levels must be controlled in order to obtain optimum color uniformity and best performance.

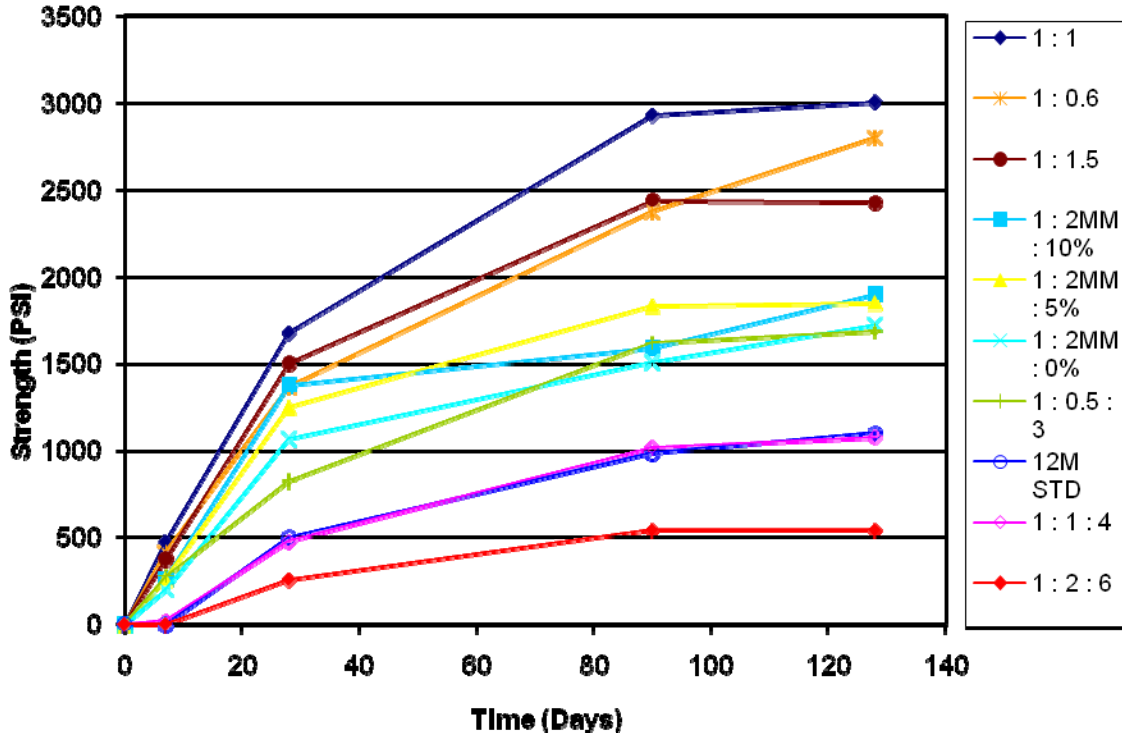
Mixed materials must be used before initial set, so mix only as much material as will be used within 10 minutes for mixes utilizing Quick-Setting Natural Cement and 30 minutes for those utilizing Natural Cement. Do not attempt to prehydrate. Temperature affects time of setting. Once material has begun to set, it should not be re-tempered or adjusted with additional water, but should be discarded.

Once the surface has been tooled or finished, it must be maintained in a damp condition throughout its curing period. Generally, this period of wet curing will be at least 3 days, with actual requirements depending on formulation and conditions. Consult Edison Coatings for curing guidelines for your specific project conditions. Acceptable curing methods include draping burlap over the fresh mortar and maintaining the burlap in a damp condition, or frequent misting with water.

PERFORMANCE

Individual custom formulations will vary in their properties. The graphic below provides typical strength development curves for various Rosendale 12M natural cement mortars. With proper proportioning, a controlled and predictable ultimate set of strength properties can be readily obtained. For further information and technical guidance, contact Edison Coatings, Inc.

Compressive Strength of Natrual Cement



3 NORTHWEST DRIVE, PLAINVILLE, CT 06062 USA

PHONE: (800) 697-8055

E-MAIL: info@rosendalecement.net

INTERNET: www.rosendalecement.net

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