

Masonry Mortar 12M

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

DESCRIPTION

ROSENDALE 12M mortars are 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.

Rosendale Natural Cement Products® are produced from argillaceous limestones conforming to the requirements of *ASTM C10 Standard Specification for Natural Cement*.

FEATURES

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

- **Fast Initial Set:** Typical initial set time is 20-60 minutes, and typical final set time is 40-120 minutes. Time of setting can be prolonged by post addition of **SYSTEM 22** set retarding admixture or by use of mixtures containing higher proportions of hydrated lime. Set retarders can also be added at the factory. Product packaging discloses any such functional additions.
- **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 that will not be subjected to saturated conditions 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. Longer cure times are required before exposure to freezing for mortars that will be frozen while saturated. Alternately, **ICE-MINUS 9 (RL-9)** polymer additive can replace water as the mixing liquid to enhance properties, such as bond strength, freeze thaw resistance, flexibility, and water absorption rate. Consult Edison Coatings for guidance under these conditions.
- **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** mortars provide 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, or to replicate original formulations.

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.

FORMULATION:

- **Lime** incorporated in **Rosendale 12M** mortars can be customized to meet individual project requirements. Limes used in **Rosendale 12M** mortars may include hydrated dolomitic building lime meeting the specifications of ASTM C207 Type S or SA, or high calcium limes. Lime can also be omitted to allow on-site addition of lime paste (putty) or field-hydrated quicklime. Edison Coatings can also provide pre-proportioned **LP20 Lime Putty** dispersions for addition to **12M** dry mixes.
- **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 are formulated to meet the requirements of ASTM C144.

INSTALLATION:

ROSENDALE 12M natural cement mortars are applied 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. Applicators meeting the performance requirements of the training workshop are individually certified. Alternate provisions are made for acceptance of experienced masons who have demonstrated their knowledge and abilities in traditional masonry practices.

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

Mixed mortar must be used before initial set, so mix only as much material as will be used within 10 to 30 minutes. Once material has begun to set, it should not be re-tempered or adjusted with additional liquid but should be discarded.

Once the surface has been tooled, it must be maintained in a damp condition throughout its curing period. Generally, this period of wet curing will be from 3 to 21 days, 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

While individual custom formulations will vary in their properties, the following are typical for Rosendale natural cement products.

PROPERTY	TYPICAL VALUES
SET TIME	Initial: 10-30 mins. (All Natural Cement); 30 – 120 minutes (Rosendale-Lime) Final: 30-60 minutes (All Natural Cement); 60 – 240 mins. (Rosendale-Lime)
COMPRESSIVE STRENGTH	Typically 500-3500 psi @ 90 days
DRYING SHRINKAGE	<0.35%

Compressive Strength of Natural Cement 12M Mortar

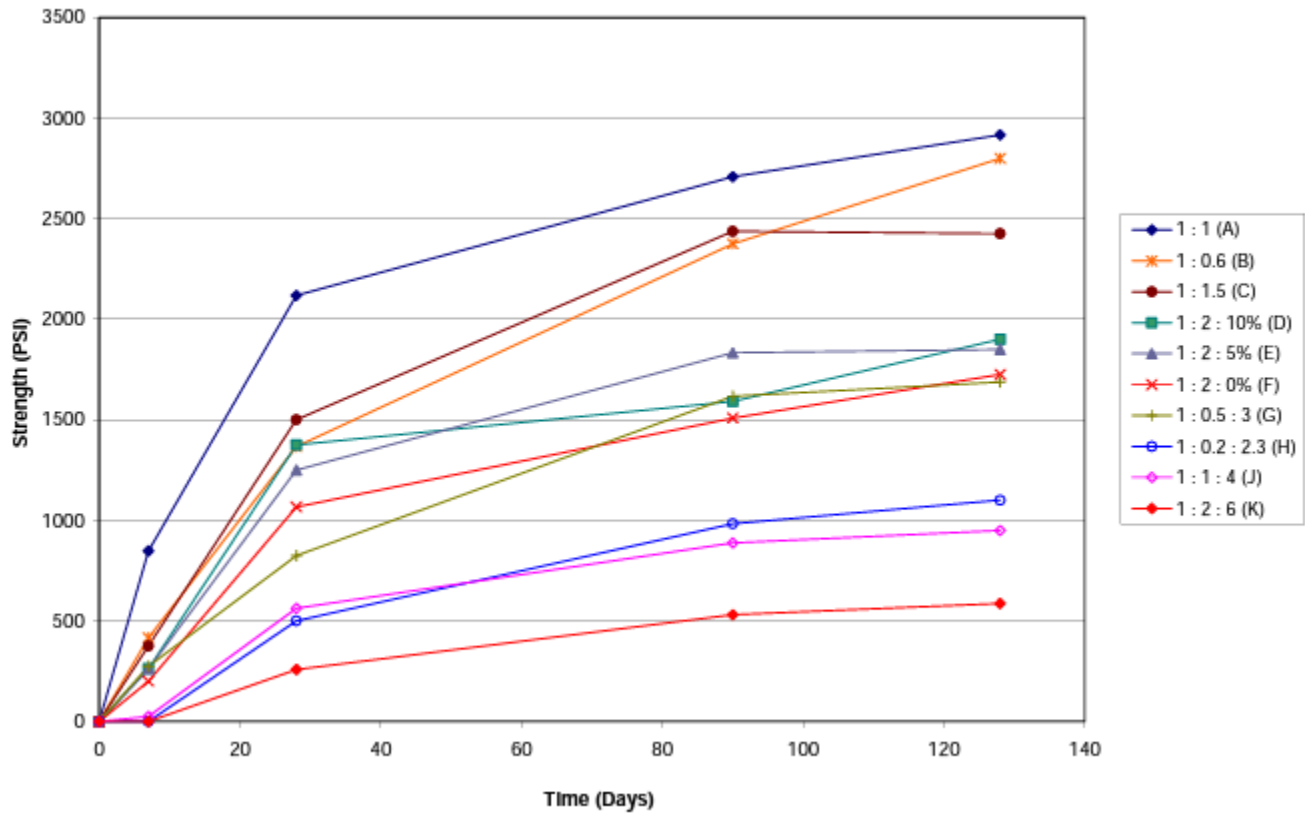


Figure 1. Compressive Strength Development in natural cement mortars of various proportions.



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