

ROSENDALE



NATURAL CEMENT PRODUCTS

Natural Cement 10C

Rosendale Natural Cement for Restoration of Historic Concrete & Masonry

DESCRIPTION

ROSENDALE 10C is a series of custom-produced natural cements for use in restoration of historic concrete and masonry. The cements are prepared in conformance with traditional specifications, faithfully reproducing the most widely used hydraulic cements in 19th century North America. Mortars, stuccos and concretes based on natural cement have endured for more than 180 years, even under severe coastal and seawater immersion service exposures, and feature high vapor permeability, tenacious adhesion and low modulus of elasticity.

Rosendale 10C cements are custom designed and produced to meet the requirements of each project. Processed directly from raw argillaceous limestones from original 19th Century mines and quarries, the controlled burning, grinding and processing of natural cement rock allows Rosendale 10C to be customized to meet varied strength, color and fineness requirements.

FEATURES

ROSENDALE 10C offers long-term performance features which are unique to natural cement products, including:

- **Fast Initial Set:** Typical initial set time is 30-60 minutes (Natural Cement), or 10-30 minutes (Quick-Setting Natural Cement). Typical final set time is 40-120 minutes. Time of setting can be prolonged by post addition of set retarding admixtures or by use of the cement in mixtures containing higher proportions of hydrated lime.
- **Moderate Strength:** Compressive strength is dependent on the specific proportions and processing conditions of each formulation. 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. Ultimate strength then develops slowly over the course of 90 days' cure.
- **Water Resistance:** Natural cements withstand severe weather 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 products require only a relatively short period of protection from freezing, facilitating installation over the course of a much-extended working season in northern climates, as compared with lime and hydraulic lime products.
- **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 10C** can provide long service life without cracking or delamination from masonry units.
- **High Permeability:** **Rosendale 10C** provides high rates of moisture vapor transmission, assuring that buildings and structures will “breathe”, and avoiding moisture entrapment.
- **Customization:** Fineness of grind standards changed over time, with the later, finest-ground cements producing the highest strengths and reactivity. **Rosendale 10C** cements are produced on a made-to-order basis for each project, to achieve the greatest historic authenticity and to meet the optimum performance levels of each application.

APPLICATIONS:

- **Rosendale 10C** cements may be formulated and used as authentic duplicates of original, historic cements for restoration of the thousands of surviving buildings and structures originally built using natural cement materials. Common uses include masonry mortars for repointing or rebuilding, stuccos, grouts, limewashes, concretes and composite repair mortars. Edison Coatings also produces pre-packaged, pre-matched custom mortars, stuccos, grouts, coatings and concrete mixes, eliminating errors in field-proportioning.
- **Rosendale 10C** may also be used in applications where original materials were entirely lime-based, in situations where adverse weather, reduced curing requirements and faster resistance to rain and frost are required, or in salt-contaminated structures where lime functions poorly as a restoration material..

FORMULATION:

- **Rosendale Natural Cement** is authentic natural cement produced from argillaceous limestone from the same 19th Century quarries and mines used to produce the historic materials. Natural cement was produced to meet the requirements of ASTM C10 specifications, withdrawn in 1976 when natural cement was no longer commercially available, and reinstated in 2006.
- **Colorants** can be incorporated in **Rosendale 10C**, customized to meet individual project requirements.
- **Starter formulations for masonry mortars, concrete, grout, stucco and limewash are available from Edison Coatings, Inc.**

INSTALLATION:

ROSENDALE 10C natural cement is used in accordance with traditional concrete and 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 substrate is required to assure that the cement mixture will not dry too quickly. **ROSENDALE 10C** must be mixed with clean water, and water addition levels must be controlled in order to obtain optimum color uniformity and best performance.

Mixed mortars 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 water, 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: >30 mins. (Natural cement), >10 mins. (Quick-Setting) Final: <3 hours
COMPRESSIVE STRENGTH	Typically 1200 – 6800 psi @ 90 days (1:1)
MODULUS OF ELASTICITY	535,000 to 640,000 psi
TENSILE STRENGTH	35-75 psi at 90 days
MODULUS OF RUPTURE	400 - 600



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