

# ROSENDALE



NATURAL CEMENT PRODUCTS®

## Composite Repair 13 P

Natural Cement-Based Repair Mortars for Limestone, Sandstone and Historic Concrete

### DESCRIPTION

**ROSENDALE 13P** is a series of custom-matched, pre-packaged natural cement-based mixtures for repair of limestone, sandstone and historic concretes. They are prepared using custom aggregates matching the composition and color of the original materials for maximum aesthetic, mechanical and thermal compatibility. Mortars based on natural cement have often endured for more than 150 years, even under severe coastal service exposures, and feature high vapor permeability and low modulus of elasticity.

Three grades are available:

<b>L</b>	<b>Limestone</b>	<b>Moderate strength mortar with calcareous aggregates</b>
<b>S</b>	<b>Sandstone</b>	<b>Low to moderate strength mortar with siliceous aggregates</b>
<b>C</b>	<b>Concrete</b>	<b>Moderate to high strength mortar with siliceous aggregates</b>

### FEATURES

**ROSENDALE 13P** offers long-term performance features which are unique to natural cement products, including:

- **Fast Initial Set:** Typical initial set time is 30 - 60 minutes, and material can typically be built up rapidly in deep sections without the need to install in “lifts”.
- **Excellent Workability:** The moderate rate of strength gain following initial set provides extended working time for fine carving or shaving of profiles. The mortars typically remain soft enough for carving or shaving for 1-3 days, but may also be instantly hardened by impregnation with *System 95* Masonry Consolidant.
- **Moderate Strength:** Compressive strength is limited to avoid distress to historic substrates.
- **Water Resistance:** Natural cement concretes withstand severe wind-driven rain exposures within a short time of application, facilitating the installation process. They can also be formulated for water immersion and below-grade applications.
- **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:** Natural cements continue to relieve stress and remain mechanically compatible with historic substrates, even after more than a century of performance.
- **High Permeability:** Natural cements permit high rates of moisture vapor transmission, assuring that buildings and structures will “breathe”, avoiding moisture entrapment.

## APPLICATION

**ROSENDALE 13P** natural cement repair mortars are applied in accordance with good restoration 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.

General installation guidelines are typical of all repair mortars. Substrates must be sound, clean, roughened and properly prepared. **ROSENDALE 13P** 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. For formed and poured repairs, **ROSENDALE 13P** can be modified with a high range water reducing admixture to facilitate placement while minimizing water-cement ratio.

Mixed mortars must be placed before initial set, so mix only as much material as will be used within 10-20 minutes. Once material has begun to set, it should not be re-tempered or adjusted with additional water, but should be discarded.

To achieve smooth profiles, finish as you go, immediately after placement. Carved or shaved profiles may be created after initial set, typically 30-60 minutes. Depending on conditions, material remains soft enough for carving or shaving for 1-3 days. Once the material has been placed, it must be maintained in a damp condition throughout its curing period. Generally, this period of wet curing will be a minimum of 3 days, depending on conditions. For faster cure, allow the mortar to dry out and apply a saturating treatment of *System 95* masonry consolidant. Consult your Edison Coatings technical representative for curing guidelines for your specific project conditions. Acceptable curing methods include draping burlap over the fresh concrete and maintaining the burlap in a damp condition, or frequent misting with water, or covering with polyethylene.

Following 28 days curing time, surfaces may be cleaned, if desired, using dilute hydrochloric acid at 2-4% active acid concentration. Limit dwell time to 1-3 minutes, and then rinse thoroughly with potable water until runoff water is neutral in pH. In many areas municipal water is slightly acidic, and alkaline detergent neutralization rinse should follow acid cleaning. Prior to large-scale cleaning, perform spot cleaning tests using the proposed methods and materials, to evaluate effectiveness and results.

**NOTE:** Acids are hazardous materials requiring proper handling and safety precautions. Read and observe the safety instructions provided by the material manufacturer and as detailed in the Material Safety Data Sheet for each cleaning product.

## PERFORMANCE

- **Rosendale Natural Cement Products®** are made from authentic natural cement, produced from argillaceous limestone extracted from North American quarries and mines used during the 19th Century to produce historic natural cement materials.

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

<b>PROPERTY</b>	<b>TYPICAL VALUES</b>
<b>SET TIME</b>	<b>30-60 minutes</b>
<b>COMPRESSIVE STRENGTH</b>	<b>Typically 1000-3000 psi @ 90 days</b>
<b>MODULUS OF ELASTICITY</b>	<b>535,000 to 640,000 psi</b>
<b>TENSILE STRENGTH</b>	<b>35-75 psi at 90 days</b>



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