Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202-8664
803/787-6910

WHITEWASH

Whitewash, sometimes called “limewash,” is a traditional external and internal finish that was applied either directly to the brick or stone or, more often, to a stucco finish coat. In cemeteries it was often used on tombs and even occasionally on concrete stones in African American graveyards. Whitewash not only provides an appearance that is unobtainable with any modern material (such as paint), but it also has a protective function.

Whitewash has the same basic technology as other lime materials – it is vapor permeable, allowing any moisture that may enter to evaporate again, protecting not only the coating, but also the underlying stone or masonry. It also has “self-healing” abilities and repairs any minor shrinkage cracks that may appear in the coating. Whitewash also has the ability to consolidate and tighten the surface to which it has been applied.

This document will provide a brief introduction to whitewash preparation and application. The advice of a conservator should be sought if necessary.

Types of Whitewash and Formulas

There are a wide variety of whitewash formulas and any historic reference is likely to provide some variation. In general, however, whitewash is a combination of slaked lime (usually in the form of lime putty) and additional water. It can also be made from hydraulic lime for use over a sound surface.

Basic whitewash is made from mature non-hydraulic lime putty and water. Lime putty, however, is difficult to obtain so the use of dry, hydrated builder’s lime is often suggested. There is little question that lime putty is preferable, but hydrated lime can be satisfactory. Thoroughly mix hydrated lime (Type S) with water to a putty consistency and allow to stand for at least 24 hours, although up to 2 weeks is preferred. Before applying, screen the mix through a fine screen (window screen will work) and thin with water to the consistency of light cream. An alternative to mixing is to purchase whitewash premixed. One source is U.S. Heritage in Chicago, Illinois. You can contact them at (773) 286-2100 or at http://www.usheritage.com/mortars14.htm.

Hydraulic whitewash takes advantage of the varying characteristics of different hydraulic limes. Because the hydraulic reaction takes place in the wet whitewash, the mix should be used within a few hours of mixing.

Other whitewashes involve the addition of different materials. Not all additions are appropriate for use on historic fabrics. For example, tallow whitewashes included the addition of tallow or animal fat in the final coat to provide added water shedding capabilities. The tallow, however, reduces the permeability of whitewash. It should not generally be used. Casein whitewash incorporates skimmed milk or commercially produced casein, providing increased weather resistance without affecting permeability. However, some recipes today call for the addition of products that are entirely unsuitable (one, for example, calls for the addition of Elmer’s glue!). There are also some formulas that involve the addition of white Portland cement. While this may be suitable on masonry that is in excellent condition, we generally advise against its use in most circumstances.

Whitewash can also be tinted; historically brick dust or similar natural earth pigments were used. Today stable, lightfast, alkali-proof pigments are used to recreate the original colored washes. For most uses, plain unpigmented whitewash is best, but if you need a pigmented coating check with a conservator so you can be certain to get a correct match.

Preparation and Application

The surface must be clean and sound. Lichen and other biological growth should be carefully removed. The surface must also be thoroughly dampened and allowed to absorb the moisture before the whitewash is applied. The surface should be redampened and the whitewash itself applied as soon as the water has been absorbed into the surface.

Immediately prior to application the whitewash should be whisked to ensure complete dispersion. As far as possible all of the whitewash for a job should be batched, combining and intermixing all separately mixed ingredients at the start of the job. Elevations should be coated in their entirety. You should make sure that your work stops at logical places where any minor color change will not be seen. The whitewash should be agitated throughout its application to ensure that the lime doesn't settle out.

Whitewash should be applied in very thin, even coats. Multiple coats are always required – four coats are normally the minimum, with six or seven often being applied. Best practice indicates that an additional two coats should be applied after an initial period of weathering. Each coat must be allowed to dry and cure slowly over several days. Prior to the application of the next coat the wall will need to be again wetted down.

There are special whitewash brushes that are densely filled, 100% natural white tampico fiber set in hardwood block. They can be found at good quality paint stores. The whitewash is worked well into the surface by brushing in all directions and finishing, if possible, in one direction. It is important to keep a wet edge throughout the application. Those who specialize in whitewash emphasize that that each coat should be well burnished into the surface with the brush as the wash begins to "gel."

The ideal conditions for whitewash application are warm – not hot – and humid weather. The wash will require protection from over-rapid drying by wind and sun as well as damage from either rain or frost. The whitewash should cure within two or three days under favorable conditions.

Safety

This information is not offered in lieu of a material safety data sheet (MSDS), but only as a general indicator of safe working practices.

Lime products should be handled with care. Slaked limes are caustic and are irritating or drying to the skin. Avoid skin or eye contact. Avoid inhaling lime dust. Wear clothes that provide maximum skin cover, wear gloves, and use eye protection. Wear a respirator when mixing dry materials.