An Investigation of Loss Compensation Materials for the Conservation of Coiled Basketry

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Introduction

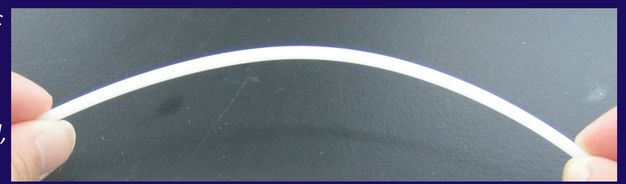
Basketry objects with large areas of damage frequently require loss compensation in order to reestablish structural stability and reintegrate overall form. Though recent approaches apply materials that are more compatible with original fibers and construction techniques, very few have been published for coiled basketry. This project attempts to fill this gap in the literature through a survey and practical evaluation of materials for compensating large foundation rod losses. The results of this study will be applied to the treatment of an Apache basket from the Southwest Museum/Autry National Center.

Apache basket from the Southwest Museum of the American Indian Collection, Autry National Center; [2249.G.2]

Materials Evaluation

After qualitative evaluation of a wide range of potential materials, two were chosen for further testing based on their flexibility, strength, and visual properties. Both materials can be modified by bulking with fillers and molded to form rods of regular shape and size.

Above: Friendly Plastic and InstaMorph are two inexpensive brands of PCL pellets. Right: Molded PCL rod, showing flexibility.



Polycaprolactone

Polycaprolactone (PCL) is a thermoplastic polyester that becomes moldable at 60°C. It is the primary constituent of the thermoplastic gauzes X-lite and Varaform, which have been widely used by conservators for temporary object supports.

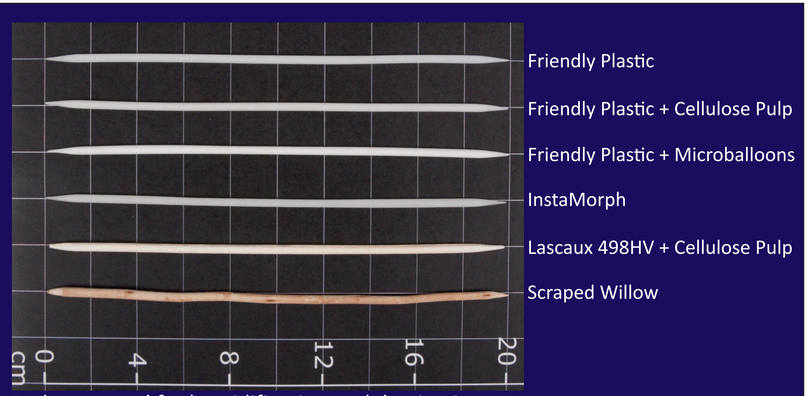
Lascaux 498 HV + Cellulose Pulp

Lascaux 498 HV is an acrylic dispersion which has found many conservation applications as an adhesive. When bulked with cellulose pulp, it can be molded and formed into rods that remain highly flexible after setting.

Molded Lascaux rods are flexible and will hold their shape.

Rod Fabrication

Rods are fabricated using a silicone rubber mold. PCL (alone or mixed with bulking material) is melted directly into the mold over a hot plate. Lascaux 498 HV can be mixed with cellulose pulp and rolled into a rod, which can then be placed directly into the mold over a hot plate (shown at right). Once cooled and set, both materials can be further shaped and refined through carving and heat application.



Rods prepared for humidification and dessication tests.

Testing and Analytical Techniques

Oddy Tests	Volatile emissions and chemical interactions
FTIR	Composition of materials and chemical changes after Oddy testing
XRD	Identification of corrosion on Oddy test coupons
pH Tests	pH of samples before and after Oddy testing
Response to RH Extremes	Hygroscopic properties (as measured by changes in weight, dimension, and appearance)

Preliminary Results

Results of Oddy tests performed at both room temperature and at 60°C suggest that PCL may not be suitable for long-term treatment applications. The results for Lascaux have been more favorable, but the hygroscopic properties of this material remain under investigation.

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