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Author(s): Peter S. Champe

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HEAT-FUSED RESINS OR "RESIN STICKS" FOR USE AS REINFORCING ELEMENTS OR DOWELS IN THE STRUCTURAL TREATMENT OF OBJECTS

Peter S. Champe

As one solution to the problem of structural repairs requiring dowels or rigid reinforcing elements or irregular size or shape, I have had success in using heat-fused pellets of adhesive resin, or "resin sticks". Resin sticks are easily made from pellets of PVA or methacrylate resins using a heat source such as a Bunsen burner or hot air gun to fuse them into a coherent mass. Resin sticks can be made to virtually any size and then molded to the desired shape.

In the reattachment of the highly deteriorated wooden arm of a Northwest Coast Indian beaver headdress in the collection of the National Museum of the American Indian (1/8944), a difficulty arose in the fact that the break occurred at the elbow which described a roughly 90 degree angle. The angle of the join suggested the use of a material which could be easily shaped to describe this angle and was strong enough to act as a dowel. A resin stick of Acryloid B-72 was made to the desired thickness and shaped to the correct angle. This was used successfully as a dowel, bridging a significant area of loss and rejoining the arm to the beaver.

Another treatment using this method involved the reattachment of the wing of a small 12th-century Limoges copper-gilt angel in the collection of the Metropolitan Museum of Art (58.110). The configuration of the piece required that a small splint rather than a dowel be used in the reattachment of the wing. As the splint had to be quite thin, different resins were carefully considered for characteristics of strength and rigidity. The methacrylates Acryloid B-72, B-48N and B-67 were found to be too brittle while the PVA resins AYAF and AYAT were found to be too flexible. PVA-AYAA proved to possess the best combination of rigidity and strength. Due to the small size of the resin splint used in this treatment, it was necessary to insert a strip of copper into the resin for further reinforcement. This was easily accomplished by heating the copper and then pressing it into the resin after it was in place. The PVA splint was attached to the copper figure using Acryloid B-48N in toluene.

Plexiglas dowels can be used in a similar way and are stronger than heat-fused resin-sticks. The extrusion processes in the manufacture of Plexiglas rods establishes polymeric alignment in an increased strength over heat-fused resins.

Author's Address

Peter S. Champe, Conservation Center of the Institute of Fine Arts, 14 East 78th Street, New York, NY 10021.