

Spot-Welding Polyester Film: An Alternative Method

During 2002 I had the fortune and privilege of teaching a papyrus conservation workshop course in Egypt to museum conservators there. The course was sponsored by the Nautical Archaeological Institute, Egypt. As part of the course I wanted to provide storage demonstrations for the class. I had already developed an alternative storage method for papyrus fragments, which is quite different from the traditional method of using glass sandwiches. My main concern about glass sandwiches is that they can easily break and in the process may damage the fragile papyrus inside. Large glass sandwiches are heavy, and difficult to handle and store.

The alternative storage method that I use employs two sheets of DuPont Mylar D polyester film (Stanley 1994). A papyrus fragment is placed between the sheets and it is held in place by spot welding around the fragment at strategic locations about three millimeters away from the edge of the object. The polyester film sandwich is then matted using 4- and 8-ply museum quality rag boards with folding covers for added protection. The storage units are strong, light, and very protective. They are also easy to handle and store. Originally I had used a Minter polyester welder for spot welding the polyester, but there were none at the site. Minter welders are also very expensive pieces of conservation equipment for institutions with scarce resources, but I wanted to demonstrate a storage method in the course that would be inexpensive as well as practical.

As necessity is the mother of invention, I began thinking about finding an inexpensive way to accomplish my goal. I came upon the idea of using a soldering iron. Searching a technical tool catalog I found a tool that would suit my needs very well. I ordered a WAHL ISO-Tip 60 cordless soldering iron (Wahl Clipper Corporation Sterling, Illinois) and a fine tip (ISO-Tip Hi-Efficiency Replacement Tip) for it from the Techni-Tool Company. The fine soldering tip would allow for an extremely small

and barely noticeable area of the polyester sheets to be welded together. The welded area must be allowed to cool and harden for a few seconds in order for the two sheets of polyester film to bond. Mylar D as well as Melinex polyester film has a melting point of about 490° F (DuPont 2002).

The WAHL Cordless Soldering Iron works very well and it's very inexpensive at less than \$70. The unit can also be recharged rapidly. The soldering tip can reach a temperature of 900° F (Grimes 2002); therefore one must be very careful when it is being handled. There should be no danger of heat-related damage to the object since the fine tip used for welding is only one-sixteenth inch in diameter and it is used at a sufficient distance away from the object. Therefore, heat radiation is negligible. There are many types of soldering irons on the market such as ones in which the temperature can be precisely controlled. But I find that for this particular use the WAHL Cordless works very well. As with any new procedure, it's always a good idea to experiment with mock-ups before working with the actual object.

SUPPLIER

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Received for publication Fall 2002.

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