

Image courtesy of Randall Fox



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Image courtesy of Dr. Susan Crawford, Naval Undersea Museum Foundation



**Figure 12.37: Potting Set-Up with Epoxy Potting Compound**

The liquid compound then hardens (cures), sealing the camera and its connecting wires inside the container. A potted camera can easily withstand water pressure to 130 feet (approx. 40 m). Remember, however, that the camera cannot be removed if it has been encapsulated with a polymer. The advantage of wax is that it's possible to remove and reuse or repair the camera.

The simple potting technique explained in the instructions below is based on suggestions made by Nuytco Research Ltd. and VideoRay LLC. It should allow you to successfully waterproof a camera to depths of 100 feet (approx. 30 m). This set of instructions uses polyurethane as the potting compound, but you can opt to use wax instead.

### 8.2.1. Camera Parts and Materials

To pot your camera, you'll need the items listed below.

- one CCD video camera, such as the model PC 166XS sold by Supercircuits: Note that there are many tiny, inexpensive video cameras available—check out various websites, catalogs, and stores in your area. Make absolutely sure that any camera you get is compatible with the 12 VDC battery power used in *SeaMATE*. Many of the smaller video cameras are designed for use with 5 volt DC supplies or low-voltage AC power; those models generally will not work with a 12 VDC supply and may even be permanently damaged by connection to such a supply.
- one transparent plastic box, big enough to hold the camera: A clear polystyrene jar (Figure 12.37) works well, too. This clear container needs to be at least 1½ inches wide by 1½ inches long by 1½ inches deep in order to fit most small cameras. No lid is necessary. The part of the box that the camera will look through needs to be optically clear with no seams, ripples, lines, etc.
- one video monitor compatible with camera video output format
- one small tube of silicone sealant: (5-minute epoxy is a good, faster alternative.) Get the smallest amount you can buy, since you'll be using only a dab. Silicone is used to secure the camera lens to the bottom of the transparent box. Use a toothpick or sliver of wood for an applicator.
- one 8-oz epoxy or polyurethane compound kit for potting: Get compound with a longer curing time (1-2 hours). This is available at hobby shops, hardware stores, fiberglass supply outlets or via the internet. Toilet bowl wax is another option.