

PMC Conference, 2004
Albuquerque, New Mexico
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Soldering for Non-metalsmiths
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Soldering is primarily a Metalsmithing technique. It uses heat and a mixture of metals, along with flux, to permanently join two pieces of metal. Because PMC is a new and different way of working with metals, occasions arise when basic soldering techniques are still the best solution.

This presentation will focus on soldering ear posts, pin catches, pin hinges and wire bails using paste solder. I used this technique during several years as a production jeweler. It is direct, quick and simple.

A few basic premises of soldering are:

- 1) Pieces to be joined must be clean.
- 2) Solder only flows in the presence of flux.
- 3) Solder does not fill gaps. Pieces being joined should fit together perfectly.
- 4) More is not better when applying solder. Too much solder yields a weak joint due to pits that can easily form.

Basic soldering equipment and supplies

Torch (Micro-torch that yields 2300F)

Soldering block

Paste solder (EZ or EX-EZ)

2 pr. Cross-lock tweezers

Water in container for quenching

Baking soda or pickle

Brass brush (soft)

Soap

Findings-Ear posts, pin catches, pin hinges, wire for bails

Soldering ear posts

Arrange pieces to be soldered on the soldering block. I recommend preparing multiple pieces for soldering whenever possible.

Place a tiny amount of paste solder on pieces where you intend to attach the ear posts.

Pick up ear posts in cross-lock tweezers. Do NOT hold ear posts perpendicular to the tweezers. The tweezers tips act as a heat sink and protect the ear posts from annealing (softening) during soldering.

Apply a small amount of paste solder to the ear post pad.

Light and hold torch in your "off" hand. "Righties" should hold the torch with the left hand. "Lefties" should hold the torch with the right hand. During soldering you want to use your primary hand for the more detailed manipulations.

Begin heating the body of the piece. Hold the ear post in the tweezers near the flame to pre-heat a bit. Solder will melt and "ball up" just before reaching flow temperature.

When the solder flows it becomes liquid and very shiny. Quickly place the pad of the ear post

into the pool of solder. After the solder on the pad flows, turn the torch flame away from the solder joint area. (The solder will have flowed almost immediately.)

Wait a moment for the solder to solidify, and then move the earring aside. The earring may be air-cooled or quenched in a container of water.

Soldering pin hinges and pin catches

Arrange pieces to be soldered on the torch block.

Use the pin stem to measure where the hinge and catch will be soldered and place a small amount of solder on the piece.

Pick up one hinge and one catch with the tweezers. Make sure that the pin catch will open downwards and the pin hinge will be oriented parallel to the pin stem.

Add solder to the bottom of the catch and hinge.

Begin heating the area where the pin hinge will be soldered first. This is because the pin catch is made up of two parts, the body of the catch and the movable, locking piece. If the catch area is over-heated, solder may flow up into the crevice between the two pieces. This will solder the two parts together and ruin the mechanism by soldering it open or closed.

When the solder flows, quickly place the pin hinge into the pool of solder. Turn the torch flame away when the solder on the hinge flows. Squeeze the tweezers to open them and set aside.

Pick up the tweezers holding the pin catch and apply the torch flame directly to the pin catch area.

When the solder flows quickly place the pin catch into the pool of solder. Make sure that the pin catch will open downward. When the pin catch solder flows turn the torch flame away. The soldered piece may be air-cooled or quenched.

Most findings will oxidize during soldering. The oxidation can be removed by placing the piece into a container of warm pickle. This is a mild acid that removes oxidation from the surface of metals and removes the small amount of acid contained in the flux. If the oxidation is irrelevant, pieces can be placed in a water and baking soda bath to neutralize the acid in the flux.

Alternate materials can be used for pickle. Citric acid works well, but slower. Jewelers used to use alum in water (hence the term pickle!). Vinegar and a little salt also work well.

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