

**To Mount pieces to a base:** Flatten the bottom. Establish 1-3 points (usually 2) for mounting. Either:

- Weld:** TIG-weld  $\frac{1}{4}$  inch x 20NC stainless steel nuts using a square and a 'third hand', or gas weld in brass nuts. Some pieces may require SS or brass threaded rod to be welded to bottom point of piece.
- Tap:** Instead of welding, holes may be tapped into bottom of piece. Establish points as above, and/or weld in tabs as necessary (these may be added in wax before casting). Determine size of thread, and use a square while drilling the correct size pilot hole: for example, use a #7 (or 13/64") drill-bit for making  $\frac{1}{4}$  inch threads. Next, use a square to thread or 'tap' the hole. (Minimum of three full turns.)
- Carefully transfer holes to base.** Use appropriate bit to drill a clearance hole in base material (stone, wood, etc.) Typically a countersink is necessary on underside of base to accommodate the screw head.

**PATINA SAFETY:** Good ventilation and/or chemical respirator, goggles, rubber gloves, apron.

**FIRST AID:** *For the below chemical recipes:* Flush eyes for 15 min. Wash skin with soap.

If Nitric acids are swallowed: give 2 glasses of milk or water, induce vomiting.

**All following recipes prefer distilled or filtered water:**

**Ammonium Sulfide:** 1-2 Tbs/quart. Apply hot or cold as undercoat. Light brown-to-gray-to-charcoal.

**Ferric Nitrate:** 1-2 Tbs/quart. Apply hot-to-very hot. Honey-to-caramel-to-brown-to-maroon.

**Cupric Nitrate:** 1-2 Tbs/quart. Apply very hot. Blue (or green if lightly over-sprayed with Ferric).

**Titanium Dioxide:** 1-2 Tbs & 5 drops Nitric Acid/quart. Apply hot. Opaque white or light gray.

**A) Prep:** **Completely finish all phases** of welding, chasing, sanding, mounting, de-burring, etc.

To even out surfaces and remove the final casting scale, flux and investment, bronzes may be treated with a variety of methods: sandblasted with #60 grit sand; soaked in a "Pickle" ( $\frac{1}{4}$  cup of Citric Acid or one quart Vinegar per gallon of tap water for 1-8 hours, or until clean.); brushed with wet pumice; rubbed with steel wool; sanded with Scotch-Brite pads. These steps will also degrease the bronze of oils or fingerprints, as will scrubbing with 'Sudsy' ammonia or Simple Green, and rinsing.

**B) Tools:** Gloves, goggles, apron, propane torch and striker, turn-table, Scotch-Brite pads, mixed chemicals in spray bottles and patina brushes. **Keep separate:** Paste wax, wax gloves and brushes.

**C) Apply:** Secure piece on turntable. Heat the piece with torch as evenly as possible to about 200°F, rotating the piece often and focusing heat near bottom and thicker areas. Test temp by spraying with distilled water: it should hit the surface and then completely steam off after about one second.

For most patinas, start by applying a base coat of Ammonium Sulfide. Wearing gloves, use a Scotch-Brite pad to bring out highlights and leave recesses dark.

The Patina acids described below are gradually and evenly sprayed on. They may also be brushed onto specific areas. Distinct edges of color may be formed by masking or removing color through abrasion:

**Warm tones:** Use Ferric Nitrate—the more chemical and the more heat, the darker it will become.

**Cool tones:** Use Cupric Nitrate—piece must be very hot. Heat-flash to 'blossom.' *Don't overheat!*

**Opaque pastels:** Use Titanium Dioxide—Heat evenly, apply. May be over-sprayed by other 3 colors.

**Dark overlay:** Use Ammonium Sulfide—may be lightly sprayed or brushed over the other 3 colors.

**D) Wax:** When finished, brush on a thin, even coat of paste wax while still warm. Almost all patinas will darken when waxed. Warm tones are enhanced and cool tones are diminished, and so cool tones must be overdone. To change a waxed patina requires burning off the existing wax and starting over.