

## Casting With Bronze Powder

(or any other metal powder)

By using TAP Bronze Powder and a variety of TAP resins, it is possible to create the effect of solid cast bronze at a fraction of the cost. This method of casting is **cold casting**. Properly done, cold casting can duplicate true cast bronze with a patina effect, if desired.

To cold cast a bronze piece, use silicone, urethane, or latex mold making materials. A good mold release is essential for all materials, except for the silicone. We recommend Pol-Ease 2300. It is economical, fast, and works with most resin/mold combinations. See *TAP Product Bulletins 7a* and *7b*, and other TAP literature for information on mold making. Construction of a high quality mold is the first step in cold casting. There are basically two cold-casting methods: solid casting and slush molding.

### Solid Casting

Powdered bronze can be mixed with resin and cast either as a solid piece (more expensive) or (for economy) slush molded. For small pieces, solid casting is easiest. Bronze powder can be used with polyester, epoxy, or urethane casting materials. The color of the casting can affect the finished appearance, so clear resins such as TAP Surfboard Resin or Casting Resin seem to work best. When casting, it is important to mix enough metal with the casting material. Too little metal, and the metallic effect will be diminished or the bronze may settle in the bottom of the mold leaving too little metal in the upper half. Settling is especially noticeable in lower viscosity resins such as Quik Cast. However, too much metal is wasteful and costly without adding to the finished effect.

Regardless of the resin used, the minimum amount of bronze recommended is one part of bronze to two parts of casting material by volume. Experiment to determine the ratio that works best for you. Solid castings with polyester or epoxy resin must be small to prevent excessive heat build-up. Remember to apply Pol-Ease 2300 to the mold prior to pouring casting medium.

### Slush Molding

When making larger pieces, solid casting with resin and metal is costly due to the large amount of metal required for a solid casting. Using the slush mold method is recommended in these cases. This involves brushing or slushing the resin/metal mixture around the inside of the mold to create a thin coat. This coat is then back-filled

with a less expensive material. Since only the surface of the piece is seen, it is impossible to distinguish it from a solid casting.

Surfboard Resin or 4-1 Super Hard Epoxy Resin and bronze powder work well for slush molds. Prepare the mold with mold release. Mix the resin, catalyst (or hardener), and bronze powder in appropriate ratios (see above for metal to resin ratio). Coat all parts of the mold interior by rotating the mixture in the mold. For molds with undercuts and a lot of detail, two slush coats are recommended to ensure complete coverage.

If Surfboard Resin is used, the slush coat should set up and gel in place in 10-15 minutes. Once this initial gel is complete, back-filling the mold is possible. Quik-Cast is a simple, economical, and quick casting material. The heat from the curing Quik-Cast will accelerate the cure of the Surfboard Resin reducing de-mold time. To determine if mold is ready for removal, peel back a corner of the mold and test the surface of the part for complete cure.

Another even more economical method is to use sand as a filler with polyester resin for the backing material. Up to a 60/40 ratio (by volume) of sand to resin can be used. This will reduce costs (by reducing the resin use over 50%), reduce exotherm (heat build-up), and increase the weight to better duplicate the heft of bronze.

For a very light weight and extremely economical model, back fill the slush mold with TAP X-30 Foam. This will add structural support to the bronze/resin skin, without changing the physical appearance of the model.

For even larger pieces, the back can be reinforced with fiberglass, creating a hollow, strong, and light weight finished piece.

### Dusting The Mold

This is the most economical method of cold casting because such a small amount of bronze powder is used. *Dusting-the-Mold* is exactly like it sounds. Put a small amount of bronze powder in a dry mold. This works best with dry molds not containing a mold release. Evenly coat the interior of the mold with bronze and dump out any that does not stick to the sides of the mold. Pour casting material into the mold, allow to cure, and pull out an economical cold bronze casting. Buff gently since the coating is much thinner than with slush or solid casting.

### **Finishing**

Once the casting is cured and removed from the mold, it can be burnished by rubbing the surface with steel wool until a fine luster is achieved. The steel wool removes the resin binder from the surface, exposing the pure bronze powder.

A number of methods can be used to create the patina effect. The simplest is to use green aerosol spray paint on the model. Be sure to remove the mold release from the model using a strong detergent. Once all the release is removed, spray the model with the green paint (oil based is best). Immediately gently wipe off the paint with a soft cloth. The soft cloth will leave behind the paint in the crevices, creating the appearance of natural patina. There are also patina compounds which duplicate the patina effect. As a last step, give the model a final burnishing with steel wool.

Experiment with different resins, fillers and ratios to create the special effects you want. You will be amazed at the beauty of cold cast bronze as well as the remarkable economy.

### **Availability**

TAP Bronze Powder is packaged in one pound containers. Larger quantities are available upon request.

#### **Caution**

Read and follow all warning notices and safety procedures on product labels. MSDS sheets are available upon request.

### **Warranty**

TAP Urethane RTV System is manufactured and tested to our quality specifications. Determine its suitability for your application by testing before using. TAP has no control over working conditions or methods used and will not be liable for damages exceeding the value of product.

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