

More Casting Tips From the Experts

Little details add up to success—or failure—in the world of casting. If the temperature or timing is off, or materials are unfamiliar or tainted (as with reused gold scrap), the result may be expensive waste and re-work. In this Tech Sheet, several MJSA Journal contributors offer advice to help ensure successful, profitable casting.

ACCURACY COUNTS:

IS YOUR OVEN AS HOT AS YOU THINK IT IS?

The conditions within the burnout oven greatly affect casting outcome. Burnout cycles, oven loading, and flask sizes should be monitored for changes, and adjustments must be made accordingly, say the experts at Ransom & Randolph in Maumee, Ohio.

Beginning hold temperatures are extremely important. If flasks are not held at a low-end temperature long enough, the result may be flashing and fins (caused by cracked molds), deteriorated or rough casting surfaces (caused by excessive steam), inclusions, and mold spalling—a thick, crusty texture on the surface of the casting. Temperature increases must be controlled and accurate to avoid problems.

Similarly, molds that are not perfectly white after burnout may have not been held for the proper amount of time at the high end of the cycle. The result is non-fills or incomplete castings and porosity.

Pay close attention, too, to flask positioning to avoid hotspots, which are areas within the oven where flames touch the sides or bottoms of molds. Signs of hotspots include discolored flasks (they turn yellow) and trees that are rough on one side and perfectly smooth on the opposite side.

DRY IS BEST WITH PLATINUM:

GET THE MOISTURE OUT

One main cause of casting failures in platinum and palladium is not allowing all moisture in the flask to drain or evaporate before the flask rises in temperature in the oven, reports Bob Romanoff, president of Romanoff International Supply Corp. in Amityville, New York. (This refers to two-

part platinum investments, which use powder, distilled water, and a binder.) The result is fins or rough surfaces on the castings.

After vacuuming, the flask should go through two drying steps: It should sit at room temperature for at least 60 to 90 minutes with paper towels underneath the non-asbestos paper that is attached to the flask, then sit for another 60 to 90 minutes at 190 to 200°F to remove the final moisture that might still remain in the flask. Then the flask can be burned out in its normal cycle.



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KNOW YOUR MATERIALS:

JUST WHAT ARE YOU BURNING OUT OR MELTING?

Dan Ballard of Precious Metals West in Los Angeles warns that casters must beware of the quality of materials they're using. They must know, for instance, what they're trying to burn out. Is it a polymer (hard to burn out) or a carving/milled wax material (easy to burn out)? When in doubt, ask.

And what about the metal? Has the high gold price made you cast your gold to near death? Be sure to consider the costs of fixing those flaws that become more common as casters

increasingly cast and cast again with "spent" metal.

Consider karating your gold in-house with 24k and alloys rather than buying blended 14k.

STEAM DEWAXING:

GOOD FOR INJECTION WAX, BAD FOR CARVING WAX

Do *not* attempt to steam dewax carving waxes, says Kate Wolf of Wolf Designs in Portland, Maine. Steam dewaxing is great for injection waxes, but carving waxes melt at 230 to 240°F, well above the temperature at which water boils (212°F). If you try to steam dewax carving waxes, you'll end up with spalling.



PHOTO BY DANIEL BALLARD

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Ransom & Randolph

3535 Briarfield Blvd.
Maumee, OH 43537
TOLL FREE: (800)800-7496
PH: (419)865-9497
FX: (419)865-9997
www.ransom-randolph.com