

Tech Tip: Brass and Bronze Alloy Casting

Brass and Bronze alloys are great low cost alternative to create more affordable jewelry designs, but your manufacturing process must be modified to achieve good results.

Some of the key differences from Sterling casting are as follows:

Casting Machine: An open system machine or induction melter with vacuum box is preferred. Torch melting will also achieve acceptable results. Closed system machines (ie Neutec) are not recommended for brass alloys with high zinc due to smoke generated. ABI yellow bronze alloys (798,926,889,954) are suitable for closed systems.

Spuring: Some bronze alloys require heavier spru diameter for best casting results.

Smoke: Brass alloys can generate a lot of smoke during melting. Employees should wear proper breathing protection. These alloys melt at lower temperatures so overheating should be avoided to reduce smoke and burn off key alloy elements.

Burnout: A clean burnout is crucial to getting good castings. Make sure there is good wax elimination (ie proper spruing, long dwell time at top temperature) and ventilation in your burnout oven. The high copper content makes the casting susceptible to defects caused by Carbon/wax residue in the mold.

Cleaning: Avoid strong acids that can cause a copper skin or other surface discolorations. A non acid investment remover or high pressure water power wash is recommended to remove investments.

Tumbling: Standard tumbling process may be used to help prepare surfaces.

Soldering: Standard easy flow silver solder (white or yellow) is recommended. Solder seams can be hidden in the design or use antiquing and patination (see soldering tech tip sheet).

Reusability: Metal must be thoroughly cleaned before reuse with 60% new metal and 40% old metal yielding the best results.

Antiquing: We recommend a special Brass/Bronze antiquing solution on all yellow alloys. White Bronze alloys should use a Nickel antiquing solution. Lacquer coating is recommended to protect the alloy from tarnishing. E-Coating and Ceramic Coating may cause discoloration of the alloy.

PROTECTIVE COATINGS

Bronze and Brass castings will discolor quickly with time. Many designers enjoy and even embrace the warm natural patina of brass and bronze alloys. To preserve the bright as polished color one must seal the brass and bronze castings together to protect against oxidation and moisture, using one of these methods:

Plating: Gold, Rhodium, Fine Silver or other noble metals offer excellent tarnish resistance. Some Alloys require a base plate before final coating for maximum adhesion and tarnish resistance.

E-Coating: An electro galvanic cellulose coating that provides excellent tarnish resistance, but the coating can scratch off over time.

Lacquer Coatings- Clear coating option that provides excellent sealing properties. Jewelry can be sprayed or dipped. High tarnish resistance is achieved but the surface is subject to chipping

Nano Ceramic Coating: Similar process to E-coating that is much harder and more abrasion resistant with a baked on finish that gives a natural metal feel. Available in clear and color coating.

Please contact ABI for further information.