

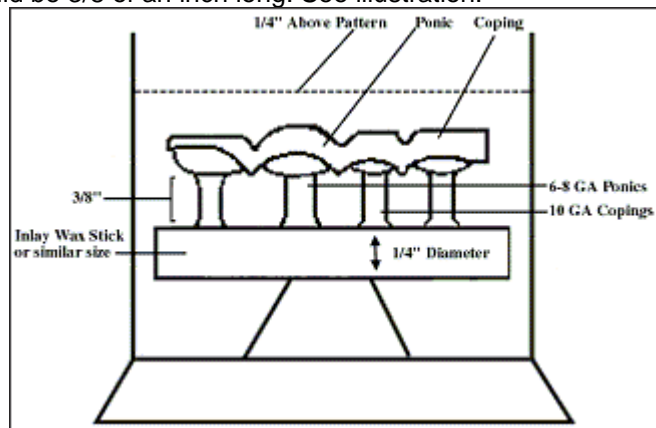
Tilite® Technical Instructions

WAXING

The wax-up procedure differs slightly from that used for precious ceramic alloys. The main difference is the thickness of the wax patterns. Due to the Talladium Tilite® Ceramic Alloys high fluidity, more fluid than water, the patterns may be waxed and cast from .2 mm to .3 mm. This minimizes metal finishing and allows more room for porcelain, thus enhancing porcelain shades.

SPRUIING

The indirect spruing technique is recommended using a runner bar 1/4 inch in diameter, the size of a pencil. Inlay wax sticks work well for this. For copings use a 10 gauge sprue and for pontics use a 6-8 gauge or larger sprue. When using a 1/4 inch runner bar, the length of the sprues from the runner bar to the pattern, should be 3/8 of an inch long. See illustration.



INVESTING

Talladium recommends a high heat investment such as Talladium's "1700" Casting Investment. Follow the manufacturer's investing procedures. For your debubbler do not use an alcohol base debubbler. Talladium recommends the Pattern Prep Debubbler. Spray the wax patterns and gently scrub the inside of the coping with a soft synthetic brush to help dissolve the die lube. Thoroughly rinse off the Pattern Prep solution with room temperature water. If using a metal ring use a ring liner that is one eighth of an inch thick like Talladium's Ceramic Ring Liner. For ringless, Talladium recommends Talladium's "Best" Proven Ringless Casting System. Be sure to only fill the ring 1/4 of an inch above the patterns. Talladium's investments do not need to be scraped.

BURNOUT

When using the "1700" Casting Investment, you can place the ring directly into a hot oven at the highest burnout temperature of 1700°F (927°C) and heat soak. To figure out how much heat soaking time is need a good rule of thumb is 15 seconds per gram of investment in the ring. Note: When using plastic patterns, sprues or runner bars, with the Micro-Fine "1700" Casting Investment, Talladium recommends going into the oven at 800°F (427°C), no higher, and hold one hour for small to medium rings and longer for large rings. When the plastic is completely burned out raise to highest burnout temperature and cast.)

EQUIPMENT

Talladium's Casting Torch has a multi-orifice tip with the capability of melting 2-3 ingots of base ceramic alloy in 12 seconds. (See Talladium's product catalog.) This is ideal. If the operator uses a less effective torch that takes 20-30 seconds to melt 2-3 ingots, they will abuse the alloy.

MELTING

The Tilite® Alloys may be melted by induction melting or with a gas-oxygen torch. For induction melting, the casting temperature is 2425°F

(1329°C). When using a gas-oxygen torch, it is important that the torch have a multi-orifice tip with the capacity to melt 2-3 ingots in 12-14 seconds. Unlike precious alloys, base ceramic alloys are melted with volume of heat instead of concentrated, intense heat. As a result, the oxygen should be set at 35-40 psi. If propane is used, the setting should be less than 2 psi.

CASTING

1st Stage) Preheat a slotted quartz crucible with the torch. Place the ingots in the crucible and heat them to a bright orange-red hue.

2nd Stage) Take the ring out of the oven and place it in the casting cradle. At this point bring the torch very aggressively down one inch from the top of the ingots. When the ingots lose definition and puddle, release the casting arm. It is very important not to leave the ring out of the oven any longer than 4-5 seconds prior to casting, due to the fact that there is an extreme drop in the temperature of the ring in a matter of seconds.

QUENCHING

Remove the ring from the oven, place it in the cradle, close the oven door and cast. Remove casting from casting machine and open the oven door. When the inside of the oven and the button are the same color **quench**. This will soften the alloy for easier cutting and grinding.

FINISHING

Metal finishing can be accomplished by using Talladium's Wear-Ever Discs and T-2 Diamond. The porcelain-bearing surface should be left rough not smooth. Do not use a white aluminum oxide stone, any fine grit stone or carbide burr to texture the porcelain-bearing surface, as this will smooth the surface and trap impurities in the grain boundaries. Never use a sintered diamond as they will contaminate the alloy.

METAL PREP

Important - From this point on do not touch the porcelain bearing surface with your fingers.

- A. Air-abrade the porcelain-bearing surface with Talladium's Brazilian Reddish-Brown Aluminum Oxide with 65-85 psi. Tests performed by Talladium and a study done by the University of Minnesota, School of Dentistry, Minneapolis, MN have proven that the Brazilian Reddish-Brown Aluminum Oxide creates a greater catalytic effect on the surface than the white aluminum oxide. The upshot is an increase in the porcelain-metal bond.
- B. Rinse with distilled water in an Ultrasonic Cleaner for 1-2 minutes

DEGASSING

- A. To create a desirable oxide, place the metal work in a porcelain oven at 1000°F (538°C).
- B. Under full vacuum raise the temperature 100°F (55°C) per minute, to 1790°F (977°C) no higher than 1800°F (982°C) release vacuum. There is no hold time!
- C. The surface of the metal should have a straw, or honey colored oxide. However, if the metal surface exhibits a bluish tint with some straw colored patches, it is okay to proceed to the opaque application. If the straw colored oxide is not achieved each time, don't be concerned.

Warning: Never sandblast after degassing

If the metal exhibits a dark red-brown oxide, this is an indication that the oxide firing was too high. In this instance, you will need to disc off this oxide, expose new metal, air-abrade and repeat the oxide firing.

OPAQUING

On the first layer only, of the opaque, fire to a high eggshell sheen at 1850° - 1875°F (1010° - °C). Place in the oven at 1000°F (538°C) with vacuum according to manufacturer's instructions raise the temperature 100°F (55°C) per minute, to 1850° - 1875° F (1010° - 1024°C) release vacuum. There is no hold time! This step is imperative to completely compound the oxide with the opaque porcelain for a strong bond. For the second application of opaque and all porcelain bakes, fire to the porcelain manufacturer's directions.

CAUTION: Never do a slow cool down cycle with the Tilite® Alloys.

Instructions for cleaning after placed in patient's mouth: Brush with any dental toothpaste as usual.

NOTE: Tilite Alloy can be safely cast to precision attachments or implants made of Platinum-Iridium type alloys that has a 2900°F/ 1593°C or higher melting point.