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TRIUMPH CERAMIC ALLOY TECHNIQUE OUTLINE

TRIUMPH is a palladium-silver based precious metal ceramic alloy (53.5% palladium; 37.5% silver) designed for use in applications where cost considerations preclude the use of gold alloys.

Wax -Up: Minimum section thickness should be no less than 0.4mm. Use 8 gauge sprues. Sprue length should not exceed ¼ inch.

Investing and Burnout: Use Aurivest investment or equivalent. Carefully follow manufacturer's recommended liquid to powder ratio. To prevent air entrapment in mold during casting, the pattern should be covered by no more than ¼ inch of investment. Burnout at 1500°F for a minimum of 45 minutes or according to manufacturer's recommended time.

Casting: If a spring loaded centrifugal casting machine is used (Kerr, Torit, or Emesco), lock casting machine arm in position after winding three full turns. Use a standard alumina or mullite type crucible that has not been previously used for a different alloy. Avoid graphite crucibles or the use of carbon, asbestos, or flux in contact with the metal during melting. If an automatic induction casting machine is used, do not use a graphite insert in the crucible.

Melt using a gas-oxygen flame with the inner cone of the flame about ½ inch long. To avoid excessive preferential oxidation of some of the alloying constituents, maintain the tip of the inner cone at a minimum distance of ½ inch from the metal. Cast at a temperature where the metal appears for flow freely but do not overheat. The metal should not be heated to the point where visible oxide vapors start rising from its surface. Quench after 4 to 5 minutes to allow the ring to bench cool.

Preparation for Porcelain: Remove adhering investment with brush or sandblast with aluminum oxide and ultrasonically clean. Rough grind with a hard mounted stone all metal surfaces to which porcelain is to be applied. Heatless stones are not recommended.

Degas at 1850°F for a total 4 minutes. 2 minutes should be in air and 2 minutes in vacuum. After this step take particular caution to avoid contact between the metal surface and fingers or any other foreign object that could leave a contaminant deposit on the surface.

Sandblast lightly with fine aluminum oxide abrasive at a pressure not in excess of 30psi. After most of the heavy oxide layer appears to have been removed, clean in distilled water in an ultrasonic cleaner. Surfaces are now ready for application of opaque, according to the porcelain manufacturer's instructions.

Alternatively to the degassing procedure, the bond between the metal and porcelain can be enhanced by use of Aurident's Vanguard Bonder. If Vanguard Bonder is used, the golden color of the Vanguard Bonder will enhance the chroma and hues of the porcelain. Follow instructions with the bonder to apply.

Recommended Solders: WCS, 1400(post)