



Talladium Incorporated

25031 Anza Drive Valencia, CA 91355 USA
Tel: (661) 295-0900 Fax: (661) 295-0895
(800) 221-6449 e-mail: talladium@pacbell.net

Ceramco³

TECHNICAL INSTRUCTIONS – A. LEVY Special Ceramco N.P Alloy

- **WAXING** - The patterns may be waxed and cast from 0.2mm to 0.3mm. This minimizes metal finishing and allows more room for porcelain, thus enhancing porcelain shades.
- **SPRUNG** - The indirect spruing technique is recommended using a runner bar the size of a pencil. (inlay wax sticks work well) For spruing, use 10 gauge for copings and 6-8 gauge or larger for pontics. The length of the sprues, from the runner bar to the pattern, should be 1/4 to 3/8 inches long.
- **INVESTING** – A high heat investment – carbon free investment is recommended. . Follow the manufacturers investing procedures using a non-alcohol debubbler; but rinse off the debubbling solution thoroughly. Fill the ring only one eighth inch above the patterns.
- **BURNOUT** – Two methods may be employed for burning out this Ceramic Alloy.
 1. Place the ring or rings directly into a 982 °C (1800 °F) oven. Heat soak for 15 seconds per gram (example: for a 90 gram ring = 23 minutes) plus 10 minutes for each additional ring. Then make your casting.
 2. Place the ring or rings in a cold oven and raise the temperature to 927 °C (1700 °F) and heat soak for 45 minutes or longer. Prior to casting increase the temperature up to 982 °C (1800 °F) and cast.
IMPORTANT – do not heat soak at 982 °C (1800 °F). The added heat from 927 °C to 982 °C is to correct for heat loss from the time the ring is out of the oven.
- **MELTING AND CASTING** – This Ceramic Alloys may be melted by induction melting or with a gas-oxygen torch.
 1. For induction melting, the casting temperature is 1329 °C (2425 ° F).
 2. When using a gas-oxygen torch, it is important that the torch have a multi-orifice tip and 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 setting should be 35-40 P.S.I... (If propane is used – the setting should be less than 2 P.S.I.).
 3. Pre-heat a slotted quartz crucible with the torch. Place the ingots in the crucible and heat them to an orange-red hue. Next, take the ring out of the oven and place it in the casting cradle. At this point bring the torch 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 longer than 4 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.*
- **METAL FINISHING** - Metal finishing can be accomplished by using stones, discs, carbides or diamonds. The porcelain-bearing surface should be left rough. Do not smooth or texture the surface with a white aluminum oxide stone, or any fine grit stone.
- **METAL PREPARATION** - **IMPORTANT** – *From this point on, do not touch the porcelain bearing surface with your fingers.*

1. Air abrade the porcelain-bearing surface with Brazilian Reddish-Brown Aluminum Oxide. Reddish-Brown Aluminum Oxide creates a greater catalytic effect on the surface than white aluminum oxide. The end result is an increase in the porcelain-metal bond.
 2. Rinse with distilled water in an ultrasonic cleaner for 1-2 minutes.
- **OXIDE-FIRING (DEGASSING) –**
 1. To create a desirable oxide, place the metal work in a porcelain oven at 538 ° C (1000 °F).
 2. Under full vacuum, raise the temperature 55 ° C (100 °F). per minute, to 977 ° C (1790 °F) but no higher than 982 ° C (1800 °F).
 3. The surface of the metal should have a straw or golden 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, do not be concerned. If the metal exhibits a dark red-brown oxide, this is an indication that the oxide firing was too high. In this instance, disc off this oxide, expose new metal, air-abrade and repeat the oxide firing.
 - **OPAQUE APPLICATION AND FIRING -** On the first layer of opaque, apply a thinner slurry and fire to a high eggshell sheen. 1010 – 1024 ° C (1850 – 1875 ° F). This step is imperative to completely compound the oxide with the opaque porcelain. For the second application, fire to the porcelain manufacturers directions.

PHYSICAL AND MECHANICAL PROPERTIES OF A. LEVY CERAMIC ALLOY

Co-efficient of thermal expansion	13.9 x 10 ⁻⁶ at 0-500 ° C
B rinell Hardness	225
Specific Gravity	7.7 gm/cc
Yield Strength	72,000 psi
Tensile Strength	164,000 psi
Elongation	11%
Melting Range	1204 – 1302 ° C (2200 – 2375 ° F)
Casting Temperature	1329 ° C (2425 ° F)

COMPOSITION OF ALLOY (Be Free)

Ni = 75.8% Cr = 12.1% Mo = 5.0% Al = 2.15% Ti = 4.57% Co = 0.28%

THIS CERAMIC ALLOY IS MANUFACTURED ACCORDING TO DIN EN ISO 9002/08.94 ↔ DIN EN 46002/09.96 ↔ ADA SPECIFICATION No. 38 for metal ceramic systems ↔ MDD 93/42/EEC Class II Device Standards.

IMPORTANT : FACE MASKS MUST BE USED IN ALL METAL CASTINGS AND FINISHING PROCEDURES.