

emdin | instructions

CERALLOY

NON-PRECIOUS ALLOY FOR CERAMIC DENTAL CROWN & BRIDGE CASTINGS

Ceralloy is a nickel-Chromium high heat-casting alloy made to strictest specifications to allow its use in fabrication of ceramic crowns and bridgework using porcelains such as Ceramco. Using purest raw materials available and employing vacuum melting process, Emdin alloys are able to insure consistent dependable quality from batch to batch.

Mechanical Properties:

Yield Strength	83,500 psi (576 Mpa)
Percent of Elongation	10%
Coefficient of Expansion	13.8×10^6
Liquidous Temperature	2120-2280 F (1160-1250 C)
Tensile Strength	120,000 psi (828 Mpa)
Modulus of Elasticity	29.5×10^6
Hardness, Vickers	380

Alloy Composition:

Nickel	74.8%
Chromium	12.7%
Molybdenum	9.00%
Aluminum	2.00%
Titanium	0.32%
Beryllium	1.95% (Max.)
Cobalt	0.45%

WAX-UP:

Wax up copings to a thickness of approximately 0.3 mm. Use of hard wax is recommended. Dipping waxes can also be used. Use of plastic copings would require adjusting (increasing) expansion of the casting investment. Use Emdin's STARVEST micro-fine casting investment for best results.

SPRUNG:

Use indirect or running bar spruing technique. For bulky pontics and occlusals use a larger 8-gauge sprue. For standard copings a 10-gauge sprue should be adequate. The horizontal bar and feeder sprues should be made of still larger 6-gauge round wax. Use softer waxes for these and sprues to copings. Keep distance from the sprue bar to the copings to about 0.24 (1/4) inch. For casting one or two single units use a ball reservoir type sprue.

INVESTING AND BURNOUT:

Follow the recommendations of the investment manufacturers. Because the non-precious requires more compensation for the alloy shrinkage it is advisable that a good investment be used. Investment consistency from batch to batch is the single most important factor in reducing repairs and rework of the castings.

We highly recommend EMDIN'S STARVEST micro-fine casting investment. STARVEST provides the smoothest castings and is the most consistent investment from batch to batch. Moreover it is a multi-

purpose investment so that no other investment is needed to cast the other type of alloys (precious and semi-precious).

CASTING:

A high volume multi-orifice tip torch should be used in casting CERALLOY. The torch needs to melt the alloy rapidly and cleanly and therefore it has to have a flame, which is hot enough to accomplish the task. Propane and oxygen or city gas and oxygen are recommended. Acetylene gas is not recommended due to possible contamination of the alloy resulting in subsequent difficulties in soldering etc. Follow the recommendation of the torch manufacturer with respect to the gas and oxygen pressure. Generally a high volume torch would require a 35 lb. of oxygen to 4 lbs. of propane. However, start with the recommendations of the torch manufacturer. Adjust the flame so that the inner cones of the flame extend about 3/8 inch in length.

Due to low specific gravity wind the casting machine one or two time more than normal for precious alloys. Replace the crucible if is too corroded from previous meltings. Use a good melting crucible. Zirconia based crucibles will give better results longer.

Preheat the crucible and then place the alloy into it. Bring the flame to within 1 and 1/2 inch distance of the alloy and heat it to bright red, moving the flame around to cover the entire alloy to ensure uniformity of heating. Cast when the molten alloy slumps into the crucible. The alloy ingots will not merge into one during melting like gold alloys. Further heating beyond the point when the alloy ingots have slumped would burn the alloy and might change the chemistry of the alloy.

Quench the ring after the button has become dull. The buttons can be remelted 50/50 with new alloy. Do not use button after two meltings and do not use alloy that has been overheated.

For casting in Induction casting machines set the casting temperature at 2700 degrees F with a 5 second soak time. Do not use carbon inserts in the crucible. Place the ingots on the floor of the casting crucible for most efficient melting. Avoid stacking the alloy ingots on top of each other.

The casting should be bright and free from casting oxides. The investment would separate cleanly from the casting surface. Heavy sticking of the investment indicates overheating of the alloy. Heavy green oxide indicates severe burning of the alloy.

DEGASSING:

Follow normal degassing procedures. Fire copings at 1950 F under vacuum for 3 minutes. Reblast to remove the oxide surface with 50 micron white aluminum oxide and place it in distilled water in an ultrasonic for 5 minutes. Do not touch the alloy with your fingers. Opaque and build porcelain in the usual manner.

HIGH FUSING SOLDER:

Use standard soldering techniques for non-precious alloys.

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