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CSN (NON-PRECIOUS ALLOY)

CSN is a nickel/chromium base alloy with a balance of properties designed to produce high quality porcelain fused to metal restorations. It offers high strength, hardness, stiffness and excellent bond strength to porcelain. The alloy contains 1.8%(maximum weight) of beryllium

COMPOSITION

Nickel	Chromium	Molybdenum	Beryllium
76%	14%	6%	1.8%

PHYSICAL PROPERTIES

Melting Range	Casting Temperature	Density
2250 – 2350 °F (1232–1288 °C)	2500 °F (1371 °C)	7.8 g/cm ³

MECHANICAL PROPERTIES

Vickers Hardness (DPH)	Proof Stress	Ultimate Tensile Strength	Elongation %	Coefficient of Thermal Expansion X10,000 °C	
	Cast	Cast			
Cast 240	552 N/mm ²	1138 N/mm ²	Cast 12-15	25-500 °C	25-600 °C
	80,000 PSI	165,000 PSI		14.0	14.4

INSTRUCTIONS FOR USE

WAXING AND SPRUING

Single Crowns	Multi-Units & Bridges
A minimum of 0.3 mm wax thickness is recommended. Use direct sprues, 8-10 gauge (3.3-2.6 mm diameter) and ½"(12 mm) long with adequate reservoirs.	Wax patter design should have lingual collars and no sharp corners. Use a 6 gauge (4.1 mm diameter) runner bar, connecting the units to the bar with 10 gauge (2.6 mm diameter) sprues 1/8" (3 mm) long and joining the bar to the sprue base with 8 gauge (3.3 mm diameter) and ½" (12mm) long sprues coming from a domed central entry point.
In all cases there should be no more than ¼"(6mm) of investment from the top of the pattern to the top of the investment.	

- INVESTING** Use a high heat phosphate-bonded investing and mix for maximum expansion. Do not use carbon-containing investment.
- BURNOUT** After adequate set-up time place the rings in a room temperature oven and raise the temperature to 800 °F (427 °C) for 30 minutes. Then raise the temperature to 1600 °F (871 °C) and hold for one hour plus 10 minutes for each additional ring.
- CASTING** Wind the casting machine one more turn than you would for precious ceramic alloys. A quartz or zircon crucible is necessary. Use a propane/oxygen torch with a multi-orifice tip. Do not use flux. Place the alloy (at least 50% new metal) in a pre-heated crucible. Keep the torch moving to heat all the metal in the crucible at an even rate. The individual ingots will not pool together to form a single mass. Do not stir or rupture the oxide surface. When the flame appears to move the alloy, cast. After casting bench cool before deinvesting. When using induction-casting machine, pre-heat the crucible. Set the arm speed to 400-450 rpm. Set the power to high and be sure that the alloy is pulsating and slumping. The casting temperature of automatic casting equipment should be set for 2500°F (1371°C) with a five seconds heat soak.
- FINISHING** Grind the metal with non-contaminating aluminum oxide stones. After grinding, blast with non-recycled 50-micron aluminum oxide and clean in distilled water in an ultrasonic cleaner for ten minutes.
- DEGASSING** Place the casting in the furnace at 1200 °F(649 °C) and raise to 1850 °F (1010 °C) with full vacuum. No Hold. A straw yellow or light gray oxide will be formed. If a redish oxide forms, it indicates too high a temperature. A bluish oxide indicates too low a temperature. If these incorrect oxides appear, blast them off and refire accordingly.
- OPAQUING** Fire a thin "wash" 15-20 °F above your standard opaque firing temperature. Followed by regular opaque coats.
- SLODERING** Use P or N/P for pre-soldering. Use R or LO for post soldering.
- CAUTION**
- A. CSN contains nickel. Use of this alloy should be avoided by persons of known nickel sensitivity.
 - B. CSN contains beryllium. Adequate ventilation is required during grinding to avoid any potential health hazard.