

**JP-5**  
**WHITE CERAMIC ALLOY**  
**NOBLE PALLADIUM SILVER**

**PROPERTIES**

Melting Range .....	2150°F to 2275°F
Coefficient of Thermal Expansion	
from 25°C to 500°C: .....	14.9x10 <sup>-6</sup> C <sup>-1</sup>
from 25°C to 600°C: .....	15.1x10 <sup>-6</sup> C <sup>-1</sup>
Density .....	11.0 g/cm <sup>3</sup>
Grain Size .....	14 microns
Hardness .....	250HV
Tensile Elongation .....	16%
Tensile Yield Strength (PSI) .....	74,500
Ultimate Tensile Strength (PSI) .....	105,000

**CHEMISTRY**

Palladium .....	53.5%
Silver .....	37.5%
Tin .....	8.5%
Contains less than 1%	
Zinc, Ruthenium	
Classification - Noble	

**PROCESSING TECHNIQUE**

**WAXING**

Wax to a minimum of 0.3mm for single units and 0.5mm for bridge work. Avoid sharp angles and wax to provide for an even thickness of porcelain.

**SPRUNG**

The indirect method is recommended for multi-units. Use an 8 gauge runner bar with 10 gauge connectors. If preferred, the direct method may be used on both single units and small bridges. Use a 10 gauge spruce 1/4" (6mm) to 3/8" (9mm) long. Sprues longer than 3/8" (9mm) should have a reservoir 1/16" (1.5mm) from pattern. Patterns should be a maximum of 1/4" (6mm) from top of investment.

**INVESTMENT**

A phosphate-bonded, high heat investment without carbon content is recommended.

**BURNOUT**

Place in a cold furnace and raise temperature to 1400°F (760°C). Hold at 1400°F temperature for 1 1/2 hours. Increase hold time for larger or multiple rings.

**MELTING AND CASTING**

Wind casting arm one turn more than used for casting gold. Use a multi-orifice torch tip with 10 lbs. gas and 20 lbs. oxygen. Add 50% new metal to button, use a high heat crucible. As JP-5 melts, a cloudy surface will appear. Continue heating until the cloudy surface clears, before releasing the casting arm. DO NOT OVERHEAT. The casting temperature is 2375°F (1300°C). DO NOT USE CASTING FLUX.

**DEVESTING AND FINISHING**

Blast with aluminum oxide to remove investment particles. Shape and finish down metal with aluminum oxide stones. Blast outer surface with non-recycled aluminum oxide (50 micron-white preferred). Clean in ultrasonic for 10 minutes in distilled water.

**CONDITIONING**

Oxidize from 1200°F (650°C) to 1850°F (1010°C) under vacuum. Hold for five minutes at 1850°F under vacuum. Bench cool. Proceed with opaque following porcelain manufacturer's instructions.

**SOLDERS AND FLUX**

Pre-Solder:	PWS
Post-Solder:	1400 Solder
Flux:	Brown Fluoride Flux for both pre and post soldering