

# JP-5

## NOBLE WHITE PORCELAIN ALLOY

**JP-5** is a noble, palladium-silver porcelain dental alloy introduced by Jensen Dental in 1981. It is ideal for just about any type of restoration, from single units to long-span bridges. JP-5 has a very small grain size that helps eliminate hot tears and marginal flaking. Because JP-5 contains 37.5% Ag, it is more economical than other similar alloys containing less silver and more palladium.

PROPERTIES	
Melting Range	2150° to 2275°F (1180° to 1245°C)
Coefficient of Thermal Expansion	
from 25°C to 500°C:	14.9x10-6C <sup>-1</sup>
from 25°C to 600°C:	15.1x10-6C <sup>-1</sup>
Density	11.0 g/cm <sup>3</sup>
Grain Size	14 microns
Hardness	250HV
Tensile Elongation	16%
Tensile Yield Strength	74,500 psi (515 MPa)
Ultimate Tensile Strength	105,000 psi (725 MPa)

CHEMISTRY	
Palladium	53.5%
Silver	37.5%
Tin	8.5%
Contains less than 1% Zinc, Ruthenium	
Au & Pt group - 53.5%	
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.
- SPRUING** 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** 1400°F (760°C)
- 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.
- OXIDATION** Oxidize from 1200°F (650°C) to 1850°F (1010°C) at 145°F/min (80°C/min) in vacuum with 5 minutes hold time. Bench cool. Proceed with normal opaque technique.
- SOLDERS AND FLUX** Pre-Solder: PWS or LX Solder  
Post-Solder: 1400 Solder  
Flux: Brown Fluoride Flux for both pre and post soldering

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