

## **GALILEO**

### **HIGH NOBLE YELLOW CROWN AND BRIDGE ALLOY**

Galileo is a yellow high noble, copper-free, Type IV alloy. Its excellent mechanical properties, tarnish resistance and corrosion resistance make Galileo an outstanding alloy for milling, telescope crowns and long span bridges when high nobility is desired. Galileo has been found to be compatible with Duceragold<sup>1</sup> and similar low-fusing porcelains.

#### **PROPERTIES<sup>2</sup>**

Melting Range .....	1740°F to 1940°F
Density.....	16.4 g/cm <sup>3</sup>
Grain Size.....	25 microns
Coefficient of Thermal Expansion	
From 25°C to 500°C.....	16.2 x 10 <sup>-6</sup> K <sup>-1</sup>
From 25°C to 600°C.....	16.5 x 10 <sup>-6</sup> K <sup>-1</sup>

	<u>Hardened</u>	<u>Softened</u>
Hardness.....	240 HV	230 HV
Tensile Elongation.....	6%	10%
Yield Strength, 0.2% Offset.....	63,820 psi	58,010 psi
Ultimate Tensile Strength.....	81,220 psi	81,220 psi
Modulus of Elasticity .....	14.5 x 10 <sup>6</sup> psi	14.5 x 10 <sup>6</sup> psi

#### **CHEMISTRY<sup>3</sup>**

Gold.....	74.3%
Silver.....	11.0%
Platinum.....	7.0%
Palladium.....	3.0%
Zinc.....	2.5%
Indium.....	2.0%

Contains less than 1%: Iridium

Classification: High Noble  
Au & Pt Group - 84.3%

### **PROCESSING TECHNIQUE**

#### **WAXING AND SPRUING**

Wax to a minimum thickness of .3mm for single units and .5mm for bridgework. Avoid sharp angles and corners. Use reservoirs for direct-sprued single units. The indirect method of spruing, with an adequate size runner bar, is recommended for multi-units. Patterns should be a maximum of 1/4" from top of investment.

#### **INVESTMENT**

A gypsum or phosphate-bonded investment with or without carbon content can be used.

#### **BURNOUT**

Burnout according to investment manufacturer's instructions to a high temperature of 1200°F (650°C).

#### **MELTING AND CASTING**

Extra winds of the casting arm are not required. Use a multi-orifice torch with 5 psi fuel and 10 psi oxygen. The alloy will fully puddle and form a ball before it is ready to cast. **DO NOT OVERHEAT. DO NOT USE CASTING FLUX.** The casting temperature is 2050°F.

#### **DEVESTING AND FINISHING**

Blast with aluminum oxide to remove investment particles. Finish with aluminum oxide stones. Reblast porcelain receiving surface with non-recycled aluminum oxide. Clean in ultrasonic for 10 minutes in distilled water or denatured alcohol (high purity only).

#### **CONDITIONING (low fusing porcelains)**

Follow porcelain manufacturer's recommendations, or oxidize at 1475°F (800°C) for ten minutes under vacuum. Do not blast or pickle oxide.

#### **SOLDER AND FLUX**

High Temp Solder: Satellite      Low Temp Solder: 1400

Flux: Brown Fluoride

<sup>1</sup> Duceragold is not a trademark of Jensen Industries

<sup>2</sup> Test methods conform to ISO Standard 1562 and ANSI/ADA Standard #5

<sup>3</sup> Jensen Industries certifies the composition to be within the tolerances of ISO 1562 and ANSI/ADA 5.

