

**THE ARGEN CORPORATION****Alloy Specification Sheet**

Standards

BS EN ISO 22674 / BS EN ISO 9693

**ARGELOY N.P. SPECIAL**

**Color:** WHITE      **Type:** 4      **ADA Classification:** Predominantly BASE (PB)      **PGM:** 0%

**Metal Content %**

Mn	Fe	Co	Si	C	Mo	Cr
x	x	59.5	2	x	5	31.5

'x' denotes a content of less than one percent.

**Thermal Properties**

Melting Range	Casting Temperature	Coefficient of Linear Thermal Expansion	
		( um/m-°C )	
2145-2460 °F	2695 °F	25-500	25-600
1175-1350 °C	1480 °C	14.3	14.8

**Mechanical Properties**

Vickers Hardness			Yield Strength		Modulus of Elasticity	Elongation		Density
(VHN)			(0.2% Offset)			(GPa)	( % )	
A.F.	Soft	Hard	A.F.	Hard	280	A.F.	Hard	8.8
430	---	---	103,000 psi	--- psi		5	---	
			710 MPa	--- MPa				

**PROCESS****INSTRUCTIONS FOR USE****Modeling**

Maintain a minimum wax thickness of 0.3 to 0.4 mm. The wax pattern design should have lingual collars and no sharp corners. Lingual eyelet rings help support castings during firing.

**Spruing (Single Crowns)**

Use direct sprues, 8-10 gauge, (3.3-2.6 mm diameter) and 1/2 in. (12 mm) long with adequate reservoirs. There should be no more than 1/4 in. (6 mm) of investment from the top of the pattern to the top of the investment.

**Spruing (Multi-Units & Bridges)**

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 in. (3 mm) long and joining the bar to the sprue base with 8 gauge (3.3 mm diameter) and 1/2 in. (12 mm) long sprues coming from a domed central entry point. There should be no more than 1/4 in. (6 mm) of investment from the top of the pattern to the top of the investment.

**Investing**

Use debubbler and blow off any excess before investing. Recommended Investment: Phosphate Bonded . Follow the

manufacturer's instructions.

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**Burnout**

After adequate set-up time, place the ring(s) in a room temperature oven and raise the temperature to 870°C plus 10 minutes for each additional ring. If you are using a rapid fire investment, follow the manufacturer's instructions.

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**Crucible Type**

Quartz or Zircon

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**Torch 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 devesting.

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**Induction or Electrical Casting**

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 2695 °F (1480 °C) with a five seconds heat soak.

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**Cooling**

Allow casting ring to cool to room temperature. DO NOT quench in water.

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**Divesting and Cleaning**

Divest and sandblast with 50 micron aluminum oxide, be careful of margins.

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**Finishing**

Grind the metal surfaces for porcelain application with non-contaminating aluminum oxide stones in one direction. Blast with non-recycled 50 micron aluminum oxide. Do not exceed a blast pressure of 4 bars or 60 psi. Clean in distilled water in an ultrasonic cleaner for 10 minutes.

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**Oxydizing or Degassing**

650-980°C, Hold 0 min with Vacuum, Remove oxide

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**Presolder**

Solder joints should be as large as possible (at least 5 mm<sup>2</sup>). Soldering gap approximately 0.05-0.2 mm. The solder joints should be parallel and free of debris. Preheat invested units and pressure

blast with 50 micron just before soldering to remove oxide. If flux is used, it should be water soluble..

Use: Co/Cr Pre

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### Porcelain Application

Follow the recommendations of the porcelain manufacturer. For a better bond, fire a thin wash 10 - 15 °F (10 °C) above normal temperature, followed by regular opaque coats.

We recommend drying paste opaque from the inside out; this is done by utilizing a hot plate. The units are placed on a honeycomb sagger tray with metal pins. This is placed on top of the burner set a low to medium setting ( approx. 250°F ).it will take approximately 8-10 minutes or until the opaque turns chalky white or flat color. Then place in furnace for entry and maturing.

One compatible ceramic - Ceramco 3

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### Post Soldering After Firing

Solder joints should be as large as possible (at least 5 mm<sup>2</sup>). Soldering gap approximately 0.05 - 0.2 mm. Cover ceramically-veneered units with wax before investing. The soldering investment should not come in contact with the ceramic. The soldering surfaces should be parallel, smooth and free of debris.

Use: LO,R

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### Laser Wire

LWNPCO

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### Polishing

Use Tripoli and rouge or other similar products.

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