



## UNITED ALLOY # PD-1

Be insured in quality, Be insured in service, Be insured in "United Alloys.

UNITED ALLOY is uniquely different from other available alloys. Combining the highest purity metals available, stringent quality control, special de-oxidizers and grain refiners, produce trouble-free, superior quality castings and rolling (hand-made).

UNITED ALLOY # PD-2 is designed for 14K Palladium White Gold, which produces a Modern White Color which should be Rhodium plated for optimum color. This alloy is making tremendous strides in the development of a high fluidity which contains Technical Metals as De-oxidizers which resist oxygen absorption in melting process and better solidification characteristics to reduce the porosity which improve the quality of casting and provide high luster in finished color and can be used for hand-made and can be used for regular investment Casting with normal equipment.

- 1.) **MELTING** : The # PD-1 Alloy, and fine gold should be melted together in a clean crucible. Put alloy in the bottom of the crucible and fine gold on top. The melting temperature for alloying should be 1,130 - 1,140 °C. Boric acid flux may be used to keep the metal clean during the melting process. The metal should be mixed well with a stirring rod before pouring to assure a good mix.
- 2.) **POURING** : Metal should be poured into a preheated, vertical graphite or lightly lubricated iron mold. A steady even pouring motion should be used slowing down at the end of the pour to prevent shrinkage in the top of the ingot. Use a round rod mold for wire and a 2 piece L shaped mold for plate and sheet.
- 3.) **QUENCHING** : The ingot should be removed from the mold and quenched immediately in pickle solution or water. For heavy ingots a one-minute cool down before quenching prevents quench cracking.
- 4.) **FABRICATION** : The ingot should be cleaned of all adhering oxide or fluxes before rolling. The ingot should be rolled or drawn to a 50% reduction in size before annealing. After annealing continue the reduction at 50% before annealing again. Clean the ingot after each anneals. Keep rolls, dies and metal clean to prevent defects in the finished stock.
- 5.) **ANNEALING** : Annealing temperature 730 °C for 20 minutes. Quench immediately in water or pickle solution. A boric acid fire coat should be applied before annealing in open atmosphere ovens to protect the metal from heavy oxidation. Avoid over-annealing wire or plate stock as this can cause excessive grain growth creating orange peel effect on the surface of finished goods.
- 6.) **PICKLING** : United's Brite-Cast™ (Ammonium Bi-fluoride), Sparex # 2 (sodium bisulfate), 10% - 20% Sulfuric Acid.  
Rubber gloves and safety glasses are recommended when using acid pickle.
- 7.) **RE-USING** : New alloy and fine gold 70% and Old gold 30%, Cleans Old gold well before re-melting.
- 8.) **SOLDERING** : United Palladium White Gold Solder # 14KWHPD. Laser welding is recommendation for matching color.
- 9.) **NOTES** : Melt temperature may vary with type of unit.

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