



PRECIOUS METAL PRODUCTS FOR THE JEWELLERY INDUSTRY

## Precious Metal Services Technical Data

# PD950AG

Data Sheet # PMS1112AG

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### 950 PALLADIUM | FABRICATION - CASTING

Colour – White

Density – 11.8gm/cm

Liquidus - 1450°C

Solidus - 1380°C

### Mechanical Properties

PROPERTIES TEST	AS CAST	RECRYSTALLISING ANNEAL	WORK HARDENED 20%	WORK HARDENED 40%	WORK HARDENED 60%	AGE HARDENED
HARDNESS - HV	95	100	140	160	175	-
TENSILE STRENGTH - N/MM	-	390	-	-	-	-
YIELD STRENGTH - N/MM	-	200	-	-	-	-
FRACTURE ELONGATION - %	-	30	-	-	-	-

### Annealing Properties

TECHNIQUE	TEMPERATURE °C	ANNEALING TIME	HOLDING TIME	QUENCHING MEDIUM	ATMOSPHERE
KILN	750	15 MIN	-	WATER	NITROGEN
TORCH	CHERRY RED	-	-	WATER	-

### Casting Properties\*

INVESTMENT TYPE	FLASK TEMPERATURE °C	CASTING TEMPERATURE °C	HOLD BEFORE QUENCH	ATMOSPHERE	EQUIPMENT
PLATINUM	800	1550	< 5 MIN	ARGON	CENTRIFUGAL

\* THE CASTING PROPERTIES ARE PROVIDED AS A GUIDE ONLY AND ARE NOT INTENDED TO BE DEFINITIVE. ALL CASTINGS REQUIRE THE OPERATOR TO OBSERVE AND RECORD THE CASTING PARAMETERS THAT PROVIDE THEM WITH THE OPTIMUM RESULTS.

### Availability

**Fabrication:** PD950AG Available in 4.50mm (55% work hardened) or 6.00mm (20% work hardened) Standard Gauge Wire

**Casting:** PD950AGC Available in Granule form and our custom casting service is available for this alloy

PETER W BECK PTY LTD

14 Duncan Court, Ottoway Park, South Australia 5013 Telephone +61 8 8440 3399 Toll Free 1800 888 590 Fax +61 8 8447 1144

Email [preciousmetals@pwbeck.com.au](mailto:preciousmetals@pwbeck.com.au) [www.pwbeck.com.au](http://www.pwbeck.com.au)

A.B.N 37 008 011 550



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### Benefits

PD950AG is a viable alternative for consumers that do not like Rhodium plated white gold but cannot justify the price of Platinum alloys. PD950AG does not need Rhodium plating therefore avoiding ongoing maintenance; it can be compared to Platinum for colour. Other benefits are that it is hypoallergenic due to its high purity, it is very malleable and arguably the best alloy for setting stones, it has a density almost half that of Platinum, meaning your piece will weigh less for the same size and it has a price similar to 18ct white gold making it financially attractive.

### Working Properties

Palladium is a Platinum group metal and it has similar fabricating characteristics to Platinum alloys. The melting point is 1450 °C which is higher than white gold but not as high as Platinum alloys. The alloy is easy to cold work and can accept considerable deformation, in excess of 70%, before annealing is required. Easy and Medium Solder for Platinum can be used and both give an excellent colour match. To achieve an optimum surface finish it is advised to go through all grades of emery prior to polishing, similar to finishing Platinum. Hardening the surface through burnishing will provide an ideal surface for finishing. The casting alloy possesses the same properties as the fabrication alloy and so castings can be sized or further fabricated as required.

### Cautions

When molten, Palladium has an affinity for Hydrogen. The absorption of gas during melting can render the alloy brittle and unworkable; this is true for all Palladium alloys and including Pure Palladium, and those from other manufacturers. To a skilled operator and using accurate gas and Oxygen mixtures it is possible to successfully remelt Palladium alloys at the bench, however extreme caution should be taken as the ideal mix is difficult to achieve. Do not use Hydrogen when working with Palladium, Propane and Oxygen is preferred. The only way to achieve consistent successful melts is by using an Induction Furnace with an Argon gas cover. Although it is quite possible to use Medium Platinum Solder for PD950AG it has a flow temperature close to the melting range of the Palladium alloy and therefore Easy Solder should be used wherever possible.

It is important to note that the recommended solders contain Palladium and therefore can absorb gas and become brittle, using an oxidising flame and avoiding the use of Hydrogen is preferred. Heating Palladium alloys to soldering temperatures will result in the formation of a blue oxide coating which cannot be removed by pickling, although this oxide can be removed mechanically, simply reheating it with a torch will remove the colouration. If it is necessary to electroplate your piece, set to 7 volts/4 amps or below when electro-cleaning to avoid the surface appearing frosted.

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Email [preciousmetals@pwbeck.com.au](mailto:preciousmetals@pwbeck.com.au) [www.pwbeck.com.au](http://www.pwbeck.com.au)

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### Re-using

We offer a rework service for most metals. Using our Induction Furnace, we can remelt your off-cuts under an Argon gas environment and fabricate the resultant ingot into either 4.50mm or 6.00mm Standard Gauge Wire for you. We require a minimum of 130 grams of clean metal for this service. Filings can contaminate the melt and render it unusable; therefore we suggest you include filings with your Lemel for refining.

### Refining

We refine all precious metals and Palladium poses no particular problem. We would encourage you to keep your Palladium scrap separate from your other scraps wherever possible to help maintain high refining efficiency.

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At Peter W Beck Pty Ltd we are continuously developing and improving our product range, as a consequence we reserve the right to alter product specifications without notice.

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