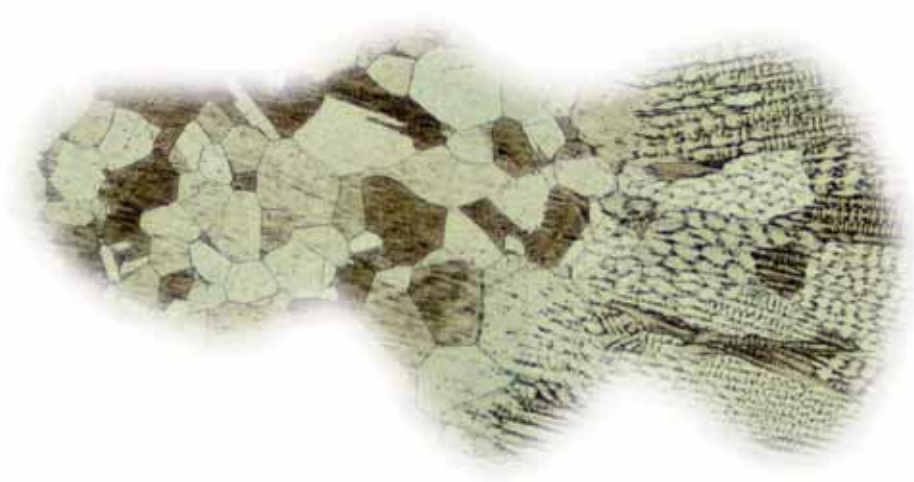




Presentation of new high hardness alloy Pd 950





The **new 950 ‰ palladium alloy** has been examined very carefully in order to offer the best features for the mechanical processing.

Its most important properties have been summarized hereafter:

- **High hardness.** Alloy has already a hardness of 180 Vickers on raw fusion material and reaches also 300 Vickers after mechanical processing. This characteristic improves remarkably the wear and tear properties compared to the Pt alloys or the traditional Pd alloys.
- **Excellent microstructure.** The alloy microstructure is characterized by very fine crystal grain (from 20 to 80 μm of annealed and re-crystallized material) in order to offer the best mechanical properties.
- **Low specific weight.** Alloy with a specific weight of 10,7 g/cm^3 becomes really interesting compared to other precious metals more utilized in goldsmith's workshop.
- **Weldable in TIG, laser, hydrogen-oxygen flame.** Alloy can be brazed with gold-palladium brazing or other brazing used for Pt 950.

The following table compares some characteristic of this alloy with the same other alloys used in goldsmith's workshops.

Characteristics	New alloy Pd 950	Alloy Pt 950	White gold 18 carats at Pd	Old alloys at Pd 950
Specific weight (g/cm^3)	10,7	20,0	15,8	10,9
Hardness Vickers in raw fusion material	180	105	110	70

The comparison, both with white gold at Pd as well as with Pt 950 shows the advantages of the new alloy. The next cards present the characteristics of the new alloy more in detail. The characteristics of the semi-finished in traditional Pd 950 alloy and in Pt 950 alloy are enclosed at the end of the brochure as confrontation. The comparison shows the better characteristics of the new Pd 950 alloy.



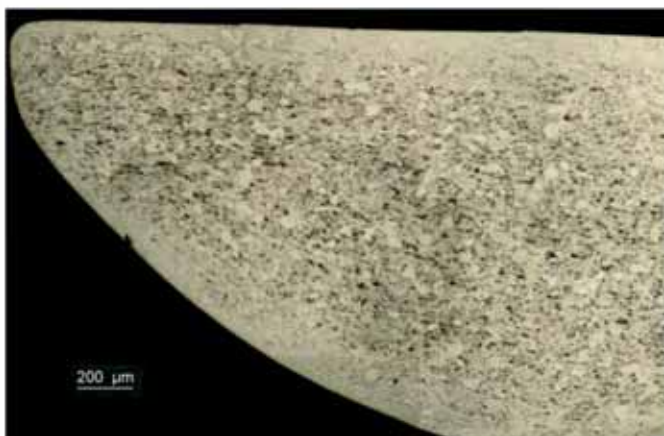
**Product typology: Wedding rings of alloy Pd 950,0 ‰ fine crystal grain annealed
title Pd minimum guaranteed 950,0 ‰**

Physical supply condition: after re-crystallizing annealing and measuring.

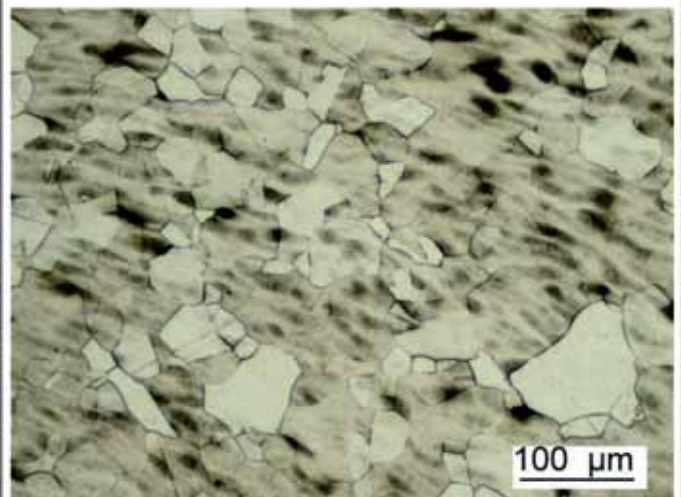
PHYSICAL-MECHANICAL CHARACTERISTICS

	Under supply conditions	After possible annealing at 800°C during 20 minutes
Micro-hardness Vickers (HV ₃₀₀)	220 ± 5	180 ± 5
Average diameter of the crystal grain	70 μm	100 μm
Fusion interval (°C)	1480 + 1520	1480 + 1520

MICRO-STRUCTURAL CHARACTERISTICS IN OPTICAL METALLOGRAPHY



Microstructure of the related semi-finished under raw conditions.



Microstructure of the related semi-finished.



Product typology: Thread of alloy Pd 950,0 ‰ fine crystal grain annealed

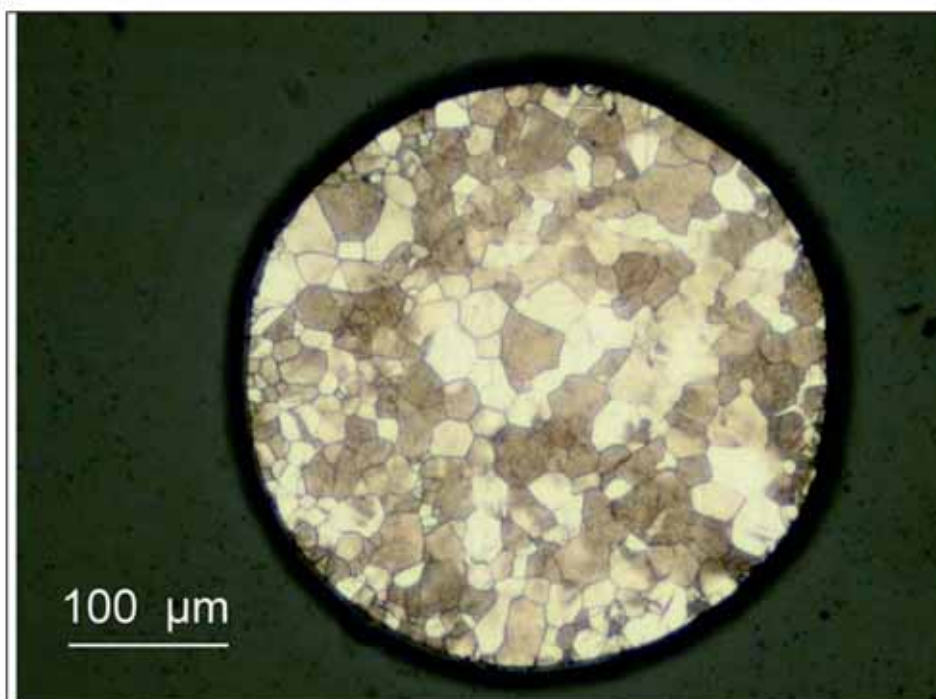
title Pd minimum guaranteed 950,0 ‰

Physical supply condition: after re-crystallizing annealing.

PHYSICAL-MECHANICAL CHARACTERISTICS

	Under supply conditions	After possible annealing at 800°C during 20 minutes
Micro-hardness Vickers (HV 300)	260 ± 5	200 ± 5
Average diameter of the crystal grain	40 μm	80 μm
Fusion interval (°C)	1480 + 1520	1480 + 1520

MICRO-STRUCTURAL CHARACTERISTICS IN OPTICAL METALLOGRAPHY



Microstructure of the related semi-finished under supply conditions.



**Product typology: Square pipe 2,7 x 2,7 mm of alloy Pd 950,0 ‰
fine crystal grain annealed**

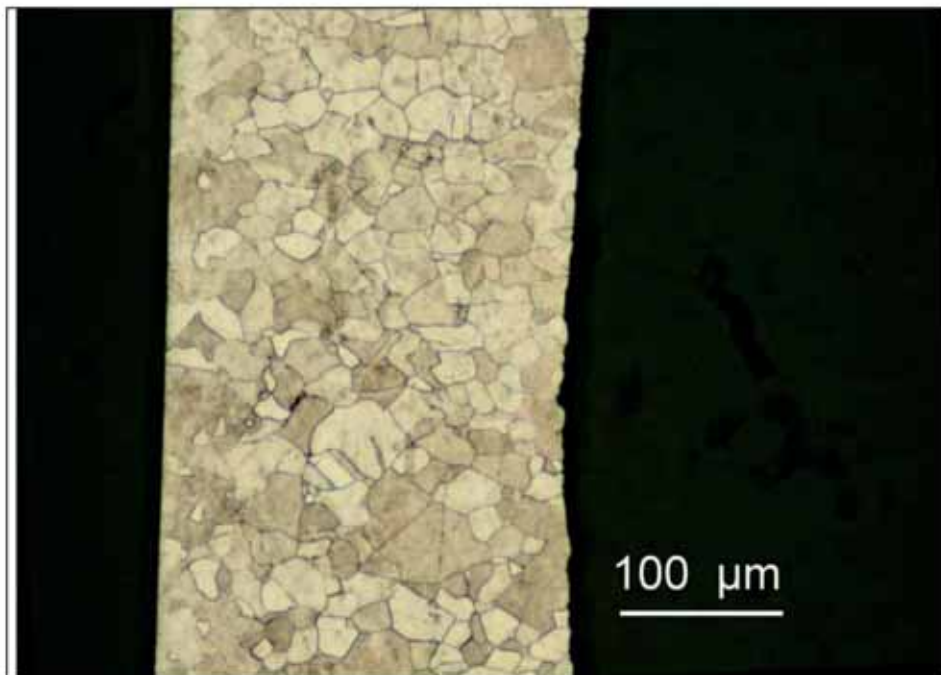
title Pd minimum guaranteed 950,0 ‰

Physical supply condition: after re-crystallizing annealing.

PHYSICAL-MECHANICAL CHARACTERISTICS

	Under supply conditions	After possible annealing at 800°C during 20 minutes
Micro-hardness Vickers (HV ₃₀₀)	210 ± 5	190 ± 5
Average diameter of the crystal grain	35 μm	70 μm
Fusion interval (°C)	1480 + 1520	1480 + 1520

MICRO-STRUCTURAL CHARACTERISTICS IN OPTICAL METALLOGRAPHY



Microstructure of the finished pipe in transversal section under supply conditions.



Comparison with other alloys of common use





**Product typology: Square pipe 3,25 x 3,25 mm
Of traditional alloy Pd 950,0 ‰ fine crystal grain annealed**

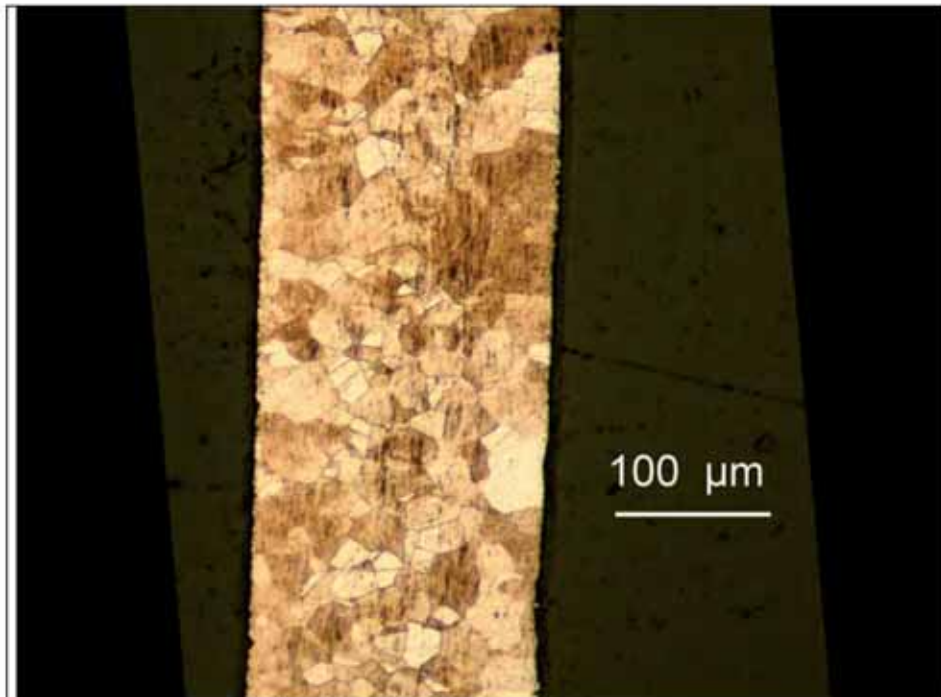
title Pd minimum guaranteed 950,0 ‰

Physical supply condition: after re-crystallizing annealing and measuring.

PHYSICAL-MECHANICAL CHARACTERISTICS

	Under supply conditions	After possible annealing at 800°C during 20 minutes
Micro-hardness Vickers (HV 300)	115 ± 7	100 ± 7
Average diameter of the crystal grain	40 µm	75 µm
Fusion interval (°C)	1490 + 1520	1490 + 1520

MICRO-STRUCTURAL CHARACTERISTICS IN OPTICAL METALLOGRAPHY



Microstructure of the finished pipe in transversal section under supply conditions



Product typology: Wedding rings in Pt 950,0 ‰ fine crystal grain annealed

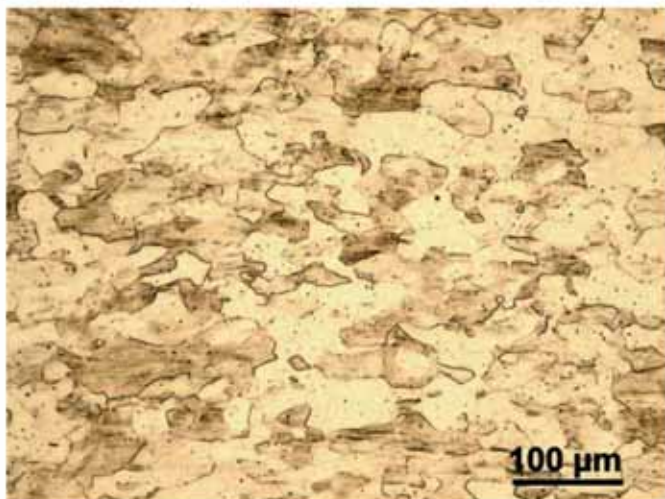
title Pt minimum guaranteed 950,0 ‰

Physical supply condition: after re-crystallizing annealing.

PHYSICAL-MECHANICAL CHARACTERISTICS

	Under supply conditions	After possible annealing at 750°C during 90 minutes
Micro-hardness Vickers (HV 300)	180 ± 10	165 ± 10
Average diameter of the crystal grain	50 µm	60 µm
Fusion interval (°C)	1695 + 1725	1695 + 1725

MICRO-STRUCTURAL CHARACTERISTICS IN OPTICAL METALLOGRAPHY



Microstructure of the related semi-finished under supply conditions.



Microstructure of the related semi-finished after possible added annealing at 750°C during 90 minutes. This annealing reduces the hardness at 165 HV, without altering excessively the dimensions of the crystal grain.



Product typology: White gold disk 750,0 ‰ extra-fine grain annealed

title Au minimum guaranteed 750,0 ‰

title Pd minimum guaranteed 150,0 ‰

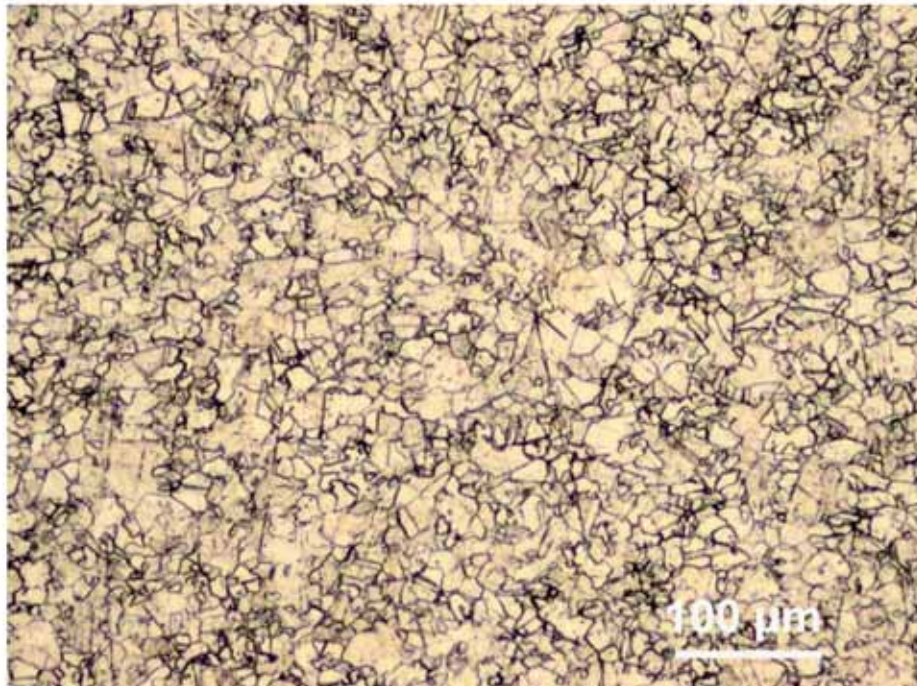
outer diameter: $45 \pm 0,2$ mm

thickness: $1 \pm 0,05$ mm

Physical supply condition: after re-crystallizing annealing.

PHYSICAL-MECHANICAL CHARACTERISTICS

		Fusion interval of the alloy
Micro-hardness Vickers (HV 300) after the re-crystallizing annealing	110 ± 10	
Average diameter of the crystal grain after the re-crystallizing annealing	20 μm	
Fusion interval ($^{\circ}\text{C}$)	1240 \div 1300	



Microstructure of the related semi-finished under supply conditions.