

Technical data sheet and product guideline



PD4-FE

Palladium iron solution for bath plating 4 g/l ready-to-use bright white color

Color coordinates



L	83.8
a	0.4
b	4.3
c	4.3

Product form

Metal concentration	4 g/l (Pd)
Form	Liquid
Material color	Yellow/Green
Storage time	2 years
Format	Ready to use
Chemical type	Neutral
Volume	1 liter

Operating data

	Range	Optimal
Voltage (V)	1-2.5	1.7
Current density (A/dm ²)	0.75-1	1
Working temperature (°C)	30-55	50
Exposure time (sec)	40-1200	240
pH	6.5-7.2	6.8
Cathode efficiency (mg/Amin)	29	29
Anode/cathode ratio	2:1-4:1	2:1
Anode type	Plattonized titainium	
Agitation	Moderate	

Metal concentration

Metal	Range (g/l)	Optimal (g/l)
Palladium	2-5	4
Iron	0.5-0.7	0.6

Deposit data

Purity (%)	90
Hardness (HV 0,01)	450-500
Density (g/cm ³)	12
Thickness (um)	0.2-5
Appearance	Shiny
Color	White

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Preparation

PD4-FE is a ready-to-use galvanic bath at the concentration of 4 g/l of palladium. No preparation is required.

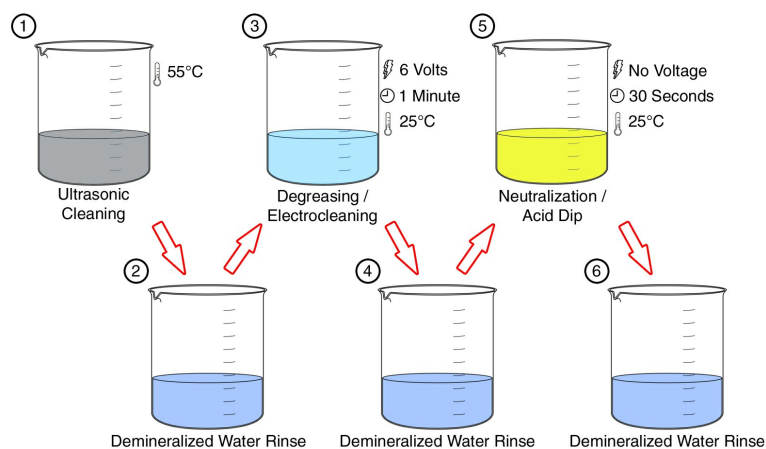
Equipment

- Working vessel material: Pyrex glass / PVC / polypropylene
- Power supply: DC current rectifier with low residual AC (<5%).
- Heating element
- Anode type: Platinized titanium (1.5-2.5 µm)

For larger bath volumes:

- Magnetic driven filter pumps with 5-15 µm cartridge
- Amp/min counter

Pre treatment



Bath maintenance

Additions to the PD4-FE system should be done by using the pre-calibrated replenisher reported in the related products section. For optimum bath performance, it is best to work at a metal concentration no less than 25% of the the initial concentration; for example, with a bath at 4 g/l nominal value, additions must be made after a maximum of 1 g/l of palladium is consumed. In order to perform the additions, consider that a 4 g/l bath deposits on average 25 mg of Palladium per Ampere/minute.

As Palladium is a precious metal, it is advisable to perform periodic analytic controls via ICP or AAS in order to control consumption. Keep in mind that the solution works with an otimum iron concentration of 0.6 g/l within a range of 0.5 - 0.7 g/l.

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Post treatment

The electrolyte should be removed from the surface as quick as possible. Wash off the bath residual in a recovery rinse (still rinse). Rinse the parts in circulating deionized water and dry.

Water purity

To prevent contamination of the bath both during its preparation and any subsequent replenishing operations, use demineralized water with a conductivity of less than 3 µS/cm (containing no traces of organic compounds, Chlorine, Silicon, or Boron).

Safety information

Although PD4-FE can be considered a product of low-toxicity, irritation to the skin, eyes and mucous membrane cannot be excluded. Caution should be exercised when using the product, avoiding contact with the eyes and skin. Use gloves and safety goggles. For further information please refer to the relative safety sheet.

Additional hints

The items to be treated are prepared according to the usual process. In general it is recommended to start by degrease the pieces in an ultrasonic solution followed by rinsing and a subsequent alkaline electrolytic degreasing step at 5-6 volts for 1-2 minutes. Neutralization is done by immersion in a 5% sulfuric acid solution or similar solutions, followed by a rinse in demineralized water and the palladium plating step with moderate agitation of the pieces. **Avoid the application of too much high voltages as they can cause localized burns of the surface close to the high current density areas which will be visible after successive plating treatments even. If the palladium plating treatment is applied as an intermediate layer on white gold items which are then rhodium plated, it is importanto to do both plating steps in rapid sequence.** After the palladium plating treatment, the pieces are rinsed with demineralized water and neutralized before entering in the final rhodium plating solution. **Never perform complete electrolytic degreasing treatment on the palladium plated pieces** as it will cause blackening of the pieces due to the absorption of the gaseous hydrogen in the palladium layer and generated by the water reduction close to the cathode. If you have accidentally done this, an anodic treatment (inverted polarity) or heating of the pieces for a few minutes at 80°C should restore the original features of the plating.

Packaging

