

Umicore Platuna PT: New platinum electrolyte for electroplating

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New pure platinum electrolyte Platuna PT from Umicore for electroplating (Image: Umicore)

Umicore Metal Deposition Solutions has developed Platuna PT, a new, innovative electrolyte for electroplating with pure platinum. The electrolyte enables the deposition of exceptionally thick, homogeneous and crack-free platinum layers, which are particularly impressive in various technical applications.

Platinum is a precious metal with outstanding properties such as high corrosion and abrasion resistance, excellent electrical conductivity, biocompatibility and catalytic activity. Platinum coatings can therefore improve the performance, durability, efficiency and effectiveness of technical applications or increase the sensitivity and accuracy of measurements. In addition, platinum is a highly recyclable metal that contributes to the circular economy. The Platuna PT electrolyte is the result of many years of research and development at Umicore. The electrolyte is highly acidic and has a low sulphuric acid content, making it less aggressive towards the substrate to be coated. It also has a deposition speed of approx. 0.13 $\mu\text{m}/\text{min}$ at 5 A/dm^2 , independent of the current intensity. The very long shelf life compared to many conventional platinum electrolytes (no precipitation) and easy transportation and storage (no cooling required) enable large storage quantities and therefore forward-looking cost calculation. Platuna PT consists of 99.9% pure platinum and demonstrates its high coating quality with the following properties: crack-free coatings up to 5 μm , very uniform coating thickness distribution with a density of 21.4 g/cm^3 , hardness of approx. 350 HV, absolutely haze-free, no color cast, very bright (L^* value: 87) and shiny, high abrasion resistance, excellent corrosion resistance and very good tarnish resistance

Platuna PT coatings are suitable for a wide range of technical applications, e.g. as a catalyst in electrolyzers for hydrogen production; Platinum accelerates the hydrogen evolution reaction at the cathode and reduces the amount of energy required for the reaction. Platuna PT can be deposited directly onto the carrier material (ideally titanium or nickel) and enables a very thin and homogeneous platinum layer. Platinum is also ideally suited as a surface material in medical sensors, as it is biocompatible, corrosion-resistant and electrically conductive. Platuna PT coatings are therefore used on electrodes, catalysts or receptors in various sensors such as ECG, glucose, oxygen or pH sensors. Electrical contact surfaces, for example in connectors, also benefit from this. The platinum layer reduces the contact resistance between the contacts and increases corrosion and abrasion resistance. Platuna PT can therefore improve the performance and service life of electronic, industrial and automotive plug contacts. In addition, platinum coatings are used in a variety of other technical applications or industries - water treatment or process control are just a few examples. Here too, Platuna PT can improve performance, durability, efficiency and effectiveness or increase the sensitivity and accuracy of measurements. In some technical applications, even very thin layers can be sufficient. This is why Umicore offers its customers interested in Platuna PT comprehensive advice and, if required, on-site technical service. In this way, the company can contribute to significant cost optimization on the basis of empirical values and the analysis of possible test layers. Of course, this also applies to applications such as jewelry, watches, writing instruments, glasses and fittings, as the new platinum electrolyte Platuna PT is also suitable for decorative coatings.

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