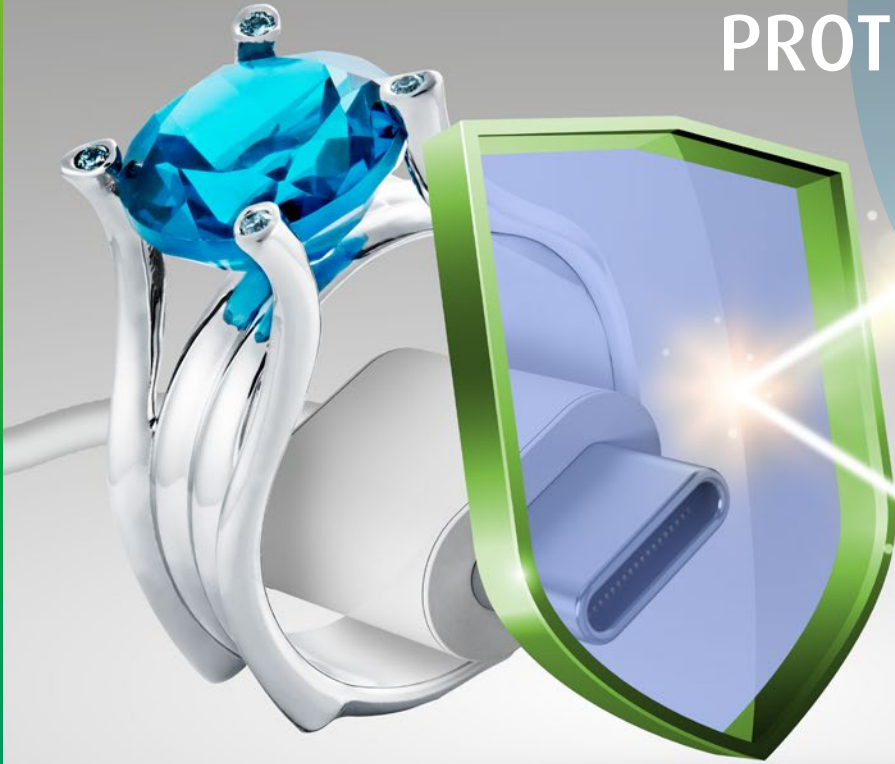


# PROTECTIVE LAYERS



## Protection right from the start for high-quality final surfaces



[www.ep.umicore.com](http://www.ep.umicore.com)

By definition, precious metals are largely resistant to corrosion in a natural environment. In daily use, however, they are exposed to environmental influences which they cannot withstand. Optical flaws or technical malfunctions are the unwanted consequences.

### **INCREASED QUALITY THROUGH SUITABLE PROTECTIVE LAYER**

Give your decorative and technical products specific protection and qualitative advantages without affecting the properties of your precious metal surface.

**umicore**  
Electroplating

# Individual solutions for your specific requirements

A few nanometers thick, transparent layer of special nanopolymers protects your precious metal surface from corrosion, tarnishing, discoloration, dirt and abrasion or scratches.

In addition, product quality is increased by functional properties. Decorative products in particular benefit from the water-repellent effect and the pleasant feel of the protective layers. Technical products such as connectors achieve a significant reduction in insertion and withdrawal forces.



The wide range enables the suitable protective layer for almost every application.



#### UNOBJECTIONABLE APPLICABILITY

None of our protective layers contains any environmentally harmful components such as solvents, CFCs, CHCs, hydrocarbons or chromium compounds, making them biologically harmless.



#### UNCHANGED MATERIAL CHARACTERISTICS

The layer characteristics remain almost unaffected compared to an untreated surface. Subsequent processing (grinding, polishing or soldering) is also possible without any concerns.



# Protective Layers

## Decorative Applications



Antitarnish	Precious metal base					Protective effect					Usage			Information Hints and special characteristics
	Ag Plated	Ag Sterling	Ag Antique	Au	Other Pd Pt Rh Ru	TAA <sup>1</sup>	K <sub>2</sub> S <sup>2</sup>	(NH <sub>4</sub> ) <sub>2</sub> S <sup>3</sup>	Na <sub>2</sub> S <sup>4</sup>	Reality <sup>5</sup>	Rack	Chain galvanization	Barrel	
613	●	⊙	⊙	⊙	⊙	■■■■	□□□□	□□□□	□□□□	■■□□	●	⊙	⊙	Subsequent bonding possible (e.g. stones) / passes TAA test
617	●	●	●	⊙	⊙	■■□□	■■■■	■■□□	■■□□	■■□□	●	⊙	⊙	Especially for sterling silver or antique coloured silver
617 PLUS	●	⊙	⊙	●	●	■■□□	■■■■	■■■■	■■■■	■■■■	●	●	⊙	Especially for plated Sterling Silver / Electrochemical
618	●	●	⊙	●	⊙	■■□□	■■■■	■■□□	■■□□	■■□□	●	⊙	⊙	Especially for silver-plated or gold-plated surfaces
618 PLUS	●	⊙	⊙	●	●	■■□□	■■■■	■■■■	■■■■	■■■■	●	●	⊙	Especially for silver-plated or gold-plated surfaces / Electrochemical

## Technical Applications



Sealing	Precious metal base				Protective effect		Layer characteristics			Usage			Information Hints and special characteristics	
	Au	Ag	Pd	Other	NSS <sup>6</sup>	K <sub>2</sub> S <sup>2</sup>	Contact resistance <sup>7</sup>	Coefficient of friction <sup>8</sup>	Soldering/bonding <sup>7</sup>	Rack	Barrel	Reel-to-reel		
691	⊙	●	⊙	Other metals on request (e.g. selective precious metal plating, mixed plating, etc.)	■■■□	■■■□	■■■■	■■■□	■■■■	●	●	⊙		
691 EL	●	●	●		■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	●	●	●	Excellent suitable for reel-to-reel lines / Electrochemical
692	●	●	●		■■■□	■■■□	■■■■	■■■■	■■■■	■■■■	●	●	⊙	Simplified handling
692 EL	●	●	●		■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	●	●	●	Excellent for reel-to-reel systems / Simplified handling / Electrochemical
Topseal 693	○	●	⊙		■■■□	■■□□	■■■■	■■□□	■■■■	■■■■	●	●	⊙	Organic-free / Extremely temperature-resistant protection

Simplified Handling

**Legend precious metal base and usage**

- Optimized
- ⊙ Useable
- Not useable

**Legend protective effect and layer characteristics**

- Excellent
- Very good
- Medium
- Weak
- None

- 1) Thioacetamid test
- 2) Potassium sulphide test
- 3) Ammonium sulphide test
- 4) Sodium sulphide test
- 5) Protective effect in reality
- 6) Neutral salt spray test
- 7) Indication of stability
- 8) Indication of reduction

Right Composition.  
Perfect Surface.

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