Decorative plastic metallisation for smart vehicle features
The ePD technology and coatings systems
The ePD technology
Decorative plastic metallisation

Representing a quantum leap in automotive engineering and offering a chrome look inside and out with countless options, the revolutionary ePD™ technology (embedded PVD for design parts) from Oerlikon Balzers is REACH-compliant and combines the low-emission PVD coating process with an advanced UV coating. This combination opens up a whole new world of design possibilities and offers enormous advantages compared to conventional technologies.

ePD™ offers an unsurpassed variety of colours and gloss levels. The ultra-thin, corrosion-resistant metal layer even allows backlit components such as sealed control buttons in chrome optics with capacitive sensors to offer a completely new dimension in the interaction between the driver and the vehicle. Specially adapted ePD™ processes enable, for example, radar sensors (ACC) to be integrated behind radiator grilles.

Oerlikon Balzers offers an all-in-one industrial solution to complement the coating: INUBIA I, the integrated, fully automatic metallisation system for ePD™, is perfectly suited to the challenges of large-scale production.

The ePD coating solution

ePD™ – PVD layer embedded between base and top coat UV lacquer

These three layers are processed in one integrated coating solution developed and manufactured by Oerlikon Balzers.

- Top coat: protection and gloss level
- PVD: generates the colour
- Base coat: adhesion and smooth surface
**Range of colours**
ePD™ offers a large variety of colour options, from mirror chrome and graphite chrome to many other colour shades.

**Eco-friendly**
ePD™ is the environmentally friendly production technology. No chrome derivatives are used in the production process.

**Corrosion resistance (“Russian Mud” test):**
ePD™ based coatings provide enhanced corrosion resistance exceeding the “Russian Mud” test – an important property for metallised plastic components on vehicle exteriors.

**Safety characteristics**
ePD™ coatings applied to soft and flexible base materials do not create sharp edges when fractured (e.g. airbag emblems). The coated components open new horizons in the design of automotive exterior components (e.g. pedestrian protection).

**TRANSLUX® – transparent or translucent on closed surfaces**
ePD™ enables light sources (e.g. LEDs) to be located beneath the coating. Components with a metallic, glossy or matt look can be fitted with individual ambient or indicator lighting.

**Day/night design – laser processing on interrupted closed surfaces**
Laser processing allows controlled removal of the coating so that symbols can be illuminated.

**Contact sensors**
ePD™ based coatings allow the use of capacitive sensors on metallised components, i.e. attractive design solutions can be created for all kinds of electronic devices.

**Radar transparency**
With ePD™ technology, corrosion-free surfaces with a metallic appearance can be produced which can even transmit electromagnetic signals.

**Suitable for a wide range of substrate materials**
ePD™ is not restricted to PC/ABS and ABS substrate materials – many other polymers such as PC, TPE, PA and ASA can also be metallised, allowing even more flexibility in design and engineering.
Metallic exterior and interior vehicle components

Radiator grille and emblems:
- “Radome” emblems (e.g. ACC)
- E-Mobility “closed” front grilles
- Chrome effect (gloss, matt)
- Backlighting
- Dark chrome or colours

Interior:
- Chrome effect (gloss, matt)
- Backlighting
- Optical illumination

ePD™ coatings on trim parts:
- provide high corrosion resistance
- keep parts flexible
- do not require clip masking
Door handles:
- Radar-transparent components for keyless systems like NFC technology
- Backlighting

Wing mirror cover:
- Integrated antennas
- Optical illumination
Eco-friendly technology
The ePD™ process is REACH-compliant and uses no Cr 6+ in the production process. Metallised parts can be disposed or recycled.

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