



Data sheet PCO[®] 22- black (stated: 08/19)

Surface treatment of titanium alloys

Goal: Creation of a black corrosion-resistant surface

Procedure: Plasmachemical oxidation (PCO[®]) in calibrated electrolyte systems

Initial state demands:

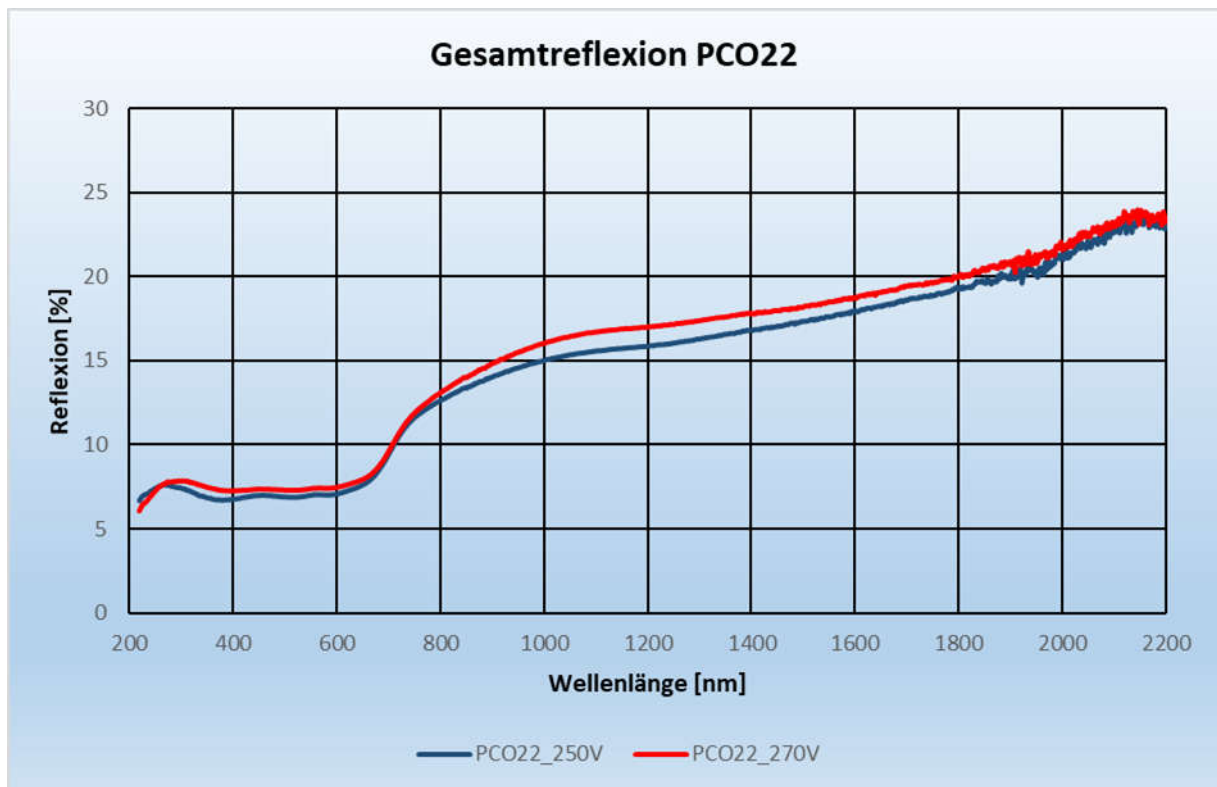
- Flash-free work pieces with oil-free and ungreased surfaces
- Free from separating agents and/or residual paint
- Signposting of contacting points on the engineering detail drawing

Alloys:

- Suitable for all titanium alloys demanding a particular pre-treatment

Layer properties:

- Reflectance plot (uv- / visible- / nir - radiation):



Layer composition:

- Anorganic layer characteristics by material based oxides and spinels as well as embedded subgroup elements; fulfils the directive 2002/95/EG enacted on 27th January 2003 without exceptions (RoHS).



Data sheet PCO[®] 22- black (stated: 08/19)

Layer thickness: Adjustable between 5 μm and 20 μm
Preferred range: 7 μm – 15 μm +/- 3 μm
 $\frac{1}{4}$ anchoring ratio and $\frac{3}{4}$ epitaxial ratio

Roughness: Based on initial state roughness properties and layer thickness desires R_a values between 0,5 μm to 3,5 μm were observed.

General properties:

- Visually matt to slightly glossy surface
- Electrically isolating
- Resistant against constant temperature up to 423 K
- UV - resistant
- Wiping-proof
- Machinable
- Possibility of partial deposition
- Constant layer development, coatable through-holes with diameters up to 1 mm and a length of 5 mm
- Reconstruction coatings possible
- Non-resitant versus ultra-sonic treatment

Maximally possible construction unit size:

- 150 x 300 x 500 mm³



Data sheet PCO[®] 22- black (stated: 08/19)

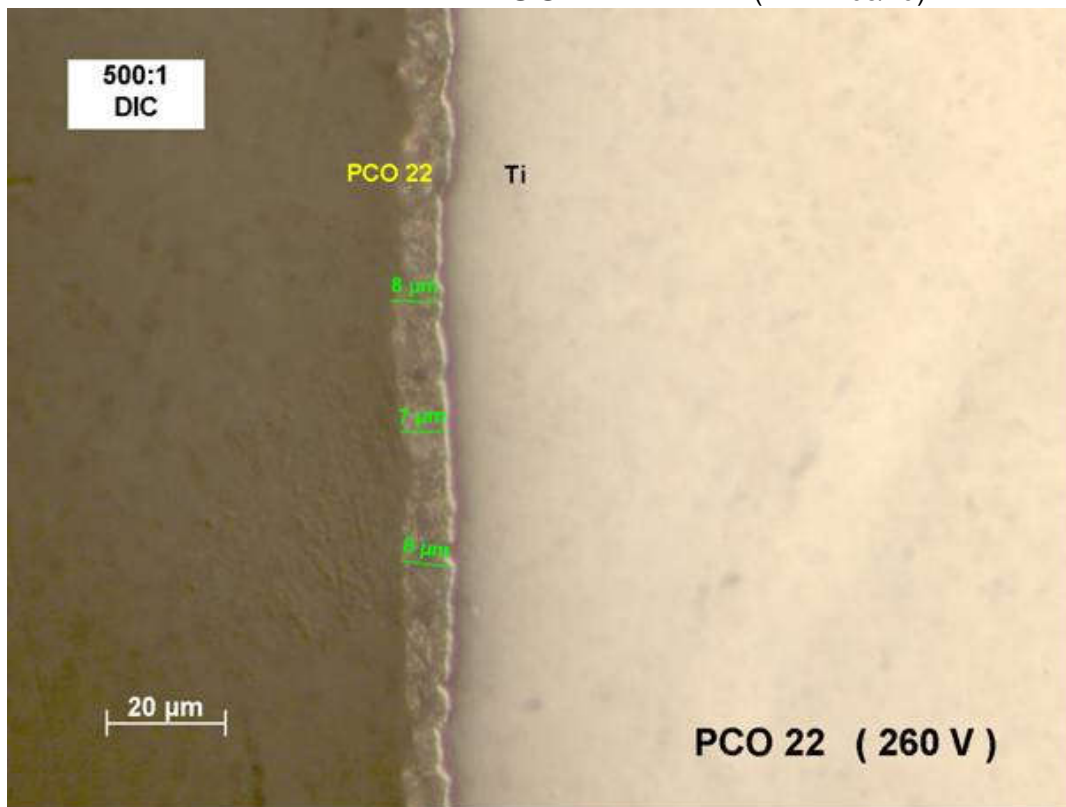


Figure 1: Cross-section polish of a PCO[®] 22 black – coating on Ti cp

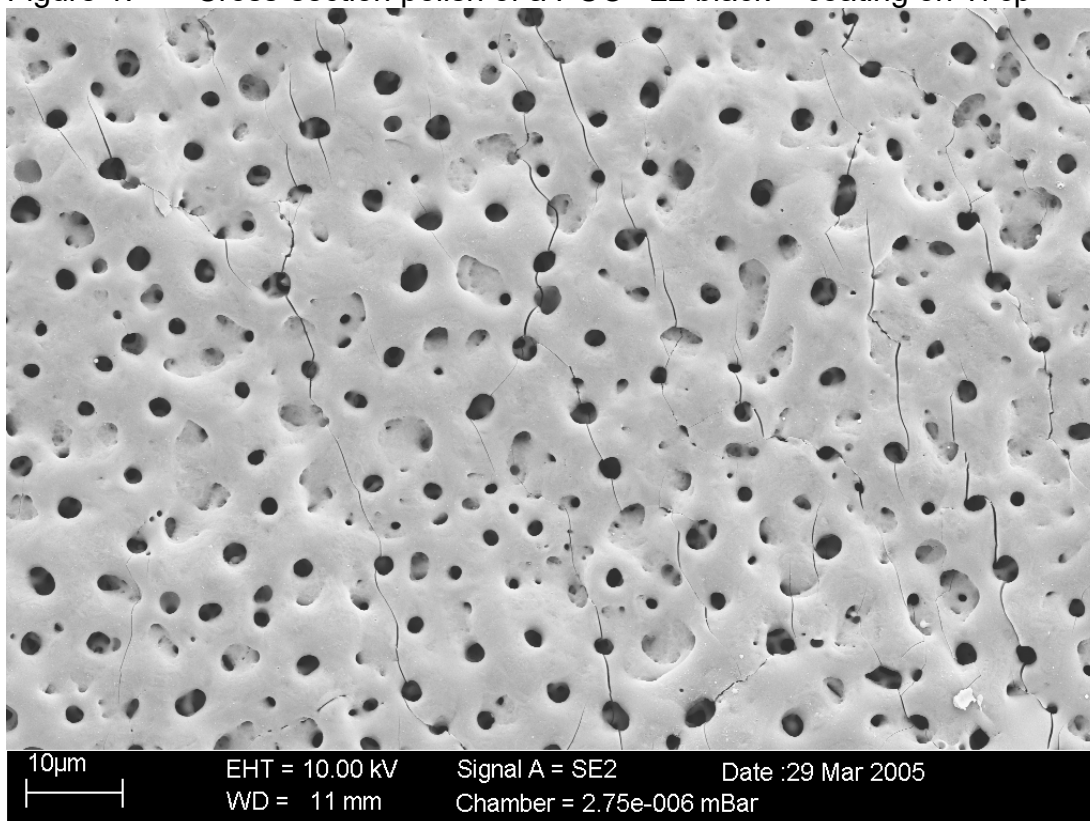


Figure 2: SEM – picture of a PCO[®] 22 black – coated surface on Ti cp