Ceramic Coatings on Metal Surfaces

- Excellent electrical insulation
- High corrosion stability
- Wear resistance
- Range of sealants

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Benefits and Properties

- Excellent electrical insulation
- High thermal and corrosion stability
- Wear-resistant
- Expansion of production capacities by 2nd manufacturing line in Czech Republic
- Multiple sealants achieve customised surface properties (e.g. anti-adhesion)
- Hard chrome replacement possible

Fields of Application

- Insulation of roller bearings up to 3000 V
- Wear components for textile and wire machinery
- Electrical insulation of heating conductors
- Various sealant options for anti-adhesion effect
- Repair coatings possible, e.g. for godets

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Ceramic coatings
Wear-resistant and efficient

Process

Ceramic layers are applied on pre-treated metal surfaces by a thermal spraying process and surface qualities tailored to application requirements. Thick-walled metal parts do not heat up above 200 °C thus ensuring that no structural changes occur. A big advantage is the free choice of metallic base material.

Applications

Ceramic coatings show higher hardness and wear resistance than hard chrome alternatives. Successful areas of application include wear components for textile and wire machinery, welding devices, electrical insulation of heating conductors and current insulation of roller bearings. Corrosion resistant substrate materials such as stainless steel 1.4301 and aluminium are recommended in humid or corrosive environments due to the process-related porosity. Pores are additionally sealed with nanocomposites.

Layer Material	No.	Colour	Wear resistance	Electrical Insulation	Thermal Insulation
Al2O3 (99)	R100	White	●	●	○
Al2O3 / TiO2 (97/3)	R103	Grey	●	●	○
Al2O3 / TiO2 (94/6)	R106	Dark grey	◐	●	○
Al2O3 / TiO2 (87/13)	R113	Anthracite	●	○	○
Al2O3 / TiO2 (60/40)	R140	Black	●	○	○
ZrO2 / Y2O3 (92/8)	R292	Ivory	◐	○	●
ZrO2 / CaO (95/5)	R295	Ivory	○	○	●
Cr2O3 / TiO2 (60/40)	R360	Anthracite	●	○	○
Cr2O3 (99)	R399	Grey green	●	○	○

● Highly suitable ◐ Conditionally suitable ○ Not suitable

Layer thickness	100 – 150 µm *
Hardness HV	700 – 1,800 **
Porosity	2.0 – 5.0 %
Dielectric strength	< 1000 V at 150 µm ***
Surface properties	upon customer request (Ra 0.1 - 7.0 possible)

* other layer thicknesses upon request
** depending on the layer material
*** depending on component geometry