plasdia® plasmet®

LWK wear protection technology

extra-hard coatings based on ceramic and carbide materials

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plasdia and plasmet – extra-hard coatings based on ceramic and carbide materials:

These coatings can be applied to metals, glass and fibre reinforced plastics (CRP, GRP).

They provide protection against abrasive and erosive wear as well as cavitation and corrosion.

What is more, the ceramic coatings feature outstanding thermal and electrical insulation properties.

Coating methods:

- Flame spraying using powder or wire
- High Velocity Oxy Fuel (HVOF)
- Atmospheric Plasma Spraying (APS)
- Electric arc wire spray

Coating materials:

- Oxide ceramics: aluminium oxide, titanium dioxide, chromium oxide, zirconia oxide as pure oxides as well as two- and three-component blends of these
- Tungsten carbide and chromium carbide with different metal matrices
- Aluminium, copper, bronze, molybdenum, as well as various alloys

Benefits of thermal spraying:

- Almost any melting metal can be applied
- Usually thin layers (0.1 - 0.5 mm) are applied; however thicker layers (0.5 - 2.0 mm) are also possible
- Low surface temperature (<200°C) during the coating process, therefore no distortion and no metallurgical alteration of the parts being coated
- Parts with damaged coatings can be re-coated and placed back in service
- Finished parts can be protected by masking and will not be coated during the spraying of the areas to be coated

lutions for enhanced service life

Technical features:

- Layer thicknesses ranging from 0.1 to 2.0 mm
- Hardness of 600-1500 HV, particle hardness of approx. 2500 HV
- Electrical insulation
- Thermal insulation
- Anti-adhesion properties
- Shock resistant
- Application temperature range: -150°C to +900°C
- Max. dimensions: length = 6000 mm, Ø = 1000 mm, weight = 2,5 tons
- Larger dimensions and weights upon request

Examples of application:

- Coatings with finished surfaces (ground or polished) are suitable for sealing and sliding surfaces of rotating and oscillating machine parts, e.g., shafts, rollers, wearing rings, sleeves, plungers, pistons, piston rods as well as any other seals including gaskets, collars, shaft seals and O-rings. Counter rotation components are typically made from bronze, carbon, stainless steel, carbide and sintered metals.
- Due to their higher layer thickness, sprayed or smoothed coatings are particularly suitable to prevent friction wear, e.g., for rollers, impeller type mixers, agitators and screw conveyors.

Fields of application:

- Apparatus engineering
- Fittings engineering
- Chemical industry
- Power plants
- Mechanical engineering
- Food industry
- Pulp and paper
- Printing industry
- Pump engineering
- Textile industry

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Our expertise:

- Complete manufacturing of parts to be coated or technical manufacturing support
- Machining services to prepare the parts for coating
- Coating
- Sealing
- Mechanical finishing of the coating (grinding, finishing, polishing, smoothing, lapping, brushing)
- Short lead times

Material	Al_2O_3 – TiO_2	Cr_2O_3	WC – Co	Cr_3C_2 – NiCr
Layer thickness [µm]	150 – 500	150 – 250	100 – 250	150 – 250
Hardness [HV0,3]	800 – 1500	1600	1000 – 1200	750 – 850
Roughness R_a [µm]	0,21 – 3,20	0,051 – 3,20	0,11 – 3,20	0,051 – 3,20
Resistance to wear	good to very good	good	very good	good
Resistance to solvents	good	very good	good	very good
Resistance to chemicals	good	very good	good	very good
Corrosion resistance	good	good	good	very good
Electrical conductivity	no	no	yes	yes
Thermal conductivity	very low	very low	high	high
Temperature stability	250 – 600° C	250° C	500° C	950° C
Approval for food industry	yes	yes	—	—

The table shows approximate values for a selection of possible coating materials.
Depending on the application, other coating versions are available upon request.

LWK maintains a certified quality management system.

LWK plasma ceramic:

extended service life, enhanced resistance and higher profitability

For more than 40 years LWK has been developing methods to protect engineering components from wear.

Our high level of expertise, good flexibility, staff qualifications and maximum customer dedication by expedient order handling have made us the partner chosen by numerous companies both in Germany and abroad.

LWK has firmly made its mark in the mechanical engineering industry, industrial furnace construction, the steel, petrochemical and glass industries and many others.

Our excellent reputation is based not only on fast problem solving – even over night – but also on the constant improvement of our processes and their flexible adjustment to suit customer applications.

Our stringent quality management system ensures standardised, repeatable production workflows to give our customers the safety which they can always rely on.

LWK

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