MAGOXID-COAT® / KEPLA-COAT®

plasma chemical coatings for light metals

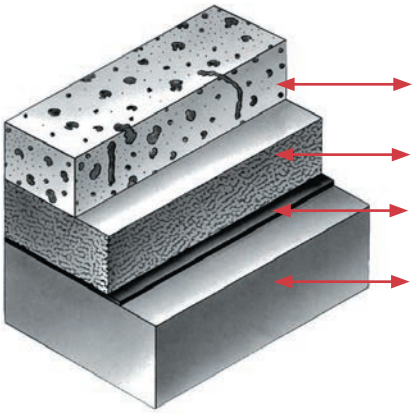
aalberts surface technologies

MAGOXID-COAT® / KEPLA-COAT®

MAGOXID-COAT® and KEPLA-COAT® are anodic plasma chemical surface treatments with functional properties, which – added up – cannot be achieved with conventional electroplating.

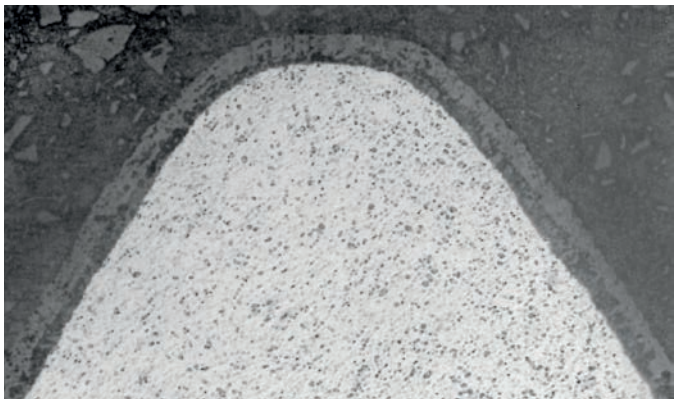
MAGOXID-COAT® can be used to apply finishes to magnesium alloys, while KEPLA-COAT® is designed for application on aluminum and titanium alloys. The plasma chemical process is used to produce oxide-ceramic layers which, in addition to providing a high level of protection against wear and corrosion, also fulfill requirements regarding hardness, uniform layer formation, fatigue strength, dimensional accuracy or temperature load capacity.

Magnesium component with MAGOXID-COAT® layer (right) and without (left).



1 = high pore-count oxide ceramic layer
2 = low pore-count oxide ceramic layer
3 = Barrier layer ~ 100 nm
4 = Aluminum, titanium or magnesium substrate

The schematic diagram provides a graphic representation of the oxide ceramic/metal bonding created by the MAGOXID-COAT® or KEPLA-COAT® process.



The photograph shows a metallographic microsection of a KEPLA-COAT® layer on a thread ridge.

	MAGOXID-COAT® (MC)	MC black	KEPLA-COAT® (KC)	KC black
Suitable materials	for use with all common magnesium alloys	virtually any magnesium-based material suitable for industrial use	suitable for almost all wrought, cast and die-cast aluminum alloys	for use with all common aluminum- or titanium-based materials
Applications	bobbins, clutch components, conveyor guide rails, cylinder tubes, driving gears, housings, levers, packaging moulds, piston valves, pulleys, rollers, sealing units	aviation and space sector, fine precision screw threads, heating radiators, optical components, vacuum technology	bracket devices, cylinders and drums, cylindrical tubes, fixing discs, housings, rotors, running wheels, sealing gaskets	aviation and space sector, fine precision screw threads, heating radiators, optical components, vacuum technology
Properties	MAGOXID-COAT® and KEPLA-COAT® are electrolytic processes which make use of an external power source. The workpiece being processed takes on the function of the anode. The surface of the material is transformed into the corresponding oxides. The electrolytes used are saline solutions. Anodizing takes place, as the plasma is discharged in the electrolyte, on the surface of the workpiece, being processed. The effect of the oxygen plasma produced in the electrolyte on the metal surface causes partial short-term surface melting and a bonded oxide ceramic-metal compound forms on the workpiece. Due to an increase in volume, 50 % of the produced oxide layer grows outwards. Edges, cavities and relief designs are coated uniformly. In other words, there is no edge buildup that occurs in conventional electroplating processes.			
Layer properties depending on alloy	high wear resistance, excellent corrosion resistance, outstanding hardness, high thermal insulation, excellent fatigue strength, good dimensional accuracy, high absorption, low reflection, good chemical resistance			