

OX-UHA ALUMINIUM PEO ALUMINIUM

OX-UHA is a hard nanoceramic coating applied by a patented electro-chemical oxidation process.

OX-UHA provides high wear-, scratch- and corrosion resistance on Aluminium alloys (2XXX, 3XXX, 5XXX, 6XXX and 7XXX series). The ceramic grows inside the substrate, allowing application to complex shapes with high dimensional accuracy.

It can be used for mechanical applications as a superior alternative to Hard Anodising, Plasma Sprayed Ceramic, or Chrome and Nickel coatings where maximum wear resistance is required.



ULTRA-HIGH HARDNESS

The OX-UHA coating achieves microhardness values of 1000-1800 Hv depending on the alloy, far exceeding conventional hard anodising treatments and making it suitable for the most demanding tribological applications.

EXCELLENT CORROSION RESISTANCE

The compact nanocrystalline Al₂O₃ layer protects aluminium alloys against corrosion in aggressive environments, achieving up to 1000 hours of salt spray resistance, depending on the alloy.

DIMENSIONAL ACCURACY

The ceramic layer grows inside the substrate, minimising dimensional change and ensuring high conformity even on complex geometries, internal channels, and precision parts.

WIDE ALLOY COMPATIBILITY

The treatment is compatible with all major aluminium alloy series: 2XXX, 3XXX, 5XXX, 6XXX and 7XXX, providing flexibility across a broad range of industrial applications.

TECHNICAL SPECIFICATIONS

COMPOSITION AND APPLICABLE STANDARDS	
CHEMICAL COMPOSITION	
Nanocrystalline Aluminium oxide Al ₂ O ₃ - fully non-organic material.	
PHASE COMPOSITION	CRYSTALLITE SIZE
Gamma and Alpha phase Aluminium Oxide	30-100 nm
ROHS COMPLIANCE	
RoHS compliant. No restricted substances present in amounts greater than the maximum tolerated concentrations.	
REACH COMPLIANCE	
REACH compliant. No SVHCs present in amounts higher than 0.1% by weight.	
TREATABLE ALLOYS	
TREATABLE ALLOYS	
ALUMINIUM ALLOYS	
2XXX, 3XXX, 5XXX, 6XXX and 7XXX series	

COATING THICKNESS AND AESTHETIC APPEARANCE

COATING THICKNESS

RANGE

5–100 µm

NOTE

Alloy and process dependent

The ceramic grows inside the substrate. Variable thickness depending on the geometry of the parts. Thickness is lower in holes and internal zones.

DIMENSIONAL ACCURACY

Ceramic grows inside the substrate. Can be applied to complex shapes with minimal impact on external dimensions.

TRIBOLOGICAL PROPERTIES

MICROHARDNESS

The surface hardness of OX-UHA varies in accordance with the treated alloy.

HARDNESS VALUE

1000–1800 Hv

NOTE

Alloy dependent

FRICITION COEFFICIENT

VALUE

0.05–0.1

CONDITIONS

Polished surface paired with steel in standard lubricated environment

WEAR RESISTANCE

Thanks to the high film hardness, the OX-UHA treatment offers outstanding wear resistance, achieving values superior to Hard Anodising, PEO, and other conventional aluminium surface treatments.

CHEMICAL AND PHYSICAL PROPERTIES

CORROSION RESISTANCE

The compact nanocrystalline oxide film of the OX-UHA treatment provides superior corrosion resistance compared to conventional anodising, hard anodising or chrome plating processes.

GUIDELINE CORROSION RESISTANCE VALUE

Up to 1000 hours salt spray

NOTE

Alloy dependent – NSS to ISO 9227

OPERATING TEMPERATURE

> 500 °C, continuous. The fully ceramic, non-organic coating is stable at high operating temperatures.

DIELECTRIC STRENGTH

50 V/µm

THERMAL CONDUCTIVITY

7 W/mK

ADHESION TO SUBSTRATE

> 300 MPa

CHEMICAL RESISTANCE

Chemical compatibility values. The actual environmental resistance must anyway be tested in the field.

✓	Hydrocarbons (e.g. petrol, diesel, mineral oil, toluene)
✓	Alcohol, ketones (e.g. ethanol, methanol, acetone)
✓	Neutral saline solutions (e.g. sodium chloride, magnesium chloride, seawater)
✓	Dilute reducing acids (e.g. citric acid, oxalic acid)
×	Concentrated acids (e.g. sulphuric acid, hydrochloric acid)
✓	Dilute bases (e.g. dilute sodium hydroxide)
×	Concentrated bases (e.g. concentrated sodium hydroxide)