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OX-HS
Hard Anodizing

OX-HS is a hard anodizing treatment of aluminium in sulphuric acid in conformity with MIL-A-8625 Type III, ISO 10074 and UNI 7796 standards.

HIGH CORROSION RESISTANCE

The compact layer of OX-HS protects the base material from corrosion and brilliantly withstands 336 hours of exposure to salt mist without any corrosive attack.

WEAR RESISTANCE AND HARDNESS

The hardness and compactness of the aluminium oxide layer permits obtaining high abrasive and adhesive wear resistance comparable to that of hard chrome.

SEALING

The “hot sealing”, carried out in hot water without the use of heavy metals, allows to increase the resistance to corrosion and improve the resistance to stains and discolorations.

HIGH THICKNESS 40-60µm

The high treatment thickness, typically 40-60µm, permits obtaining high duration in aggressive environments.

OX-HC BLACK COLOUR VARIANT

The OX-HS treatment can be pigmented deep black, thereby making the colour uniform on all aluminium alloys.

OX-HS-PTFE LOW-FRICTION VARIANT

To lower the friction coefficient and provide anti-adhesion properties, the OX-HS treatment can be impregnated with PTFE nanoparticles.

TECHNICAL SPECIFICATIONS

COMPOSITION

The OX-HS treatment transforms base aluminium into a compact layer of aluminium oxide.
The composition largely depends on the initial alloy.

Al	O	S	Impurities
20-40%	50-70%	3-5%	Depending on alloy

APPLICABLE STANDARDS

PRODUCT TECHNICAL STANDARDS

ISO 10074	UNI 7796	MIL-A-8625 | Type III

ROHS CONFORMITY

- RoHS conform.

No restricted-use substances beyond maximum tolerated concentrations.

REACH CONFORMITY

- REACh conform. No SVHC in quantities greater than 0.1% by weight.

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ANODIZABLE ALLOYS

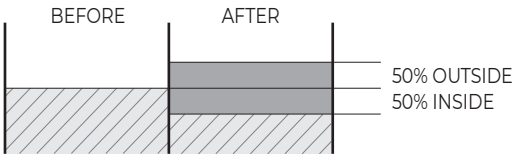
WROUGHT ALLOYS	HARDNESS	WEAR RESISTANCE	CORROSION RESISTANCE	MAX THICKNESS
Series 2000	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆
Series 5000 (with >2%Mg) & 7000	★★★★☆	★★★★☆	★★★★☆	★★★★★
Series 6000 (except 6082, 6061)	★★★★★	★★★★★	★★★★★	★★★★★
6082, 6061	★★★★★	★★★★★	★★★★★	★★★★☆
CASTING ALLOYS				
Alloys with Si>8% or Cu>2%	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆
Die-casts with Si<8% or Cu<2%	★★☆☆☆	★★☆☆☆	★★☆☆☆	★☆☆☆☆
Other alloys	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★☆☆

COATING THICKNESS

STANDARD THICKNESS	TOLERANCE
50 µm	± 10 µm

Uniform thickness over the entire external surface. Reduced thickness in holes.

Treatment thickness grows 50% outside and 50% inside the surface of the aluminium piece. The radial dimensionalincrease is therefore equal to half the treatment thickness.



AESTHETIC APPEARANCE

Slight matt appearance with dark grey colour. The colour tone depends on the base alloy and treatment thickness. Morphology is similar to the machined piece.

Black colour option in OX-HC version.

HARDNESS

The OX-HS treatment features extra layer hardness. This depends on the type of treated alloy.

HARDNESS VALUE	ALLOY
>280 HV	Series 2000
>330 HV	Series 5000 (with >2% Mg) & 7000
>400 HV	Other wrought alloys

WEAR RESISTANCE

OX-HS has very high abrasive and adhesive wear resistance.
This varies according to the type of treated alloy.

WEAR VALUE, TWI-CS17	ALLOY
<35 mg / 10.000 cycles	Series 2000
<25 mg / 10.000 cycles	Series 5000 (with >2% Mg) & 7000
<15 mg / 10.000 cycles	Other wrought alloys

A LOW NUMBER INDICATES A BETTER PERFORMANCE
MIL-A-8625F 3.7.2.2 AND ISO 10074 C.3 - TABER ABRASER WEAR TEST - ABRASIVE WHEELS CS 17 - LOAD 1 KG

FRICTION COEFFICIENT

The OX-HS-PTFE variant consists of an impregnation treatment of the anodizing layer with PTFE nanometric particles. This impregnation permits obtaining a non-adhesion, self-lubricating surface with low friction coefficient.

CORROSION RESISTANCE

The OX-HS treatment permits obtaining high corrosion and oxidisation resistance.
Brilliantly withstands 336 hours of exposure to salt mist without any sign of corrosion.

CORROSION RESISTANCE VALUE	BASE MATERIAL
≥336 hours without corrosion	Alloy 6000

NSS ACCORDING TO ISO 9227 AND ISO 10074 10

CHEMICAL RESISTANCE

Approximate values of compatibility with the coating environment.
The actual resistance to the environment must in any case be tested in the field.

✓	Hydrocarbons (e.g. petrol, diesel fuel, mineral oil, toluene)
✓	Alcohols, ketones (e.g. ethanol, methanol, acetone)
✓	Neutral saline solutions (e.g. sodium chloride, magnesium chloride, brine)
✗	Diluted reducing acids (e.g. citric acid, oxalic acid)
✗	Oxidizing acids (e.g. nitric acid)
✗	Concentrated acids (e.g. sulphuric acid, hydrochloric acid)
✗	Diluted bases (e.g. diluted sodium hydroxide)
✗	Oxidizing bases (e.g. sodium hypochlorite)
✗	Concentrated bases (e.g. concentrated sodium hydroxide)

DENSITY according to ISO 10074

Series 2000 & alloys with >5% Cu	> 9,5 g/cm³
Series 5000 (with >2% Mg) & series 7000	> 9,5 g/cm³
Other wrought alloys	> 11 g/cm³
Casting alloys with Si<8% or Cu<2%	> 9,5 g/cm³
Other casting alloys	By agreement

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