

What's ALUMINOX®?

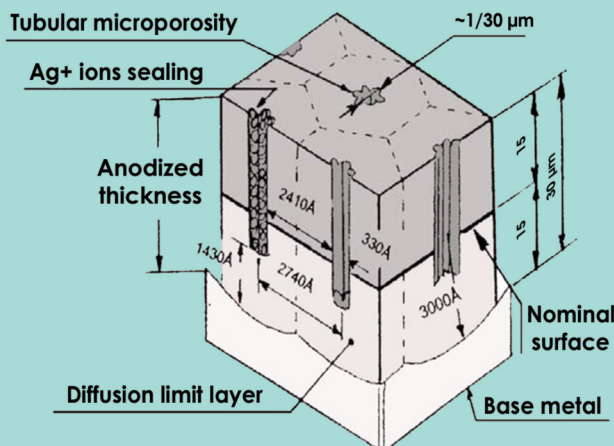
ALUMINOX® is a combination of Aluminium alloy used for all Coelbo's products with a final surface treatment which involves the exclusive GHA technology (Golden Hard Anodizing).

The Aluminium alloys, because of their low hardness, present an extremely vulnerable surface (scratches, wear). Moreover, their natural bent to get oxidized, quickly triggers dangerous corrosion processes either locally (pitting) or diffused. This is why aluminium items are protected by painting, chrome, nickel or anodic oxidation coatings.

The Anodic Oxidation represents the most suitable and safe surface treatment among any others as it cannot be removed: the aluminium surface becomes Aluminium Oxide (Al₂O₃), creating a hard not removable protective layer. The Aluminium Oxide crystals present a very hard and compact hexahedron structure with a capillary hole on its centre, that severely limits its application especially when the surfaces are subject to frictions or to corrosive environments.

Scientists of M/s SOUKEN (Japan) have developed the process for sealing the porosities of the Al₂O₃ by a special galvanic process using Ag⁺ ions, transforming the porosity (which was a real defect) into a new material.

The technological characteristics lead by this process make extremely convenient and competitive any Aluminium alloys item Vs. the equivalent solution based on most valuable materials such as Stainless Steel, Titanium alloys or Steel coatings involving TIN, PVD, CVD, Hard Chrome, Chemical Nickel, etc.



Which are the advantages of ALUMINOX®?

ALUMINOX® preserves all the advantages of the Aluminium alloys with the addition of characteristics normally belonging to Stainless Steel as well as to other advanced materials:

- Unparalleled corrosion resistance in Marine/Saline environment;
- High antibacterial and anti-mildew capability;
- Extreme surface hardness (resistance to wear);
- Elevate thermal conductivity;
- Superior fire and heat resistance;
- Non stick and Antistatic properties (less dirt/easy cleaning and electrically safer);
- Self-lubricating surfaces (i.e. non-seizing threading).

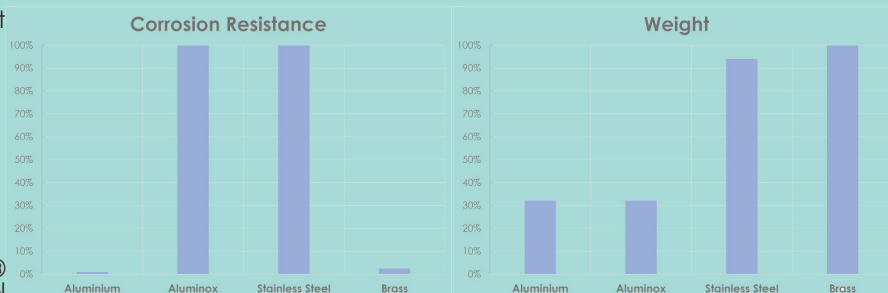
MATERIAL	HARDNESS (Hv)	Melting Point (°C)	Coefficient of Friction	Bacteriostatic capacity	Corrosion resistance (NSS)	Resistance to wear
Aluminum alloy	70÷100	680°C	0,44	None	50÷100 hours	10 ² hours
ALUMINOX®	500÷550	2100°C	0,025	Very High	10000 hours	10 ⁵ hours
Hard anodizing	500÷550	2100°C	0,15	None	200÷500 hours	10 ³ hours

When and where using ALUMINOX®?

All the listed characteristics let the ALUMINOX® to be suitable where there is a particularly aggressive environment and in many different industrial areas such as:

- Off-Shore platforms;
- Coastal Oil & Gas Exploration;
- Coastal Oil & Gas Drilling;
- Petrochemical Industries
- Fertilizers Production Plants;
- Food;
- Beverage;
- Pharmaceutical Industries;
- Etc.

The graphs below shows how the ALUMINOX® has the same behaviour as the Stainless Steel regarding corrosion resistance but at one third of the weight. This leads to some saving aspects, because less weight means minor costs of transportation and even smaller frame-works on site of installation.



All the extraordinary characteristics of ALUMINOX® have been scientifically tested and proven by independent laboratories.

For example, as far as the resistance to corrosion is concerned, these laboratories have exposed a number of our enclosures to ACCELERATED CORROSION TESTS, lasting 600 hours in a Saline Atmosphere Chamber (Heraeus Votsch GmbH). The test report no. 10661/2009 dated January 30th 2009, indicates that "the enclosures and their covers present an uniform downgrading localized to some small circular corrosion hotbeds (see picture below). No invasive damages such as rising of surface layers or craters (pitting) occurred".

