

ALUMAL ELOX 557

High Performance Anodizing


COVENTYA
Beyond the Surface

INTRODUCTION



Anodising is a globally viable and important electrolytic passivation process to improve the durability and appearance of Aluminum for many industrial uses and applications.

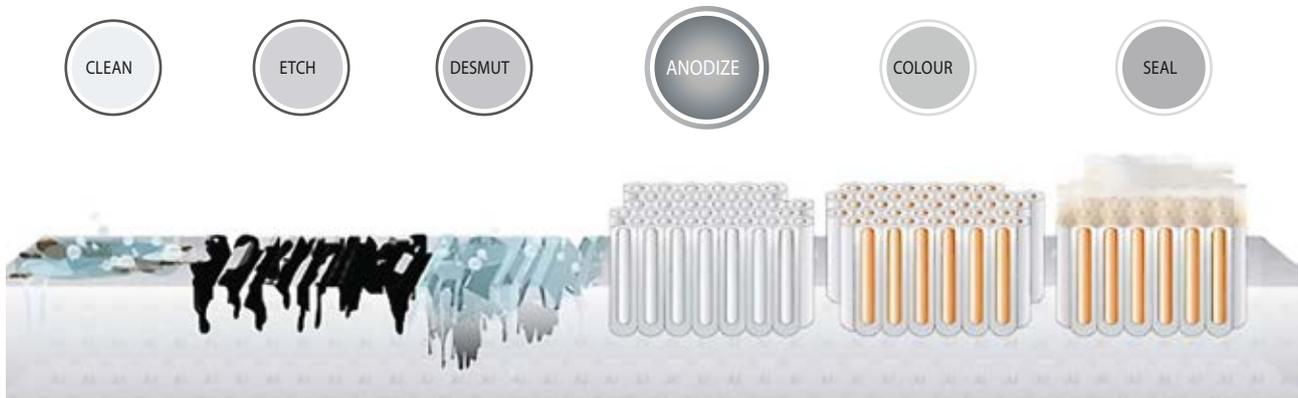
While aluminum's natural oxide offers some protection to its surface, the ability to increase the thickness of porous oxide and improve the quality and stability of the oxide layer through an enhanced anodising solution increases performance of parts and components fabricated from Aluminum its alloys.

COVENTYA offers a complete range of processes for standardized sulfuric acid type anodising applications. The quality and structure of this resulting coating depends on various factors, such as operating temperature, current density, voltage & time, solution agitation during processing. Of course, the choice of aluminum substrate used for processing plays an important role in the result as well.

Furthermore, our portfolio holds some specially crafted anodising chemistry additives that extend additional benefits for Aluminum applicators to improve their efficiency, reduce consumption of chemicals and provide overall energy savings as examples.

ALUMAL ELOX 557, as an example, is an additive system designed for sulfuric anodising applications. Unlike oxalic acid, this proprietary chemistry is specifically formulated to maximize process performance in anodising plant installations. Applicators realize greater productivity and output of the anodising process with reduced energy consumption. The incorporation of ALUMAL ELOX 557 to the process will yield improved properties of the anodising layer, a wider operating window while overall providing greater quality and consistency for the performance of the application and the resulting oxide layer.

ANODIZING IS A PROCESS

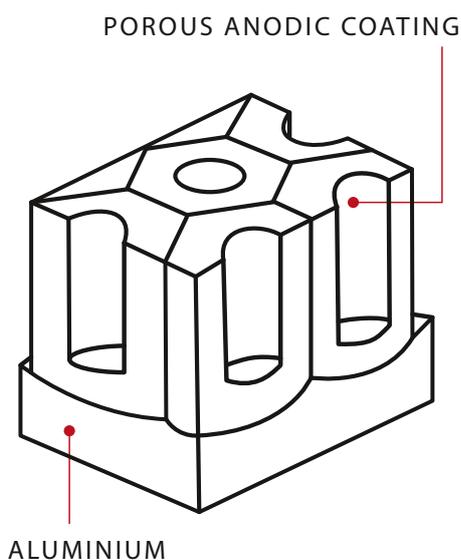


Because anodising is an electrolytic dissolution of Aluminum, the oxide formed is not simply a deposit, but rather a highly ordered nano-scale Aluminum oxy-hydroxide type network of cells growing from the alloy substrate being processed.

The definition and structure of this anodic coating represents a series of hexagonal cells, each with a central pore and a thin

barrier layer separating the electrolyte, at the base of the pores, from the underlying aluminum metal.

The size, structure, placement, and uniformity of these cells that determine the characteristics of the final coating layer obtained. The more evenly the resulting cells are distributed, the more uniform and positive the result.



KEY FACTORS INFLUENCING ANODIZING QUALITY

- Applied current/voltage
- The chemistry of the anodizing solution
- Electrolyte temperature
- Processing time
- Base metal alloy and surface condition
- Racking of the parts

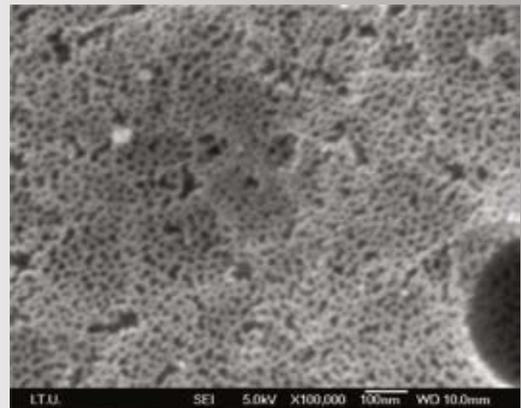
OXIDE LAYER OPTIMIZATION

ALUMAL ELOX 557 anodising additive modifies the formation of the microstructure of the anodic oxide by increasing the number of the cells per given surface area. This yields a more defined, even structure, resulting in higher gloss and smoother surface finish that significantly improves the quality of the result providing higher performance.

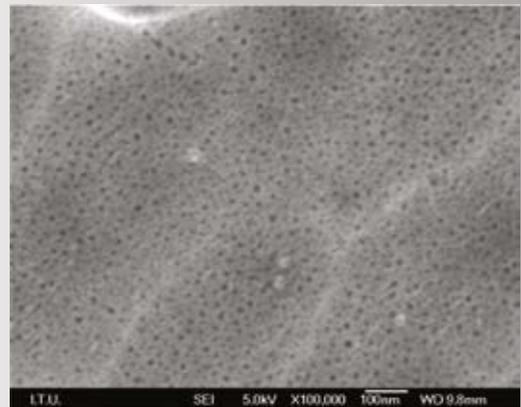
The hardness of the formed anodic oxide layer is increased up to 55 – 85Hv Vickers hardness units greater than obtained with conventional sulfuric anodized systems, corresponding to higher wear resistance for the layer.

Additionally, the resulting layer is more ductile and, despite the increased hardness, there is less brittleness than the oxide obtained without using the ELOX 557 additive.

CONVENTIONAL ANODIZING



ALUMAL ELOX 557



SEM SURFACE 100.000X

C IS FOR COLOURING

The improvement with uniformity of the oxide layer makes for an easier electro-colouring or organic dye colouring processes management and higher overall colour quality.

The enhanced colour penetration into the oxide layer pores results in better colour brightness and retention with increased fade resistance. Applicators realize additional benefits of reduced times for effective colouring and decreased dye consumption.

What is more; the anodize layer sealing process is also simplified, as smaller pores are filled the sealing chemistry, the reliability of sealing is higher for exceeding performance standards.

As for cold sealing processes, the consumption of the sealing additives is decreased by up to 7% which improves cost savings for the application.

EFFICIENT ECONOMY

In addition to the improvement of layer quality, using ALUMAL ELOX 557 maximizes the efficiency of the anodising process application through cost savings, or increased throughput from the process. Important energy savings for the process can be realised thanks to this additive having options to adjust such operational parameters as temperature and applied voltage.

ALUMAL ELOX 557 enables anodising parts at higher temperatures (up to 24°C) therefore electric energy savings of up to 30% can be realised with a diminished need for cooling/chilling the solution.

Electric energy savings of up to 15% can be realised due to lower applied voltages while processing time is reduced as the oxide layer can form 25% faster when using the ALUMAL ELOX 557 additive in the process. The consumption of sulfuric acid can be reduced by up to 15% due to the ALUMAL ELOX 557 inhibiting effect on the dissolution of the oxide that normally occurs during the anodising processing of parts. Less dissolution of Aluminum extends the solution life of the anodising solution requiring less solution replacement and positive benefits impacting plant wastewater treatment efficiency.

PRODUCTIVITY

A meticulous case study was performed at a customer's plant to validate the performance and the impact using ALUMAL ELOX 557 in a production scale. These benefits represent the realised advantages after the introduction to their anodizing process.



Let our COVENTYA team show you how ALUMAL ELOX 557 can improve your anodising operation by increasing performance, realising the potential of higher profitability while expanding your market presence in the world of Aluminum Surface Treatment. For more information for reaching a customized solution, contact your local COVENTYA representative.

BRAZIL

Av. Deputado Oswaldo
Moraes e Silva, 55 – Prédio 02
Bairro Conceição – Diadema
SP, 09991-190, Brazil
Tel. +55 11 4055 6602
coventya_br@coventya.com

Rua Jacob Lucchesi, 4852
Santa Lucia – Caxias do Sul
RS, 95032-000, Brazil
Tel. +55 54 2101 3800
coventya_br@coventya.com

CHINA

1 XuHua Road, Xushuguan Town
SND, Suzhou
215151, China
Tel. +86 (0) 512 6708 2628
coventya_cn@coventya.com

FINLAND

Sienitie 17
FI-00760 Helsinki, Finland
Tel. +358 400 650 106
j.nummisalo@coventya.com

FRANCE

7, rue du Commandant
d'Estienne d'Orves - CS
30001
92396 Villeneuve-la-Garenne
CEDEX
Tel. +33 1 47 15 73 00
coventya_fr@coventya.com

GERMANY

Stadtring Nordhorn 116
D-33334, Gütersloh, Germany
Tel. +49 52 41 93 620
coventya_de@coventya.com

Blütenstrasse 62 – 64
86558 Hohenwart
OT Koppenbach, Germany
info@microgleit.de
+49 (0) 8443 91757 0

INDIA

Gat n° 520 B, Shelkewadi
Rihe Road
At and Post Ghotawade
Taluka Mulashi
Pune 412 115, India
Tel: +91 20 67 90 19 00
s.sunkle@coventya.com

ITALY

Via Fratelli Rosselli, 2
IT-31050 Villorba (TV), Italy
Tel. +39 04 22 61 45
coventya_it@coventya.com

Via 1° Maggio 5/A
IT-22060 Carugo (CO), Italy
Tel. +39 031 75 90 11
coventya_it@coventya.com

Divisione Precious Metals
Via Chiusa
IT-51031 Agliana (PT), Italy
Tel. +39 0574 67 11
coventya_it@coventya.com

KOREA

77-8, 5 Sandan 3 ro
Seongnam-myeon
Dongnam-gu, Cheonan-si
Chungcheongnam-do
31245, Korea
Tel. +82 (0)41-558-2921
coventya_kr@coventya.com

MALAYSIA

No. 9, Jalan Padu
Tampoi Industrial Estate
80350 Johor Bahru, Johor
Tel: +607 239 57 57 x222
l.huang@coventya.com

MEXICO

Bolivar 752 – Col Alamos
Deleg. Benito Juarez
MX-03 400 Mexico
Tel. +52 55 5698 1130
coventya_mx@coventya.com

POLAND

ul. Mydlana 1 Pokój 105
PL - 51-502 Wroclaw, Poland
Tel: +48 71 34 50 043
biuro@coventya.pl

SINGAPORE

1 Science Park Road
#01-07 The Caprico
Singapore Science Park II
Singapore 117528
Tel. +65 9177 1294
coventya_sg@coventya.com

SPAIN

C/ Romani, 2
P.I. Castellbisbal Sud
E-08755 Castellbisbal (BCN), Spain
Tel. +34 937 723 770
coventya_es@coventya.com

SWEDEN

Ödegårdsgatan 3
S-504 64 Borås, Sweden
Tel. +46 33 20 28 40
coventya_se@coventya.com

TURKEY

Tuzla Kimya Sanayicileri
Organize San. Bolgesi
Kristal Cad. No: 2
Tuzla / Istanbul, Turkey
Tel. +90 0216 504 02 75
(pbx) f.korkunc@coventya.com

UNITED KINGDOM

Enterprise Drive
Station Road, Four Ashes
GB-WV10 7DF
Wolverhampton
Tel. +44 1902 797 990
uksales@coventya.com

USA

4639 Van Epps Road
Brooklyn Heights, OH 44131
Tel. +1 216 351 1500
coventya_us@coventya.com

132 Clear Rd
Oriskany, NY 13424
Tel. +1 315 768 6635
coventya_us@coventya.com

HEADQUARTERS

7, rue du Commandant
d'Estienne d'Orves – CS 30001
92396 Villeneuve la Garenne CEDEX

France
www.coventya.com