



## Technical Information - Anodising

This guide is a general introduction to technical aspects of anodising.

It can be used in conjunction with our downloadable guide on “Design Considerations – Hard Anodising”.

When anodised aluminium is specified, the required properties are obtained by selecting the following:

- Metal structure
- Conditions of surface finish
- Anodising process
- Anodising conditions, and
- Type of sealing.

It is important that the metal specification is considered at the earliest possible stage, especially if a specific property is required. We offer friendly technical advice and free samples to ensure that your requirements are achieved.

### **1.0 Pre-treatment for anodising**

A uniform film cannot be obtained unless the surface to be anodised is clean and free of grease, as the anodising process may emphasise rather than conceal blemishes. Care must be taken to avoid:

- Foreign matter being retained in the surface, e.g. use of a metallic grit abrasive
- Covering defects by burnishing
- Overheating during mechanical preparation.

Any of the above may cause a patchy appearance after anodising. For Hard Anodising, a good surface finish will give better hardness figures and increase corrosion resistance.

Pre-treatments include brushing, machine polishing, chemical etching, chemical cleaning or abrasive methods.

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## **2.0 Types of anodising**

Please refer to our webpages on Anodising Processes for general information and our downloadable Technical Sheets on the processes offered by ASE.

- Hard Anodising
- Nituff®
- Sulphuric Anodising
- Chromic Anodising
- Titanium Anodising

## **3.0 Sealing**

Sealing is a term used to describe a post-treatment process of anodised parts. It is a filling or capping of the pores produced in an anodised film to improve features, or to include materials for special purposes such as dry lubrication or non-stick properties. Sealing improves performance, for example:

- Light fastness of dye
- Corrosion resistance
- Electrical resistance
- Restoration of loss of fatigue strength.

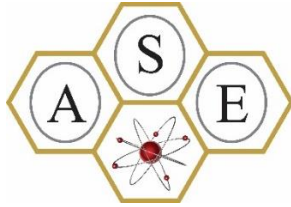
The use of Dichromate compounds in sealing is particularly suitable in marine and aerospace environments.

Anodised films can be impregnated by materials such as PTFE (see Nituff®) or lacquers that will offer a wide range of special applications by utilising features such as

- High corrosion resistance
- Low coefficient of friction
- Non-stick properties.

Unsealed anodised coatings are an excellent base for painting, adhesive or cold pressure bonding of aluminium. For the best results, these treatments are recommended as soon as possible after anodising.

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## **4.0 Properties of anodised films**

We can discuss with you the properties of anodised films that may have specific importance to your finished product, such as the following.

- Adhesion
- Strength
- Thickness of films
- Fatigue strength and stresses
- Hardness
- Friction
- Wear resistance
- Electrical properties
- Ductility
- Thermal conductivity
- Heat resistance
- Breakdown voltage
- Emissivity
- Reflectivity
- Refractive Index
- Corrosion resistance

At ASE, we have in-house laboratories, and offer free samples, so that the properties sought in the final finish can be tested and evaluated.

## **5.0 Masking**

Precision masking is a labour intensive and highly skilled process that “masks off” or “stops off” specific areas from the anodising process. Masking also can be used for decorative purposes. At Aluminium Surface Engineering, we use techniques such as lacquering, taping and bunging to achieve customer requirements.

Applications include those with tight tolerances or electrical contacts.

Masking can be carried out so that local anodising only may be obtained, but the cost will vary regarding:

- area to be masked

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- material specification
- size of part
- type of process, and
- quantity.

Sectors such as aerospace, medical and defence require precision masking, and one piece could have a combination of processes applied by using suitable masking techniques.

Successful masking for the Chromic Anodising process is always difficult and should be avoided whenever possible. If a two-stage anodising treatment is required e.g. Chromic and Hard, then in preference to masking for the first treatment (Chromic), the process should be carried out all over. This guarantees the correct surface finish that can then be masked off prior to Hard Anodising.

## **6.0 Jigging**

The purpose of jigging is to form a positive contact on the work surface, and to aid the handling of components during anodising. The contact points may have to be three or more to obtain the necessary rigid contact.

For large parts or complex shaped parts, special purpose jigs may have to be made and consideration for contact area, avoidance of air locks and the drainage of solution must all be considered.

## **8.0 Reprocessing of parts**

If a part is returned for reprocessing, then the original anodic coating must be removed. This is normally done chemically with little or no attack on the base material. The surface may then be repolished if required. The dimensions of any parts stripped of anodic coating will be reduced, but some loss may be regained on re-anodising dependant on alloy or original process method.

**For friendly advice and free samples please contact us  
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