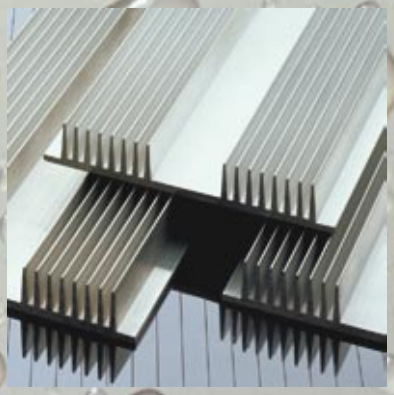
PURSO™



Anodising

Anodising, a natural way to treat the surface of aluminium

After processing, extrusion or rolling, the surface of aluminium is quite glossy and beautiful. But after a while it will turn spotty and mat, after a longer time even powdery. To prevent this natural oxidising the aluminium has to be surface treated. Anodising is a controlled oxidising process which gives aluminium a hard glassy surface which is beautiful, corrosion resistant and durable. The anodised surface keeps its stylish appearance for decades.

Natural colour (LV)

By anodising a layer of oxide is made on the surface of the aluminium by letting a direct current run through the aluminium in a sulphuric acid bath. The thickness of the oxide layer depends on the treatment time. The colour of the layer is metallic silvery and most often used as such. By further treatment the oxide layer can also be coloured.

Colour anodising (S)

By colour anodising the oxide layer is coloured with organic pigments on top of the layer. In this way several colours can be made but many of these pigments fade when submitted to UV-light. They are hence not applicable for outdoor use. Purso uses UV-resistant pigments only, which limits the colours to different shades of gold and brass.

Electrolytic colouring (ES)

By electrolytic colouring the oxide layer is coloured electrolytically in a metal-salt solution. In this process the colour pigment is absorbed inside the oxide layer and the colouring is therefore fully UV-proof and well suited for outdoor use.

Different shades of brown, up to black, can be achieved in this way.

Electrolytic colouring can be further tinted with pigment colours. The shades ES 210, ES 310 and ES 410 are made in this way.

Standard colours

LV

Colour **S 132**

Colour **S 139**

Colour **ES 200**

Colour **ES 210**

Colour **ES 310**

Colour **ES 400**

Colour **ES 410**

Colour **ES 600**

Colour **ES 900**

Due to different lighting conditions and limitations in printing technology the actual appearance may differ from the printed colours.

Good to know about anodising

What can be anodised?

Anodising is a special surface treatment which can be made only with aluminium. No other metal reacts with oxygen in the same way. Therefore there must not be any other materials attached to the part that shall be anodised. Thermal insulation strips in polyamid are, however, an exception. Aluminium castings are generally not suited for anodising as the material is normally heavily alloyed.

Corrosion resistance

Aluminium has a very good corrosion resistance because it reacts very agressively with the oxygen in the air forming a hard aluminium-oxide layer which is so tight that not even an oxygen molecule can get through. The oxide layer forms a solid part of basic material and does not peal of as on iron. The layer thus prevents further corrosion. Due to this feature aluminium is, as material, long lasting and well suited for recycling. However, the naturally formed oxide layer is spotty and even powdery.

The corrosion resistance can be further improved by anodising which also gives the surface a beautiful finish. An oxide layer is created by means of an electrolytic process whereby the oxide layer thickness can be about 500 times thicker than the naturally formed layer.

The treated pieces are dipped in a sulphur acid bath as the anode. When a direct current is led through the bath oxygen from the electrolyte is freed and reacts with the aluminium forming an aluminium oxide layer on the surface. The thickness of the layer can be controlled by changing the density of the current and by the time of treatment. Typical layer thicknesses used are between 5 and 20 microns.

Powder coating of anodised parts

An unsealed thin anodised surface (5 microns) is a very good base for powder coating. This is the only pretreatment for powder coating that prevents filiform corrosion. It is not advisable to powder coat thick anodised surfaces as the oxide layer is an insulator which prevents powder particles from attatching to the surface.

Anodising of machined parts

When anodising machined parts certain precautions have to made. Before anodising the surface is etched to get the surface is completely clean from oxide. This, as well as the formed oxide layer, may destroy some machined details like sharp corners and threads. It is hence advisable to machine screw threads only after anodising.

Bending

Bending of anodised parts is not advisable. The oxide layer is very hard and cracks easily when bended. The thicker the layer is the easier it cracks.

Welding

Welding causes big changes in the crystal structure of aluminium. These kind of changes are very visible after anodising. Welding seams should thus be placed where they are as invisible as possible. Welding should always be made before anodising as welding destroys the oxide layer.

Aluminium sheets

Cutting of aluminium sheets should be made before anodising. If the sheets are used in constructions where the edges of the sheet are covered they can be cut after anodising. Edging of the sheets should always be made before anodising as the oxide layer is very hard and cracks easily when bended.

Contact points

When anodised the parts are suspended in frames for the process. It is important that the aluminium has a good electric contact to the frame, otherwise it will not be anodised. The contact points are clearly visible after anodising so it should be agreed where they should be placed and what is the visible surface of the final product.

Variations in shades

Anodising is not painting or powder coating but an electrolytic process where the surface layer is a part of the original material. Many factors give cause to the fact that there are always small variations in the colour. For extruded and rolled products also the direction of light causes differences in the appearance of the surface.

Cleaning of anodised structures

Weather and wind, pollution from industry and traffic make all surfaces dirty. An anodised surface, however, is very simple to keep clean because its plane and tight. Anodised aluminium is cleaned with warm water and a neutral detergent. Grease, paint or pitch is removed before cleaning with a solvent (turpentine, kerosene or such). Strong alkaline detergents and acids should be avoided as they etch the oxide layer. After cleaning the surface shall be rinsed well and dried.

Maximum size of anodised parts at Purso

By Purso Oy the anodising line is meant mainly for aluminium profiles in long lengths and aluminium sheets. The size of the basins determine the maximum size of parts to be anodised which are:

Length	7.500 mm
Width	400 mm
Depth	2.000 mm

Quality and experience

Purso Oy has four decades of experience in anodising of aluminium. As all our operations also the anodising plant is ISO 9001 (quality) and –14001 (environment) certified. We continuously improve our processes in close co-operation with chemical suppliers and independent testing bodies. Our personel is happy to give you any further information you may need about anodising.

PURSO™

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