

## Anodising

Anodising is an electrolytic conversion coating that increases the hardness and corrosion resistance of raw aluminium. It is a process achieved by suspending the raw aluminium in a mixture of water and Sulphuric acid solution and passing a DC current through. This process increases the natural aluminium oxide layer on the surface of the metal.

Moss Metal Finishing offers two types of Anodising, standard Sulphuric Anodising which is the most suitable for decorative purposes as it can be dyed a range of colours with great effect. The other option is Hard Anodising which offers better corrosion resistance and is most suited for Defence and Marine applications. This process is less suitable for colours though as it gives a duller effect.

The process of anodising adds to the dimensions of the aluminium with standard anodising adding between 5-25µm and Hard Anodising adding between 25-80µm. The process grows the oxide layer onto the aluminium and it grows inwards as well as outwards therefore with a thickness of 10µm 50% would be inside the aluminium and 50% on the outside.

### Coloured Anodising

Once a part has been anodised the oxide layer achieved is porous and can therefore be coloured using appropriate dyes. The colours we offer are as follows;

- Red
- Gold
- Blue
- Green
- Purple
- Black
- Smokey Blue
- Natural (Also referred to as Silver or Clear)

Due to the process of anodising many shades of these colours can be achieved by careful control of the process variables. Should you require a specific shade the best way is to send in a sample of the shade with your order.

## Aluminium Alloys

To achieve the best possible finish of anodising the aluminium alloy used is crucial as some alloys anodise much better than others, whilst some alloys are much more suited for colour anodising than others. The below list gives an indication of each grades suitability;

- 1000 (Pure) – The purest grade of alloy and as such anodises very well and can be coloured with excellent results.

- 2000 (Copper) – Whilst this grade of alloy can be anodised it is generally poor for decorative purposes where a good colour finish is required as it anodises to a dark finish. It is prone to pitting when anodised which also makes it unsuitable for decorative purposes. We can Hard anodise onto 2000 series although due to the copper content it can be prone to burning so we wouldn't recommend it.

- 3000 (Manganese) – Due to the high manganese content in this grade of alloy it is very difficult to achieve consistency in the shade of anodising so it is not recommended for colour anodising but is suitable for natural anodising where parts aren't required to colour match.

- 4000 (Silicon) – This grade of alloy is well suited to natural anodising but has a dark grey shade when anodised which makes it unsuitable for coloured anodising.

- 5000 (Magnesium) – This alloy is very good for decorative anodising as most grades take colour very well and it is excellent for Hard anodising

- 6000 (Magnesium & Silicon) – This is the most common grade of alloy we come across and anodises very well for both decorative and hard anodising.

- 7000 (Zinc) – We don't recommend anodising this grade of alloy as it has mixed results although it can come out very well it is prone to burning when Hard Anodised and can have pitting in either process, this can subsequently cause the finished surface to have a smutty appearance.

- CAST Aluminium – As a general rule cast alloys are not suitable for coloured anodising but can be natural anodised well and hard anodised well. We find that most customers are unaware of what grade of cast their parts are made from but should you be able to choose, the best grades which can be coloured reasonably well are LM0, LM5 and LM31.

## Useful Information

It is worth noting that once anodised the surface of the metal does not conduct electricity therefore should your parts require conductivity you will need to state this and where the contact points are so we can mask the parts appropriately beforehand.

The same applies to internal threads where the tolerance is critical as the anodising process will add to the size therefore we can mask these threads if made aware upon ordering.

For certain applications e.g. if parts are going to be used in a marine atmosphere where corrosion resistance is more important than decorative purposes it is most suitable to have parts hard anodised.