ANODISING GUIDE FOR USING JM PRECISION DYE

Our Anodising dyes are easy to use and are very forgiving in the anodising process but in order to obtain best results you should follow the recommendations presented in this guide.
Once you are familiar with the process you may want to experiment to achieve different results. This guide assumes that you will be anodising well prepared and clean aluminium that has not been previously anodised or coated.
The process will vary for aluminium which is alloyed with other metals and some experimentation may be required to achieve good results in such cases.
Ensure that you read this guide thoroughly and have all the required materials to hand before you start the process. You cannot start and stop and then restart the process as this will result in a poor finish.
A certain degree of skill is required to get a good anodising finish but it is not as difficult as some professional anodising companies may lead you to believe.

! SAFETY !

The chemicals used in the anodising process are dangerous so ensure that you read and understand the health and safety advice that comes with them.
Anodising produces harmful and dangerous gases so only work in a very well ventilated area. Wear protective clothing and have plenty of clean water to hand in case you need to quickly wash spills or splashes off yourself.
Be especially careful with sulphuric acid as you may not feel a splash immediately but this will not stop it burning deep into your flesh.

Step 1

Create the required surface finish on the component. Anodising will not cover any surface blemishes and may even enhance them (Of course this may be what you want).

Step 2

Clean the component using a strong detergent (such as washing up liquid) using a soft scrubbing brush.
Cleanliness throughout the process is vital. Once you have completed step 2 you MUST NOT handle the component with bare hands as this will leave fingerprints in the final anodising layer. Always use rubber gloves to handle the component or mount it on an aluminium electrode and use this as a handle.

Step 3

Immerse the component in a strong solution of caustic soda which has been brought just to boiling temperature. This will not only clean the surface but will also etch the surface to leave a very fine matt finish. The longer you leave the component in the solution the more material will be etched from the surface. Avoid leaving too long, especially for components with fine detail such as small threads as they may be etched away.
15 seconds to 1 minute is usually sufficient.

Step 4

Rinse the component in clean water and then scrub clean, again using a strong detergent. This step is the most important in the process.
The component must be absolutely clean.

Step 5

Repeat step 4 then
Rinse the component thoroughly in distilled water.
Do not use tap water as this will leave cloudy blemishes on the anodised finish that cannot be cleaned.

Step 6

Anodise the component in a bath of 10% solution sulphuric acid.
This entails passing a current through the acid bath using the component as the anode (hence the name) and lead plates as the cathode(s).
A good arrangement is to use two lead plate cathodes at either end of the tank which are at least as wide as the widest component that you wish to anodise.
Use an aluminium rod or wire to suspend the component in the bath.
Note that this will also be anodised and so can only be used once as anodised layers do not conduct electricity.
It is important that no other metals are put into the bath as they will cause contamination and poor anodising results. The bath itself should be made from rigid plastic.
Connect the negative wire from your power supply to the lead cathodes and the positive lead to the aluminium rod or wire that is used to suspend the component in the bath. Do connect the wire directly to the component as it will be eaten away by the acid and contaminate the bath.
To get the correct anodising layer to accept our dye the current used is very important.
Approximately 20mA per square centimetre of component surface area should be used.
If possible use a current controlled power supply and calibrate it using a component of known surface area.
For example a 10 square centimetre plate would require a current of 200mA.
Make a note of the voltage applied and then adjust the current when anodising your components to give the same voltage. This will result in the same current per unit area. Usually a voltage of 12 to 25 volts is produced. If you are way outside this range then check your acid bath strength and temperature and electrical connections.
This current varies with bath temperature and acid strength so you should check it before each anodising process.
You should ensure that the acid bath temperature remains between 20 and 25 degrees centigrade throughout the process. High currents will cause the bath to heat up.
If you need to top up the bath always use distilled water as tap water will cause a poor anodising finish.
Leave the component anodising for approximately one hour to achieve the correct depth of surface conversion.

Step7
Switch off the power supply and remove the component from the bath.
Rinse thoroughly in distilled water.
Again do not use tap water as this will cause a poor anodising finish.

Step 8
Immerse the component in your JM PRECISION dye solution.
The longer you leave the component in the dye the deeper the resulting colour will be. If you need consistent results across multiple runs then you should carefully time the immersion duration.
During the immersion you should gently agitate the component to remove any trapped bubbles that can cause light spots and to ensure an even colour finish.

Step 9
Rinse the component thoroughly in distilled water. Do not use tap water…..

Step 10
Immerse the component in boiling distilled water. This step seals the anodising surface and seals in the dye. A small amount of dye may leach out at the start of this step but keeping the water just below an active boil will minimise this.
Leave the component in the boiling water for 30 minutes.

Final Step
Rinse the component and buff to a fine finish.

While the anodising process is simple there are many factors than can influence the final results. Most problems are caused by poor preparation or contaminated solutions.
The overall process is much simpler and safer if performed in an organised environment where you can accurately control each step.
Do not be tempted to use tap water instead of distilled water as the results will be very variable but always poor.
Do not tip waste dyes or chemicals down the drain. It is your responsibility to dispose of them responsibly.