Introduction

The process is chromate conversion and is a simple dip process, complying with MIL-C-5541F.

This process is not to be confused with anodizing, which results in a tough non electrical conductive coating which can be coloured with dye. It has several trade names such as Alochrome, Alodine, Chromate Conversion, etc. but they all mean the same.

The chromate conversion process for aluminium is used extensively in aircraft parts and gives a better corrosion resistance. The process used a very weak chromic acid solution. There are 2 colours available, yellow and clear. I prefer the golden yellow finish myself.

You MUST use mechanical means to remove oxide layers from as purchased Aluminium, because the process will not work unless you do. Scotchbrite or 600 grit wet and dry works very well for the removing oxide layer from “as bought” Aluminium.

Freshly machined Al gives the best results.

I purchased my chemical from Avanti Chemicals www.avantichem.com.au where you will find all info including the correct procedure. Cost was approx. $45 for 500g including postage to my doorstep.

Some photos which gives more detail are shown a the end of this document.

My process is as follows:

1. Clean the oxide layer from virgin material with Scotchbrite or wet and dry. (I often use a Scotchbrite belt on my linisher). This step is not necessary on freshly machined parts.

2. Remove all traces of oil and grease from the part using an automotive degreaser (This has the added benefit of pre-etching the Al surface ready for Alochroming process). The recommended pre-etching process from Henkel Chemicals is to use Ridoline (an acid etch but there is nothing wrong with an alkaline solution).

3. Thoroughly rinse in hot water. The process works best the solution at 35°C but I cheat and pre-heat the component. (Saves heating the Alochroming solution).

4. Totally immerse in the Alochrome 1200S solution (mixed at 7.5grams per litre of water) for approx. 30 to 60 seconds. Longer time gives a stronger colour ranging to a horrible brown if left too long. If the solution is correct 30 seconds is all it takes. (Make sure there are no trapped air bubbles in the part and that the part is not touching the sided or bottom of the container). Larger parts can be hung from wire hooks and small parts can be done (I have done 1000 parts at a time) in a wire basket by agitating the basket up and down during the process.

5. Rinse in cold water.

6. Rinse again in hot water (This raises the temperature of the part again to make it easier to dry off).

7. Blow dry with compressed air (this ensures that any impurities in the water like calcium and lime do not leave any stain marks on the parts).

8. Keep the solution in a totally sealed bucket with a lid and it will last for a long time. I mixed up my first batch approx. 12 months ago and I am still using it. The sealed lid keeps dust and insects etc. out of the solution and prevent evaporation. A chlorine bucket from pool suppliers is ideal.

9. Alochrome 1200S crystals are hydroscopic, so they absorb moisture from the atmosphere and turn into a mess, if not totally sealed. It pays to seal the plastic tub of unmixed crystals as supplied inside another container such as a zip lock plastic bag or resealable plastic container.

   It should be noted that this tried and true process (MIL-C-5541F) is not ROHS compliant, as Alodine 1200S is hexavalent chrome. There are current compliant methods now used widely in industry, but in my opinion, they are crap. If you handle parts treated with the modern method, you end up with fingerprints all over the parts.

Hope this helps.

Regards

Chris Humphris

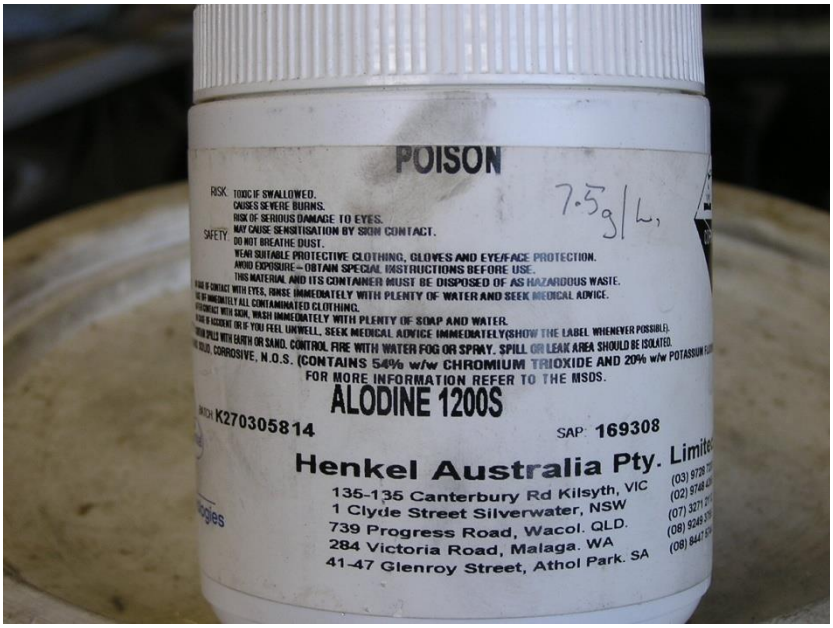
Many parts can be done at once in a basket.

The parts must be continuously agitated during the process with this method.

I jiggle the basket up and down during this process to ensure each part gets full coverage otherwise “shadowing” occurs.

For larger parts, hang on wire in the solution one or two at a time.

Alochrome Solution mixed 7.5g/L of Water in a Sealed Bucket



Alochrome 1200S as Supplied from Avanti Chemicals