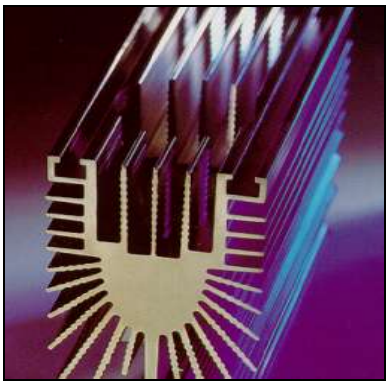
APTICOTE® 300

Apticote Hard Anodising



The **Apticote 300** process is a unique approach to precision hard anodising. Poeton provide a level of quality control, combined with high throughput and low turn-round times, that is unmatched by our competitors.

We offer a wide range of hard anodising variations, one of which will satisfy you particular requirements for wear resistance, corrosion protection and mechanical properties. Our strength lies in the skill of our operators, with your component being processed exactly to your requirements, irrespective of the alloying content of the substrate.

Specifically, the highly innovative **Apticote 300M** hard anodising process gives a layer thickness twice that which is normally achievable, producing excellent thermal and electrical insulation properties.

The APTICOTE 300 Options	
Apticote 300N	For maximum hardness and wear resistance
Apticote 300W	For improved fatigue strength
Apticote 300A and 300D	For maximum fatigue strength combined with corrosion protection
Apticote 300M	For greatest coating thickness

Apticote 300 Automated Anodising Line

Why is Apticote 300 the best hard anodising?

- Fully automated lines
- PC controlled - fully programmable
- Accurately controlled chemistry and maintenance
- Low noise, automated ramping, power supplies
- Professional laboratory backup
- Highly trained and skilled operators
- Comprehensive quality inspection

Features

- High hardness
- Very low wear
- Excellent corrosion protection
- Superb control of coating thickness
- Uniform coverage
- No post-machining
- Pleasing visual appearance and feel
- Coats a range of aluminium alloys

Coating cross-section, x 1000

The protective film is created on, and within, the surface of aluminium. The greater thickness and wear resistance of Hard Anodising compared with Chromic or Sulphuric Anodising make it the natural choice for preparing aluminium for use in more arduous environments

Applications

- Gears
- Pulleys
- Valve Blocks
- Hydraulics
- Pneumatics
- Pistons
- Hinges
- Swivel joints
- Rod ends
- Food Chutes
- Nozzles and Venturi

Performance Benefits

Excellent Wear Resistance

The wear resistance of **Apticote 300** is similar to that of case-hardened steel (hardness 800VHN) and even that of Hard Chromium, although the micro-hardness values (reflecting the micro-cellular structure rather than actual base oxide) are only 300-500 VHN. At low loads, the wear compares favourably with that of tool steels. **The benefit to the end-user is prolonged wear life, with a substrate that provides for reduced weight and cost.**

Good Corrosion Protection

Generally superior to that of chromic and sulphuric anodising, the corrosion resistance of **Apticote 300** can be further improved by dichromate or acetate sealing. Typical results show **>500 hours salt spray endurance** on 6082 aluminium alloy. **The benefit to the end-user is prolonged corrosion protection, with a substrate that provides for reduced weight and cost.**

Good Heat Resistance

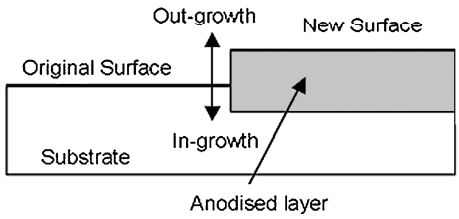
Apticote 300 coatings can withstand short exposures up to 2,000°C, making them ideal for parts like rocket venturi. Long exposure to high temperatures has no adverse effect on the coating performance, other than crazing of the surface. **Specifically, Apticote 300M, with a thickness over 200µ, is a very effective thermal barrier.**

High Dielectric Strength

Breakdown voltage increases with film thickness. Coatings normally withstand voltages in excess of 1,000volts DC. Unlike most insulators, **Apticote 300** coatings can operate at up to 2,000°C. Its combination of high dielectric strength and thermal stability make **Apticote 300** the ideal surface for mounting electrical components.

Mechanical Strength/Fatigue Strength

Losses in tensile strength due to anodising are small and have not prevented the widespread use of aluminium in many high-tech industries. However, anodised aluminium is not recommended for high-impact situations. Hard anodising can reduce the fatigue strength of the base material by up to 47%, depending on the alloy and the coating thickness. However, this loss can be held at 16-20 % by modifying the sealing procedure. Where fatigue mechanisms exist, components benefit from ceramic shot peening before coating.



Uniform Coverage

Apticote 300 provides a uniform surface layer of predictable thickness. Component surface growth is 50% of the total coating thickness, so that final dimensions can be accurately predicted. For optimum results, sharp corners should be relieved. **The benefit to the end-user is reduced machining and grinding costs and improved precision of manufacture.**

Poeton are highly skilled at jigging and fixturing, so that an even coating distribution can be achieved on complex geometrical features, including down long bores, where normal anodised layers will thin.

However, anodising to a specific final size requires that the as-manufactured dimensions and tolerance band are closely controlled. Tolerances are additive, so that the final size depends more on the incoming precision than on any small variations in the anodising process. **Poeton strongly recommend that parts should be anodised to a specified coating thickness rather than to a defined final size.**

Substrate materials

Apticote 300 can be applied to a range of aluminium alloys. Best results are obtained on alloys in which the Si content is below 10% and the Cu content is below 5%. As examples, alloy types HE30 (6082), L65 (2014), L160 (7075), DTD 735 and LM25 are particularly responsive to the **Apticote 300** process.

Colour

Colour matching of hard anodised parts is near impossible, with too many variables on the parts, their method of manufacture, their heat-treatment, as well as in the details of the process, all conspiring to produce unpredictable changes in hue and shade. Poeton do not, therefore, offer colour matching with **Apticote 300.**

Accredited Nadcap™

NADCAP Accreditation is held by Poeton Industries Ltd with Poeton (Gloucester) Ltd Accredited for Plasma Spray (coatings) and Chemical processing, and Poeton (Cardiff) Ltd Accredited for Chemical Processing and NDT

Poeton Industries Ltd,
Eastern Avenue,
Gloucester, GL4 3DN

For more information, please contact our Sales or Technical Department, (44) 1452 300 500, info@poeton.co.uk