

APTICOTE®

Keronite® 3000

Electro Ceramic Anodised Coatings

Apticote Keronite® 3000 is a unique electro-ceramic process that transforms the surface of light-weight alloys to provide thick, hard, tough and wear resistant layers. It is based on a liquid electrolyte to provide surface properties that are unmatched by any conventional conversion or anodising approach.

Poeton offer a range of **Apticote Keronite® 3000** variations, one of which will be appropriate to your alloy composition and satisfy your particular requirements for wear resistance, corrosion protection or reduced friction.

(Keronite® is a registered trademark of Keronite International Limited)

The Apticote 3000 Options

A3000A	For aluminium
A3000T	For titanium
A3000M	For magnesium



Substrate Materials

Aluminium Alloys

2000 series
5000 series
6000 series
7000 series
Cast alloys with less than 8% Si (LM25 is most common)

Magnesium Alloys

Any Mg alloy can be treated, the most common being AZ91, AM60, WE45 and WE54.

Titanium Alloys

6Al/4V/1Mo (IMI 318) and pure Ti are most common.

Applications

Apticote 3000 coatings are used in a wide range of industries. For example:

- Textiles
- Bicycle brakes and frames
- Automotive bores and pistons
- Military and Defence
- Aerospace
- Oil and Gas
- Nuclear
- Marine and Chemical Industries
- Energy and Power Generation
- Food and Drink
- Consumer
- Engineering
- Plastic Moulding
- Electronics

The Process

The process uses a proprietary electrolyte with a PC controlled, high power electrical supply, with strict monitoring of the batch chemistry, process temperature and agitation. Whilst processing, the part glows, as in the picture.



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Primary Features

- Superb corrosion resistance (> 5,000hrs salt spray)
- Extremely hard (up to 1,500Hv)
- Effective undercoat for paints and polymers
- High wear resistance, in both abrasive or sliding situations
- Very effective thermal barrier
- Thick coatings, up to 150 μ , with predictable coverage and dimensional control
- Superb heat resistance
- High dielectric strength

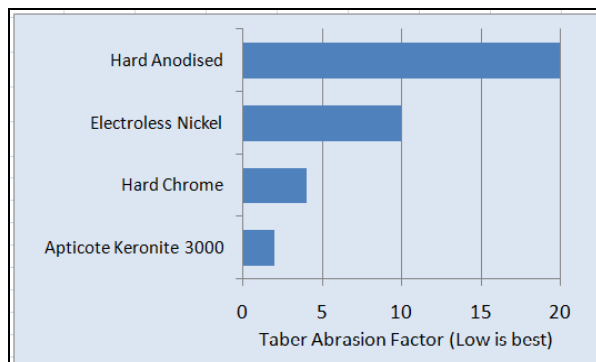
Some Key Benefits

- Life of textile machine parts increased 10-fold
- No wear or leakage with seals
- Reduced weight, with no wear, for bike brakes, clutches and frames.
- Light weight magnesium leisure wear, spectacles and watches, with no corrosion
- Coated piston skirts reduce wear
- Coated piston crowns give more efficient combustion.
- Eliminates galvanic corrosion cells with titanium components
- Can replace expensive solid ceramics with a cost-effective coating

Performance Data

Corrosion Protection - **Apticote Keronite 3000** gives superb corrosion resistance. Unlike ordinary anodising, the coatings are dense and thick. On 6082 alloy, for instance, the coating will provide 5,000 hours with no corrosion spots in a standard salt mist exposure test.

Because of the precise process control, defects and imperfections are virtually eliminated, so that the barrier corrosion protection given by the coating is maximised.

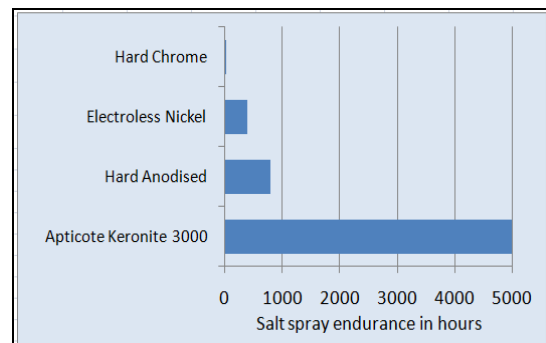


Thermal Barrier - The coating is a superb insulator; ideal for piston crowns, kitchenware and other applications where protection from heat conduction is needed.

Thickness and Coverage - Coating thickness is typically 50 to 70 μ , but 150 μ is possible if the application demands. The outward surface growth is 30% of the total thickness. Penetration down holes is to one diameter deep, but special tooling can provide coverage down long tubes or bores if required. Unlike anodising, **Apticote Keronite 3000** can coat a sharp corner without cracking.



Corner does not crack



Wear Resistance - **Apticote Keronite 3000** is highly resistant to both abrasive and adhesive wear. The graph shows the relative wear rates in a Taber Abrasion test. It reflects, for instance, the results that are obtained against synthetic textiles and explains the huge benefits that are gained.

Effect on Fatigue - Rotating bar tests show a reduction in fatigue strength of 7075 Al Alloy of only 14%, much less than is caused by plating or hard anodising.

Finishing - **Apticote Keronite 3000** builds with a duplex layer, the outer surface being slightly rough. To avoid abrasion of mating parts (e.g. brake pads), the surface can be easily polished. Ask Poeton for advice.

Cylinder Bores - **Apticote Keronite 3000** provides unique wear and lubrication properties on high performance cylinder bores. Ask Poeton for advice on coating and honing.

Disclaimer

The information contained in this leaflet is intended for guidance. Whilst every effort is made to understand the environment in which the coating is designed to work, success can only be determined by trials and in-service testing.



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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

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