

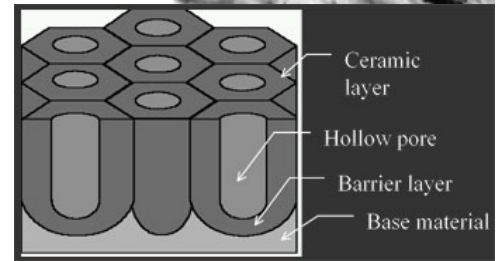
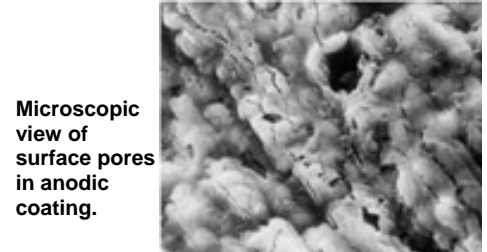
# Anodize & Hardcoat Anodize

ALUMINUM PROTECTION FROM WITHIN  
(Type II Sulfuric Acid & Type III Sulfuric Acid)  
MIL-A-8625

The anodize process refers to the passing of DC current through an aluminum part (the anode) while the aluminum part is submerged in a sulfuric acid electrolyte bath. Contrary to some beliefs, anodize is not metal plating or a topical paint. The anodize process results in a durable layer of aluminum oxide being grown on the surface of the part. This layer is porous and receptive to dyeing.

Aluminum oxide's hardness levels approach that of a diamond. The end result is a preserved aluminum product with extended life.

The difference between anodize and hardcoat anodize is that the hardcoat anodize process takes place at lower electrolyte bath temperatures and requires greater DC current. Under these conditions, the most dense, durable, aluminum oxide coating is grown. The density of hardcoat anodize results in the coating being less porous and less receptive to dye, but dramatically increases wear resistance and corrosion protection versus conventional anodize.



	Type II (Sulfuric Anodize)	Type III (Hard Anodize)
<b>Corrosion Resistance</b>	>336 hrs salt spray	1000-2000 hrs salt spray
<b>Wear Resistance</b>	15.4 mg loss (Suga test) Good	3.4 mg loss (Suga test) Excellent
<b>Di-electric Properties</b>	Good (non-conductive)	Excellent (Extremely non-conductive)
<b>Thickness Range</b>	0.0001" – 0.001" (0.0005" required to dye)	0.0005" – 0.003" (Dependent upon alloy)
<b>Appearance</b>	Clear or dyed (Recommended for cosmetic applications)	Natural dark gray color (Recommended for industrial applications)
<b>Penetration/Growth (Approximately)</b>	65% Penetration 35% Growth (Dependent upon alloy)	50% Penetration 50% Growth (Dependent upon alloy)

\*Individual results may vary depending on substrate alloy and coating thickness

Benefits of anodize and hard anodize include:

- Wear Resistance
- Lubricity
- Heat Dissipation
- Aesthetics
- Corrosion Resistance
- Dielectric Properties
- Bonding
- Versatility

**Under EPA rules, anodizing is an environmentally friendly process that generates no hazardous waste.**

**Anodized aluminum meets ELV, RoHS, and WEEE directives. It is the environmentally sound choice for many applications.**

Call Pioneer Metal Finishing to discuss your metal finishing needs or visit our website: [www.pionermetal.com](http://www.pionermetal.com)