HARD ANODIZING SURFACE TREATMENT

CONTENTS

- What is hard anodizing? How to process?
- What is the method to make it?
- What is the standard specification of hardness for hard anodizing?
- Application of hard anodizing for our life?
- What is the usefulness of hard anodizing?
- Comparing Hard Anodizing with Normal Anodizing

HARD ANODIZING

Hard anodizing is an upgraded method of surface treatment.

It adds up surfaced treated material to 30~40 micrometers while regular anodizing is 10 micrometers. It applied to the aircraft industry a lot.

Currently, in Trimmers, we are applying this treatment for T9 40, 50mm, and TXC1 chair.

T9 Shield Heavy Duty

TXC1 Chair

PROCESS OF HARD ANODIZING

Hard anodizing is a practical refinement term, also known as hard coat anodizing, which refers to the process of anodizing aluminum parts in a special cold electrolyte, which is the acid solution that cooled to the freezing point of water. The amount of electric current increased substantially, for creating a non-metallic conversion coating thicker than standard anodizing.

Hard anodizing is measured as the below tooling

Manual version

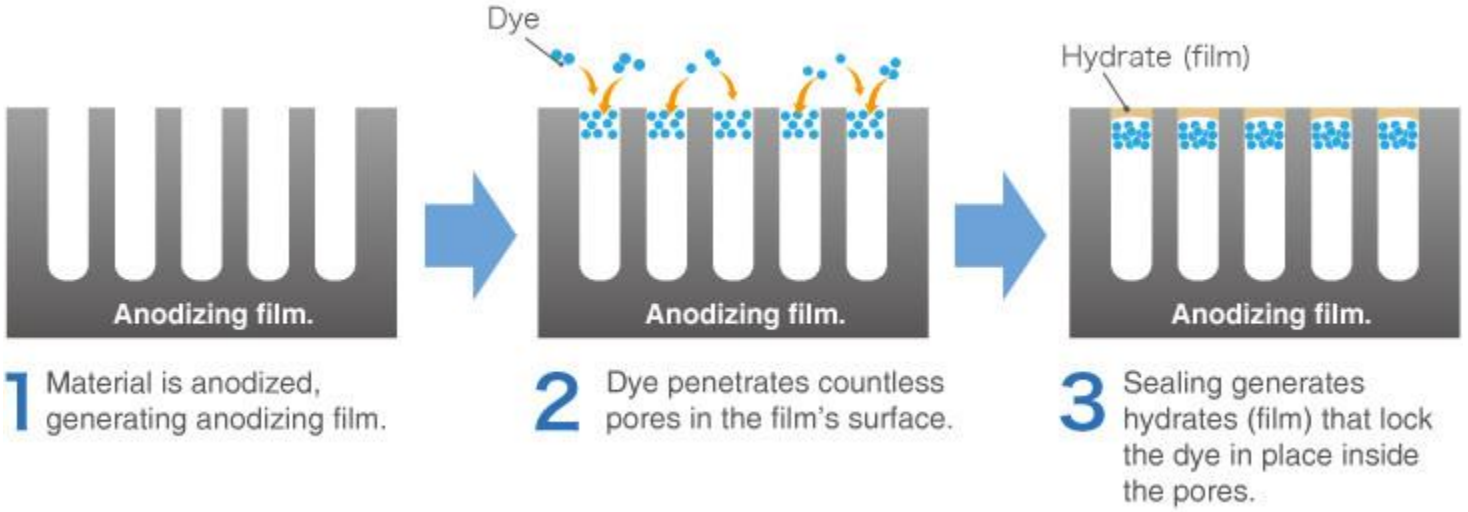
WHAT IS THE METHOD MAKE IT?

Some household aluminum can use state-of-the-art anodizing technology, the conventional anodizing process will create wave-resistant coating surfaces that are extremely popular with users. Hard anodizing creates a thinner surface layer of anodized aluminum, with small holes and cracks in the surface to form a stronger structure than conventional anodized aluminum. Aluminum that has undergone hard anodizing can have brown or black surfaces but can also produce different colors.

WHAT IS STANDARD SPECIFICATION OF HARDNESS FOR HARD ANODIZING?

Requirements of hardness for the coating: The maximum wear index for coatings on aluminum alloys having a copper content of 2% or higher is 3.5 mg/1000 cycles and 1.5 mg/1000 cycles for all other alloys.

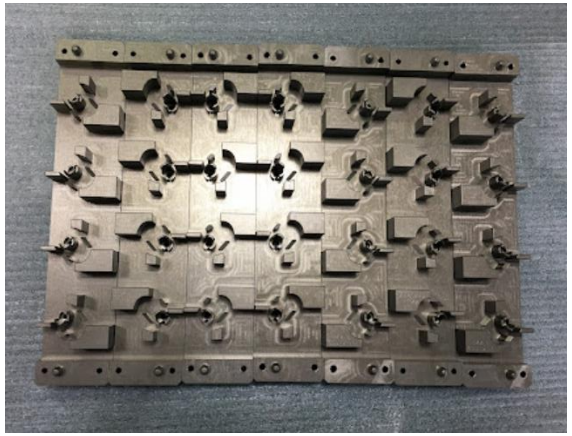
Process: This is produced by continuing the electrical current until the depth of the pores exceeds 10 microns/0.01mm per side (corrosion surface), all the way to 25 microns or even more.
After finishing, hard anodize have a thickness on the surface up from 30 ~ 60 microns.

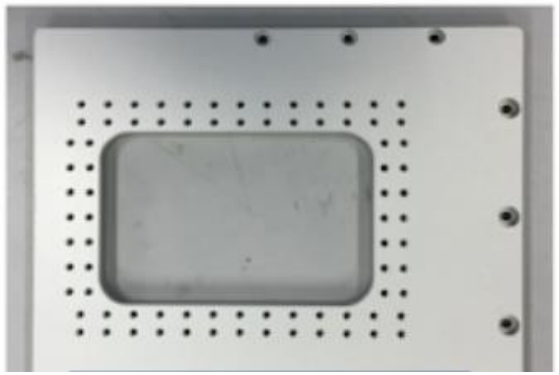


APPLICATION OF HARD ANODIZING FOR OUR LIFE?

Hard anodizing is used by numerous industries throughout the world for the manufacture of automobiles, thousands of consumer, commercial, and industrial products, and even in the medical field.

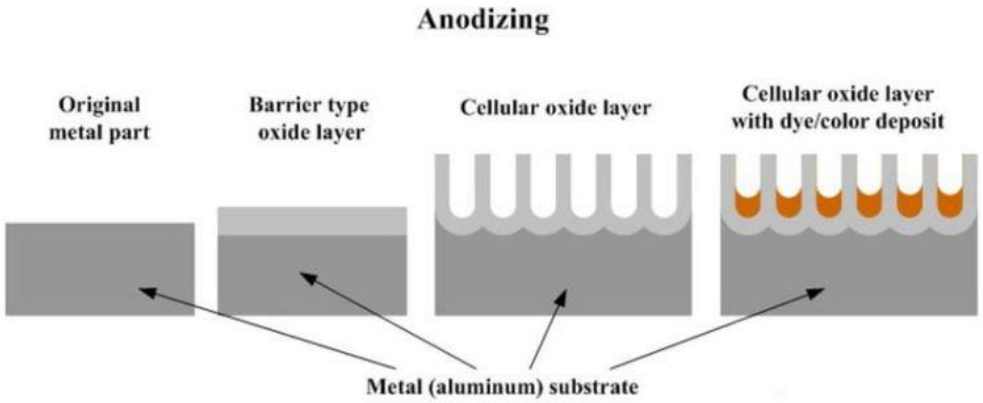
Some applications of hard anodizing in life as below pictures:

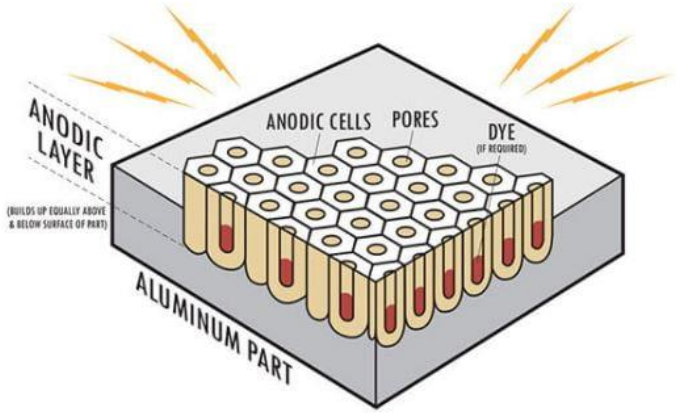




WHAT IS THE USEFUL OF HARD ANODIZING?

The benefits of using hard anodizing aluminum over stainless steel are its low cost and lightweight. Hard anodizing aluminum is much easier to handle than an equivalent volume of stainless steel. Hard anodizing also provides the product with resistance to the effects of bad weather, salt, and abrasive mechanical influences. Hard anodizing aluminum can be said to be only slightly weaker than the most intricate diamond.





COMPARING HARD ANODIZING WITH NORMAL ANODIZING

Strong points:

- Appearance: Hard anodizing has a more uniform surface than regular anodized aluminum.
- Thickness: Hard anodized aluminum is thicker than standard anodized, which gives the surface of hard anodized aluminum part higher abrasion resistance.
- Due to the thickness greater than 25 microns so the hard anodizing coating is produced at lower temperatures and higher current density.
- Application: Hard anodizing aluminum products are used wider than normal anodizing.
- Durable: Standard anodized aluminum needs to be sealed to close the pores produced in the process of conversion to aluminum oxide. While hard anodized aluminum does not need because its thicker oxide layer is more durable and wear-resistant.

Weak points:

- Hard anodizing has complicated process than normal anodizing.
- Need more time than standard anodizing.
- Has price cost more expensive than normal anodizing around 25~30%.
- MOQ requirement 5000pcs/PO