Surface treatment（Metal）

Surface treatment is through the physical or chemical method in the material surface to form a layer with some or more special properties of the surface. Through the surface treatment can enhance the product appearance, texture, function and other aspects of the performance.

Appearance: color, pattern, logo, gloss lines (3D, 2D);
Texture: feel, roughness, life (quality), streamlined and so on;
Function: hardening, anti-fingerprint, anti-scratch;

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Anodizing

Anodizing: the main material is AL, Using electrochemical principles, a layer of A1203 (alumina) film was formed on the surface of aluminum and aluminum alloy, which has some special features such as protection, decorative, insulation, wear resistance and so on.

Process flow:

Monochrome、 gradient color:

Polishing/Sandblasting/Wire drawing→unoil→anodizing→neutralization→dyeing→sealing→drying

Double color:

1 Polishing/Sandblasting/Wire drawing→unoil→shelter→anodizing 1 →anodizing 2 →dyein g→sealing→drying

2 Polishing/Sandblasting/Wire drawing→unoil→anodizing 1 →Laser carving→anodizing 2 → sealing→drying

Advantages:

1 Enhance strength;

2 To achieve any color except white;

3 To achieve nickel-free sealing, to meet Europe, the United States and some other countries on the nickel-free requirements.

Technical difficulties and key points to improve:

The level of anodic oxidation is related to the cost of the final product, and the emphasis on improving the oxidation yield is to suit the amount of oxidant, the appropriate temperature and current density, which requires structural parts manufacturers to continue to explore and seek a breakthrough in the production process.

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ED-Electrophoresis deposition

ED-Electrophoresis deposition: for stainless steel, aluminum and so on, it can make the product presents a variety of colors, and maintain the metallic luster, while enhancing the surface properties, with good corrosion resistance.

Process flow:

Preprocessing→ED-Electrophoresis deposition→drying

Advantages:

1 Colorful;

2 No metal texture, it can match Polishing/Sandblasting/Wire drawing and so on;

3 Processing in liquid environment, can achieve complex structure of the surface treatment;

4 The process is mature, mass production available.

Disadvantage:

Cover the ability of defects is not very well, die casting to do a higher pre-processing requirements.

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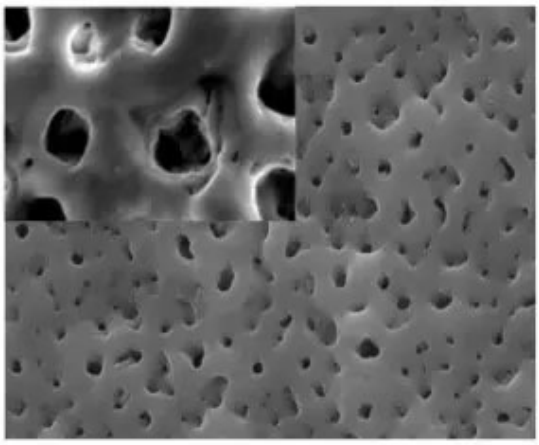
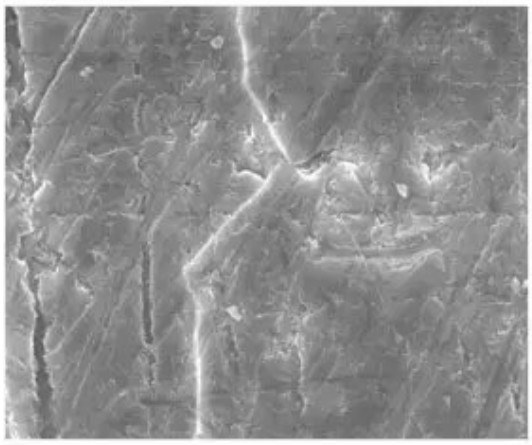
MAO

MAO ： The process of applying a high voltage to the ceramic surface layer in an electrolyte solution(typically a weakly alkaline solution) is the result of a synergistic effect of physical discharge and electrochemical oxidation.

Process flow: pro-process→hot wash→MAO→drying



MAO—surface SEM



Anodize—surface SEM

Advantages:

1 Ceramic texture, the appearance of dull, no high-light products, feel fine, anti-fingerprint;

2 Substrate widely: Al Ti Zn Zr Mg Nb and related alloy and so on;

3 Pro-process is simple, product corrosion resistance, excellent weather resistance, good heat dissipation.

Disadvantages:

Limited color: only black and gray are related mature, it is hard to achieve bright colors,costs are mainly affected by high power consumption, is one of the highest cost of surface treatment.

PVD（Physical Vapor Deposition）

PVD： It is an industrial manufacturing process, is a technology that the main use of physical processes to deposit thin film.

Process Flow:

PVD before cleaning→Into the furnace vacuum→Wash the target and ion cleaning→Coating→The coating is finished and cooled→surface treatment(Polish, AFP)

Advantages:

Can be plated on the metal surface of high hardness, high wear resistance of the cermet decorative coating.

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Electroplating

Electroplating： Is a technique in which a metal film is adhered to the surface of a metal by electrolysis to there by prevent corrosion, improve abrasion resistance, electrical conductivity, reflect ability and aesthetic appearance.

Process Flow: Pro-process→ cyanide-free copper → no cyanide copper tin → chrome plating

Advantages:

1,Coating high gloss, high quality metal appearance;2,the substrate is SUS, Al, Zn, Mg, etc .; 3,cost is low
compared with PVD.

Disadvantage: Environmental protection is poor, the risk of environmental pollution is bigger.

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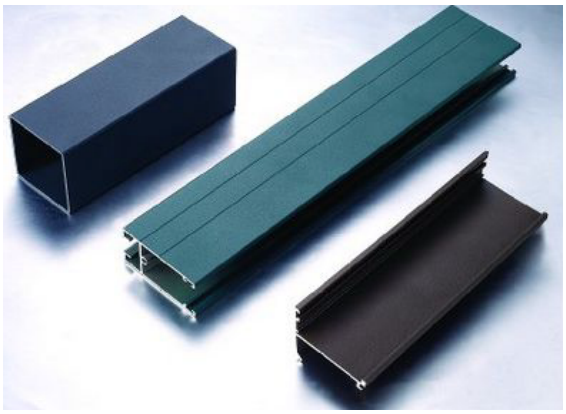
Powder coating



Powder coating: Is the use of powder coating equipment (electrostatic spray machine) to spray the powder coating to the surface of the workpiece, under static electricity, the powder will be uniformly adsorbed on the surface of the workpiece to form a powder coating; powder coating through the high temperature baking flow Flattened into a final coating with different effects (different effects of powder coatings)

Process: on the pieces → electrostatic dust → spray → low temperature leveling → baking

Technical features:

advantages:

1 rich colors, high light, matte optional;

2 low cost, suitable for building furniture products and heat sink shell;

3 the utilization rate is high, 100% use, environmental protection;

4 the ability to shield defects;

5 can be imitation wood grain effect.

Disadvantages: currently used for less electronic products.

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Metal wire drawing

wire drawing： it is through the grinding product in the workpiece surface to form a line pattern, play a decorative effect of a surface treatment means. According to the different lines after drawing can be divided into: straight wire drawing, chaos drawing, ripple, spin pattern.

Technical features:

Drawing treatment can make the metal surface to obtain non-mirror-like metallic luster, while drawing processing can also eliminate the metal surface fine flaws.

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Sandblasting

Sandblasting: is using compressed air as the power, to form a high-speed jet to high speed injection beam will need to deal with the workpiece surface, make the appearance on the surface of the work piece surface appearance or shape changes, get a different roughness and cleanliness of a process.

Technical Features:

1 Achieve different reflections or sublights.

2 It can clean up the tiny burrs on the surface of the workpiece and make the surface of the workpiece more flat, eliminating the damage of the burrs and improving the level of the workpiece.

3 Clear the residual dirt left during the pretreatment and improve the finish of the workpiece. It can make the workpiece show a uniform and uniform metal color, and make the appearance of the workpiece more beautiful and Attractive.

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Polishing

Polishing:The surface modification of a work piece is modified with a flexible polishing tool and abrasive particles or other polishing medium. The surface modification of a work piece by means of a flexible polishing tool and abrasive particles or other polishing medium. For different polishing processes: coarse polishing (basic polishing process), medium polishing (finishing process) and accurate polishing (glazing polishing process), the proper polishing wheel can be used to achieve the best polishing effect, while improving the polishing efficiency.

Process: Local grinding→The overall grinding→Rough polishing→fine polishing→cleaning→inspecting

Technical features:To improve the dimensional accuracy or geometric accuracy of the workpiece, to obtain a smooth surface or specular gloss, but also to eliminate gloss.

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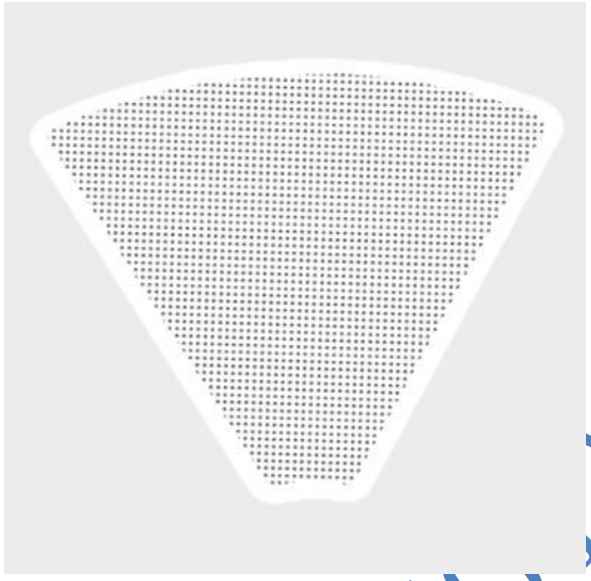
Etching



Etching: Usually refers to the etching called photochemical etching, the exposure plate, after developing the protective film etching area will be removed, exposure to chemical etching solution, to dissolve corrosion, forming a concave convex or hollow molding effect.

Process(Process repeated 12 times):Plain glass substrate Fill→Photoresist coating→Exposure→Development→Etching→Peel off→Backplane output

Exposure method: According to the engineering graphics out of stock size-stores reserve-material cleaning-dry→coating or coating→dry→exporure→develoment→dry→etching→demould→ok

Screen printing:cutting →cleaning plate(other metal materials of stainless steel) → screen printing →etching →demould→ ok

Technical Features:

Advantages:

1 The metal surface can be machined

2 Give the metal surface a special effect

Disadvantages: corrosive liquids (acids, bases, etc.) used in etching are mostly hazardous to the environment.

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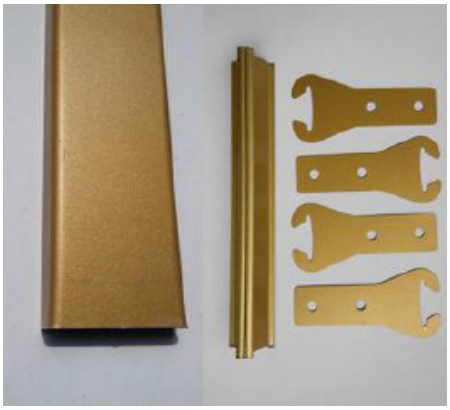
Baking finish



Baking finish:In the grinding to a certain degree of roughness of the substrate (usually high-density sheet), spray a number of layers of paint and high temperature baking stereotypes.

Process: painting on the Substrate, every time after painting, it should be put in the dust-free constant

temperature Curing chamber. 3 or 4 times.

Advantages:

Bright color, with a strong visual impact, good surface finish, easy to scrub,moisture, fire performance is better.

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Surface treatment（Plastic）

Mold interior decoration technology

In-Mold Decoration-IMD:

Mold interior decoration technology will have the printed pattern into the diaphragm in the metal mold, the forming resin into engagement with the diaphragm metal die, which is printed with a pattern of the diaphragm is integrally formed with the resin and into products forming method.

Technical Features:

1 Exquisite decorative graphic, logo hidden inside, free from friction or chemical decay.

2 Graphic, logo and color design can be changed without changing the mold.

3 The printing accuracy of the three dimensional shape product is accurate, and the error is ±0.05mm.

4 Can provide graphics, identification of the light of the back light and high transmittance of Windows.

5 The function key is convex bubble even, feel good, life can reach more than one million times.

6 Three-dimensional change can increase the designers' freedom of product design.

7 The composite forming process achieves seamless results.

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Painting

Painting:The coating method on the coated workpiece is sprayed by spraying tools ,such as spray gun

process:primer→spray paint→stoving→coating→drying

Technical features

Advantages:

1 Rich in color;

2 In liquid environment, surface treatment of complex structures can be realized;

3 Mature process and mass production;

4 It has a unique transparency and high gloss.

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NCVM： Non conductive vacuum metallization

NCVM:

Also known as the discontinuity or non-conductive plating coating technology, is to use the metal and insulation compounds such as plating film, using the characteristics of the discontinuous, get the final appearance of both metallic and do not affect the effect of wireless transmission.

Technical features:

The products are non-conductive, and can be tested by high voltage meters, tens of thousands of volts, without conduction or breakdown. The surface of the product has metal texture and can realize the translucent control at the same time.

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Electroplate

Electroplating: the metal surface is obtained by high yield and low cost.Similar to PVD, PVD is the physical principle, electroplating is chemical plating, mainly divided into vacuum electroplating and water plating.

Process- Water electroplating process:

racking→unoil→coarsening→neutralization→catalysis→glue solution→chemical nickel→flash of nickel

plating→bright copper→semi bright nickel→bright nickel,pearl pinch→nickel sealing→bright chrome;trivalent chromium;chrome ink→underbarrel

Technical features

Advantages:

1 Weight reduction

2 Overall cost savings

3 Fewer processing steps

4 Simulated metal parts

Disadvantages:

1 Including the metal plug in the molding process can not be changed;

2 Mold manufacturing more than 200 square inches of parts than the die casting more difficult;

3 The danger of fire when Electroplated Plastics are used in some household appliances.

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Printing

Plastic parts printing : A printed process that prints the desired pattern on the surface of a plastic piece by means of printing, screen printing, transfer, and the like.

Pad printing :is an indirect veneer printing technique in which the pattern is first etched on a printed plate, the etched plate is coated with ink, and then the majority of the ink is transferred to the object being printed by the silicone head on.

Screen printing :is one of the main printing methods in stencil printing: the plates are reticulated and the ink on the plates is printed on the substrate from the perforations of the plates after the squeegee. Usually the screen is made of nylon, polyester, silk or metal mesh.

Transfer: water transfer, thermal transfer

Water transfer: is the use of water pressure will be with a color pattern transfer paper / plastic film for a polymer hydrolysis of a printing.

Thermal transfer: is a pattern or pattern printed on the heat-resistant adhesive tape, by heating, pressure, the ink layer pattern printed on the finished product on a technology.

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Laser engraving

Laser engraving: also known as laser engraving or laser marking, is a kind of optical treatment with the surface of the process, and screen printing similar printing, through the laser carving can be typed on the product surface or pattern.

Technical features:

1 Wide range, safe and reliable

2 Accurate and meticulous, safe and efficient

3 Low cost, saving environmental protection

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Textured

Textured: the use of chemicals such as concentrated sulfuric acid on the plastic molding mold internal corrosion, the formation of serpentine, erosion, plow and other forms of the pattern, the plastic mold through the mold, the surface has a corresponding pattern of a process.

Process:

Mold to receive → Sandblasting → Chemical cleaning (pickling) → Decal → On the leaching powder →Heating → On the ocean → Dry paint → Chemical corrosion → Chemical cleaning → Sandblasting →Inspection

Technical features:

1 To enhance the visual effects of products and feel

2 Non-slip

3 Increase the surface area, conducive to heat

4 Conducive to stripping, easy to shape