

# LINEA FINITTURE



# Alkaline Copper

The electrolytic alkaline branching process has the purpose of preparing the surfaces of the various parts to receive any further treatments (acid copper, nickel, chromium, brass, etc ...).

Thicknesses from 1 to 3 microns can be made

The copper plating is applied exclusively by electroplating, done in electrolytic baths in which the object to be coppered acts as a cathode, while the anode is made of pure copper cathodes.

In alkaline baths the electrolyte is a solution of the complex cyanide  $\text{Na}_3\text{Cu}(\text{CN})_4$ .

The alkaline baths lend themselves instead to the direct ramming/coppering of the iron / zamak, but give rise to deposits of a very modest thickness.



The copper plating is used both as a protection against atmospheric corrosion and to improve the adhesion and the protective value of a subsequently applied nickel plating.

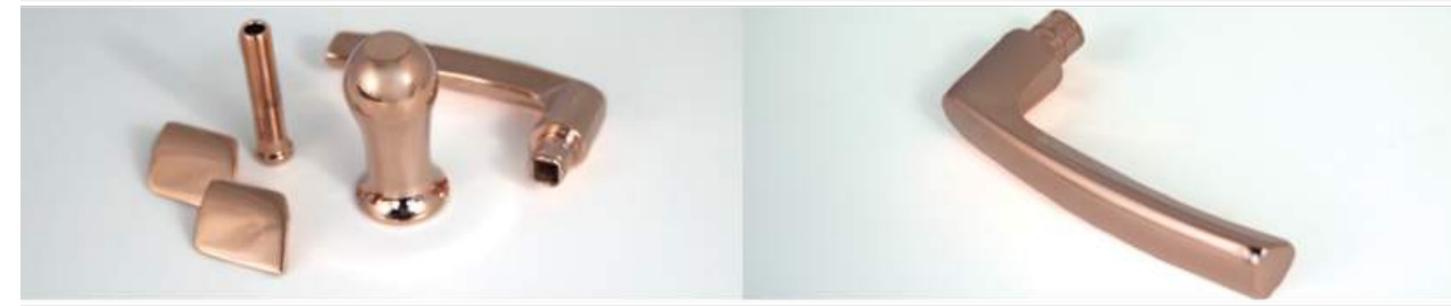
Frequently copper plating is also used in electronics and in industrial electrotechnics for the production of printed circuits and for the covering of steel wires.

We can use alkaline copper for the preparation of the following materials:

- Iron
- Cast iron after sandblasting
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300.

# Acid Copper



The acid copper-based process with electrolytic thickness has the purpose of creating deposits of considerable thickness of copper in order to level out and improve the surfaces of the various parts with a considerable aesthetic quality increase.

Thicknesses from 3 to 100 microns can be made according to your need.

The copper plating is applied exclusively by electroplating, operating in electrolytic baths in which the object to be coppered acts as a cathode, while the anode is made of pure copper cathodes. In acid baths, the electrolyte is made up of a concentrated solution of sulfate of copper with sulfuric acid added to increase its electrical conductivity and improve the etching of the anodes.

The acid copper baths allow to obtain notable and compact thicknesses, but they have the drawback of not being usable for the direct ramming of iron objects because these, immersed in the copper sulphate solution, give rise to the so-called cementation phenomenon. As a consequence, the thicknesses of a certain thickness must be applied on the iron objects in two stages, first in an alkaline bath and then subjecting the object, whose surface is now protected against cementation by a thin layer of copper, to a subsequent branching in acid bath.



The copper plating is used both as a protection against atmospheric corrosion and to improve the adhesion and the protective value of a subsequently applied nickel plating.

Frequently copper plating is also used in electronics and in industrial electrotechnics for the production of printed circuits and for the covering of steel wires.

The electroplated acid copper layer is not uniform in its distribution, in particular there will be areas such as the edges or points where there will be a very marked deposition, while in the holes and in the undercut the deposition will be much lower. It still has an excellent penetration

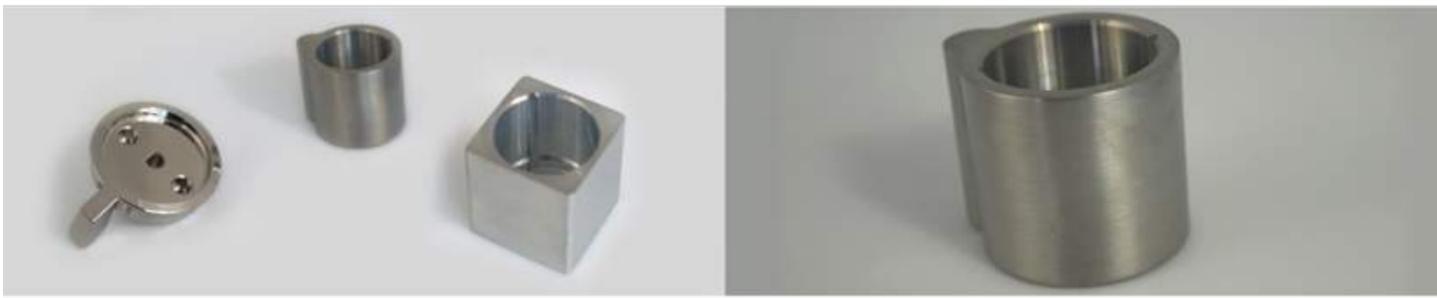
We can coat the following materials after appropriate preparation treatments:

- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- cast iron after sandblasting
- Copper and its alloys
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300.

# Nichel Satin Polished

# Nichel Pearl



The electroless nickel process aims to make deposits of polished or opaque nickel on both smooth or previously satin surfaces.

Nickel-plating has a main decorative purpose, with thicknesses obtainable and variable from 1 to 50 microns certified, according to the requests.

The objects to be coated with nickel-plating are treated in a solution of nickel salts while the nickel-metal coating is obtained by another electrochemical process.

Good corrosion resistance and excellent esthetic properties are, in fact, particularly suitable for decorative functions.

The corrosion resistance of a nickel deposit depends both on the thickness deposited and on the adhesion of the deposit itself, but - above all - on intermediate treatments such as copper.

The electroplated nickel layer through the nickel-plating is not uniform in its distribution, in particular there will be areas such as the edges where there will be a very marked deposit, while in the holes and in the undercut the deposit will be much lower.

Generally it should be protected with transparent or opaque paints as needed.



Through nickel plating we can coat the following materials after appropriate preparation treatments:

- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- cast iron after sandblasting
- Copper and its alloys
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300

Possibility of de-hydrogenation and / or lubrication with emulsifiable oils.

The process of electrolytic nickel came like that of making deposits of nickel "classic" pearl and nickel-plated "type 3Q7" (glossier no fingerprints left) on smooth surfaces.

It has a mainly decorative purpose with obtainable thicknesses of 1 to 50 micron based on the requests.

The objects to be coated are treated in a nickel relief solution and the metallic nickel coating is obtained thanks to an electrochemical process.

Good resistance to corrosion, excellent esthetic properties is in fact particularly suitable for decorative functions.

The corrosion resistance of a nickel deposit depends on the thickness deposited and on the adhesion of the same but superior deposit of the intermediate treatments such as copper.

The electroplated nickel layer is not uniform in its distribution, in particular there will be areas such as edges or points where there will be a very marked deposition, while in the holes and in the undercut the deposition will be much lower.

Generally it should be protected with transparent or opaque paints as needed.



You can coat the following materials after appropriate preparation treatments:

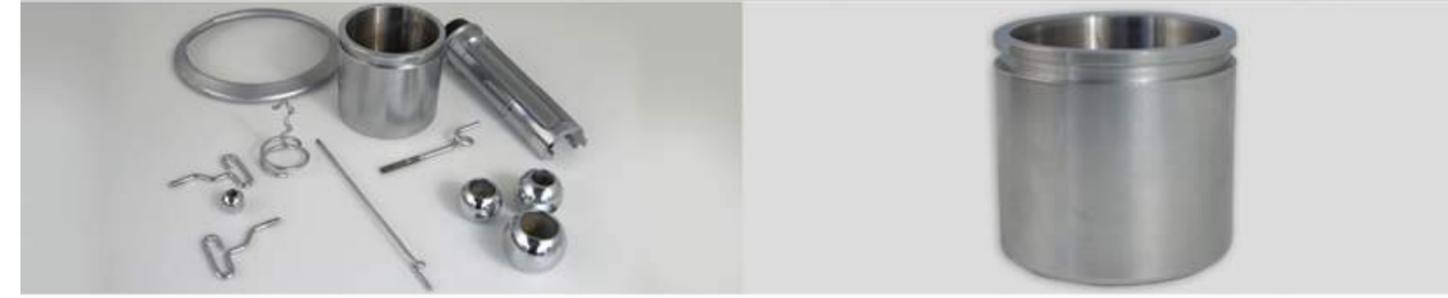
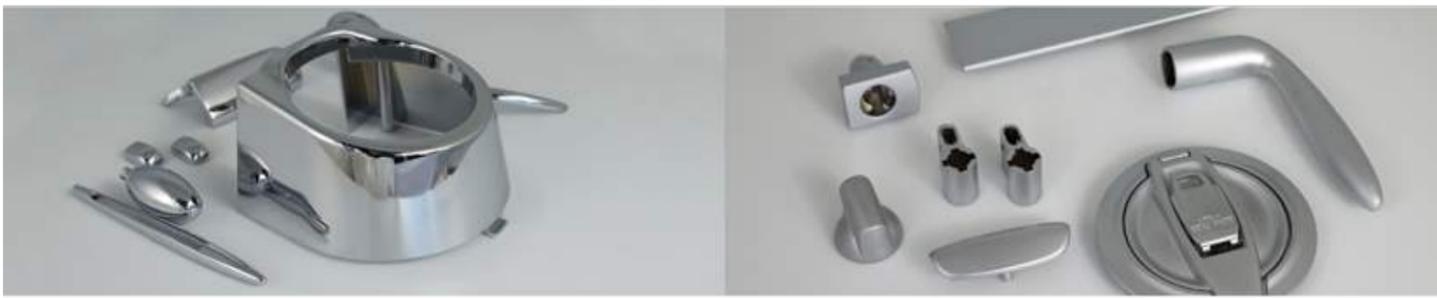
- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- Cast iron after sandblasting
- Copper and its alloys
- Brass
- Zama

The maximum dimensions of the details that are used are 1600x1100x300

Possibility of de-hydrogenation and / or lubrication with emulsifiable oils.

# Decorative Chrome

# Hard Chrome



The process of electrolytic decorating chromium has the aim of creating deposits of polished, matt, pearl classic" and "3Q7" (glossy, no fingerprints) on smooth or previously sanded surfaces.

The chrome-plating has a mainly decorative purpose with obtainable thicknesses of the addition of 0.025 to 0.3 microns certified, always according to the requests.

The objects to be coated, are treated in a solution of chromium salts and the metallic chrome coating is obtained by an electrochemical reduction process.

Good corrosion resistance, excellent esthetic properties are, in fact, particularly suitable for decorative functions.

The corrosion resistance of a decorative chrome deposit depends on the thickness deposited and on the adhesion of the deposit itself, but above all on intermediate treatments such as copper and nickel.

The electroplated chromium layer is not uniform in its distribution, in particular there will be areas such as edges or points where there will be a very marked deposit, while in the holes and in the undercut the deposit will be less.



We can coat the following materials after appropriate preparation treatments:

- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- Cast iron after sandblasting
- Copper and its alloys
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300

Possibility of de-hydrogenation and / or lubrication with emulsifiable oils.

The thick chromium-plating process has the aim of creating hard and opaque and wear resistant hard chrome deposits, with thicknesses greater than 1µm up to even 100 µm directly on the object to be coated without interposing layers of copper or nickel.

The objects to be coated with hard chromium are treated in a solution of chromium salts and the metallic chrome coating is obtained by an electrochemical reduction process.

The features that determine the technical and industrial relevance of chrome coatings are:

- High hardness
- Low friction coefficient
- Suitability for uses in severe tribological conditions
- Non-stick
- Good mechanical workability
- high chemical and thermal resistance

The hard chrome deposits are featured by high hardness and wear resistance and it is thanks to these peculiarities that are used in various sectors. The hardness can vary between 900-1000 Hv.

The corrosion resistance of a hard chrome deposit depends on the thickness deposited, the adhesion of the deposit and the micro-cracking.



This micro-cracked structure is responsible for the high hardness of deposits.

Oxidizing or reducing agents have little effect on chromium, however it is attacked by hydrochloric acid and chlorides in general, moderately by sulfuric and nitric acid.

The chrome deposit can be opaque or glossy depending on the preparation of the pre-coating piece (sandblasting, polishing). Therefore the roughness can vary according to the customer's requests. Ra can be obtained between 0.2-2.0

The electroplated chromium layer is not uniform in its distribution, in particular there will be areas such as edges or points where there will be a very marked deposition, while in the holes and in the undercuts the deposition will be almost none.

We can coat the following materials after appropriate preparation and without intermediate layers:

- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- Cast iron after sandblasting
- Copper and its alloys
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300

Possibility of de-hydrogenation and / or lubrication with emulsifiable oils.

# Aluminum Treatment

# Burnished inox



We like to emphasize that Eurogalvano is able to perform all types of treatments offered on all the other materials also on an ALUMINUM basis as well.

- Thick aluminum chromium plating
- Decorative glossy chromium plating, pearl
- Glossy nickel, matt, pearl
- Decorative glossy, matt, pearl and thickness brassing
- Bronzing
- Alkaline, acidic, etc. ...

For the extra features please refer to the other treatment cards.

For this reason, Eurogalvano has equipped its machine for the preparation of aluminum, triacidal preparation and double "CEMENTATION", which allow the adhesion of subsequent galvanic coatings.



Stainless steel burnishing, a galvanic process also called black oxidation, is achieved by the following procedures:

- Pre-treatment of the material with Degreasing and Pickling
- Washing with water
- Immersion of the pieces in oxidizing solutions at a temperature of 140 ° C
- Repeated wash cycles in hot running water
- Final treatment with heat protection oil

In the stainless steel burnishing treatment no dangerous substances – such as lead, mercury, hexavalent cadmium, polybrominated biphenyls, polybrominated diphenyl ethers – are used. The browning process is particularly suitable also for aesthetic reasons, thanks to the pure black color of the iron if required.

Thanks to the modular burnishing, the degree of gloss of the blackened layer is possible, acting on the preparation of the underlying surface.

One of the strong points of burnishing is that it does not substantially change the thickness (and therefore the dimensions) of the treated parts. In fact, the blackening layer consists mainly of oxides with a thickness of about 0.1 micron.

Another strong point of stainless steel burnishing is the resistance to corrosion that the metal parts treated with burnishing acquire, as the pores are completely clogged with the finishing oil and do not let the water infiltrate.

All these particulars can be burnish

- Iron
- Ferrous materials
- Cast Iron
- Steel
- Stainless steel (with a special procedure)

# Phosphating



Manganese phosphating (or phosphating) is a dark gray coating of phosphate material with anti-rust and anti-seize properties. The color tone and the thickness of the phosphating depend both on the type of material and the parameters of the bathroom. Manganese phosphating has the advantage, compared to other surface treatments, to guarantee a constant thickness coating over the entire surface.

The phosphating allows a long corrosion protection of the parts subject to sliding.



The main applications of manganese phosphating are:

- **Anticorrosive iron function:**

The laboratory tests confirm that, after appropriate oiling, the particular manganese phosphate exceeds 50-100 hours of resistance in salt spray. Thanks to its porosity the phosphate coating is able to absorb large quantities of oil and keep it in contact with the surface.

- **Anti-wear function:**

Unlike zinc phosphating, manganese phosphating is able to reduce the friction between surfaces in reciprocal sliding, acting on both the parameters that limit friction: lubrication and reduction of roughness. After a very short running, in fact, the crystals on the sliding surfaces they smooth the peaks and make them perfectly specular to each other. At the same time, the cavities still present in the phosphate carryover act as lubricant reserves.

# Painting Type Bruniton



It is an electro-static spray painting based on teflon black color "bruniton type" that is tendentially opaque. Once deposited, it is polymerized at a temperature of 210 ° C in a suitable oven. The parts treated with painting must first be prepared by mechanical sandblasting and manganese phosphating in such a way as to obtain the ideal gripping conditions.

The details are then oiled with appropriate oils.

The detail is given a homogeneous opaque black color, obtaining an ideal smoothness for all moving parts that need to be self-lubricated.

This kind of spray painting improves smoothness considerably.

With the painting we can coat steel, iron, aluminum, aluminum alloys, brass, and all previously galvanized materials.

Some features:

Gloss: 13 +/- 3 units / 60 ° angle

Viscosity: 60 +/- 10 secs / 4 mm / 23 ° C / DIN 53211

Film thickness: 5-30 microns



# Transparent Painting

# Bright Decorative Brass Plating



To complete the range of services offered by Eurogalvano it also includes the treatment done with transparent paint in its processes and is able to receive from the customer the raw product and return it finished without the help of sub-suppliers.

The two-component transparent non-yellowing electrostatic paint becomes part of our services!

Equipped with a high glossy look and fullness, it is characterized by its exceptional direct adhesion on metal supports (steel, aluminum, copper, brass, galvanized steel, carbon fiber, etc ...)

Used in the furniture industry, objects, components, items for indoor / outdoor.

Our plant is equipped with 6-axis anthropomorphic ROBOT, this allows us to obtain high quality that - together with the guarantee of repeatability of the process - make our painting one of the best available on the market.

Mixing process takes place automatically:

The mixing process is based on a constant flow of the base: the catalyst is injected in low flow and high frequency and regulated under pressure. The injection is done directly in the base stream at the mixer level.

In this way we can obtain a constant mixing of the product, maintaining a high quality over time.

The ROBOT is equipped with a last generation rotary cup steamer.

Equipped with a magnetic bearing turbine, it allows to pulverize with a rotation speed of 45,000 rpm improving the production quality with significant paint savings and high deposition uniformity.

The best technology is available together with the experience of our staff to ensure our customers the best that the market can offer today.

The features that are offered by our coating are essentially:

- Covering
- Gloss
- Smoothness
- Adhesion to the substrate
- Physical and mechanical properties (hardness, wear resistance, impact resistance)
- Resistance to chemical agents
- Corrosion resistance
- Durability

The decorative and electrolytic brass plating process has the aim to create deposits of polished, opaque brass, pearl on smooth or previously satin surfaces.

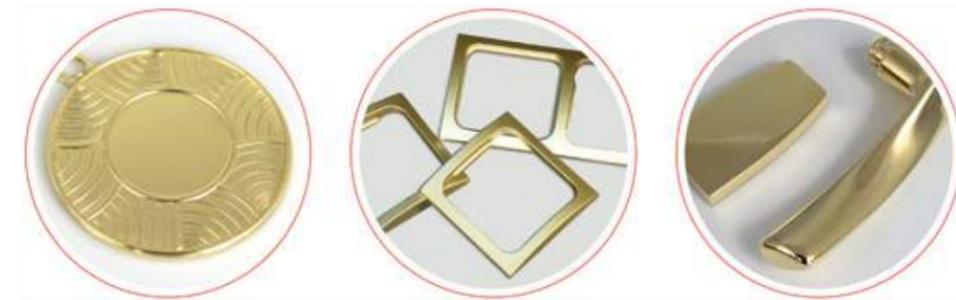
Brass plating has a mainly decorative purpose with obtainable thicknesses of about 0.025 microns carried over for the decoration up to even 6 microns certified according to the thickness requirements.

Thickness is normally used to obtain finishes with a sweeping or satin finishing effect or is used to be chemically bronzed.

The brass is obtained by electrodeposition using soluble brass anodes in copper, zinc, sodium cyanurate baths, plus other leveling, brightening (aluminum sulphate) and buffering substances. To obtain an adequate adherence of the brass layer on the piece to be coated, a substrate of some  $\mu$  of nickel is preliminarily made.

The deposited brass layer is always protected with transparent or opaque varnish as needed.

The corrosion resistance of a decorative brass deposit depends exclusively on the protection given by the protective varnish.



The electroplated brass layer is not uniform in its distribution, in particular there will be areas such as edges or points where there will be a very marked deposition, while in the holes and in the undercut the deposition will be less.

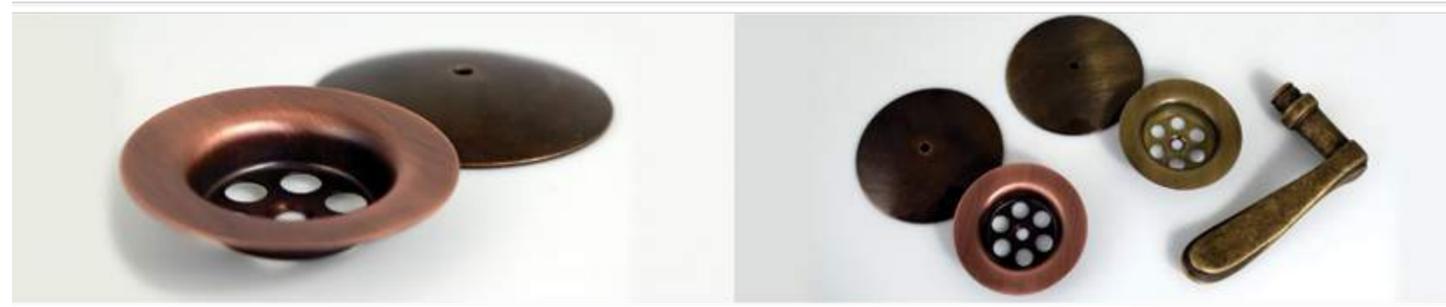
We can coat the following materials after appropriate preparation treatments:

- Iron
- Aluminum and its alloys after special preparation
- Carbon steels also heat treated
- Stainless steels
- cast iron after sandblasting
- Copper and its alloys
- Brass
- Zamak

The maximum dimensions of the parts that we can work are 1600x1100x300

# Bronzing

# Sating, Brozing, Tumbling, Wet Tumbling, Griding



The purpose of the chemical bronzing process is to make black colored deposits, on surfaces previously brassed or copper-plated with a mainly decorative purpose.

This bronzed is then tumbled, brushed or satin according to the finishes requested by the customer.

Eurogalvano realizes bronzing.

The deposited bronzed layer is always protected with transparent or opaque varnish according to need. The corrosion resistance of a bronzed deposit depends exclusively on the protection given by the protective coating.



We can coat the following materials after appropriate preparation treatments:

- Iron.
- Aluminum and its alloys after special preparation.
- Carbon steels also heat treated.
- Stainless steels.
- CAST IRON after sandblasting.
- Copper and its alloys.
- Brass.
- Zamak.

The maximum dimensions of the details that we can work with the bronzing are 1600x1100x300

In order to guarantee a very complete high quality service, Eurogalvano also offers various types of surface preparation:

## GLAZING

### Deburring

Metal deburring is the operation in which the finishing and polishing operations are carried out, as well as the elimination of all the imperfections on the edges of the object, in particular the metal burrs.

### Grinding

In the process of grinding metal, each piece is processed manually with accuracy and precision, initially with abrasive bands with large grits and gradually more and more fine, until reaching an appropriate level of honing through the grinding process.

### Polishing

Polishing allows you to remove all sanding marks from the object, making it ready for the next galvanic passage. The metal polishing process takes place through the rubbing, in special manual or automatic machinery, of objects with appropriate abrasive pastes able to guarantee the desired level of surface finish and to prevent possible chemical attacks on the objects to be processed.

## TUMBLING

### Dry tumbling

Of considerable value and used on details even in place of manual cleaning. Particularly suitable to give a perfect surface finish to a large number of pieces of various sizes. The process of tumbling occurs by rolling the pieces in a tumbler with a precious and special abrasive material shaped to the purpose, to obtain a perfect finish

### Wet tumbling

"Vibratory polishing" is the action produced by the relative movement between different elements of a mass. This mass consists of pieces in bulk to be treated and a liquid solution of a chemical product, the energy for the relative movement is supplied by a plant or a machine and the liquid in this case acts as cushion and get a better finish.

### Chemical

The metal polishing is a particular finishing process with a result comparable to "mirror polishing", particularly suitable for small parts or materials of various sizes. The effect is obtained through a slight vibration in contact with soft abrasive material of various sizes, together with the use of some specific chemical additives.

### Sandblasting

Sandblasting is a mechanical cleaning of the surfaces, it can be used to prepare surfaces for painting, for galvanic coating and to give a certain roughness.

Eurogalvano has several sanders for cleaning and surface preparation:

- Manual
- Automatic belt
- Automatic Buratto
- Automatic in rotation

By applying different types of abrasive products (such as gray, white, brown corundum, glass microspheres, steel or cast iron) we are able to obtain different types of finish. In fact, surface roughness is mainly a function of the granulometry and the quality of the abrasive and of the initial conditions of the metal surface to be sandblasted.

Eurogalvano is able to monitor all the roughness parameters, using the Rugosimeter tool. The most used parameters to control the roughness of a sandblasted surface (expressed in microns) are (according to DIN 4768):

- Ra: average roughness - arithmetic mean of the absolute values of all the ridges and the valleys measured along the sample stretch
- Rmax or Rt: maximum or total roughness - distance between the highest ridge and the deepest valley measured along the sample stretch;
- Rz: average roughness - arithmetic average between the 5 major crests and the 5 deepest valleys measured along the sample stretch.

# Powder Coating



Eurogalvano s.r.l. also offers powder coating, a coating process for small and large metal surfaces in all shades of color.

Thanks to the electrostatic painting we can obtain for on any material a homogeneous distribution of the paint and a longer duration in time.

Eurogalvano s.r.l. has two powder coating systems with manual and automatic painting stations ensuring quality and constant control of the application both on small and medium-sized parts.



The industrial powder coating is made using powder products with an electrostatic system. Applied as a finish or as a background treatment, depending on the type of paint product chosen and the environment in which it will be used, the electrostatic painting is particularly suitable for materials that need an aesthetic and elastic coating.

The pieces being processed are covered with a layer of paint powder that adheres to the material by electrostatic effect, and then passes into an oven where the paint first melts and then polymerizes at a temperature of 180 °.

# Sputtering



Eurogalvano s.r.l. is able to offer among the wide range of its treatments the cathodic pulverization, cathode spraying or cathodic vaporization. (in English sputtering, means "spraying"), process in which there is emission of atoms, ions or molecular fragments from a solid material said target, (target), bombarded with a beam of energetic particles (generally ions) allowing the chroming, brassing and plating of plastics and metals with a totally Green process.

Eurogalvano s.r.l. also offers the industrial application of Metallization which takes place by deposition of aluminum.

Metallization, means deposition on a substrate of a thin film of metal in a vacuum condition. The vacuum allows the metal molecules to move from the evaporation source to the surfaces to be coated without encountering the impediment of air and other gaseous particles.



The Metallization in vacuum allows to cover any type of material indiscriminately from the shape, geometry and size obtaining both technical and decorative objects with a bright, reflecting, metallic appearance as well as variously colored. Furthermore, the high strength of the surfaces obtained gives a long-lasting appearance to the products.

Features and Benefits:

- Low temperature ecological processes
- Zero slag or by-products from processing



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