

Decorative Chromium

Common Names: Nickel-Chromium, Chrome, Triple Chrome

Applicable Specifications: Federal Specification QQ-C-320, Class 1 (QQ-N-290 Class 1 also applies), SAE-AMS QQ-C-320

Description: Decorative chromium plating refers to relatively thin deposits of chromium plated over a nickel deposit. The nickel deposit may be bright or satin and determines the reflectivity of the final finish (Palmetto Plating does not offer the satin finish). In some cases, copper may be used as an initial deposit on the base material (Palmetto Plating Co., Inc. does not provide copper plating services). Decorative chromium deposits achieve corrosion resistance by encapsulation and not by electro-chemical properties. The degree of corrosion resistance is directly related to the thickness of the nickel and the porosity of the nickel. The higher the quality of the nickel deposit, the greater the corrosion resistance.

Function & Physical Finish: Decorative chromium plating is used to give a bright, easily cleanable, corrosion resistant deposit to metal parts. This deposit has a reflective white or bluish-white color and can withstand mild to severe abrasion. The thickness of the underlying nickel is .0003" to .002", with thinner deposits usually on copper or brass for interior use and heavier deposits usually on steel or other substrate materials for exterior use. Chromium thickness seldom exceeds 0.00001" or the deposit assumes the true milk white color of chromium. Decorative chromium deposits on stainless steel are usually applied directly onto the stainless steel.

The deposit is a blue-white color. Deposits greater than 0.0005" are non-porous.

Examples of Use: Automotive components, food, pharmaceutical, and medical equipment, household trim, wares, hardware, electrical equipment.

Considerations & Limitations:

- Base Material: Steel, Cast Iron, Brass, Copper.
- Shape of parts: Chromium is a relatively inefficient process and does not cover recessed areas. Careful consideration should be given to design.
- Size: Parts up to 4 feet by 2 feet. Maximum weight 500 lbs.
- Quantity: Although quantity affects price, quantity is not a limiting factor. Price is determined by how many parts can be process in an hour.
- Thickness of Finish: Nickel thicknesses of 0.0003" to 0.002" are normal. Chromium thickness is normally 0.00001"
- Masking: Can be used to protect critical machined dimensions.
- Heat Treatment: Heat treat scale must be removed. It is necessary to stress relieve parts whose hardness is Rockwell 40c or higher.
- Method of Processing: Parts must be racked plated.
- Pre-Treatment: Parts must be clean and free from oil, grease and tape residue. Parts must be "chemically" clean prior to plating and may require specific activation, chemical etch or activation prior to plating. Normal processing includes caustic soak, electroclean, and acid de-oxidize. An acid pickle prior to de-ox may also be used. Sometimes abrasive blasting or mechanical finishing is required for better adhesion or to achieve a required surface finish. Palmetto Plating Co., Inc. provides limited abrasive blasting (parts less than 18" maximum dimension and 25 lbs) for parts which are being plated.
- Post Treatment: None.
- Packaging: **Parts are repacked as received.** It is often necessary to wrap parts with paper to prevent scratching. This will be done at the customer's request.

Quality Control Process solutions are checked and analyzed following an established schedule and monitored using SPC techniques. Thickness testing can be done at the customer's request. Salt Spray testing can be done by submitting samples to an outside laboratory. This is done for an extra charge at the customer's request.