

Zinc Plating: A common sacrificial coating used in finishing steel parts to provide protection from red rust. Applied electrolytically to a typical thickness of 200 – 300 micro inches (.0002" - .0003"). The zinc plating protects the underlying steel by formation of a "galvanic cell", which results in the zinc corroding preferentially to the steel. Red rust will not start forming until all zinc has been converted to white rust (zinc oxide). Normally zinc plating is used for indoor applications, but can also be used as a base for painting. By itself a 200 – 300 micro inch zinc plating will probably get no more than 12 hours of Salt Spray protection per ASTM-B117. With a clear chromate topcoat this is increased to 24-36 hours, while a yellow chromate top coating can achieve protection up to approximately 96 hours. Even though it is mostly used as a functional coating, zinc plating does have some decorative appeal. Other properties of zinc plating include: moderate appearance, excellent abrasion resistance and excellent paint adhesion.

Yellow Zinc Plating: As above, with yellow dichromate passivate, greatly improving corrosion resistance. Salt Spray protection (ASTM-B117) is approximately 96 hours.

Black Zinc Plating: As above with black silver nitrate passivate, giving a matte black appearance and similar corrosion resistance to yellow zinc plating.

Zinc Plate, Chromate Plus Sealer: Currently Southco's standard finish of choice. A metallic (inorganic) sacrificial finish which provides excellent corrosion protection. "Sacrificial" means that the plating will corrode instead of the base material. This finish will protect even if the finish is scratched through to the base material. Most applications provide corrosion resistance averaging 500 hours of salt spray, per ASTM B117 or ISO 9227, and 5 cycles of moist sulphur-dioxide testing (ASTM G-87) without evidence of red rust for parts plated approximately .013mm (.0005") thick. This finish has a lubricious surface, which is more uniform and consistent, both visually and in terms of its mechanical properties. This finish also exceeds zinc-plating specifications as outlined by ASTM B633, BS 1706, DIN 50961 and AS1789.

Dry Film Lubricants: A variety of lubricious coatings (including Mil-L-4601014 & MIL-L-8937) that give permanent, oil free lubrication to moving components while at the same time protecting them from corrosion. This heat curing material also prevents galling, seizing and fretting. Typical salt spray protection is in the range of 240-480 hours (ASTM-B117). These coatings do not rub off and can be painted over with most paints. Dry film lubrication is an excellent solution to the problem of lubricating parts that will be operated in corrosive atmospheres that may be stored for long periods, are seldom lubricated once they leave the factory, or where permanent lubrication is desired. *(See also Black Organic Coating)*

Dacrotizing: An immersion zinc flake/chromate dispersion coating applied to ferrous metal parts for very good corrosion protection. Dacrotizing meets specification Mil-C-87115. Dacrotized parts withstand 240 hours of salt spray testing per ASTM B-117, and 1 cycle of moist sulphur-dioxide testing (ASTM G-87) without evidence of red rust. *(Dacrotizing is a registered trade name of Metal Coatings International, Inc.)*

Black Oxide: This is a black conversion finish used over steel parts for aesthetic purposes. The coatings have a deep glossy appearance. Salt Spray protection approaches 24 hours (ASTM-B117) depending on the sealant used.

Black Organic Finish: A lubricious, uniform black fluoropolymer finish for metallic parts. Provides up to 400 hours of salt spray resistance per ASTM B-117, without evidence of red rust, when applied over approximately .013mm (.0005") of zinc plating. Over bare metal only a maximum of 96 hours of protection per ASTM B-117 can be expected. *(See also Dry Film Lubricants)*

Chrome Plating: A highly decorative and very hard silver finish achieved by an electroplating process which applies three or four layers of metal; copper, nickel and chromium. Depending on the surface preparation (polishing) and the final chrome thickness, the finish can range from satin to a high luster mirror-like surface. Properties of chrome plating include superior appearance and superior abrasion resistance.



Copper-Nickel-Chrome Plating: See *chrome plating*.

Nickel Plating: As an electro-deposit, this coating is used primarily when a decorative bright silver finish is desired. If high hardness and good chemical resistance are required, parts are often coated with electroless nickel. This has the advantage of being able to build thickness evenly on both the inside and outside of a part. Other than E-coating, electroless nickel is one of the only coatings that will achieve total coverage. Other properties include excellent chemical resistance in a hard, durable finish. More decorative than zinc plating but does not provide sacrificial protection.

Chromate Conversion Coatings: Also known as Chem-Film (Mil-C-5541E), Irridite or Allodine, this coating is similar to phosphate coatings in that it chemically reacts with the surface of the metal (in this case strictly aluminum and its alloys). Its primary purpose is to provide maximum corrosion protection to aluminum parts. It will yield up to 336 hours of Salt Spray protection (ASTM-B117), and is an excellent base for paint adhesion.

Phosphate Conversion Coatings: There are three basic types of phosphate coatings: Iron (TT-C-490 type II or IV), Zinc (TT-C-490 type I) and Manganese phosphate (DOD-16232). Iron and Zinc phosphate are both used as a pretreatment on steel and other metal parts to enhance paint adhesion and corrosion resistance. Iron phosphate yields light coating weights of 30 to 80 mg/SF, while zinc phosphate usually yields heavier coating weights of 150 to 1500 mg/SF or more. Heavier phosphate coats coating weights require more paint to achieve a smooth finish. Manganese phosphate is used over steel as a break-in lubricant with oil or where a very thick coating is required. Manganese phosphate easily yields coating weights of over 3500 mg/SF. All phosphate coatings can serve as good "in process rust preventatives."

Powder Coating: Powder coating is an electrostatic painting process followed by a thermal curing of the finish. This provides uniform coverage and results in a top-coat that is attractive, durable, corrosion resistant, and UV stable. Powder coat is available in a variety of colors and glosses. Ideally suited for exterior applications. Properties of powder coating include excellent appearance and good abrasion resistance.

Standard E-Coat: Either an epoxy or an acrylic paint that is applied through an electroplating process followed by a thermal curing of the finish. Epoxies are normally used as a primer or for indoor applications while acrylics are often applied as a finish coat. E-Coat is available in a variety of colors and offers the ability to coat parts uniformly inside and out. Properties of E-Coating include: excellent appearance, high corrosion resistance, excellent abrasion resistance, and excellent paint adhesion.

Techniclad E-Coat: An ultraviolet resistant polyurethane E-Coat with excellent aesthetic appearance. Techniclad E-Coat is the best choice for weatherability, UV resistance and acid rain resistance. This urethane coating is also perspiration resistant and can achieve Salt Spray protection levels of 1,000 hours or more (ASTM-B117) on steel as well as aluminum. This unique process is capable of achieving total coverage on complex parts such and assemblies such as latches, hinges and lock assemblies.

CARC coatings: Camouflage coatings for military vehicles and equipment. These coatings conform to Mil-C-46168 and/or Mil-C-53039 and are generally dead-flat green, brown, black or white.

Stainless Steel: Stainless steel materials provide excellent corrosion resistance in high moisture environments. Stamped products allow for buffing and polishing which provides a bright and attractive appearance that is easily maintained.



Polyamide: Also known as PA or nylon. Polyamide is a thermoplastic polycondensate and offers high lubricity and moderate strength. Many grades are available and often use glass fiber reinforcement for added strength and durability.

ABS: Acrylonitrile-Butadiene-Styrene is a thermoplastic that has been mass-produced since the 1960's. ABS is tough, hard and rigid. It also provides good chemical resistance, dimensional stability, creep resistance and moderate strength.

Plastisol: A soft, waterproof, non-sliding, non-conductive coating with many practical applications. Provides excellent corrosion and impact resistance, protects against rough metal edges, and insulates from electrical shock. Plastisol is also a cost effective way to improve the appearance of your product. It can be used to replace molded plastic handles, rubber coating, hard plastic coatings, liquid painted products or powder coated products and reduces the need for expensive packaging to protect from scratching.

Electro-Polishing: A process in which metal is removed from the surface using electrochemical techniques. Commonly used on stainless steel to produce a surface ranging from a low reflective satin finish to a bright finish. Properties of electro-polishing include superior appearance and excellent abrasion resistance.

Ball Burnishing: A process by which steel or stainless steel balls are used to debur, smooth and polish metal or metal products. Burnishing improves surface hardness, wear resistance, and corrosion resistance and is often used to polish stainless steel, aluminum, brass or silver.

Anodizing: Used exclusively on aluminum products. An electrolytic process where the thin oxide film on the aluminum surface is converted to an anodic coating. This anodic coating provides a hard, wear and scratch resistant surface. Dyes are then used to provide specific decorative appearance and colors. Properties of anodized aluminum include superior appearance and excellent abrasion resistance.

Passivating: A treatment for stainless steel performed in accordance with Mil-Std-171 section 5.4.1 (QQ-P-35). This process removes free iron from the surface structure of the stainless steel part and leaves behind an impenetrable matrix of Nickel and Chromium Oxides. This process is relatively economical as only an acid solution bath is required.

Note: Values for corrosion protection are to be used for comparative purposes only. These values should not be construed as a guarantee that the levels of protection will be achieved. Customers are encouraged to perform their own testing on specific items contained within this catalog.

Precautions must be exercised when welding plated parts to assure adequate ventilation and appropriate personal safety.