

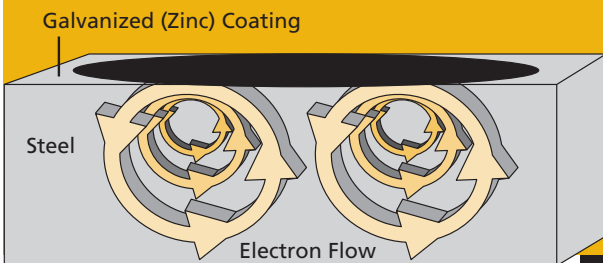
ALLIED TUBE & CONDUIT
GALVANIZED STEEL TUBING

Why Galvanize?

Galvanizing (zinc coating) has been used to protect iron and steel from rusting for over one hundred years. Galvanizing protects steel from rusting (which it tends to do almost immediately if bare) by forming a protective barrier between the steel and the environment, like paint does. But galvanizing goes one giant step further than paint; in addition to forming a protective barrier, it provides sacrificial protection of the steel. Steel is more electro-negative than zinc; that is, steel will attract electrons from the zinc. This electronic flow from zinc to steel will reduce the corrosion rate of the steel while increasing that of the zinc. The zinc coating is thus sacrificed to prevent the corrosion of the steel at breaks in the zinc surface. Galvanizing protects the steel even when the coating is damaged.

Galvanic Protection

ZINC CORRODES TO PROTECT THE STEEL



Steel which is exposed to the weather or receives rough treatment in which coatings are physically damaged will remain free of rust five to ten times longer when the steel is galvanized instead of painted. Due to lower maintenance and longer life, galvanized steel is a premium product, and should be sold at a higher price than a painted product.

Galvanizing, therefore, provides electrochemical protection of steel in addition to forming a protective barrier. Allied's unique triple coat zinc galvanizing process provides an end product that can easily be welded, fabricated or powder coated. Allied's clear polymer topcoat reduces the general corrosion rate of the zinc, and it allows the zinc to be more effective in protecting uncoated edges through the self-sacrificial galvanic effect.

GALVANIZED STEEL TUBING

The Flo-Coat® Process

Allied's patented Flo-Coat process is the superior method of galvanizing steel tubing. The process begins with flat strip steel, which is then cold-formed and either electric-resistance or induction welded. After welding, the tube receives a triple layer of protection – zinc, conversion coating, and a clear polymer topcoat – all applied in-line to assure a uniform coating. The result is a smooth, shiny end product appearance that is unmatched in terms of strength and durability.

Other inherent advantages of the Flo-Coat process include:

The cold-forming and quenching process creates greater yield and tensile strength than competitive product alternatives.

The tube is welded prior to the application of coatings; thus the weld area is as protected from corrosion as the rest of the tube body.

Flo-Coat tubing exhibits greater corrosion resistance because of the synergism created between the coatings; the conversion coating passivates the zinc to slow down the white rust growth process, and the clear topcoat then “seals in” the protection.

The clear third coating also acts as a primer for painting or powder-coating. Extensive precleaning is unnecessary, and excellent adhesion is achieved, even at high baking temperatures.

Welding Flo-Coat is easily done in the exact same manner as welding bare steel. Allied's zinc coating contains the lowest lead content achievable (99.99% pure zinc) so lead oxide fumes generated during welding are kept to an absolute minimum. Hot-dip galvanized products usually contain up to .5% lead (5000 ppm). For more information, see Welding and Painting Guidelines.

Allied's galvanized products can be easily fabricated...bent, swaged, wall-to-wall flattened...without deformation of the triple layer of protection. Competitive products tend to flake and chip during fabrication.

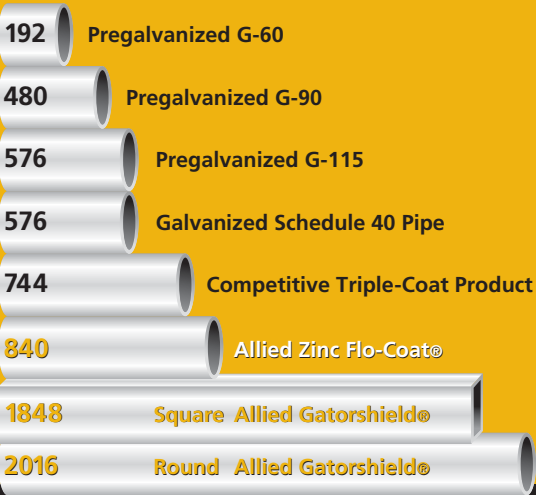
GALVANIZED STEEL TUBING

Allied vs Competition

When Rust and Corrosion Resistance are Paramount...Allied's Triple-Coat Zinc Products Excel!

Salt Spray Tests* – Galvanized Products

First Sign of Red Rust – No. of Hours



Salt Spray Tests* – Scribed Polyester Powder Coated Products

To 1/8" Creepage – No. of Hours



*Tests independently conducted by Scientific Control Laboratories, Chicago, IL in accordance with ASTM B-117. Detailed Scientific Laboratories' test results are readily available from your local Allied Sales Representative.

Powder coating over Allied's galvanized substrate provides substantial corrosion resistance superiority over powder coating a raw/uncoated substrate. Powder coating over a galvanized surface provides corrosion protection at least 5-6 times longer than the same coating over a raw or bare surface.

Allied vs Pregalvanized (G-60/G-90)

Allied products exhibit superior corrosion resistance, both inside and out. Pregalvanized products do not provide the "sealed-in" protection of the Flo-Coat process. On the inside, a corrosion resistant zinc rich coating is applied after the tube is welded, and completely covers the interior. When pregalvanized tube is welded, the ID weld area is left bare; unprotected since the ID cannot be re-metalized. The exposed metal is immediately left to be attacked by all corrosive elements. The OD weld is re-metalized, but is still highly susceptible to corrosion.

Allied's 50/55® with Gatorshield delivers a minimum 50,000 PSI yield strength and minimum 55,000 PSI tensile strength. Pregalvanized tube product offerings advertise only "target" yield and tensile strengths.

Allied utilizes a special high-grade zinc material (meeting ASTM B-6) which has an average 13 ppm lead content. Pregalvanized products typically have a much higher lead content level. By having the lowest lead content achievable, Allied zinc products can keep noxious fumes generated during welding to an absolute minimum.

Allied's Flo-Coat process provides all tubular product's with a smooth, shiny, clean appearance that will not flake or chip during fabrication. In addition, the synergistic triple coating retards oxidation (graying down) and flaking common to pregalvanized products.

Unlike Allied's products, tubing manufactured from pre-coated steel coils/sheets requires special surface treatment prior to the application of paints or powder coatings; otherwise, proper adhesion is not obtained. These pre-treatments may include phosphating, anodizing, conversion coating, or use of a special primer. Whichever process is utilized, it will add cost to the end product and possibly generate hazardous waste materials. Furthermore, a re-metalized weld seam on the OD will have different characteristics than the rest of the surface, and may cause poor adhesion of paint and powder to that area of the tube.

Allied vs Galvanized (Hot-Dipped) Schedule 40 Pipe

Allied's galvanized products resist rust and corrosion at least 45% longer than galvanized Sch 40 pipe. (See salt spray test results on page 4)

Hot-dipped products, like pregalvanized, generally have a higher lead content than Allied's products, which are galvanized with "four-nine" zinc, which is 99.99% pure.

Allied's Flo-Coat process is safer and better for the environment. Increased Federal and State EPA issues are restrictive to the hot-dipped galvanizing process. These restrictions will make hot dip processes cost prohibitive, and may result in a decline of processors and cause availability problems.

50/55 with Gatorshield is significantly stronger (66%) gauge for gauge, yet is at least 31% lighter (OD/OD) than galvanized Sch 40 pipe. Less weight means easier handling and installation in the field, particularly in areas where material handling equipment is unavailable or the site is inaccessible.

Allied's in-line galvanizing process, which involves heating and quick cooling of the tube, enhances the mechanical properties of the finished product. 50/55 with Gatorshield delivers a minimum 50,000 psi yield strength, and greater impact resistance than hot-dipped Schedule 40 pipe.

50/55 with Gatorshield can be easily fabricated...bent, swaged, wall-to-wall flattened...without deformation of the triple layer of protection. Galvanized Sch 40 tends to flake and chip during fabrication.

Unlike Allied's uniform exterior and interior coatings, the pipe hot-dipping process provides an inconsistent, rough surface finish that can result in poor coating coverage, as well as an inferior aesthetic appearance.

50/55 with Gatorshield is available in a wide range of lengths to meet specific customer requirements. In contrast, galvanized Sch 40 pipe is typically sold only in 21 foot standard lengths.

Allied vs Aluminum

When compared with aluminum pipe, 50/55 with Gatorshield exhibits an average 60% greater load-carrying capacity in tension. In the weld area, the strength differences are even greater, as aluminum loses 50% of its strength in the weld area, requiring welds to be placed in low-stress areas of a structure.

Since Gatorshield is stronger than aluminum, less material can be used. Steel's substantially lower material cost (about 50%) combined with the need for less material can create dramatic cost savings.

Steel structures require significantly fewer welds (there is less need for structural bracing). The result is lower welding labor costs. Welding Gatorshield also requires less expensive equipment and materials. And unlike aluminum, Gatorshield can be easily welded in the field.

Allied's ductile steel tubing withstands the bending and forming work required for custom awning designs, playground equipment, etc. Aluminum, however, continues to age-harden while in storage, and can break during fabrication.

Gatorshield steel tubing is easily and less expensively painted or powder-coated than aluminum, which must go through extensive cleaning and other costly pre-coating processes. Because Gatorshield's third coat has the same paint chemistry and surface consistency as expensive primers, finish adhesion is excellent.

Allied's zinc products exhibit a bright, smooth finish that retains its attractive appearance for an extended period. Aluminum turns a dark, dull gray as it ages.

Using steel reduces theft and vandalism...the scrap value of aluminum is more than 10 times that of steel.



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