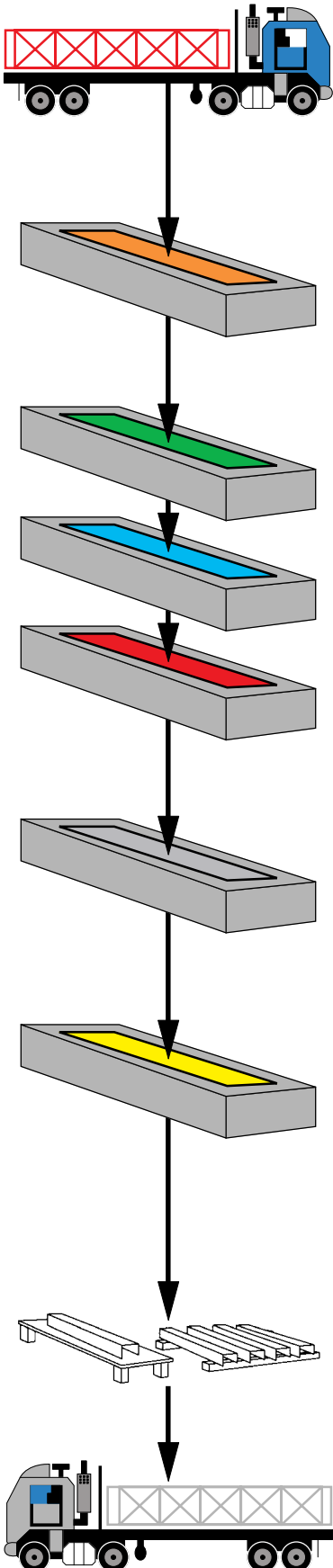


**METALPLATE**

**Metalplate Galvanizing, L.P.**

Alabama • Florida • Georgia • Louisiana • Texas

[www.metalplate.com](http://www.metalplate.com)



**Receiving** - Materials received at Metalplate are unloaded and verified against their packing list and customers are notified promptly if discrepancies are found. Material is inspected for its suitability to be galvanized including proper design and fabrication for galvanizing as well as the presence of surface contaminants that are not removable by the normal chemical cleaning process. Material is then packaged for processing which may involve “tying-up” the material with wire or chains to facilitate its handling.

**Caustic Cleaning** - Material is immersed in a hot caustic solution to remove grease, oil, dirt, and water-based paints. Other contaminants that cannot be removed by the normal chemical cleaning procedures include but are not limited to: welding slag, splatter, antisplatter, lacquer and oil-based paints.

**Acid Pickling** - Material is immersed in a dilute acid solution to remove all rust, mill scale and any other surface contaminants.

**Rinsing** - The material is rinsed in water to remove excess acid and iron salts.

**Fluxing** - The material is immersed in a heated aqueous zinc-ammonium chloride solution. This step is performed to remove any remaining impurities, moisture, or oxide film from the iron or steel and to ensure that the metal's surface is chemically clean and ready for galvanizing. Upon removal from the flux solution, the work is air-dried before entering the molten zinc.

**Galvanizing** - The work is immersed in molten zinc where it will react to form a series of zinc-iron alloy layers. Immersion time varies according to the thickness and weight of the material being galvanized. The material will be withdrawn from the zinc kettle when the coating thickness meets or exceeds the appropriate minimum coating thickness as specified in the relevant ASTM standard.

**Quenching** - The material is immersed in a quenching solution following galvanizing. The quench step is performed to minimize the formation of dark, matte gray coatings by stopping the galvanizing reaction. In addition, the freshly galvanized surface is very chemically active and the quenching solution will passivate the surface making it less susceptible to the formation of Wet Storage Stain (White Rust).

**Finishing** - Following galvanizing, material is weighed, the coating thickness is tested for compliance with ASTM standards, and the surface quality of the material is visually inspected. If necessary, the material is cleaned to remove excess zinc drips and runs.

**Shipping** - The material is identified, matched-up, and checked off against the customer's paperwork and then prepared and packaged for delivery.

# Hot-Dip Galvanized Steel Data Sheet



Type of corrosion protection	Cathodic and Barrier
Type of reaction with iron in steel	Diffusion, producing intermetallic layers
Coating layers (Zinc %, Iron %)	Gamma (75, 25), Delta (90, 10), Zeta (94, 6), Eta (100, 0)
Abrasion resistance/Hardness of coating layers	Gamma (250 DPN)
	Delta (244 DPN)
	Zeta (179 DPN)
	Eta (70 DPN)
Bond strength to steel	approximately 3600 psi
Density of zinc coating	446 lbs./ft <sup>3</sup> (7.14 g/cm <sup>3</sup> )
Thickness of coating	Variable (ASTM A 123, A153, A767, or CSA G 164)
Thickness of coating (edges, corners)	> = flat surface
Zinc coating coverage on tubular pieces	100%, inside and out
Inspection method	Visual and/or magnetic
Typical durability without maintenance*	
Industrial	> 65 years
Tropical Marine	> 70 years
Temperate Marine	> 70 years
Suburban	> 85 years
Rural	> 120 years
Durability in solutions	Excellent in pH range 5.5 - 12.5
Durability in fresh water	Good, f(O, N, CO <sub>2</sub> , Ca, Mg, Fe, Mn, temp., pH)
Durability in sea water	Good, f(dissolved sulfides and chlorides, aeration, pH)
Durability in soils	Good, f(moisture, resistivity, aeration, pH)
Typical durability in concrete	Excellent, typically 75 years
Bond strength	> = to black bar
Temperature range of use	-75°F to +392°F (-59° to 200°C)
Formability radius	3x steel thickness
Steel's mechanical properties	Unchanged
Zinc coating appearance	Shiny, spangled, matte gray, but equivalent
Other properties	Paintable, weldable

\*1/4" thick carbon steel

# THIS IS HOW WE DO IT

## SERVICE AND QUALITY

Metalplate offers the ultimate in quality, and complete and prompt service.



## TECHNICAL SUPPORT

Metalplate's Technical Department enables us to maintain tight process controls thus assuring desired results. Our Technical Department also provides application engineering support for you and your customer.

## CAPACITY AND CAPABILITY

Metalplate's capacity for high volume, high quality and quick turn around at each plant is unequalled. We galvanize everything from small fasteners, small parts and marine products to large structural shapes and grating.



## TRANSPORTATION ASSISTANCE

Metalplate will assist you in arranging prompt and efficient shipment to us, back to you, or to your customer. This assistance applies to a one-pallet order or to multi-truckload projects.

## MATERIAL IDENTIFICATION AND PACKAGING

Dedicated to making galvanizing a positive experience, we place high priority on identification, accountability and packaging throughout the entire material handling process.



**Metalplate's Quality System is designed to ensure the excellent results expected by our customers. Some of the elements that form the backbone of our system include:**

**STANDARD OPERATING PROCEDURES (SOPs)**

Metalplate has developed unique SOPs for each of our facilities in order to communicate to our personnel the normal operating practices, specifications and standards used by Metalplate to produce and deliver cost effective, high quality coatings of hot-dip galvanized products.



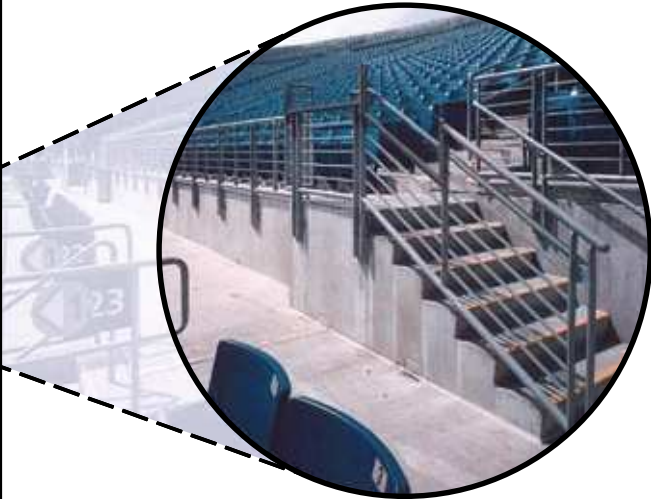
**AUDITS**

Metalplate's Technical Department performs internal quality system audits to ensure that processes and product quality are in compliance with our SOPs. If variations from the established procedure are found, action plans are developed to eliminate the observed discrepancies to further our quest for continuing improvement.



**CONTROL PROGRAMS**

Metalplate maintains control programs for the calibration, adjustment, and maintenance of measuring and test equipment to demonstrate the conformance of our galvanized product to industry standards. Each Metalplate facility has an on-site lab for daily testing and control of process solutions. Metalplate also operates an advanced testing laboratory at its corporate headquarters that is capable of analyzing zinc bath metal and zinc by-products as well as process solutions. We also perform any non-routine testing such as microscopic evaluation of galvanized coatings.





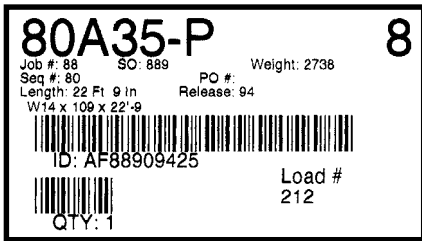
**Galvanized Seating**



**Galvanized Understructure**

## CERTIFICATES OF COMPLIANCE

Metalplate's hot-dip galvanizing process adheres to all applicable ASTM Specifications and we inspect materials to assure that a quality galvanized coating has been applied. Metalplate will provide Certificates of Compliance to the customer when requested.



## MATERIAL TRACKING

All material received at Metalplate is verified against its packing list and the customer is notified immediately if discrepancies are found. Metalplate also tags material for proper identification and accountability throughout the galvanizing process. We work with our customers to provide proper identification for their material following galvanizing. This can include procedures such as transferring piece marks to the material or applying bar codes where applicable.

## FINISHING CODES

In order to provide consistent finishing quality to our customers and their products, Metalplate developed an internal system of finishing classifications which incorporate specific industry standards, customer quality needs, special work requirements, repair methods, and cleaning methods.

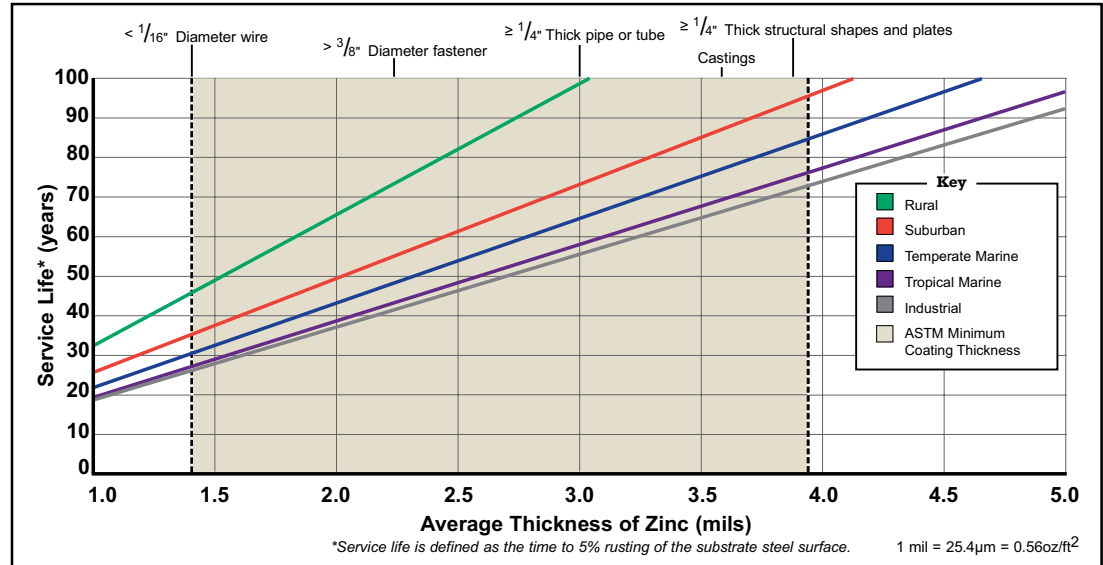


*Metalplate is always continuing to improve our quality and productivity. The results of our efforts are realized by our customers as quicker turn times, lower prices, and higher quality coatings.*

Corrosion is the destructive result of the chemical reaction between a metal and its environment. More simply, it is the process of metal being worn away. If left unprotected, iron and steel will react with the surrounding environment and revert to more stable oxide compounds, thus consuming your product in the process. This leads to expensive repairs and eventual replacement of components.

## Service Life

**LONG LIFE &  
MAINTENANCE -  
FREE SERVICE**



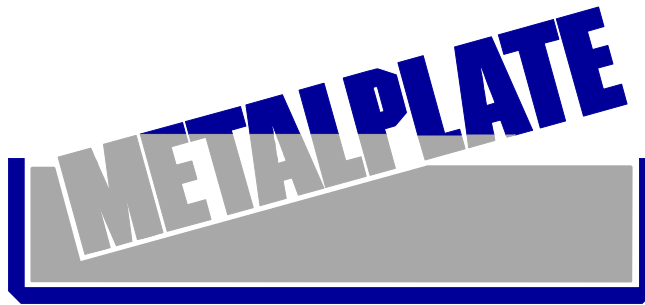
Wherever the potential for corrosion exists, hot-dip galvanizing and hot-dip galvanized products can be used to eliminate the problem and provide predictably long, maintenance-free service. The life expectancy of hot-dip galvanized coatings on typical structural members is far in excess of 100 years in most rural environments, and 60 to 70 years plus, even in severe urban and coastal exposure. The graph above illustrates the expected service of a galvanized coating as a function of coating thickness in varying atmospheric conditions. As you can see, the life of a coating is linearly related to its thickness. Very simply, the thicker the coating, the longer it will last.

Virtually any product or application imaginable can make use of hot-dip galvanizing. Metalplate has provided quality hot-dip galvanized coatings to both private industry and government, to include military applications. We have galvanized material that is successfully being used in diverse industries such as power transmission, recreation, petrochemical, water treatment, bridges and highways, paper mills and agriculture. Our capacity and capabilities allow us to hot-dip galvanize nearly all types of fabricated and non-fabricated products such as structural members and assemblies, pipes and tubes, reinforcing steel, wire, tanks, sheets, plates, castings, fasteners, fittings and plates. Coatings applied to a structure or fabrication after completion cannot provide the same protection, since every part of a hot-dip galvanized article is protected (even recesses, sharp corners and inaccessible areas).

**EVERY SURFACE IS  
COATED BECAUSE  
MATERIAL IS FULLY  
IMMERSED**

## **COST EFFECTIVE**

In most cases, the initial cost of hot-dip galvanizing is less than alternative coatings. Hot-dip galvanizing is more cost effective in the long term because it lasts longer and needs less maintenance. There is also no time lost at the job site in surface preparation, painting, or inspection. As hot-dip galvanized steel members are received, they are ready for use. When assembly of the structure is complete, it is immediately ready for use, or for the next construction stage.



[www.metalplate.com](http://www.metalplate.com) • [galvanize@metalplate.com](mailto:galvanize@metalplate.com)

**Birmingham - Plant 1**

Kettle Size 22' X 4'4" X 5'6"  
 4450 7th Avenue North  
 Birmingham, AL 35212  
 Phone (205) 595-1106  
 Fax (205) 591-4659

**Birmingham - Plant 2**

Kettle Size 42' X 5' x 6'  
 1120 39th Street North  
 Birmingham, AL 35243  
 Phone (205) 595-7103  
 Fax (205) 595-2965

**Atlanta Plant**

Kettle Size 42' X 5' X 6'  
 505 Selig Drive  
 Atlanta, GA 30336  
 Phone (404) 691-0600  
 Fax (404) 699-2270

**Jacksonville Plant**

Kettle Size 28' X 5' X 6'  
 7123 Moncrief Road West  
 Jacksonville, FL 32219  
 Phone (904) 768-6330  
 Fax (904) 764-3948

**Houston West Plant**

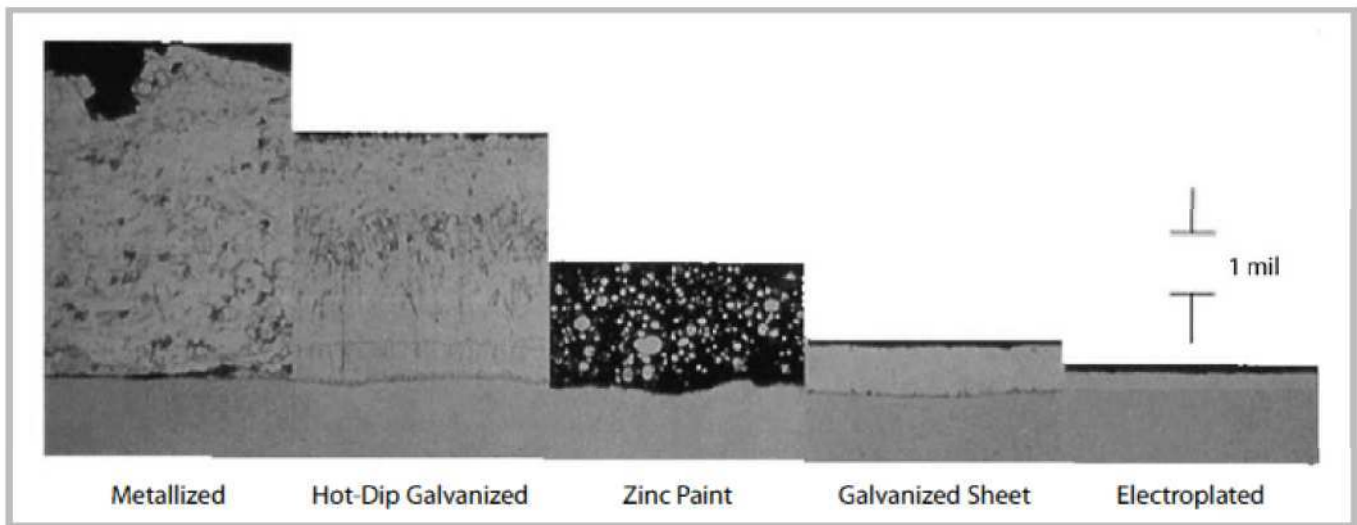
Kettle Size 42' X 5' x 6'  
 10625 Needham Street  
 Houston, TX 77013  
 Phone (713) 671-2454  
 Fax (713) 671-2957

**Houston East Plant**

Kettle Size 28' X 5' X 6'  
 10635 Needham Street  
 Houston, TX 77013  
 Phone (713) 672-9480  
 Fax (713) 672-9892

**Jennings Plant**

Kettle Size 50' X 5' X 7'  
 14055 Farm Supply Road  
 Roanoke, LA 70581  
 Phone (337) 753-2285  
 Fax (337) 753-2261



## Microstructures of Various Zinc Coatings

### Technical Affiliations

American Galvanizers Association (AGA)  
 American Society for Testing and Materials (ASTM)  
 Association for Metallically Stabilized Earth (AMSE)  
 National Association of Corrosion Engineers (NACE)  
 Steel Structures Protective Coatings (SSPC)  
 Trade Association of Pulp & Paper Industry (TAPPI)

**Corporate Office**

P.O. Box 966  
 1120 39th Street North  
 Birmingham, AL 35201  
 Phone (205) 595-4700  
 Fax (205) 595-7800

**Technical Department**

P.O. Box 966  
 1120 39th Street North  
 Birmingham, AL 35201  
 Phone (205) 595-4703  
 Fax (205) 595-0027