

HOT-DIP GALVANIZING



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AN INTRODUCTION TO HADID GALVANIZING

ASSALAMU ALAIKUM,

Welcome to **HADID GALVANIZING**, your trusted partner in hot-dip galvanizing services. We specialize in providing sustainable and unmatched metal coating solutions that enhance the longevity and appearance of buildings, products, and the infrastructure we depend on for everyday life.

OUR GALVANIZING EXPERTISE

At **HADID GALVANIZING**, we leverage advanced technology and state-of-the-art facilities to deliver high-quality galvanizing services. Our solutions are designed to protect steel and other metals from corrosion, ensuring durability and long-term performance in various environments.

Our commitment to sustainability and quality drives us to provide superior metal coating solutions that safeguard critical structures and assets. Our team of skilled professionals and dedicated employees work tirelessly to meet and exceed industry standards, ensuring peace of mind for our clients.

Comprehensive Galvanizing Solutions

Understanding the importance of providing robust protection for metals, we offer a range of services and benefits, including:

Hot-Dip Galvanizing: A cost-effective and environmentally friendly process that provides exceptional corrosion resistance for steel structures and products.

Durability and Longevity: Our galvanized coatings are designed to extend the lifespan of materials, reducing maintenance costs and enhancing structural reliability.

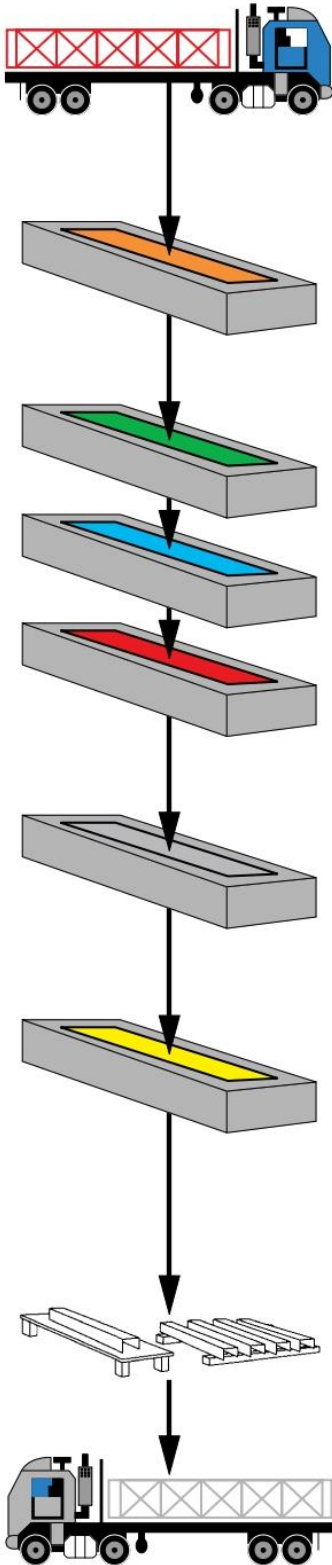
Custom Solutions: Tailored galvanizing processes to meet the unique requirements of our clients in diverse industries.

Contact Us

We highly appreciate your business inquiries and value your suggestions for continual improvement. We invite you to visit our facility and explore how our galvanizing solutions can add value to your projects. For more information, visit our **website: www.hadidgalvanizing.com**

Thank you for your kind support.

HADID GALVANIZING PROCESS



RECEIVING: Materials received at HADID GALVANIZING 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, ant splatter, 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 passivity 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)
Coating layers (Zinc %, Iron %)	approximately 3600 psi
Density of zinc coating psi	446 lbs./ft ³ (7.14 g/cm ³)
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	65 Years
	70 Years
	70 Years
	85 Years
	120 Years
Durability in solutions	Excellent in pH range 5.5 - 12.5
Durability in fresh water	F (O, N, CO ₂ , 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 Unchanged
Steel's mechanical properties	Unchanged
Zinc coating appearance	Shiny, spangled, matte gray, but equivalent Paintable
Other properties	Paintable, weldable

*1/4" thick carbon steel

THE INDUSTRY SPECIALISTS



CONSTRUCTION

In comparison to other industries, over 36% of galvanized steel use is in the construction industry. When you think of the amount of construction work we see on our daily commute, it is not a surprising figure. Steel is harder and stronger than iron like the old days of construction. Steel is very diverse and affordable to work with, and so it really is the material of choice when it comes to construction projects.

Typical applications include:

Structural steel work, balconies, balustrades, fire escapes, flooring, Trench sheeting, and scaffolding.

As we strive for a more modern society, galvanizing has never been more important in construction. For example, think of the many bridges that have been enhanced with the help of a protective layer of zinc, enhancing their longevity and keeping pedestrians and road users safe

When in use.



TRANSPORT

Made of stern steel, chassis provide a stable frame for a structure such as a car, a caravan or a trailer, and for that reason alone they must be protected for as long as possible. With risks such as de-icing salts on the roads and the ever-changing UK weather providing such a corrosive environment, it is important that any steel chassis is afforded the best protection to significantly extend its working life.

Steel is the material of choice for its ease of forging and shaping, creating reliable, everlasting structures that can be galvanized, giving the framework long lasting protection from the elements.

Typical applications include:

Trailer chassis, caravan chassis, drawbars, and rear end frames. The galvanizing process ensures that your product is ready to protect your chassis from any elemental damage for many years to come.



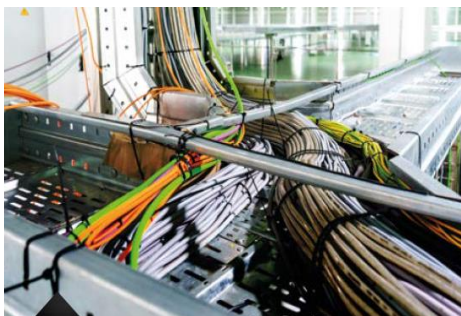
INFRASTRUCTURE

The overall economic cost of corrosion has been studied in several countries and is commonly estimated to be up to 4% of Gross Domestic Product. With many millions of pounds being invested in infrastructure improvements, galvanizing can be used to significantly extend the life of your fabrication.

Typical applications include:

Transmission towers, overhead line fittings, access covers, parapets, gantries and bridges

Without a solid infrastructure in place, a modern society simply would not be able to function efficiently. Therefore, it is vital to take extra care when considering applying the necessary protection that is galvanizing to such key elements like bridges and gantries covering over 214,000 miles of road in the UK alone. Other key areas are airports and railway stations that provide vital transport services to the public



UTILITIES

In this digital age, there seems to be an ever-growing requirement for long-lasting cable management systems with the growth in the hospitality sector and the desire to refurb buildings for commercial use. Having exposed or elevated cabling is very much the way today and having that cabling suspended is both practical and aesthetically easy on the eye. For those constructed of steel, it is imperative that they are provided with corrosion protection, and our unique galvanizing process is ideal for this.

Cable tray management ensures a safe, efficient, and reliable cabling infrastructure. It addresses various aspects, including safety, accessibility, interference prevention, and scalability, heat dissipation of cabling, regulatory compliance, aesthetics, and cost savings.

Typical applications include:

Strut, ladder, cant arms, trays, covers, and conduit.



FENCING

Taking care of our street furniture, mainly fencing is essential if we are to maintain a safe and secure society, saving manufacturers of such products maintenance, time and, of course, money. Councils too have to maintain budgets, so investing in professional galvanized street furniture is a must to ensure the lifespan of these products and prevent the ever-advancing war of rust taking its grip.

Typical applications include:

Streetlamps, traffic lights and signs, traffic barriers, camera mounting columns, security fencing, railings, shelters, manhole covers, gratings, memorials, and public structures.

Our unique galvanizing process will provide significant corrosion protection. We pride ourselves on offering the shiniest finish available. But this is not just aesthetically pleasing; it will also save you time and money as the steel doesn't need to be cleaned prior to installation.



AGRICULTURE

More than two thirds of UK land area is agricultural and there are many steel fabrications that require protection from corrosion in this sector. Steel is strong, versatile and very economical and so it is used for a myriad of applications. As we drive past farms and farmland, we take it for granted that there are gates up to protect us from livestock, and also to prevent livestock from escaping. Cattle grids are also common in rural areas, preventing animals from escaping and farmers losing expensive livestock.

There is also the farm itself that houses such applications as feed stations, internal fencing, and building structures, all of which need protecting from the elements to maintain their usage and be free from rust as long as possible.

Typical applications include:

Estate fencing, gates, posts, equine equipment, and cattle grids.

THIS IS HOW WE DO IT

SERVICE AND QUALITY

Hadid Galvanizing offers the ultimate in quality, and complete and prompt service.

TECHNICAL SUPPORT

Hadid'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.

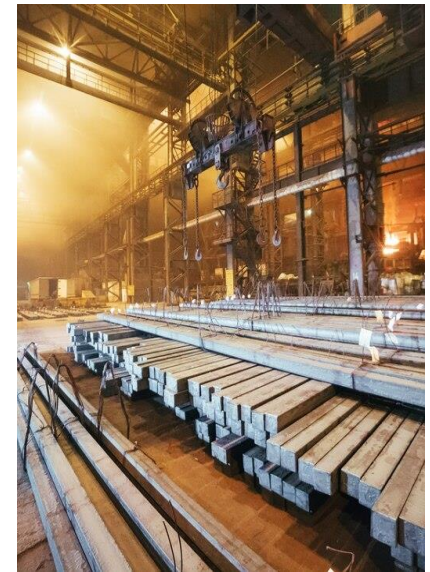


CAPACITY AND CAPABILITY

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

TRANSPORTATION ASSISTANCE

Hadid 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.



HADID'S COMPLETE SERVICE

HADID'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)

Hadid Galvanizing 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 Hadid to produce and deliver cost effective, high quality coatings of hot-dip galvanized products.

AUDITS

Hadid'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

Hadid Galvanizing 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 Hadid Galvanizing facility has an on-site lab for daily testing and control of process solutions. Hadid Galvanizing 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.

CERTIFICATES OF COMPLIANCE

Hadid'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. Hadid Galvanizing will provide Certificates of Compliance to the customer when requested.

FINISHING CODES

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



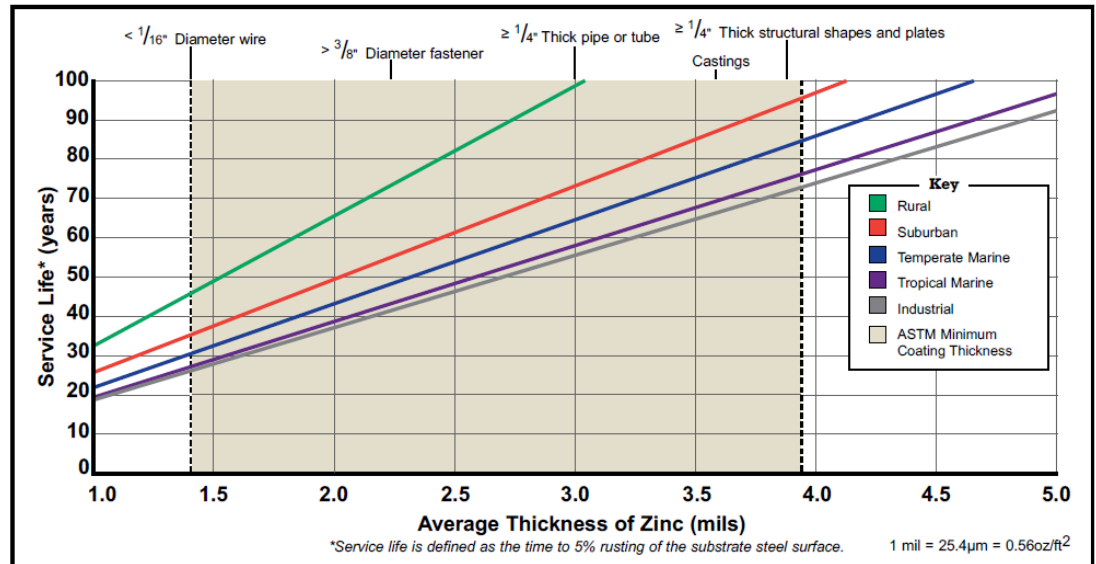
HADID GALVANIZING IS ALWAYS CONTINUING TO IMPROVE OUR QUALITY AND PRODUCTIVITY. THE RESULTS OF OUR EFFORTS ARE
REALIZED BY OUR CUSTOMERS AS QUICKER TURN TIMES, LOWER PRICES, AND HIGHER QUALITY COATINGS.

WHY GALVANIZING ?

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**



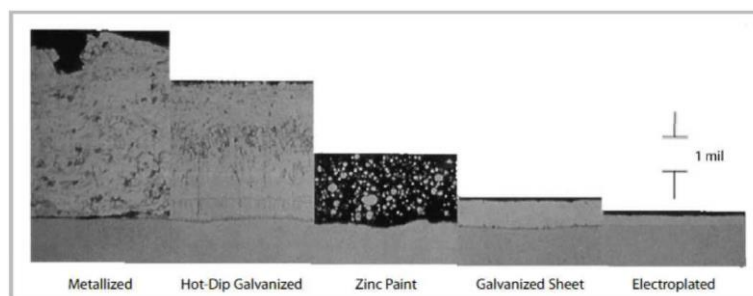
Wherever the potential for corrosion exists, hot-dip galvanizing and hot-dip galvanized products can be used to eliminate the problem and provide predictably long, maintenance-free service. The life expectancy of hot-dip galvanized coatings on typical structural members is far in excess of 100 years 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. Hadid Galvanizing 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.



Microstructures of Various Zinc Coatings

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