



Material Specification Sheet Galvanized Steel

Description

Hot-dipped galvanized commercial steel is carbon steel sheet coated with zinc on two sides by the continuous hot-dipped process. This process results in a layer of zinc on each side of the steel sheet that is tightly adhering to the steel thru the formation of an iron-zinc alloy bonding layer that is formed by a diffusion process while the heated steel strip is in contact with the molten zinc. Hot-dipped galvanized steel is one of the most economical corrosion resistant sheet materials available. It is excellent for all applications where optimum galvanic protection from corrosion is required. Additionally, galvanized steel lends itself to most fabrication processes. It can be roll-formed, brake-formed or lock-seamed. It can be joined by various methods including riveting, soldering, welding and spot welding. Galvanized steel is available in numerous metallurgical grades providing different degrees of formability and strength to the base sheet. The designation for the basic galvanized product is commercial steel (CS). This product is useful for many applications requiring the strength of steel combined with the workability needed for bending and moderate forming; it provides the strength and formability levels that most users need for general purpose applications.

Mechanical Properties

Typical mechanical properties for hot-dipped galvanized commercial steel are listed below.

- Yield Strength: 48 ksi
- Tensile Strength: 59 ksi
- Elongation: 28%
- Hardness: 62 RB

ASTM Specifications

ASTM Designation A924 outlines the general requirements for carbon steel sheet metal coated by the hot-dipped process. A924 designates tolerances for thickness, width, camber, shape, etc.

ASTM Designation A653 outlines the general requirements for the hot-dipped coated galvanized steel. Included in this specification are steel chemistry requirements and typical mechanical properties of the various metallurgical grades. ASTM A653 also includes the coating weight requirements for the different coating designations.

Coating Thickness

Coating thickness is measured as the coating weight in ounces per square foot. For example, the coating designation G-90 specifies there is a minimum coating weight of .90 ounces of zinc per square foot on both sides of the sheet, or 275 grams of zinc per square meter.

Surface Treatment

The "chem-treat dry" surface treatment consists of an application of a thin, invisible, corrosion inhibiting, inorganic, chemical film on the zinc surface. This film is applied at the galvanizing line by dipping into an aqueous solution of corrosion inhibiting chemicals. The chemically treated surface is much more resistant to "white rust" - the corrosion of zinc that typically occurs in humid conditions during storage or transportation.