

Material Specification Sheet Galvanneal Steel

Description

Galvanneal is a carbon steel coated with zinc on both sides by a continuous hot-dip process. Immediately as the strip exits the coating bath, the molten zinc coating is subjected to an in-line heat treatment that converts the entire coating to a zinc-iron alloy. (The iron diffuses from the steel into the coating). The galvannealed surface has a non-spangled matte finish. One of the primary attributes of the galvannealed coating is that the surface accepts paint very readily. It can be painted without the application of a pretreatment, although a pretreatment will enhance the performance after painting. Other attributes are the zinc-iron alloy coating can be welded more easily than galvanized and the coating is harder than a galvanized coating and is thus more resistant to scratching and manufacturing damage. During fabrication there is almost always some degree of powdering of the coating. For this reason, typical galvannealed coatings are thinner than most galvanized coatings. Additionally the coating is less reactive when exposed to the atmosphere, and as a result, the dissolution that occurs during corrosion occurs more slowly than for a galvanized coating. Galvannealed steel sheet can be readily post-painted, and is not intended to be pre-painted. The brittle nature of the coating makes forming after painting a difficult task to avoid degradation of the corrosion performance in subsequent service. Galvannealed sheet is specifically designed to be used in the painted condition. It can be joined by various methods including riveting, soldering, welding, spot welding and adhesives. For more info on Galvanneal visit http://www.galvinfo.com/ginotes/GalvInfoNote_1_3.pdf

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 or zinc-iron alloy-coated galvannealed sheet. 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 per square foot on both sides of the sheet. For more info on zinc coatings visit http://galvinfo.com/ginotes/GalvInfoNote_1_6.pdf

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.

Source: US Steel

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