

# HDG DATASHEET: 17

## Batch Galvanized v Pregalvanized Products

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It is a common misconception that any zinc coating can be termed as galvanizing but this is in fact not the case as there are many different processes by which a zinc coating may be applied. Hot Dip Galvanizing refers only to coatings formed by immersing steelwork into molten zinc. However, there are two variations of the Hot Dip Galvanizing processes: Batch Galvanizing and automated or semi-automated galvanizing of pregalvanized products.

### Batch Hot Dip Galvanizing

This process is used to coat fully fabricated articles and involves chemical cleaning of work prior to immersion in the galvanizing bath and is specified by EN ISO 1461 : 2022. This process described in HDG Datasheet 2 provides complete coverage of the article (including internal surfaces of hollow sections) with no uncoated areas being present. The thick coating formed also offers the highest level of corrosion protection available.

### Pregalvanized Steel Product

An alternative is to take a specific product (typically sheet, wire or tubes) which have been galvanized by an automated or semi-automated process.

### Pregalvanized Steel Sheet

This is the most widely used pregalvanized product and is specified by EN 10346. Sheet is uncoiled and passed through a reducing atmosphere prior to immersion in the galvanizing bath for a relatively short period of time. Upon withdrawal from the galvanizing bath, either an air knife or mechanical wiper is used to remove excess zinc so producing a good surface finish. The result however is a thin coating which may vary from 7-42  $\mu\text{m}$  according to grade, with most products typically having a coating thickness of 20  $\mu\text{m}$ . After galvanizing, the sheet is recoiled prior to despatch to a stockholder, the sheet being uncoiled and cut for sale so producing uncoated edges.

### Pregalvanized Steel Tubes

Tubes may also be galvanized using a semi-automated process to EN 10240. Again immersion times are relatively short and upon withdrawal, steam may be blown down the bore of the tube to give an adequate surface finish. The coating thickness may be as high as 45-55  $\mu\text{m}$  although much of the product produced has a significantly thinner coating of 20-30  $\mu\text{m}$ . Again for resale purposes, tubes may be cut to size creating uncoated edges.

### Pregalvanized Wire

From a practical point of view, single strands of wire may only be coated using an automated process and this may be specified by EN 10244-2. Immersion times are again short with wiping procedures being utilised to remove excess zinc and achieve a smooth finish. Coating thickness may vary with grade and strand diameter but might typically be circa 20-30  $\mu\text{m}$ . Note that while individual strands can not be galvanized to EN ISO 1461 mesh might be suitable for such processing so achieving a thicker galvanized coating.

### Coating Comparison

Both batch hot dip galvanizing and pregalvanized coatings have different characteristics and the table below summarises these.

Feature	Batch Hot Dip Galvanizing	Pregalvanized Product
Coating thickness	Thick coating with minimum average requirements of 45-85 $\mu\text{m}$ within EN ISO 1461	The coating thickness may vary but is typically circa 20 $\mu\text{m}$ for sheet* and 20-30 $\mu\text{m}$ for tubes and wire
Coating continuity	Continuous coating over the whole of the article	Uncoated areas at cut edges
Coating bond	Strong metallurgical bond with the base steel	Strong metallurgical bond with the base steel
Abrasion resistance	Thicker layer of hard zinc-iron alloy gives a high resistance to abrasion	Thin alloy layer with reduced resistance to abrasion
Coating formability	Forming after galvanizing is not advised as the coating may damage	Thin coating may normally be formed without damage
Sacrificial protection	Offers the highest level of sacrificial protection	Reduced sacrificial protection due to the thin coating which may lead to rust staining from cut edges on sheet
Coating appearance	Typically bright but can be variable	A uniform bright finish is normally achieved
Consideration of design for galvanizing required	Yes	Yes

\*It is important to remember that when coating weights are specified for steel sheet, the weights include both sides of the sheet so that the life of the coating is half that for the equivalent coating weight specified in EN 10346

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