HDG DATASHEET: 4a Specifying Hot Dip Galvanized Steel

For the vast majority of applications, hot dip galvanizing can be simply specified using the following reference: Hot dip galvanized to BS EN ISO 1461 : 2009 by a member of Galvanizers Association. This standard contains coating thickness requirements as shown in Table 1 which will typically be sufficient to achieve an acceptably long coating life.

	Article and its thickness	Local average coating thickness	Average coating thickness
	> 6 mm	70 µm	85 µm
	$>$ 3 mm but \leq 6 mm	55 µm	70 µm
	> 1.5 mm but ≤ 3 mm	45 µm	55 µm
	< 1.5 mm	35 µm	45 µm
	castings $\geq 6 \text{ mm}$	70 µm	80 µm
	castings < 6 mm	60 µm	70 µm

Table 1. Minimum coating thicknesses achieved by hot dip galvanizing to BS EN ISO 1461 (not centrifuged)



Fig 1. Microstructure of a typical hot dip galvanized coating

Thicker Coatings by Surface Roughening

For instances where an increased coating thickness is required to achieve a longer coating life, or where work will be exposed in a severe service environment, steelwork may be grit blasted prior to galvanizing. This produces a coarse profile so opening up more steel surface to react with the molten zinc resulting in a thicker galvanized coating. Typically the following reference may be used: Grit blast to Sa2½ with G24 chilled angular iron grit before hot dip galvanizing to BS EN ISO 1461 : 2009 to achieve a nominal coating thickness by a member of Galvanizers Association. It should be noted that the term 'nominal' implies a target to be aimed for but not guaranteed, the value of which can vary with the steel section thickness well in excess of 6 mm, a coating thickness in excess of 140 µm might be achieved.

Use of a Reactive Steel

The silicon (and to a lesser extent the phosphorous) content of a steel can affect its reactivity so causing the galvanized coating to grow more rapidly during immersion in the galvanizing bath. Typically steels with a silicon content in excess of 0.25% may be reactive and in the very rare cases where prior grit blasting

Article and its thickness	Average coating thickness
> 6 mm	140 µm
$>$ 3 mm but \leq 6 mm	100 µm
\geq 1.5 mm but \leq 3 mm	85 µm
< 1.5 mm	70 µm

 Table 2. Nominal coating thicknesses on samples that are grit

 blasted prior to hot dip galvanizing



Fig 2. Microstructure of a thick coating obtained by grit blasting steel prior to galvanizing

will not achieve a sufficiently thick coating the specification of a steel's chemistry can enable a still thicker galvanized coating to be specified using the following reference: Use of a high silicon steel hot dip galvanized to BS EN ISO 1461 : 2009 to achieve a nominal coating thickness of 200 μ m, by a member of Galvanizers Association. The 200 μ m requirement would only apply for heavier steel section thicknesses. For light gauge steelwork a more realistic figure might be circa 120 μ m. Where such a specification is used the coating may be comprised fully of zinc-iron alloy such that it will be dull grey in appearance and might be more susceptible to mechanical or handling damage. As a result increased care should be taken when handling such product. You should contact your steel stockholder to discuss material availability.



Fig 3. Microstructure of a thick coating obtained on a reactive steel

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