

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 ≤ 6 mm	55 µm	70 µm
> 1.5 mm but ≤ 3 mm	45 µm	55 µm
< 1.5 mm	35 µm	45 µm
castings ≥ 6 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)

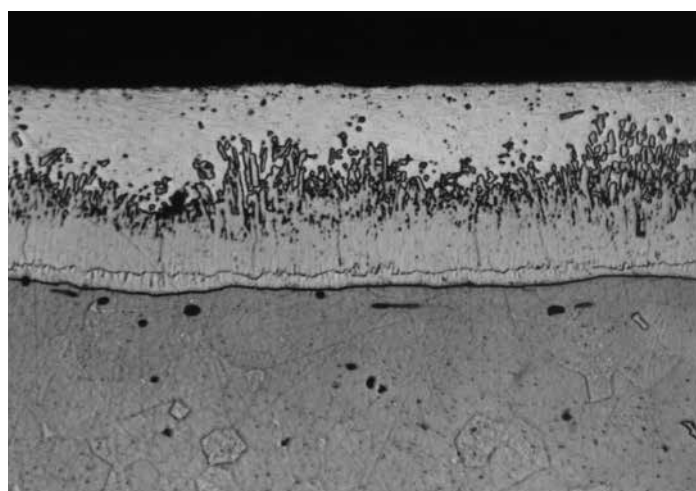


Fig 1. Microstructure of a typical hot dip galvanized coating

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, with upper limits being indicated in Table 2. For steel section thicknesses 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 ≤ 6 mm	100 µm
≥ 1.5 mm but ≤ 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

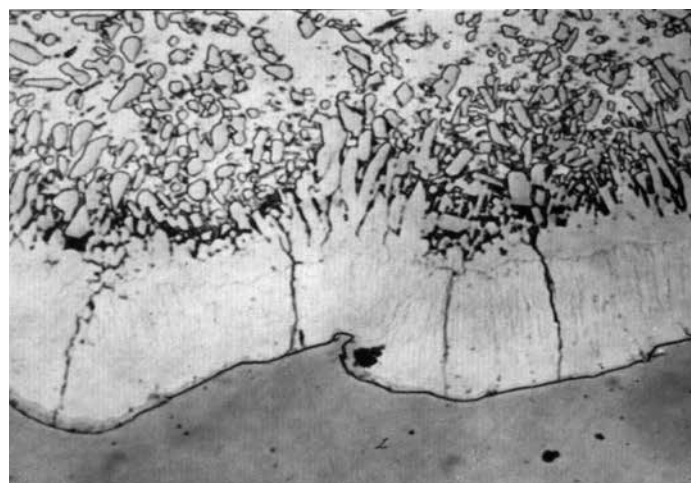


Fig 2. Microstructure of a thick coating obtained by grit blasting steel prior to galvanizing

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 µm, by a member of Galvanizers Association. The 200 µm requirement would only apply for heavier steel section thicknesses. For light gauge steelwork a more realistic figure might be circa 120 µm. 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