

HOT DIP GALVANIZING SPECIFICATION FOR BOLTS AND NUTS

Corrosion protection of carbon steel fasteners is generally achieved through the application of a coating (barrier protection), be it in the form of a paint system or through the use of a metallic coating. Metallic coatings comprise of different materials, zinc is usually chosen for reason of economics, ease of application as well as the mechanism of cathodic protection provided by zinc.

Zinc is applied either by an electroplating process (electro-galvanizing) or by immersion in molten zinc (hot dip galvanizing). Corrosion protection provided by zinc is generally proportional to the coating thickness, i.e. the thicker the coating the longer the service life.

Zinc coating thicknesses achieved using the electroplating process, generally range between 6 μ m to 10 μ m (μ m = micrometers), while hot dip galvanized coating thicknesses range from 45 μ m through to about 65 μ m. It is therefore imperative to specify the specific type of zinc coating required for corrosion protection. The word "galvanized" alone is insufficient and should be avoided. Corrosion protection specifications should clearly state, "electroplated, or electro-galvanized" or "hot dip galvanized".

The following specification is restricted to the requirements for Hot Dip Galvanized carbon steel fasteners, comprising bolts, nuts and washers.

Class 4.8 and 8.8 Fasteners

Class 4.8 and 8.8 fasteners shall be hot dip galvanized by the centrifuging process. The coating shall conform to the thicknesses listed in table No.1.

Table No. 1 - Coating thicknesses on samples that are centrifuged (Refer ISO 1461:2000)

Fastener and Thickness	Local coating thickness (minimum) Note A: μ m or gms/m ²	Mean coating thickness (minimum) Note B: μ m or gms/m ²
≥ 20 mm diameter	45 or 325	55 or 395
≥ 6 mm to < 20 mm diameter	35 or 250	45 or 325
< 6 mm diameter	20 or 175	25 or 200

Notes:

- Local coating thickness obtained using a magnetic test or preferred single value from a gravimetric test.
- Mean coating thickness being the average value of the local thicknesses on all the articles in the control sample.
- Fasteners not commercially available in sizes < 6 mm diameter.