



Advisory Note
GEN 34/1

Testing the Coating Thickness of Galvanized Steel

November 2010

The following is to advice on the process by which the average coating thickness of galvanized articles is determined using the magnetic method.

It is first recommended to check that the instrument you are using to measure the galvanized coating is calibrated correctly. This is generally done using a zero plate of base metal of appropriate thickness and certified shims. You should also ensure the instrument to be used is suitable for the article being measured, e.g. if the base metal is too thick the instrument will no longer be able to measure the coating thickness correctly. The instruments make and model as well as the calibration date should be included in a report.

Secondly, the area in which measurements are taken should not (unless otherwise specified) be less than 10mm away from a discontinuity, such as an edge, hole or corner, or from flame cut surfaces. The area being measured should not be a curved surface, i.e. the surface should be flat.

Both an instrument and the galvanized coating of an article can have a normal variability, therefore a number of measurements should be taken in each area of the article that is measured. If there are considerable variations of coating thickness measurements in a localised area (usually due to surface roughness), additional measurement should be made on different areas of the coating to compensate and achieve a reasonable average. It is also advisable to check the zero of the instrument by testing uncoated base metal, to ensure that any large variations of the coating thickness measurements are not due to a change in the calibration.

When measuring a galvanized item, if there are sections of the item which have differing steel thicknesses, each thickness range shall be treated as a separate article. The thickness ranges are dictated by AS/NZS 4680, Table 1 and Table 2.

For large articles, the coating thickness should be tested in 3 different areas 20cm² in size. Within each area, 10 measurements should be taken randomly. The average coating thickness of the article shall be the mean of all the measurements taken on the article, i.e. the mean of 30 measurements taken. For smaller articles, take a practical number of measurements and then calculate the mean, which will then be the average coating thickness.

(For the standard minimum average coating thickness of a hot dip galvanized article, please refer to Table 1 and 2 below)

TABLE 1
REQUIREMENTS FOR COATING THICKNESS AND MASS FOR
ARTICLES THAT ARE NOT CENTRIFUGED

Article thickness mm	Local coating thickness minimum μm	Average coating thickness minimum μm	Average coating mass minimum g/m^2
≤ 1.5	35	45	320
$> 1.5 \leq 3$	45	55	390
$> 3 \leq 6$	55	70	500
> 6	70	85	600

NOTE: 1 g/m^2 coating mass $\equiv 0.14 \mu\text{m}$ coating thickness.

TABLE 2
REQUIREMENTS FOR COATING THICKNESS AND MASS FOR ARTICLES
THAT ARE CENTRIFUGED

Thickness of articles (all components including castings) mm	Local coating thickness minimum μm	Average coating thickness minimum μm	Average coating mass minimum g/m^2
< 8	25	35	250
≥ 8	40	55	390

NOTES:

- 1 For requirements for threaded fasteners refer to AS 1214.
- 2 1 g/m^2 coating mass $\equiv 0.14 \mu\text{m}$ coating thickness.

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