INTERNATIONAL STANDARD

**ISO
1460**

Second edition
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Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area

Revêtements métalliques — Revêtements de galvanisation à chaud sur métaux ferreux — Détermination gravimétrique de la masse par unité de surface

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 1460 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Sub-Committee SC 4, *Hot dip coatings (galvanized, etc.)*.

This second edition cancels and replaces the first edition (ISO 1460:1973), clauses 3 (formerly 4) and 7 of which have been technically revised.

Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area

1 Scope

This International Standard specifies a method of determining the mass per unit area of hot dip galvanized coatings on ferrous materials.

Since as exact knowledge of the area of the surface is essential, this International Standard is mainly applicable to shapes whose areas are easy to determine. If, with heavy samples, the specifications of clause 5 cannot be met, then the hot dip galvanized coating mass has to be determined by another method.

2 Principle

The hot dip galvanized coating on a surface of known area is dissolved in inhibited acid and the resultant loss in mass is determined by weighing the sample before and after the coating is dissolved.

3 Stripping solution

Dissolve 3,5 g of hexamethylenetetramine in 500 ml of concentrated hydrochloric acid ($\rho = 1,19$ g/ml). Dilute this solution to 1 000 ml with distilled water.

4 Sampling

The method of sampling shall be agreed between the interested parties.

5 Procedure

Where necessary, the sample shall be degreased with an organic solvent that does not attack the hot dip galvanized coating, and then dried.

Before stripping, the sample shall be weighed to an accuracy better than 1 % of the presumed coating mass.

The quantity of solution shall be measured so that at least 10 ml of solution are available for each square centimetre of the surface of the sample. The sample shall be completely immersed in the solution at room temperature and left until the coating has completely dissolved. The end of the dissolution process can be recognized by the cessation of the originally brisk evolution of hydrogen. The sample shall then be rinsed in running water and, if necessary, brushed to remove any loose substance which may be adhering to the surface, dipped in alcohol, quickly dried and again weighed to the accuracy indicated in the previous paragraph.

After weighing, the surface area A of the exposed surface shall be determined to an accuracy of 1 %.

6 Expression of results

6.1 Method of calculation

Calculate the mass per unit area ρ_A, of the hot dip galvanized coating, expressed in grams per square metre, from the equation

$$\rho_A = \frac{m_1 - m_2}{A} \times 10^6$$

where

$\quad m_1 \quad$ is the mass, in grams, of the sample before stripping;

$\quad m_2 \quad$ is the mass, in grams, of the sample after stripping;

$\quad A \quad$ is the area, in square millimetres, of the exposed surface of the sample.

NOTE 1   With steel wire, it is often advantageous to calculate the mass per unit area, ρ_A, of a hot dip galvanized coating, expressed in grams per square metre, using the equation

$$\rho_A = \frac{7,84 \times 10^3}{4} \times D \times \frac{m_1 - m_2}{m_2}$$

where D is the diameter, in millimetres, of the wire after stripping, and the density of steel is taken as 7,84 g/cm^3.

In this way, it is not necessary to know the length of the wire.

6.2   Reproducibility

The reproducibility (different observers, different apparatus and operating conditions) is about $\pm$ 5 % of the mean value.

7   Test report

The test report shall contain the following information:

a) a reference to this International Standard;

b) type and dimensions of the sample;

c) the method of calculating the surface area for shaped samples;

d) the mass per unit area of coating, in grams per square metre or, if agreed between the interested parties, the thickness of the coating, in micrometres[1].

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[1] The approximate thickness, d, of the hot dip galvanized coating, in micrometres, can be calculated from the equation

$$d = \frac{\rho_A}{7,2}$$

which assumes that the density of the coating is 7,2 g/cm^3.

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