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## AS 2331.1.4-2001 (R2017) Methods of test for metallic and related coatings - Method 1.4: Local thickness tests - Magnetic induction and eddy current methods

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Abbreviation

AS 2331.1.4-2001

Valid from

17/07/2001

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Information provider

SAI Global

Author

Standards Australia

Information type

Australian Standard

Format

PDF

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**Description**

This Standard specifies requirements for two methods of local thickness testing. The magnetic induction method is suitable for the measurement of thickness of gold, silver, tin, cadmium, lead and organic coatings on magnetic substrates. The eddy current method is suitable for measurement of thickness of anodic coatings and organic coatings on aluminium.

**Scope**

This Standard sets out the requirements for the following non-destructive methods for the measurement of the local thickness of metallic and non-metallic coatings:

- (a) Magnetic induction (low frequency) method The magnetic induction method is used for the thickness testing of non-magnetic and non-metallic coatings on magnetic substrates.
- (b) Eddy current (high performance) method The eddy current method is used for the thickness testing of
  - (i) a non-conductive coating on a non-magnetic substrate; and
  - (ii) a metallic coating or a non-metallic coating on a substrate that has appreciably different conductivity.

These methods apply when the coating thickness is not less than 2 mm, and the surface contour permits calibration of the test instrument.

The magnetic induction (low frequency) method is suitable for the measurement of thickness of gold, silver, tin, cadmium, zinc,

copper, chromium, lead and organic coatings, such as paints and plastics, on magnetic substrates.

The eddy current (high frequency) method is suitable for the measurement of thickness of oxide coatings on metals. Using selected frequencies, it is also possible to measure the thickness of various metallic coatings on either magnetic or non-magnetic substrates, e.g. tin-lead on copper, silver on nickel/silver, copper, zinc, cadmium or tin on steel, and copper or silver on a non-metallic base.

Under the best conditions of use, these methods are accurate to 0.7 mm, or 10%, whichever is the greater.

Notes:

1. Factors affecting the accuracy of measurement are given in Appendix A.
2. The methods given in this Standard are not suitable for the measurement of chemical conversion coatings.

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