

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 2331.1.7—2006

Methods of test for metallic and related coatings

Method 1.7: Local thickness tests—Measurement of dry film thickness of thin coating systems particularly by coil coated products by destructive means using a boring device

RECONFIRMATION NOTICE

Technical Committee MT-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 20 March 2017.

The following are represented on Technical Committee MT-009:

Australasian Institute of Surface Finishing
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Galvanizers Association of Australia
Galvanizing Association of New Zealand
New Zealand Metal Roofing Manufacturers

NOTES

Methods of test for metallic and related coatings

Method 1.7: Local thickness tests—Measurement of dry film thickness of thin coating systems particularly by coil coated products by destructive means using a boring device

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-009, Metal Finishing.

After consulting with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify a method of measuring film thickness by destructive means, using a microscopic observation for measurement.

This Standard is Part 1.7 of a series of Standards covering the methods of test for metallic and related coatings.

During the preparation of this Standard cognizance was taken of ASTM D5796, *Standard test method for measurement of dry film thickness of thin film coil-coated systems by destructive means using a boring device*.

METHOD

1 SCOPE

This Standard specifies a method for determining the measurement of dry film thickness of coating films by microscopic observation of a precision-cut shallow-angle crater in the coating film.

The substrate may be any rigid, metallic material, for example, cold-rolled steel, hot-dip galvanized steel, aluminium, etc. The substrate should be planar.

NOTE: Variations in the surface profile of the substrate may result in non-representative organic coating thickness readings. This condition may exist over substrates such as hot-dip, coated steel sheet. This is true of all precision cut methods that are used to determine dry film thickness of organic coatings.

This method is only valid for coating thicknesses between 0 to 90 µm, for measurements of films greater than 90 µm but less than 1575 µm, a 45° borer may be used in accordance with this test method.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2102	Micrometer callipers for external measurement
2483	Metal finishing—Recommended sampling plans for the inspection and testing of coatings (ISO 4519:1980, MOD)
4108	Metal finishing—Glossary of terms in electroplating and related processes

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 4108 apply.

4 PRINCIPLE

The principle of this method is to measure the dry film thickness of organic coatings by physically cutting through the film and optically observing and measuring the thickness, which gives the advantage of direct measurement as compared with non-destructive means.

Constituent coats of an overall thickness of a coating system can usually be measured individually by this test method.

NOTE: This can be difficult in cases where primer and topcoat have the same, or very similar, appearance.

The measurement is performed by first boring a shallow angle crater of known configuration through the coating film into the substrate and then viewing the crater with a metallographic microscope with a measuring reticle.

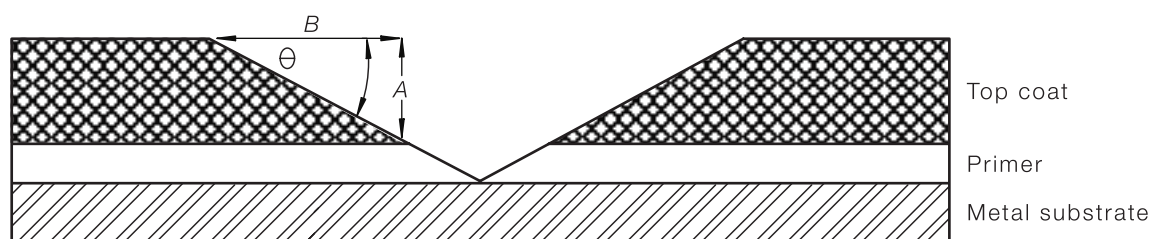
5 APPARATUS

5.1 Dry film thickness device

This apparatus consists of a carbide-tipped boring device e.g. drill; that is automated by a lever that raises and lowers the boring tip perpendicular to the surface to be tested, and a video imaging system, which is attached to an metallographic microscope that views the crater formed by the boring device.

5.2 Carbide borer bit

This configuration shall be designed to provide a very smooth circular incision in the paint film at a precise angle to the surface see Figure 1.



$$\begin{aligned}\Theta &= 5^{\circ} 42' 38'' \\ \tan \Theta &= A/B = 0.1 \\ A &= 0.1B\end{aligned}$$

FIGURE 1 CRATER FORMED BY BORING TOOL