Australian Standard™

Paints and related materials—Methods of test

Method 408.4: Adhesion (crosscut)

METHOD

1 SCOPE

This Standard sets out a method for assessing the adhesion of paint coatings to substrates by applying and removing pressure-sensitive adhesive tape over cuts made in the coating. The method is also applicable as a field procedure, when not under the controlled environmental conditions of AS 1580.101.1, however the temperature of the surface needs to be recorded. It is not applicable to soft or friable substrates.

NOTES:

1 The method is not considered suitable for coatings thicker than 125 μm.

2 The method does not distinguish between high levels of adhesion for which more complex procedures are required, such as a pull-off adhesion test similar to ASTM D4541 or ISO 4624.

3 In multicoat systems, if adhesion failure occurs between coats, the adhesion of the coating system to the substrate cannot be determined.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1580	Paints and related materials—Methods of test
1580.101.1	Method 101.1: Conditions of test—Temperature, humidity and airflow control
1580.101.4	Method 101.4: Conditions of test—Temperature control
1580.102.1	Method 102.1: Sampling procedure
1580.103.1	Method 103.1: Examination and preparation of samples for testing
1580.107.3	Method 107.3: Determination of wet film thickness by gauge
1580.108.1	Method 108.1: Determination of dry film thickness on metallic substrates—Non-destructive methods
1580.108.2	Method 108.2: Dry film thickness—Paint inspection gauge
1635	Methods of test for pressure-sensitive adhesive tape
1635.3.1	Method 3.1: Adhesion strength
ISO	
4624	Paints and varnishes—Pull-off test for adhesion
ASTM	
D4541	Pull-off strength of coatings using portable adhesion testers

3 PRINCIPLE

A panel, prepared, coated and dried in accordance with the product specification, is scored with a cutting tool to form a series of parallel cuts in a crosscut pattern. Adhesive tape is applied over the crosscut pattern in the coating and then removed. The scored surface is then examined for coating condition.

4 OCCUPATIONAL HEALTH AND SAFETY

During handling follow precautions for use outlined in suppliers Materials Safety Data Sheet (MSDS). Care should be exercised when using sharp tools.

5 APPARATUS

5.1 Cutting tool

A sharp single-edged razor blade, scalpel or similar cutting device, or a multiple cutting tool as appropriate.

5.2 Cutting guide

A steel or other hard metal straightedge or template, to ensure straight cuts.

5.3 Rule

Graduated at 1 mm intervals, for measuring the distance between individual cuts.

5.4 Tape

24 mm wide, semi-transparent pressure-sensitive tape with a minimum adhesion strength of 6.0 N and a maximum adhesion strength of 7.5 N when tested in accordance with AS 1635.3.1.

NOTE: The adhesive strength of tapes changes with time, therefore tapes purchased within the last 18 months should be used.

5.5 Illuminated magnifier

Typically 10×, to be used while making individual cuts and examining the test area.

5.6 Brush

A clean soft-haired artist's paint brush.

5.7 Surface temperature measuring device

For field use only.

6 SAMPLE

A representative sample of the paint shall be taken in accordance with AS 1580.102.1 and prepared in accordance with the procedures described in AS 1580.103.1.

7 TEST PANEL

The test panel shall be selected and prepared in accordance with the product specification. The film thickness shall be determined in accordance with AS 1580.107.3, or other appropriate method.

Metal panels shall be free from distortion and at least 0.25 mm thick. Where panels consist of a relatively soft material, such as wood, the minimum thickness shall be 10 mm.

NOTE: The test result may be influenced by any directionality in the material, such as occurs with wood grain.

