

Australian Standard™

AS 1580.410.1

Paints and related materials—Methods of test

Method 410.1: Cold check cycling

METHOD

1 SCOPE

This Method sets out a test for assessing the resistance of a paint system to extremes of temperature and humidity when both the oven and the freezer are at humidity under 5% RH.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

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| 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 |
| 1580.104.1 | Method 104.1: Recommended materials for test panels |
| 1580.107.3 | Method 107.3: Determination of wet film thickness by gauge |

3 PRINCIPLE

Panels are cycled through hot dry conditions; to cold conditions; routine laboratory conditions. Condensation occurs at the interface of cold with ambient.

4 APPARATUS

4.1 Oven

Oven maintained at $60 \pm 2^\circ\text{C}$.

4.2 Freezer

Freezer maintained at $-10 \pm 2^\circ\text{C}$.

4.3 Timer

An electronic or mechanical timing device accurate to at least 0.1% over a 5 min period.

4.4 Other

Marker pen.

Panel rack.

5 TEST PANELS

5.1 General

Timber (solid, veneer, or medium density fibreboard—MDF) test panel 16 mm thickness minimum or metal panels as per AS 1580.104.1 (nominal size 200×300 mm) coated to specification.

5.2 Clear coatings

Where clear coating is to be tested, either solid pine timber or metal or timber veneered onto medium density fibreboard shall be used.

NOTE: Typical veneer choice is Tasmanian oak/Victorian ash, however, other timber veneers may be used as decided by interested parties.

5.3 Pigmented coatings

Where a pigmented coating is to be used, medium density fibreboard or metal panels shall be used.

NOTE: Other substrates or sizes may be used as long as a control panel is run.

6 OCCUPATIONAL HEALTH AND SAFETY GUIDANCE

During handling follow precautions for use outlined in suppliers Materials Safety Data Sheet (MSDS).

7 PANEL PREPARATION

Coat the panel(s) with the agreed coating system and record the film build of each coat in accordance with AS 1580.107.3. Allow to dry at ambient temperature for a minimum of 7 days and a maximum of 28 days prior to testing. The curing of panels may be accelerated by placing in a $40 \pm 1.5^\circ\text{C}$ oven for 3 days if agreed at the time of test.

8 TEST CONDITIONS

The test shall be performed under conditions specified in AS 1580 101.4.

9 PROCEDURE

- (a) Place panel into the oven at $60 \pm 2^\circ\text{C}$ and leave for 1 h (± 5 min). Ensure the panels are spaced to allow even distribution of heat.
- (b) Remove and place immediately into freezer at $-10 \pm 2^\circ\text{C}$ and leave for 1 h (± 5 min).
NOTE: Ensure the number of panels in oven or freezer at the same time, allows the chambers to return to specified temperature within 5 min.
- (c) Remove from freezer and stand upright in panel rack, leave for 1 h (± 5 min) at ambient laboratory temperature. (Record that each full cycle has been completed on the panel with a marker pen or other suitable marking method.)
- (d) Repeat 20 cycles of Steps (a) to (c) unless otherwise specified.
- (e) Panels completing a cycle at the end of the day shall be left overnight, at ambient routine temperature, before recommencing the next cycle.
- (f) Panel should be viewed at the end of each cycle under good lighting conditions. Defects should be readily visible when viewed by a person with good eyesight or corrected vision.

NOTE: Cracking in clear coatings on light coloured veneers or timbers may be difficult to see if the cracks follow the grain. Panels should be viewed from the side at various angles by tilting under good lighting conditions and assess for cracks which may be short or long particularly along the grain of the timber. Cracks following the timber grain may be due to veneer checking (timber related). Cracking without preferential direction is classified as coating failure.