

Australian Standard®

Test methods for general access floors

Method 6: Test for floor resistance for electrostatic control

METHOD

1 SCOPE This Standard sets out the method for the on-site floor resistance test for electrostatic control of the complete elevated floor system.

2 PRINCIPLE Floor resistance can be measured and expressed in two ways, either as a bulk or surface resistance. When an elevated floor with an earthed metal substructure is used, the bulk resistance is the property to be measured. However, if the final floor surface is laid on an insulating material (e.g. carpet on a rubber underlay) then the surface resistance is the important parameter.

Measurements shall be made with a pedestal gluing system specified by the floor manufacturer.

3 REFERENCED DOCUMENTS

AS

1683 Methods of test for elastomers

1683.15.2 Durometer hardness

4154 General access floors (elevated floors)

4 APPARATUS The following apparatus is required:

- (a) *Ohmmeter*—capable of measuring resistance values in the range of $1 \times 10^4 \Omega$ to $2 \times 10^{12} \Omega$ and operate in a nominal circuit which has a d.c. output voltage of 500 V.
- (b) *Solid metal electrodes*—each electrode shall have a mass of 2.5 ± 0.1 kg and a circular contact area of 65 ± 2 mm diameter.

5 TEST SITUATIONS There are two different test situations, as follows:

- (a) Laboratory test of floor materials.

NOTE: This is the preferred situation as the test condition can be examined by prospective users prior to purchasing the materials.

- (b) Field test of completed floors (in situ). This test is applicable where it is desired to test an existing floor constructed of materials with unknown conductive properties.

The following requirements apply to both test situations:

- (i) Resistance shall be measured with a calibrated ohmmeter as specified in Clause 4.
- (ii) The contact area of each electrode shall be circular, dry, flat and comprise a surface of aluminium or tin foil 0.015 mm to 0.025 mm thick, backed by a layer of rubber

6 ±1 mm thick and measuring between 40 and 60 durometer hardness as determined with a Shore Type A Durometer in accordance with AS 1683.15.2.

- (iii) The electrical resistance of high pressure laminate (HPL), lino and similar floors shall be measured with the specified electrodes and an electrode contact liquid. The conductive liquid shall have the following parts by mass:
 - (A) Anhydrous polyethylene glycol of molar mass 600: 800.
 - (B) Water: 200.
 - (C) Wetting agent: 1.
 - (D) Potassium chloride: 10.
- (iv) Measurements shall be made at five or more locations on the test floor or floor material under test and the results averaged. Where the bulk resistance of an elevated floor is being measured, the measurements shall be made on five or more separate panels with the electrode placed at the approximate centre of each panel. No individual value shall lie outside the resistance range specified in AS 4154.

6 PROCEDURE

6.1 Laboratory test The procedure for the laboratory test is as follows:

- (a) The test floor shall be clean and conditioned at 20 ±2°C dry bulb and 50 ±10% relative humidity for a minimum of 48 h.
- (b) The surface resistance shall be measured between the two electrodes placed 700 mm apart between centres at any point on the test floor. In order to ensure that surface resistance only is measured, it will be necessary to use a 'guard' circuit technique; an example of which is shown in Figure 1, or to use an insulating rubber underlay.

NOTES:

- 1 When testing a floor covering, the material should be laid on the test floor including any underlay materials normally laid with the floor covering.
- 2 When testing an elevated floor where the size of the panels is such that the two electrodes will be placed on different panels to obtain the required separation, an additional test is required. An additional electrode is required to be placed evenly across every intervening junction between panels in-line with the two test electrodes. The lowest reading thus obtained needs to meet the requirements of AS 4154. The purpose of this additional test is to ensure that the resistance at the junctions between panels is not masking an inherently low surface resistance of the panel itself.
- (c) The bulk resistance shall be measured between one electrode placed on the surface of the test floor or finished floor panel and the other on the clean metal contact on a metal foil underlay or, in the case of an elevated floor, the floor substructure.

6.2 Field test The procedure for the field test is as follows:

- (a) The test floor shall be clean. The temperature and relative humidity should be at their normal values and should have been as stable as possible during the preceding 48 h.
- (b) The surface resistance shall be measured between the two electrodes placed 700 mm apart between centres at any point on the floor under test.
- (d) The bulk resistance shall be measured between one electrode placed at any point on the surface of the floor and the other connected to a suitable building earth.

NOTE: This reading may be inaccurate if the test is carried out near any point of the surface that is connected to building ground, e.g. through equipment leg or conduit.