Australian Standard®

Methods of testing sheet roof and wall cladding

Method 3: Resistance to wind pressures for cyclone regions

METHOD

1 SCOPE This Standard sets out a test method for determining the resistance of sheet roof and wall cladding to wind pressures for cyclone regions.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
1170	Minimum design loads on structures
1170.2	Part 2: Wind loads
1562	Design and installation of sheet roof and wall cladding
1562.1	Part 1: Metal
4040	Methods of testing sheet roof and wall cladding
4040.0	Part 0: Introduction, list of methods and general requirements

3 PRINCIPLE A simulation of the loading resulting from cyclonic wind pressure is applied to the test specimen to determine the deflections of the cladding and the performance of the fastenings.

4 APPARATUS

4.1 Supporting structure The supporting structure shall be as specified in AS 4040.0.

4.2 Loading system The test to resist cyclonic wind pressures is mainly concerned with the interaction between the cladding and the fasteners. The parameters that need to be modelled exactly are the load per fastener and the bending moment in the cladding. This necessitates a multispan test specimen. Cladding extending over three supporting members can satisfactorily represent a double end-span condition.

A commonly-used loading medium for this type of test is inflatable bags bearing on the underside of the cladding. Load cycling can be achieved by displacing all or part of the cladding system relative to the inflated bags. If only part of the cladding system is displaced in this way, any resultant bending stresses that may be induced in the cladding need to be accounted for.

4.3 Measuring devices Deflections shall be determined by means of a device capable of measuring to an accuracy of not less than ±0.05 mm. Pressures or loads shall be determined to an accuracy of not less than 5%.

NOTE: An accuracy of 5% would normally be achieved by means of a device capable of measuring to an accuracy of ±1% of full scale.

5 TEST SPECIMEN The test specimen shall be as specified in AS 4040.0.

6 PROCEDURE

6.1 Loading

6.1.1 *Design pressures* Design wind pressures for strength limit state and serviceability limit state can be calculated from the relevant wind speeds V_u and V_s listed in AS 1170.2 for the appropriate cyclone regions. The design pressure is to be derived from a combination of internal positive pressure and external negative pressure, including local pressure factors where appropriate, for the particular part of the roof or wall being tested.