

Australian Standard®

Methods of test for unplasticized PVC (UPVC) pipes and fittings

Method 11: Method for high temperature stress-relief testing of UPVC fittings

1 SCOPE. This Standard sets out the method for detecting the presence of residual stresses and lack of fusion along weld lines in unplasticized PVC (UPVC) fittings due to moulding.

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

- AS 1984 Vernier callipers
- 2101 Internal micrometers (including stick micrometers)
- 2102 External micrometers

3 PRINCIPLE. A complete fitting is heated in a hot oven at 150°C. After removal and cooling, the fitting is examined for defects.

4 APPARATUS. The following apparatus is required:

- (a) *Hot air oven*—capable of maintaining and controlling an air temperature of 150 ± 4°C.
- (b) *Mercury-in-glass thermometer*—of appropriate temperature range graduated at intervals of 2°C or smaller, and capable of indicating the test temperature to an accuracy of ± 2°C. Other suitable temperature indicating instruments, which can be shown to provide an accuracy of the same of a higher degree, may be used.
- (c) *Micrometer*—complying with AS 2101 or AS 2102, as applicable, or vernier callipers complying with AS 1984.

5 TEST SPECIMEN. The test specimen shall be a complete UPVC fitting.

6 PROCEDURE. The test procedure shall be as follows:

- (a) Preheat the oven to the required test temperature of 150 ± 4°C. Allow it to stabilize for a further 15 min before inserting the test specimen.
- (b) Place the test specimen in the oven and ensure that it stands vertically on one socket mouth.
NOTE: The door of the oven should remain open for the minimum possible time.
- (c) Allow the test specimen to remain in the oven at a temperature of 150 ± 4°C for a period as specified in the relevant fitting Standard.
- (d) Remove the test specimen from the oven and allow it to cool in air until sufficiently rigid to handle. Care should be taken not to distort or damage the fitting in handling.
- (e) The test specimen shall be examined, and the existence of any of the following changes shall be noted and recorded:
 - (i) The presence of any blisters, foreign inclusions or voids.
 - (ii) Any delamination or damage at the injection point which results in a reduction of wall thickness. If this has occurred, the reduced wall thickness shall be measured using the micrometer or vernier callipers.
 - (iii) Any opening of the weld line. If this has occurred, the location of the opening and its depth shall be measured using the vernier callipers.
 - (iv) The presence of any surface delamination. If this has occurred, the depth of delamination shall be measured using the vernier callipers and its area expressed as a percentage of the total surface of the test specimen.