

Australian/New Zealand Standard™

Methods of test for plastics pipes and fittings

Method 2: Method for determining the flattening properties of plastics pipes and fittings

1 SCOPE

This Standard sets out a method for determining the flattening properties of plastics pipes and fittings.

2 PRINCIPLE

Specimens are compressed across the diameter between two rigid parallel plates. The condition of the test specimens at 100% internal diameter deflection is noted.

3 RELEVANCE OF TEST

This test method is designed as a quality control test principally to ensure that there is no 'fault line' in plastics pipes where the material recombines after passing the spider of an extrusion head, and to ensure the quality of the moulding in injection-moulded fittings.

4 APPARATUS

A parallel plate press, capable of producing the force necessary for the specified deformation, and of dimensions suitable for receiving the test specimen, is required.

NOTE: A safety guard should be provided to protect the operator from the hazard of test specimen fracture.

5 TEST SPECIMENS

The following are required:

- (a) *Pipes*—three test specimens shall be tested from each pipe sample. Each test specimen shall be a ring-shaped section of pipe 50 ± 10 mm long.
- (b) *Fittings*—three test specimens shall be cut from the socket or spigot of the fitting under test. Each test specimen shall be a ring-shaped specimen of 50 ± 10 mm long. When testing fittings, where it is not possible to cut the test specimen to 50 mm long, the test specimen shall be cut from the socket or spigot of the fitting and shall have a minimum length of half the socket or spigot length. Where it is not possible to cut three specimens from one fitting, specimens may be cut from additional fittings of the same batch.

6 CONDITIONING OF TEST SPECIMENS

Immediately prior to testing, test specimens shall be conditioned in either air or water at $20 \pm 2^\circ\text{C}$ for a period not less than that indicated in Table 1.

TABLE 1
CONDITIONING TIMES OF TEST SPECIMENS

Minimum wall thickness (mm) (see Note 1)	Conditioning time in water or moving air (see Note 2)	Conditioning time in still air (see Note 3)
≤5	5 min	15 min
>5 ≤10	15 min	35 min
>10 ≤20	30 min	90 min
>20	2.5 h	5 h

NOTES:

- 1 Minimum wall thickness for the nominal size under test can be determined by reference to the dimensional table(s) in the relevant pipe standard.
- 2 For these conditioning times, water should be used or air should be circulated over the test specimens by means of a fan or other device.
- 3 This is considered to be a normal laboratory atmosphere.

7 PROCEDURE

The procedure shall be as follows:

- (a) Locate and mark the point of thinnest wall thickness of each of the test specimens.
- (b) Place the first test specimen in the press so that the thinnest wall thickness is against the movable plate.
- (c) Flatten the test specimen diametrically at a uniform rate in the press until either—
 - (i) the distance between the plates is equal to $100 \pm 2\%$ of the mean inside diameter, or
 - (ii) the opposing pipe walls come into contact.

The time to flatten each test specimen shall not exceed 5 min.

- (d) Retain the test specimen in the flattened state between the plates and examine it for splitting, cracking, breaking or delamination.

NOTE: Ductile tearing of test specimen in the stress whitened zones is acceptable and does not need to be reported, see Note to Clause 8(b).

- (e) Repeat Steps (b) to (d) on the second and third specimens. The second test specimen shall be oriented $45 \pm 5^\circ$ and the third test specimen $90 \pm 5^\circ$ from the position of the first test specimen.

8 REPORT

The following information shall be reported:

- (a) Complete identification of the pipe or fitting tested.
- (b) Any splitting, cracking, delamination or breaking.
NOTE: Ductile tearing of test specimen in the stress whitened zones does not need to be reported.
- (c) Reference to this test method, i.e. AS/NZS 1462.2.