

## Australian/New Zealand Standard™

**Methods of test for plastics pipes and fittings****Method 26: Determination of weathering resistance of plastics pipes for external storage**

## PREFACE

*This Standard incorporates Amendment No. 1 (July 2003). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

**1 SCOPE**

This Standard sets out a method for determining the weathering resistance, including resistance to ultraviolet radiation of plastics pipes and fittings.

**2 APPLICATION**

The method provides a controlled and reproducible natural weathering test. The intent of the weathering test is to provide assurance of resistance to weathering encountered during storage and transport of pipes. The test does not provide similar assurance for installations exposed to the elements long term.

**3 REFERENCED DOCUMENTS**

The following documents are referred to in this Standard:

AS	
1145	Determination of tensile properties of plastics materials
2193	Calibration and classification of force measuring systems
AS/NZS	
1462	Methods of test for plastics pipes and fittings
1462.6	Part 6: Method for hydrostatic pressure testing of pipes

**4 APPARATUS**

The following apparatus is required:

- (a) *Suitable tensile testing machine*—capable of applying a smooth uniform test force without interruption and capable of measuring the test force to  $\pm 2\%$ . The accuracy of the testing machine shall be verified in accordance with AS 2193. The machine shall be fitted with suitable grips, be free to move without undue friction, have a shape that shall ensure proper alignment of the test specimen, and which shall apply uniform pressure on the gripping surfaces, yet eliminate slip or damage to the test specimen during testing.

The machine shall be set so that the separation rate of the driven grips is  $50 \pm 2$  mm/min.

- (b) *Test racks and specimen fixtures*—made from inert materials that will not affect the test results. Wood, non-corrosive aluminium alloys, stainless steel and ceramic have been found suitable. Brass, steel or copper shall not be used in the vicinity of the test specimen. The test site shall be equipped with instruments to record the received energy of sunlight and ambient temperatures.
- (c) *Pressure testing apparatus*—the pressure testing apparatus shall be in accordance with AS/NZS 1462.6 using end connections as shown in Figure 1(a) of AS/NZS 1462.6.

## 5 EXPOSURE SITE

The requirements of this Clause are deemed to be applicable for Australian and New Zealand conditions.

The equipment shall be capable of supporting the test specimens so that the exposed surface of the specimens is at latitude angle to the horizontal facing to the equator. The exposure site shall be on open ground well away from trees and buildings. No obstruction, including adjacent racks, in an easterly, northerly or westerly direction shall subtend a vertical angle greater than 20°, or in a southerly direction greater than 45°.

For exposure in the Northern Hemisphere facing south, corresponding provisions shall apply.

## 6 PROVISION OF TEST SPECIMENS

A total of 10 pipe samples shall be required for tensile testing. In the case of pressure compounds a further sample shall be required for hydrostatic pressure testing. The test samples shall be in pipe form, using DN 63 SDR 11 pipe.

The following apply to the preparation of pipe samples:

- (a) Ten pipe samples shall be prepared for tensile testing, of sufficient size such that one dumbbell specimen to the dimensions of Type 2 test specimens of AS 1145 may be taken from each sample after the relevant exposure.
- (b) Where applicable, one sample of pipe shall be prepared for hydrostatic pressure testing so that the free length between end connections shall be 250 +50 –0mm.

## 7 PROCEDURE

The procedure shall be as follows:

- (a) Mount the test samples for exposure in a suitable rack and fixtures, as described in Clause 3 (b).
- (b) Expose the test sample until the global radiation received is equal to or greater than 3.5 GJ/m<sup>2</sup>.
- (c) On completion of the necessary exposure period, cut one dumbbell test specimen from the exposed area of each of 10 exposed samples. Condition the test specimens at 20 ±2°C for not less than 24 h immediately before testing to determine elongation at break. Determine and record the elongation at break of the 10 specimens from the exposed samples, by the procedure described in AS 1145, at a grip separation speed of 50 ±2 mm/min. The mean of the 10 results shall be recorded as the mean elongation at break of each group of test specimens.
- (d) Subject the specimen prepared in accordance with Clause 6(b) to a test for resistance to internal hydrostatic pressure if specified in the relevant product Standard.

## 8 REPORT

The following shall be reported:

- (a) Compound batch details.
- (b) Sample preparation.
- (c) Exposure conditions and location of test site.
- (d) Exposure period, in days, and radiation energy received.
- (e) Mean elongation at break of the exposed specimens as per Clause 6(c).
- (f) Where applicable, test report for resistance to internal hydrostatic pressure.
- (g) Reference to this test method, i.e., AS/NZS 1462.26.