

Australian Standard™

AS 2888.8

Methods of testing plastics waste fittings

Method 8: Thermal cycling test

PREFACE

This Standard was prepared by the Standards Australia Committee PL-045, Plastics Pipe Systems Test and Calculation, to supersede AS 2888.8—1986.

The only technical change is the removal of the requirement for a hydrostatic head pressure to be applied to the fitting prior to inspection.

METHOD

1 SCOPE

This Standard sets out a method for determining the ability of plastics waste fittings and attachments to withstand the effect of differential thermal expansion of the various materials comprising the assembly.

2 PRINCIPLE

The test specimen is assembled at a specific torque to mating components, where applicable, then subjected to an endurance test for a fixed number of thermal cycles, which simulate temperature variations possible in-service. The test specimen is subsequently hydrostatically tested to the relevant pressure rating, checked for leaks, then assessed on the basis of any cracks, degeneration of the fitting or other failure occurring as a result of thermal cycling.

3 APPARATUS

The following apparatus is required:

- (a) *Hot reservoir* A hot reservoir containing sufficient water at a temperature of 80 ± 5 , -0°C to completely immerse the test specimen. Suitable means for controlling the temperature of the water shall be employed.
- (b) *Cool reservoir* A cool reservoir containing sufficient water at a temperature of $20 \pm 5^\circ\text{C}$ to completely immerse the test specimen. Suitable means for controlling the temperature of the water shall be employed.
- (c) *Mating components* To complete the assembly.
NOTE: Where physical size becomes restricting, fixtures representing the mating component may be used.
- (d) *Torque wrench* A torque wrench or other device capable of tightening the assembly to the required torque to within $\pm 5\%$.

4 TEST SPECIMEN

The test specimen shall be a complete fitting.

5 CONDITIONING AND TESTING

For referee tests, the test specimen shall be conditioned in air at a temperature of $20 \pm 2^\circ\text{C}$ for a minimum of 24 h prior to testing. For routine tests, the test specimen may be tested at ambient temperature conditions but not exceeding 38°C .

6 PROCEDURE

The procedure shall be as follows:

- (a) Attach the fitting by its normal method to its mating components. Where threaded connection ends are present, connections shall be tightened to the torque specified in the relevant fitting Standard.
- (b) Subject the test specimen to the following thermal cycle:
 - (i) Complete immersion in 80°C reservoir, 2 ± 0.3 , -0 min.
 - (ii) Drain over 80°C reservoir, 0 to 30 s.
 - (iii) Complete immersion in 20°C reservoir, 2 ± 0.3 , -0 min.
 - (iv) Drain over 20°C reservoir, 0 to 30 s.
 - (v) Repeat the thermal cycle 1000 times.

NOTE: The drain time between immersion in hot and cold reservoirs is to allow some fittings, such as traps, which contain a quantity of water to empty thus preventing temperature changes in the reservoirs.

- (c) At the completion of 1000 cycles hydrostatically test the specimen to the relevant pressure rating, examine the fitting and report the presence of any cracks, distortion or degeneration of the fitting surface.

7 REPORT

The report shall contain the following:

- (a) Manufacturer, model, size and configuration of the test specimen.
- (b) Tightening torque used.
- (c) Any cracking, distortion or degeneration of the fitting surface.
- (d) The number of this Australian Standard i.e., AS 2888.8.