

Australian Standard[®]

Plastics—Glass filament reinforced plastics (GRP)—Methods of test

Method 11: Determination of the initial ring deflection of glass filament reinforced plastics pipes

1 SCOPE. This Standard sets out a method for determining the initial ring deflection of glass filament reinforced plastics (GRP) pipes.

2 PRINCIPLE. A section of pipe is subjected to a compressive load. The load is applied until a specified deflection is reached, and the inside layer is examined for damage. The load is then increased until a second specified deflection is reached and the specimen is re-examined for structural damage.

3 REFERENCED DOCUMENTS. The documents below are referred to in this Standard.

AS

3572 Plastics—Glass filament reinforced plastics (GRP)—Methods of test

3572.1 Method 1: Preparation of glass filament reinforced plastics test specimens

3572.4 Method 4: Determination of the dimensions of glass filament reinforced plastics pipes

4 APPARATUS. The following apparatus is required:

(a) *General.* The apparatus consists of two parallel bearing plates or beam bars between which the specimen is compressed by an external load. The load is applied to the specimen with only negligible friction losses. (See Figure 1).

NOTE: Where deflections exceed 28%, beam bars should be used.

(b) *Loading plates.* Loading plates, if used, shall be not less than 5 mm thick and should not bend or deform during the test. Their length shall be equal to or greater than the specimen length.

(c) *Beam bars.* For pipe specimens with a nominal diameter less than 300 mm, the beam bars, if used, shall be 20 ± 5 mm diameter. For larger diameter pipes the bars shall be 50 ± 5 mm diameter.

(d) *Force and deflection measuring equipment.* The accuracy of measurement of force shall be ± 1.0 percent of the indicated value. For measurement of deflection, the accuracy shall be within ± 1.0 percent of the maximum measured value of change or 0.1 mm, whichever is the larger.

5 PREPARATION OF TEST SPECIMENS. Test specimens shall be taken from normal production pipes. The length of the test specimen is specified in Table 1.

TABLE 1
LENGTH OF TEST SPECIMEN

millimetres	
Nominal size of pipe (DN)	Length (L)
< 300	DN
$\geq 300 \leq 1\ 500$	300
> 1 500	0.2DN

NOTE: A tolerance of ± 5 percent on the length is permitted.

Before testing, the test specimen shall have its ends squared and cleaned. It shall not have any burrs, notches or other markings which may cause premature failure.

NOTE: The test specimen used to determine initial stiffness (AS 3572.10) may be used for this test. The test specimen from the initial stiffness test should be allowed to recover for at least 15 min before being subjected to the determination of initial ring deflection.