

Australian Standard®

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

Method 6: Determination of hoop tensile modulus of elasticity of wood glass filament reinforced plastics pipes

1 SCOPE. This Standard sets out a method for determining the hoop tensile modulus of elasticity of filament wound glass filament reinforced pipes.

NOTE: This test may be carried out on pipe wound at any angle.

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

AS

1349 Bourdon tube pressure and vacuum gauges

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

3 APPARATUS. The following apparatus is required:

- (a) *Pressurizing system.* An hydraulic system capable of producing a pressure up to twice nominal pressure rating of the pipe under test. An hydraulic accumulator or pump may be used for this purpose.
- (b) *End connections.* Fittings that will make a watertight connection to the test specimen and to the pressurizing system. Three types of fittings are permitted, as follows:
 - (i) Caps, provided with ring joints sealing onto the external surface of the test specimen and connected to one another by a metal rod allowing some longitudinal movement at the ends of the test specimen. Pressure is applied through one cap end, or through the connecting rod. (See Figure 1(a).)
 - (ii) Metal plugs provided with ring joints sealing onto the inner surface of the test specimen and connected to one another by a metal rod with a central bore, allowing some longitudinal movement at the ends of the test specimen. (See Figure 1(b).)
 - (iii) End caps, or end plugs, incorporating standard joint couplings. (See Figure 1(c).)
- (c) *Pressure measurement device.* A pressure gauge or pressure gauges meeting the requirements of AS 1349 for the range of pressure to be measured within the specimen under test.

Pressure gauges shall be of 150 mm minimum diameter and shall be capable of indicating the test pressure to within ± 2 percent of its true value.

NOTE: Digital or analogue pressure gauges which can be shown to provide capabilities and characteristics of the same or a higher degree, may be used.

- (d) *Strain measurement device.* A means shall be provided to measure the strain in the pipe wall in the hoop direction.

NOTE: Where strain gauges are used, a minimum gauge length of 60 mm should be used.