Australian Standard®

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

Method 5: Determination of hoop tensile strength of wound glass filament reinforced plastics pipes

1 SCOPE. This Standard sets out a method for determining the hoop tensile strength of filament wound pipes.

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 which will burst 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 internal 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.* A pressure gauge or pressure gauges, meeting the requirements of AS 1349 for the full 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.

4 PREPARATION OF TEST SPECIMENS. One specimen, consisting of a piece of pipe of 250 mm nominal size and with a free length (L) between end connections of at least 1.5 m, shall be tested.

NOTE: Test specimens of nominal sizes other than 250 mm may be agreed between the purchaser and supplier.

The test specimen shall be hoop wound (wound at right angles to the pipe axis), and shall be prepared for testing without a corrosion barrier on either the internal or outer surfaces.