Australian Standard®

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

# Method 9: Determination of pressure regression characteristics as a function of time for glass filament reinforced plastics pipes

**1 SCOPE.** This Standard establishes the procedure for determining linear regression coefficients of the pressure/time relationship of GRP pipes, and regression ratios based on lower confidence limits used for the determination of quality control test pressures.

**2 PRINCIPLE.** A number of test specimens are subjected to internal hydraulic pressures selected so that failures will occur within prescribed ranges of time.

**3 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
3572.3 Method 3: Determination of loss on ignition of glass filament reinforced plastics
3572.4 Method 4: Determination of dimensions of glass filament reinforced plastics pipes
3572.12 Method 12: Determination of initial failure pressure and initial hoop strength of glass filament reinforced plastics pipes
3572.14 Method 14: Determination of long-term ring deflection of glass filament reinforced plastics pipe subject to constant load and environmental exposure
3572.15 Method 15: Determination of resistance to long-term strain corrosion of glass filament reinforced plastics pipes

**4 APPARATUS.** The following apparatus is required:

(a) *Pressurizing system.* An hydraulic system capable of producing the appropriate pressure without shock or pulsations, and capable of maintaining an accuracy of ±1 percent of the set value. An hydraulic accumulator or a pump may be used for this purpose.

Provision may be made for the connection of one or more test specimens to the hydraulic system at the one time. Where more than one connection is provided, the equipment shall ensure that, if a test specimen bursts, any change in pressure on the other specimens under test will not exceed the ±1 percent tolerance allowable. Provision shall also be made to isolate each connection.

Provision may be made for an automatic accumulator to recharge during a test provided the test time automatically pauses for the full recharge period. During recharge, the pressure on the test specimen may be permitted to vary outside the specified tolerance.

(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).)