

# Australian Standard<sup>®</sup>

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

### Method 16: Testing of flexible joints of glass filament reinforced plastics pipes

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**1 SCOPE.** This Standard sets out the method for conducting type tests on flexible joints.

**2 PRINCIPLE.** A sample incorporating the flexible joint is subjected to a range of pressure, angular deviation, draw, diametral distortion and misalignment conditions to demonstrate the leak proof capability and material strength of the joint.

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

- (a) *End sealing devices*—end sealing devices which are appropriate to the system being tested, shall be anchored to take the end thrust resulting from internal pressure without supporting the joint.
- (b) *Special supports*—special supports may be required for the misalignment test conditions to minimize distortion or local buckling. These supports should be positioned not less than one pipe diameter from the joint.
- (c) *Straps or cradles*—straps or cradles supporting an 180° arc of the pipe barrel to apply the shear force for the misalignment tests. The strap or cradle on one side shall be anchored to a fixed base, and the strap or cradle on the other shall be loaded by a suitable method.
- (d) *Force measurement equipment*—the measuring equipment shall allow the applied force to be measured with an accuracy of  $\pm 5$  percent.

NOTE: Forces applied shall be calculated having regard to the mass of the pipe, its support and contents.

**4 TEST CONDITION.** Tests shall be conducted at ambient temperature.

**5 TEST SPECIMENS.** The test specimen shall consist of the joint under test coupled to pipe of appropriate class and stiffness, assembled according to the manufacturer's instructions.

The joint under test shall be located in the middle of the test unit.

Total specimen length shall be not less than 10 times the nominal pipe size, with a maximum of one production pipe length including sealing caps.

#### 6 TEST PROCEDURES

##### 6.1 Joints for pressure applications.

**6.1.1 Normal assembly.** The procedure shall be as follows:

- (a) Ensure that the joint is assembled normally with the witness mark correctly positioned. There should be no draw and no deflection.
- (b) Fill the test piece with water.
- (c) Apply and maintain a hydrostatic pressure of 5 kPa for 15 min.
- (d) Inspect the joint for leaks and damage to the joint components.
- (e) Pressurize the joint to a pressure of three times the working pressure, and maintain that pressure for 24 h.
- (f) Inspect for leaks and damage to the joint components.
- (g) Drain the water and apply a negative pressure of 80 kPa to the specimen.
- (h) Seal and leave for 1 h. Check for any pressure change greater than 8 kPa during this period.