Australian Standard®

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

Method 13: Determination of the initial longitudinal tensile strength of glass filament reinforced plastics pipes

1 SCOPE. This Standard sets out two methods for determining the initial longitudinal tensile strength and percentage elongation at failure of glass filament reinforced plastics (GRP) pipes.

The initial longitudinal tensile strength may be determined by either Method 13A or Method 13B.

2 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
3572.8	Method 8:	Determinination of long-term ring stiffness of glass filament reinforced plastics pipes

3 METHOD 13A.

3.1 Principle. A specimen cut from the pipe parallel to the axis of the pipe is subjected to a tensile force. Force and elongation at rupture are measured.

3.2 Apparatus. The following apparatus is required:

(a) A tensile testing machine capable of indicating the force applied to the test specimen with an accuracy ±0.01 mm. The machine shall be equipped with a means of measuring the elongation of the test specimen during the test and with an accuracy of ± 1 percent of the indicated value.

(b) Micrometer complying with AS 2102 or vernier callipers complying with AS 1984.

3.3 Preparation of test specimens. Test specimens shall be prepared from strips cut from the pipe under test in a longitudinal direction.

Test specimens may consist of a parallel strip 25 mm wide, or profiled as shown in Figure 1. The test specimens may be cut from a previously tested undamaged ring used for the determination of the initial stiffness (AS 3572.10). For referee tests, the test specimen shall be profiled to the dimensions shown in Figure 1.

The thickness at the ends of the profiled test specimens may be built up with a suitable thermosetting resin. When cured, the ends may be trimmed flat while ensuring that the centroid of the curved pipe wall thickness will lie on the loading centreline when gripped in the testing machine.

Suitably curved testing machine jaws may be used as an alternative.

3.4 Number of test specimens. Five test specimens shall be tested.

3.5 Conditioning. Test specimens shall be conditioned in accordance with AS 3572.1. Except for referee tests, conditioning shall be at ambient conditions.

3.6 Test conditions. The test shall be conducted in air at a temperature of 23°C ±2°C.

3.7 Measurement of length and width. Measure the length and width of each test specimen to an accuracy of 1 mm and 0.1 mm respectively. The width shall be measured in the centre of the test specimen.