

# Australian Standard®

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

### Method 3: Determination of loss on ignition of glass filament reinforced plastics

**1 SCOPE.** This Standard sets out the method for determining the percentage by mass of resin in glass filament reinforced plastics.

**NOTES:**

1. Where reinforced plastics contain organic fillers, or if the resin is incompletely combustible, the percentage by mass resin content cannot be determined directly by this method.
2. Glass content may be calculated directly provided no inorganic fillers are present.

**2 REFERENCED DOCUMENTS.** The document below is 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

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

- (a) *Crucible*, three of platinum or porcelain) each of approximately 30 mL capacity.
- (b) *Muffle furnace*, capable of maintaining temperature in the range 600°C to 625°C.
- (c) *Desiccator*.
- (d) *Balance*, capable of weighing to an accuracy of ±0.01 g.
- (e) *Fume cupboard*.

**4 TEST SPECIMENS.** Three specimens, each of minimum mass 10 g shall be cut from a test panel and the resin rich layer removed by machining. Edges of test specimens shall be machined back to a hard, clean surface.

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

**6 PROCEDURE.** The procedure shall be as follows:

- (a) Determine and record the constant mass of each crucible to the nearest 0.01 g. The crucible shall be heated to 500°C and cooled in the desiccator to remove moisture residue, etc, prior to weighing.
- (b) Place a test specimen in each crucible and determine the total mass to the nearest 0.1 g.
- (c) Heat the crucibles in a bunsen flame until the contents ignite. Maintain a temperature at which the material burns at a uniform and moderate rate until only glass, ash, inorganic fillers, and carbon remain when the burning has ceased.

**NOTE:** As the combustion of plastics materials may produce toxic gases, combustion should be carried out in a fume cupboard.

- (d) Heat the crucible and contents to constant mass at a temperature in the range of 600°C to 625°C in the muffle furnace.
- (e) Allow the crucible and contents to cool to ambient temperature in the desiccator and then determine the mass to the nearest 0.01 g.

**7 CALCULATIONS.** The percentage by mass of resin in each test specimen shall be calculated using the following equation:

$$\% \text{ resin} = \frac{(m_1 - m_2)}{(m_1 - m_c)} \times 100$$