



IPC-TM-650 TEST METHODS MANUAL

1.0 Scope A test method for determining density (specific gravity) of solid plastics by displacement of water; and weight and volume measurement.

2.0 Applicable Document None

3.0 Test Specimen The test specimen shall be a solid piece of any size and shape except that volume shall not be less than 0.125 cubic inches and have a smooth uniform surface.

4.0 Apparatus

4.1 Analytical balance and a specific gravity bridge or a jolly balance.

4.2 Metal scale graduated in hundredths of an inch, micrometers, gages, and calipers.

5.0 Procedure

5.1 Conditioning the specimen shall be prior to and during test at 23°C ± 1.1°C and 50 ± 4 percent relative humidity for the 48 hours of 1/8 inch or less in thickness and 96 hours for thicker specimens.

Number 2.3.5	
Subject Density, Insulating Material	
Date 8/97	Revision B
Originating Task Group N/A	

5.2 Specific Gravity by Placement of Water The specimen shall be weighed in air and in distilled water at 23°C ± 1.1°C and a small amount of a wetting agent may be needed.

5.3 Specific Gravity by Weight and Volume Measurement The dimensions of the conditioned specimen shall be determined and the specimen shall be weighed in air at 23°C ± 1.1°C and 50 ± 4 percent relative humidity.

5.4 Calculations

$$\text{Specific Gravity} = \frac{\text{Wt. in Air}}{\text{Wt. in Air} - \text{Wt. in Water}}$$

$$\text{Specific Gravity} = \frac{\text{Wt. of Specimen in Air}}{\text{Volume of Specimen} \times \text{Density of Water } 23^{\circ}\text{C}}$$

5.5 Evaluation of Test The value of the density of water at 23°C is 0.9976 grams per cubic centimeter and the specific gravity of the material at 23°C.