



IPC-TM-650 TEST METHODS MANUAL

1.0 Scope This method is designed to determine the thickness of woven glass fabric, such as E-glass, S-glass, and quartz, used as reinforcement in prepreg (resin-impregnated glass fabric, or B-stage). It is applicable for glass fabric inspection before and after impregnation.

2.0 Applicable Documents

FED-STD-191

3.0 Test Specimens

3.1 Size Specimen size of 101.6 x 101.6 mm [4.0 x 4.0 in] is recommended; specimens used for determination of resin content by Burn Off Method may be used. Specimens shall be of sufficient size to insure that all points of the pressure foot of the thickness gauge shall be at least 6.4 mm [0.25 in] from the edge of the specimen.

3.2 Quantity and Sampling Unless otherwise specified, three pieces of material shall be cut one each from three sample sheets. Specimens shall be cut with the edges on a bias to the orientation of the fabric. Specimens shall be free of folds, creases, knots or other distortions which are not representative of the material surface.

4.0 Apparatus or Material

4.1 Muffle furnace Muffle furnace that is capable of maintaining 550 +/-50°C [1022 ±90°F].

4.2 Thickness Gage (Dead weight type) A dead weight type thickness gage equipped with a dial graduated to read with a precision of 0.0025 mm [0.0001 in] shall be used. The pressure foot shall be circular with a diameter of 6.35 ±0.025 mm [0.25 ±0.001 in], and with the moving parts weighted to apply a total load of 173 ±14 kPa (25 ±2 psi) to the specimen. The anvil shall be not less than 6.35 mm [0.250 in] in diameter. The micrometer shall be capable of repeating its readings to 0.0013 mm [0.00005 in] at zero setting or on a steel gage block.

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5.0 Procedure

5.1 Preparation of Prepreg Specimens Place specimens in a muffle furnace at 550±50°C [1022 ±90°F], for a period of time necessary to assure complete removal of the organics (resin). After removal from the muffle furnace, the specimens shall be cooled to room temperature.

5.2 Thickness Determination The specimen shall be placed on the thickness gauge anvil, and the pressure foot shall be closed onto the specimen at a location outside the area to be measured. The pressure foot shall be backed off to a distance of 0.008 to 0.01 mm [0.0003 to 0.0004 in], the specimen moved to the measurement position, and the pressure foot then released onto the specimen. The pressure foot shall be allowed to rest there for a minimum of 5 seconds. The dial reading shall then be taken to the nearest 0.0025 mm [0.0001 in].

5.3 Evaluation Record each reading and report the average of three measurements to the nearest 0.025 mm [0.001 in].

6.0 Notes See Federal Test Method Standard No. 191, Method No. 5050 for additional information and background on this procedure.