



# IPC-TM-650 TEST METHODS MANUAL

**1.0 Scope** This method is designed to determine the weight of a fabric by use of a small specimen. It is appropriate for woven or nonwoven fabrics made with glass or other inorganic yarns, or made with organic fibers or yarns.

**2.0 Applicable Documents** None

### 3.0 Test Specimens

**3.1 Test Specimen Configuration** Unless otherwise specified, the specimen shall consist of at least 2 pieces of fabric with a maximum size of 127 x 178 mm [5.0 x 7.0 in] and a minimum of 98 x 98 mm [3.88 x 3.88 in]. The total area shall be greater than 29,000 sq mm [45 sq. in]. For example, three pcs. of 102 x 102 mm [4 x 4 in] with a total area of 30,968 sq mm [48 sq. in].

**3.2 Quantity and Sampling** Specimens shall be taken from the fabric roll (as supplied by the manufacturer) no closer to the selvage (or cut edge) than a distance equal to one-tenth of the width of the roll. Unless otherwise specified, three specimens shall be taken from the roll at randomly selected locations.

### 4.0 Apparatus or Material

**4.1** An analytical balance capable of weighing to 0.001 gm.

**4.2 Cutting Equipment** A punch die or steel rule die capable of cutting the specimens to a size per 3.1 and to within 0.38 mm [0.015 in]. Alternately a razor blade knife, or equivalent, plus a caliper, or equivalent measuring device, may be used provided the precision requirement is met and the fabric edges are cleanly cut.

Number <b>2.1.6.1 (renumbered from 2.3.12)</b>	
Subject <b>Weight of Fabric Reinforcements</b>	
Date <b>12/94</b>	Revision
Originating Task Group <b>MIL-P-13949 Test Methods Task Group (7-11b)</b>	

### 5.0 Procedure

**5.1** Prepare a specimen by cutting the specified pieces in accordance with 3.0. Carefully handle the pieces to prevent loss of yarns or fibers from the cut edges. When applicable, the edges shall be cut on a bias to the orientation of the fabric. If not using a die, measure the specimen dimensions to the nearest 0.38 mm [0.015 in].

**5.2** Determine the weight of the specimen to within 0.1% on the balance. (Note: care must be taken so that any loose yarns unraveling from the cut are also weighed with the specimen.)

**5.3 Evaluation** Calculate the weight in grams per square meter [ounces per square yard] as follows:

$$\text{GSM} = \frac{G}{A} \quad \left[ \text{OSY} = \frac{45.72 G}{A} \right]$$

GSM [OSY] = Grams per square meter [ounces per square yard]

G = Total weight of specimen in grams [ounces]

A = Total area of specimens in square meter [square inches]

**5.4 Report** Report the individual specimen weights and the average of all specimens tested. Report the specimen size and number of pieces per specimen.

**6.0 Notes** None