



Determination of Mass per Area

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This test procedure describes the process to measure mass per area of interior trim materials

1.2 Applicability. This procedure is applicable to textile materials, trim materials, and other materials.

1.3 Remarks. Mass per unit area supports Computer Aided Analysis.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3221

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Analytical Balance, accurate to 0.01 g.

3.2.2 Apparatus for conditioning to the appropriate requirements as described in GMW3221, unless otherwise specified in the relevant material specification.

3.2.3 Apparatus for cutting the test specimens, chosen from among the following per 3.2.3.1 through 3.2.3.3.

3.2.3.1 Die which is capable of cutting 100 cm² minimum circular or square test specimens.

3.2.3.2 A template, square or round, having an area of 100 cm² minimum and a sharp cutting device (i.e., scissors, shears, razor blade, etc.)

3.2.3.3 Calibrated scale graduated in millimeters and a sharp cutting device (i.e., scissors, shears, razor blade, etc.)

3.3 Test Vehicle/Test Piece. Cut three (3) 100 cm² round or square test specimens from the conditioned material.

Note: 100 cm² is the minimum sample size allowed for engineering approval. Smaller test specimens may only be used to acquire reference values. See reporting requirements.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Test specimens of known surface area are taken and subsequently weighed. The mass per area of the test specimens is calculated and reported as material mass per area, (M_A).

3.6 Personnel/Skills. Personnel trained in accordance with the laboratory accreditation and Standard Operating Procedure requirements.

4 Procedure

4.1 Preparation. Unless otherwise specified in the relevant material specification, conditioning shall be performed according to GMW3221 Code A.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 Calculation of Area (A). Calculate the exact area (A) of each test specimen. For die cut specimens, use the known area of the die. For hand cut specimens, the following equations shall be used:

4.3.1.1 Circular Test Specimens. When testing circular test specimens, measure diameter (d) in centimeters to the nearest 0.1 cm, divide by two (2), square the result and multiply by pi (π). See Figure 1.

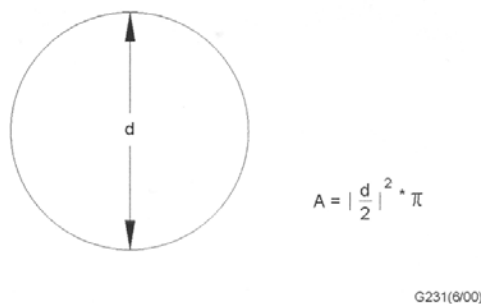


Figure 1: Circular Test Specimens

4.3.1.2 Square Test Specimens. When testing square test specimens, measure one (1) side (a) in centimeters to the nearest 0.1 cm and square it. See Figure 2.