

## STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard METHODS OF TEST FOR TEXTILE FLOOR COVERINGS

## AS 2111.17 DETERMINATION OF THICKNESS, COMPRESSION AND RECOVERY CHARACTERISTICS OF A TEXTILE FLOOR COVERING

### FOREWORD

The thickness of a textile floor covering depends upon the pressure applied to it. The ability of a textile floor covering to be compressed and to recover after compression is an important factor in its performance.

A pressure of 2 kPa has been adopted for measuring the initial thickness of textile floor coverings since under the conditions of test this pressure has been found to be just sufficient to flatten any protruding fibres without appreciably

compressing textile floor coverings of low density. The highest pressure used in this method is 200 kPa, which appreciably compresses most textile floor coverings.

The method of measuring thickness used in this standard is based on that prescribed in AS 2111.1\*.

\*AS 2111.1, Method for the Determination of Thickness of Textile Floor Coverings.

### METHOD

**1 SCOPE.** This standard describes a method for measuring the thickness, compression and recovery characteristics of textile floor coverings.

**2 APPLICATION.** The method is applicable to all types of textile floor coverings, except pile textile floor coverings with areas of varying thickness and/or density of pile, unless these areas can be measured separately.

NOTE: The test method is valuable for comparing results obtained from testing floor coverings of the same construction but results should not be directly compared for floor coverings of different construction.

**3 DEFINITIONS.** For the purpose of this standard, the following definitions apply:

*Initial thickness*—the thickness of textile floor covering measured under a pressure of 2 kPa.

*Compression*—the change in thickness of the textile floor covering when the pressure is increased from 2 kPa to 200 kPa.

*Load-compression curve*—the plot of decreasing thickness against increasing pressure from 2 kPa to 200 kPa.

*Load-recovery curve*—the plot of increasing thickness against decreasing pressure from 200 kPa to 2 kPa.

*Work of compression*—the work done on the textile floor covering when the pressure is increased from 2 kPa to 200 kPa, i.e. the area under the load-compression curve.

NOTE: Compression takes no account of the shape of the load-compression curve. Work of compression will distinguish between textile floor coverings which, although they have the same value of compression, have differently shaped load-compression curves.

*Percentage thickness recovery*—the thickness to which the textile floor covering recovers when the pressure is diminished from 200 kPa to 2 kPa, expressed as a percentage of the initial thickness.

*Percentage compression recovery*—the change in thickness when the pressure is diminished from 200 kPa to 2 kPa, expressed as a percentage of the compression.

*Percentage work recovery*—the work done by the textile floor covering when the pressure is diminished from 200 kPa to 2 kPa, expressed as a percentage of the work of compression from 2 kPa to 200 kPa pressure, i.e. (the area under the load-recovery curve divided by the area under the load-compression curve)  $\times 100$ .

NOTE: Percentage thickness recovery is based upon the total thickness of the textile floor covering. Percentage compression recovery would normally be expected to rank textile floor coverings in the same order as that of the percentage work recovery. Percentage work recovery is mainly influenced by the work done by movement of the pile in the type of textile floor covering and is thus more sensitive to change in the pile than percentage thickness recovery and has a much lower value.

**4 PRINCIPLE.** The thickness of a textile floor covering specimen is measured as the distance between the reference plate on which the textile floor covering rests and a parallel circular presser-foot, exerting a known pressure to an area between 300 mm<sup>2</sup> and 1000 mm<sup>2</sup> inclusive, within a larger area of textile floor covering. By the application of a series of increasing, and subsequently decreasing, loads to the specimen, the thickness at various pressures and the load-compression and load-recovery curves can be determined.