

COMPRESSION AND RECOVERY OF TEXTILE MATERIALS**Application**

This procedure is used to measure the compression and recovery of fibre padding and similar materials of high compressibility in the normal condition and after water soak.

Apparatus Required**Aluminum Plate**

100 x 100, Weighing 85 g.

Compression Tester

A compression machine capable of compressing the specimen at a constant rate of 50 mm/minute without impact, is required. The instrument must indicate the load applied.

Water Tank

Containing distilled or deionised water. Size must be suitable to enable a total immersion of the test specimen.

Mechanical Convection Oven

Capable of maintaining a temperature of 100 +/- 2 °C.

Slide Gauge**Conditioning and Test Conditions**

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure**Method A - Compression and Recovery - Normal**

1. Cut 100 x 100 mm specimens at random from across the width of the roll and build up to a pile not less than 25 mm in thickness.

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2. Place the aluminum plate over the pile and measure the thickness of the specimen at the centre of the four sides of the aluminum plate. Compute the average of these values and record as thickness T_1 .
3. Place the assembly in the compression tester and apply a load of 5.5 kg for one minute. Measure the average thickness of the specimen under the 5.5 kg load as in para 2 and record as compression thickness T_2 .
4. Remove the load and allow to recover for 3 minutes with the plate still on the specimen. Measure and record the average thickness T_3 .

Evaluation

Calculate the compression and recovery as follows:

$$\% \text{ Compression} = \frac{T_1 - T_2}{T_1} \times 100$$

$$\% \text{ Recovery} = \frac{T_3 - T_2}{T_1 - T_2} \times 100$$

Method B - Recovery After Water Soak

1. Determine and record original thickness T_1 as described in Method A, Steps 1 - 2.
2. Remove plate and immerse specimen in distilled water for one minute.
3. Shake out excess water, replace plate and place the assembly in the compression tester and apply a load of 5.5 kg for one minute.
4. Whilst still under pressure, measure the thickness of the specimen at the centre of the four sides and compute the average of these values and record as thickness T_2 .
5. Remove load and plate, separate the specimens and dry in the oven for one hour at 100 +/- 2 °C and then allow to obtain standard conditions at 20 +/- 2 °C and relative humidity of 65 +/- 3 %.
6. Build up the specimens into a pile, replace the plate and after 3 minutes measure and record the average thickness T_3 .

Evaluation

Calculate the recovery as follows:

$$\% \text{ Recovery after Water Soak} = \frac{T_3 - T_2}{T_1 - T_2} \times 100$$

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.