Ford Motor Company

FORD LABORATORY TEST METHOD BN 015-02

COMPRESSION AND RECOVERY OF TEXTILE MATERIALS

Application

This method is used to measure the compression and recovery of fiber padding and similar materials in the normal and aged condition.

Apparatus Required

Steel Plate

125 x 125 mm x 3 mm weighing 280 g.

Compression Tester

A compression machine capable of compressing the specimen at a constant rate of 50 mm/minute. The instrument must indicate the load applied and may be motor or hand driven.

A compression tester with dead weights applied as shown in Figure 1, 2, & 3 can be used.

Mechanical Convection Oven

Capable of maintaining a constant temperature of 82 +/- 2 °C.

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.

2. Place the 125 x 125 mm steel plate over the pile and place in the compression tester. (See Figure 1.)

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2001 08 22	Revised	Editorial – no technical change A. Cockman
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3. Apply a 22 N load for one minute. If the dead weight compression tester as shown in Figure 2 is used, apply the load gradually without impact until the load is supported by the test specimen. Remove the load and measure the thickness of the sample at the center or corners of the four sides of the steel plate. Compute the average of these values and record as thickness T_1

4. Apply a load of 334 N at the rate of 50 mm/minute (when using the compression machine), lock the scale and again measure the compressed height of the sample as in step 3 and record as compression thickness T2. If the dead weight compression tester is used, apply the 334 N load gradually without impact until the load is supported by the test specimen. (See Figure 3.)

5. Hold at the 334 N load for 5 minutes, remove load and allow to recover for 5 minutes with the steel plate still on the sample. Measure and record therecovered thickness of the specimen as in Step 3 and record as T_3

Method B - Compression and Recovery after Aging

1. Cut 100 x 100 mm specimens at random from across the width of the roll.

2. Age test specimens for 24 h at 82 +/- 2 °C in the oven, and then allow to stand for 30 minutes at 23 +/- 2 °C and relative humidity of 50 +/- 5 %.

3. Build up the specimens into a pile not less than 25 mm thick.

4. Continue the test as described in Method A, Steps 2 through 5.

Evaluation

Calculate the compression and recovery of the specimen for both Method A and B as follows:

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

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

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