Ford Motor Company

FORD LABORATORY TEST METHOD EU-BP 053-07

COMPRESSION SET OF FOAMED SEALING PROFILES

Application

This method is used to determine under constant load the compression set of foamed sealing profiles (made from rubber, elastomers etc.), after a hot or cold ageing treatment.

Apparatus Required

Mechanical Convection Oven

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

Cold Box

Capable of maintaining a constant temperature of - 40 +/- 2 °C.

A box with a door opening at the top is preferred to minimise rapid changes in temperature whilst the compression tests are being performed.

Angle Blocks

For mounting specimens - dimensions see Figure 1.

Clamping Device

For compressing test assemblies - see Figures 2 & 4 (or equivalent).

Thickness Measuring Device

With an accuracy of +/- 0.02 mm.

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.

Date	Action	Revisions
2001 08 23	Revised	Editorial – no technical change A. Cockman
1994 02 28		

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Procedure

1. Prior to testing condition sample for 24 hours at a temperature of 23 +/-2 °C and relative humidity of 65 +/- 3 % unless otherwise specified.

2. Prepare 3 test assemblies by cutting 3 specimens 50 mm long and bonding them in the angle blocks as shown in Figure 3.

3. After complete drying of the adhesive, measure the height of the sealer lip as shown in drawing to an accuracy of +/- 0.2 mm at 3 points. The average indicates the original height "h" of the sealer lip.

4. Place a test assembly into the clamping device and compress the lip to the height (h_1) indicated on the relevant component drawing.

5. While still under compression expose the test assembly for the time and temperature required by the relevant Engineering Specification in the oven or the cold box respectively.

6. After exposure remove the test assembly from the clamping device and condition at 23 +/- 2 °C and 50 +/- 5 % relative humidity if not otherwise specified for 30 minutes. Again measure the height of the sealer lip at 3 points and take the average (h_2).

Evaluation

Calculate the compression set as follows:

$$\text{Compression Set (\%)} = \frac{h - h_2}{h - h_1} \times 100$$

Where: h = Original height of the sealer lip in mm
h_1 = Height of the sealer lip under compression in mm
h_2 = Height of the sealer lip after exposure and conditioning in mm

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