

LOAD DEFLECTION TEST**Application**

This procedure is used to determine the load deflection values and the load losses of polyurethane foam used as a padding in the construction of arm rests and crash pads.

Apparatus Required**Universal Testing Machine**

A universal testing machine capable of a constant rate of crosshead movement and of obtaining the desired crosshead operating speed; with a mechanism capable of showing the compressive load carried by the test specimen. The tester should be equipped with a recorder.

Test Fixture

A test fixture similar to the one shown in Figure No. 1 is satisfactory for the test. This fixture simulates the mounted position of the test specimen in the automobile.

Compression Foot

13 x 13 x 50 mm steel or wood block is attached to the moving crosshead of the tester.

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

1. Mount the arm rest on the test fixture as shown in Figure No. 1. Place the fixture on the base of the universal tester and adjust the arm rest so that it is parallel with the base of the tester.
2. Position the compression foot over the test area.

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Page 1 of 3

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3. Apply a 4.5 newton preload and set the dial gage to zero. Deflect the test specimen 25 % at a rate of 50 +/- 12 mm/min, based on the foam thickness and the cover material as specified on the engineering drawing.
4. Immediately read and record the number of newtons required to deflect the specimen 25 %. This represents the normal compression - deflection value as specified in the engineering document.
5. Without stopping the machine, continue on to the precalculated 50 % deflection level. Immediately reverse the machine and return to the original 25 % deflection dial gage setting and record the load in newtons.
6. Report as % load loss as specified on the engineering drawing.

$$\% \text{ load loss} = \frac{R_1 - R_2}{R_1} \times 100$$

R_1 = original 25 % deflection (Step 5)

R_2 = return 25 % deflection (Step 6)

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.