

COMPRESSION LOAD DEFLECTION TEST FOR POLYURETHANE FOAM

Application

This procedure is used to determine the compression load deflection of polyurethane foam.

Apparatus Required

Foam indentation hardness tester with a pressure foot approximately 150 mm diameter. A suitable alternative is a tensile testing machine with a special test fixture as shown in drawing.

Either piece of apparatus must be capable of compressing the material at a constant rate of 50 mm/minute and be equipped with a recording device.

Height 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

1. Cut a specimen of 80 +/- 1 mm x 80 +/- 1 mm with a thickness of 50 +/- 1 mm from the material under test.

Note: For testing thin sheets of a foam material, a pile of minimum thickness of 50 mm is used. The number of layers used to achieve this thickness and overall thickness of the pile must be recorded.

2. Measure the thickness of the specimen using the height gauge to the nearest 0.5 mm without pressure on the specimen.
3. Place the test specimen on the base plate of the machine, symmetrically to the centre of the pressure foot or symmetrically to the centre of the test fixture as shown in the drawing.

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4. Compress the specimen 70 % of its original height at a rate of 50 mm/minute. Repeat this process 4 times in succession and record the compression stress-strain curve.

Evaluation

Calculate the load deflection value at 40 % compression from the fourth curve obtained.

Note: Other compression, e.g., 20 % or 50 %, may be used if quoted on the relevant engineering specification.

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.