Go to Test description

REFERENCES	**BRITISH STANDARD BS 4952 : 1992 - DBA Modified (Stretchability and modulus)**
PURPOSE	To measure the extension and the modulus of fabrics or trims
DEFINITIONS	*Modulus*: the tensile force in the test specimen required to produce a specified elongation

APPARATUS

- Metal scale, graduated in millimeters.
- Autographic constant rate-of-extension stress/stain apparatus (unless otherwise indicated in the particular test procedure) capable of cycling between zero extension and either a predetermined force or a predetermined extension and capable of maintaining a specimen either under a constant tension or at a constant elongation.
- The apparatus shall be provided with means for recording the extension of the test specimen and the corresponding force. It shall be equipped with line contact clamps.

Clamps:

- The central points of the two clamps shall be in the line of pull and the testing device shall be calibrated with the clamps in position.
- The clamps shall be capable of allowing the specimens to be maintained either at a constant elongation or under a constant force as appropriate for the test to be performed.
- Line contact clamps as shown in *Figure 1* shall consist of two jaws, one being a flat steel plate, the other having a convex 3 mm radius (*R 3*). The line of contact of the jaws shall be at right angles to the line of pull, and their clamping faces shall be in the same plane. The jaws shall be capable of holding the test specimen without allowing it to slip, shall be designed so that they do not cut or otherwise weaken the specimen and shall be not less than the width of the specimen.
- Dimension in millimeters.

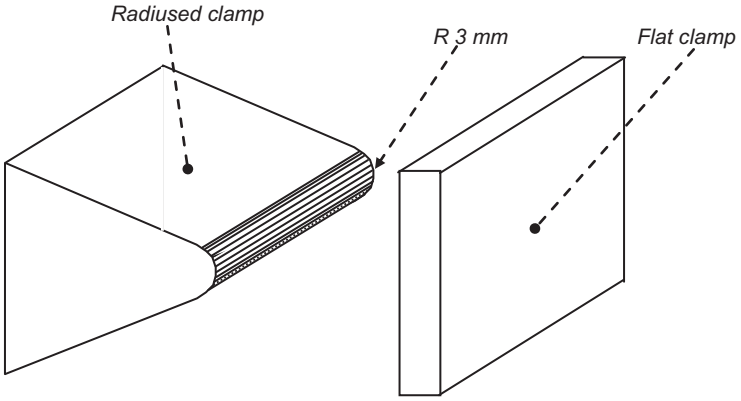


Figure 1

ATMOSPHERE FOR CONDITIONING AND TESTING

The materials should be in the state of relaxation obtained by exposure (free from applied tension) to the standard time and atmosphere for testing (ISO 139, Textiles – Standard atmospheres for conditioning and testing).

TEST SPECIMEN

Take samples of fabric from which test specimens will be cut to represent the fabric under test.

Prepare the specimens according to whether machine direction or cross direction stretch of the fabric is to be tested. Where possible test at least five specimens in each direction.

Fabrics 50 mm and below in width shall be tested full width in a lengthwise direction. For fabrics greater than 50 mm in width, specimens 50 mm wide, excluding any fringe, shall be prepared such that they are of sufficient length to provide a nominal gauge length of 100 mm.

PROCEDURE

- Set the clamps of the dynamometer to 100mm apart.

Clamp a test specimen centrally.

- Reach a pre-tension of 0.5 N.

The positioning of the clamps at this pre-tension of 0.5N correspond to the 0% of elongation.

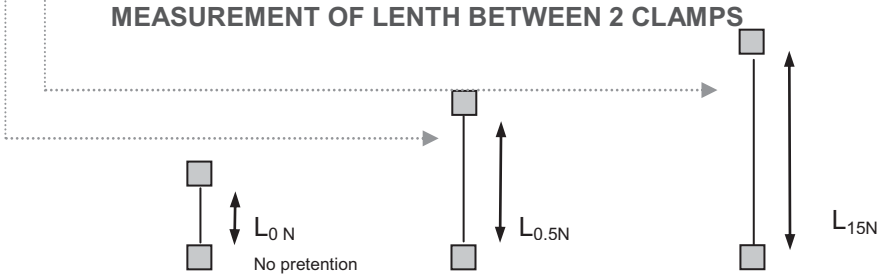
- Cycle the specimen twice between 0% of elongation and 15 N at a rate extension of 500 mm/min.

Record for the percentage of elongation :

The $L_{0.5N}$ is the length measured between the 2 clamps at a pre-tension of 0,5N readen on the first outgoing curve.

The L_{15N} is length measured between the clamps readen on the 2nd outgoing curve at 15 N.

MEASUREMENT OF LENTH BETWEEN 2 CLAMPS



The percentage of elongation $E_{\%}$ is calculated as follow :

$$E_{\%} = (L_{15N} – L_{0..5N}) / L_{0.5N} * 100$$

(see the drawing for details)

Record for the Modulus force :

The Modulus force is calculated depending on the percentage of elongation E%.

The Modulus force is readen on the 2nd outgoing curve.

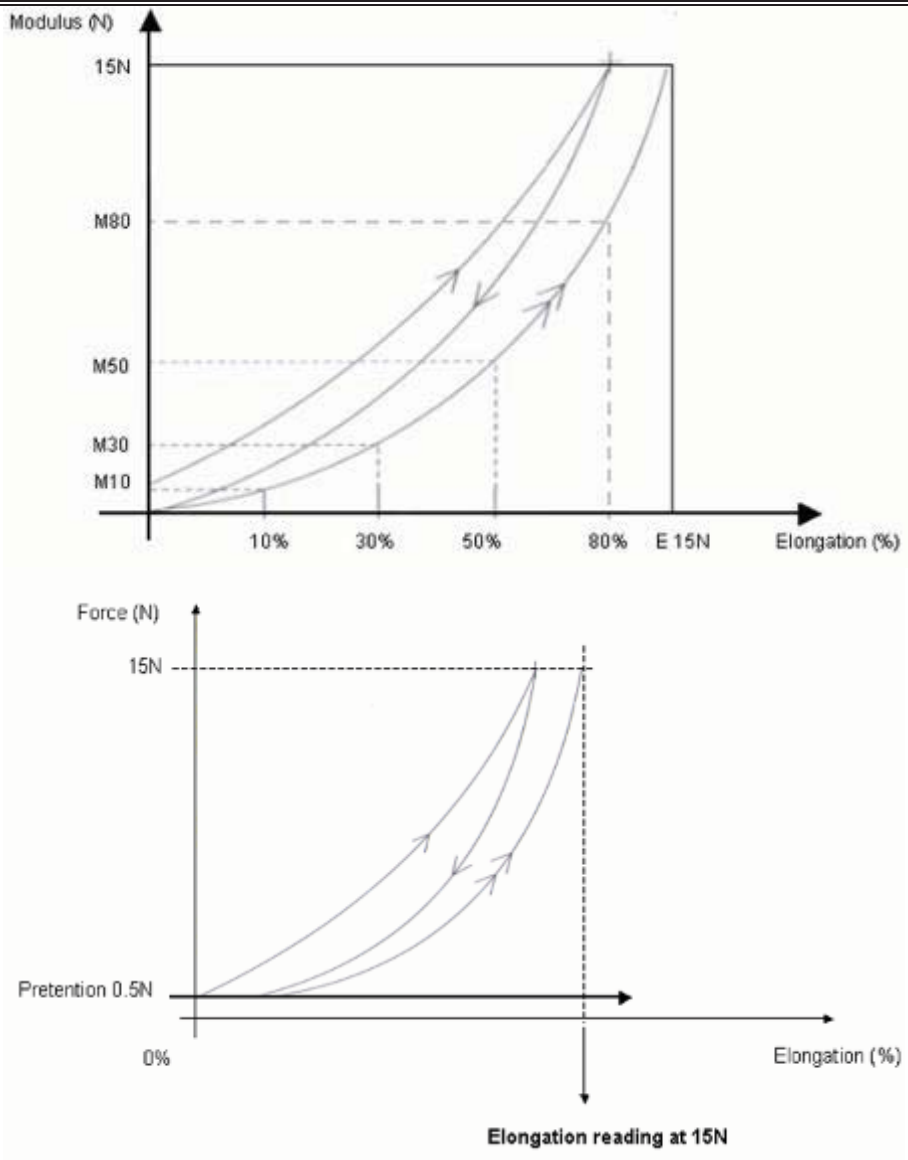
If $E_{\%} < 50\%$ then the Modulus is readen at an elongation of 10%.

If $50\% \leq E_{\%} < 80\%$then the Modulus is readen at an elongation of 30%.

If $80\% \leq E_{\%} < 120\%$ then the Modulus is readen at an elongation of 50%.

If $120\% < E_{\%}$ then the Modulus is readen at an elongation of 80%.

(See the drawing for details)



TEST REPORT (Results and tolerances)	The following shall be reported: ⇒ percentage elongation at 15 N for each specimen and their arithmetic mean; ⇒ modulus, i.e. force (in N) at specified elongation (Es) and their arithmetic mean; direction of test of the fabric, i.e. either machine direction or cross direction;

Tolerances for elongations: ± 15 %

Tolerances for modulus: ± 30 %

Except other different indications notified on the Raw Material Specification provided by the relevant DBA Division.