The Engineering Society
For Advancing Mobility
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SAE J855 MAR87

Test Method of Stretch and Set of Textiles and Plastics

SAE Standard
Revised March 1987

Submitted for Recognition as an American National Standard

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space

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MATERIALS STANDARD

Submitted for recognition as an American National Standard

SAE J855

Issued June 1963
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Supersedes J855 JUN85

TEST METHOD OF STRETCH AND SET OF TEXTILES AND PLASTICS

1. SCOPE: This method of test applies to the measurement of elastic and recovery properties of materials after being subjected to a low static load.

2. APPARATUS REQUIRED:

2.1 Fixtures: Either of the fixtures shown in Figs. 1 and 3 is satisfactory for this test. The fixture shown with the vise grip clamps is preferred because of its speed and ease of operation.

2.2 Weight: A weight is attached to the clamp on the suspended end of the test specimen. The clamp and the weight together shall total 27 lb (12.25 kg) unless otherwise specified.

3. TEST SPECIMENS: At 70 +2°F (21 + 1°C) and 50 + 5% relative humidity, cut three test specimens 3 x 9 in (76 x 229 mm) (or as specified) each in both the warp and fill directions. The warp stretch and set is measured on the samples with the long dimension parallel to the warp yarns and the fill stretch, and set is measured on the samples with the long dimension parallel to the filling yarns. In nondirectional materials such as unsupported or nonwoven backed vinyl, one set of samples should have the long dimension cut in the machine direction of the roll, while the other set should be cut in the opposite or cross-machine direction. For woven fabrics such as bodycloth, sidewall, or headlining, the samples should be cut slightly oversized and the yarns unraveled on each side until the 3 in (76 mm) dimension is attained.

Unless otherwise specified, samples shall be taken no nearer the selvage edge than one tenth the width of the material or nearer than 12 in (305 mm) from either end of the roll.

4. PROCEDURE: Mark two sharp clear lines 3 in (76 mm) apart (or as specified) across the center portion of the sample. Fasten the clamps firmly at each end of the test specimen. One clamp is attached to the supporting fixture and the weight is attached to the clamp on the other end. The weight is lowered carefully to prevent undue stress on the sample, and the assembly is suspended vertically for 5 min. Measure the length of the section between the bench marks to the closest 1/64 in (0.40 mm) and record the results as L_2. Remove the clamps and weight, and allow the sample to recover in a horizontal position for 5 min. Again measure the length of the section between bench marks and record as L_3.

5. CALCULATIONS AND REPORT: Report the data as percent stretch and percent set calculated as follows:

$$\% \text{ Stretch} = \frac{L_2 - L_1}{L_1} \times 100$$

$$\% \text{ Set} = \frac{L_3 - L_1}{L_1} \times 100$$

Where: L_1 = Original length between bench marks.
L_2 = Measured length after the weight is applied for 5 min.
L_3 = Measured length after the 5 min recovery period.

Report the average of the results for the three warp (or machine) direction samples as percentage warp stretch and set. Report the average of the results for the three filling (or cross-machine) direction samples as percentage fill stretch and set.

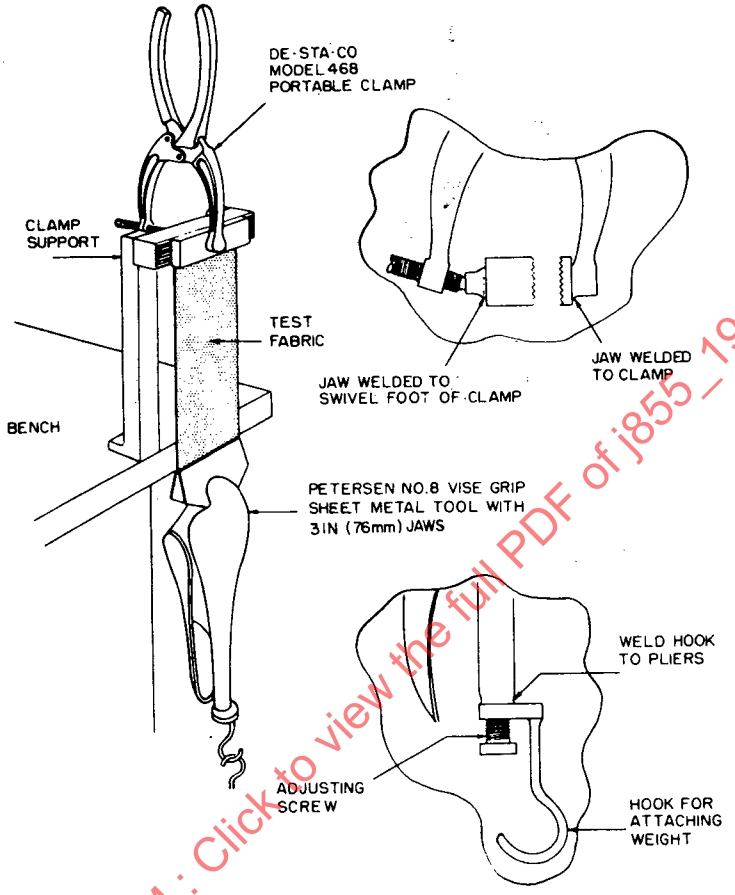

FIG. 1 - CLAMP AND FIXTURE ASSEMBLY FOR STRETCH AND SET OF TEXTILES

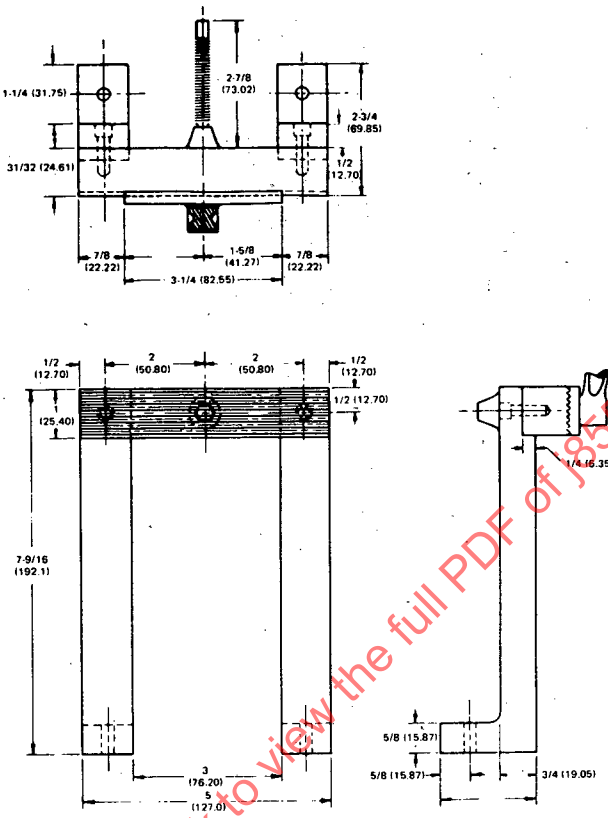

FIG. 2 - DETAIL OF CLAMP SUPPORT

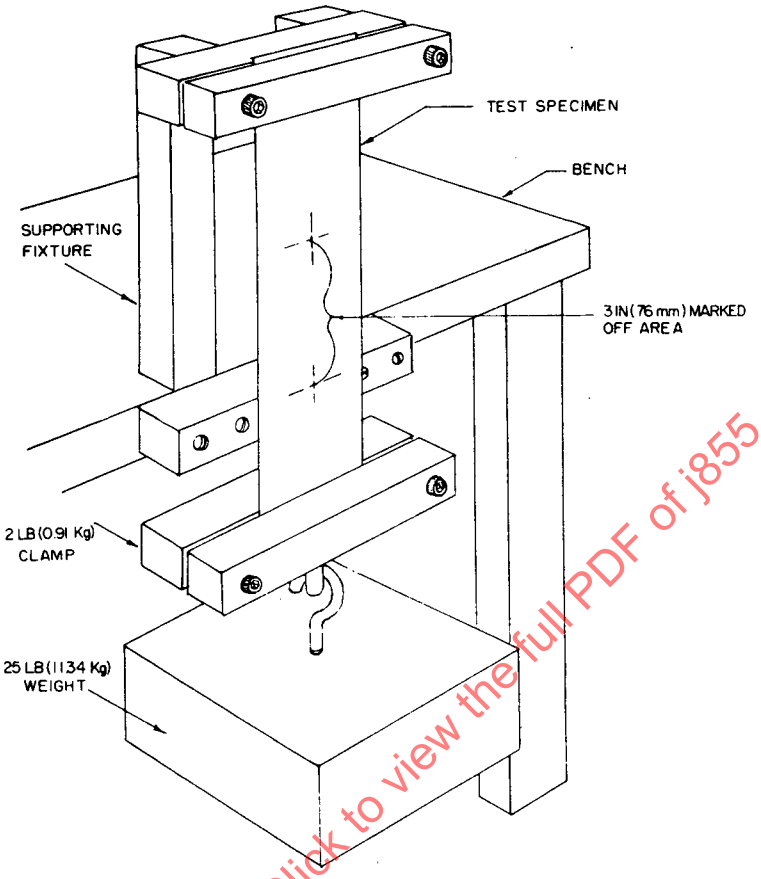

FIG. 3 - STRETCH AND SET APPARATUS

RATIONALE:

Not applicable.

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

Not applicable.

REFERENCE SECTION:

Not applicable.

APPLICATION:

The method of test applies to the measurement of elastic and recovery properties of materials after being subjected to a low static load.

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