SAE International™ SURFACE VEHICLE STANDARD

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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. ***References***—There are no referenced publications specified herein.

3. ***Apparatus Required***

3.1 **Fixtures**—The vice grip clamps are preferred because of the speed and ease of operation. Refer to Figure 1.

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

4. ***Test Specimens***—At 21 °C ± 2 °C (70 °F ± 3 °F) and 50% ± 5% relative humidity, cut three test specimens 76mm x 229 mm (3 in x 9 in) (or as specified) each the machine direction, (MD), across machine direction (AMD) and bias direction (45 degree angle, both directions were applicable). The MD stretch and set are measured on the specimens with the long dimension parallel to the MD, and the AMD stretch and set are measured on the specimens with the long dimension parallel to the AMD. For woven fabrics such as bodycloth, sidewall, or headlining, the specimens should be cut slightly oversized and the yarns unraveled on each side until the 76 mm (3 in) dimension is attained.

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

5. ***Procedure***—Mark two parallel lines 76 mm (3 in) apart (or as specified) centered in the lengthwise direction of each specimen. Place benchmark lines in the center of each parallel line. 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 specimen, and the assembly is suspended vertically for 5 min. With the weight still applied measure the length of the section between the two parallel lines at the benchmarks. The reading should be to the closest 0.40 mm (1/64 in) and record the results as L_2. Remove the clamps and weight, and allow the specimen to recover in a horizontal position for 5 min. Again measure the length of the section between benchmarks and record as L_3.

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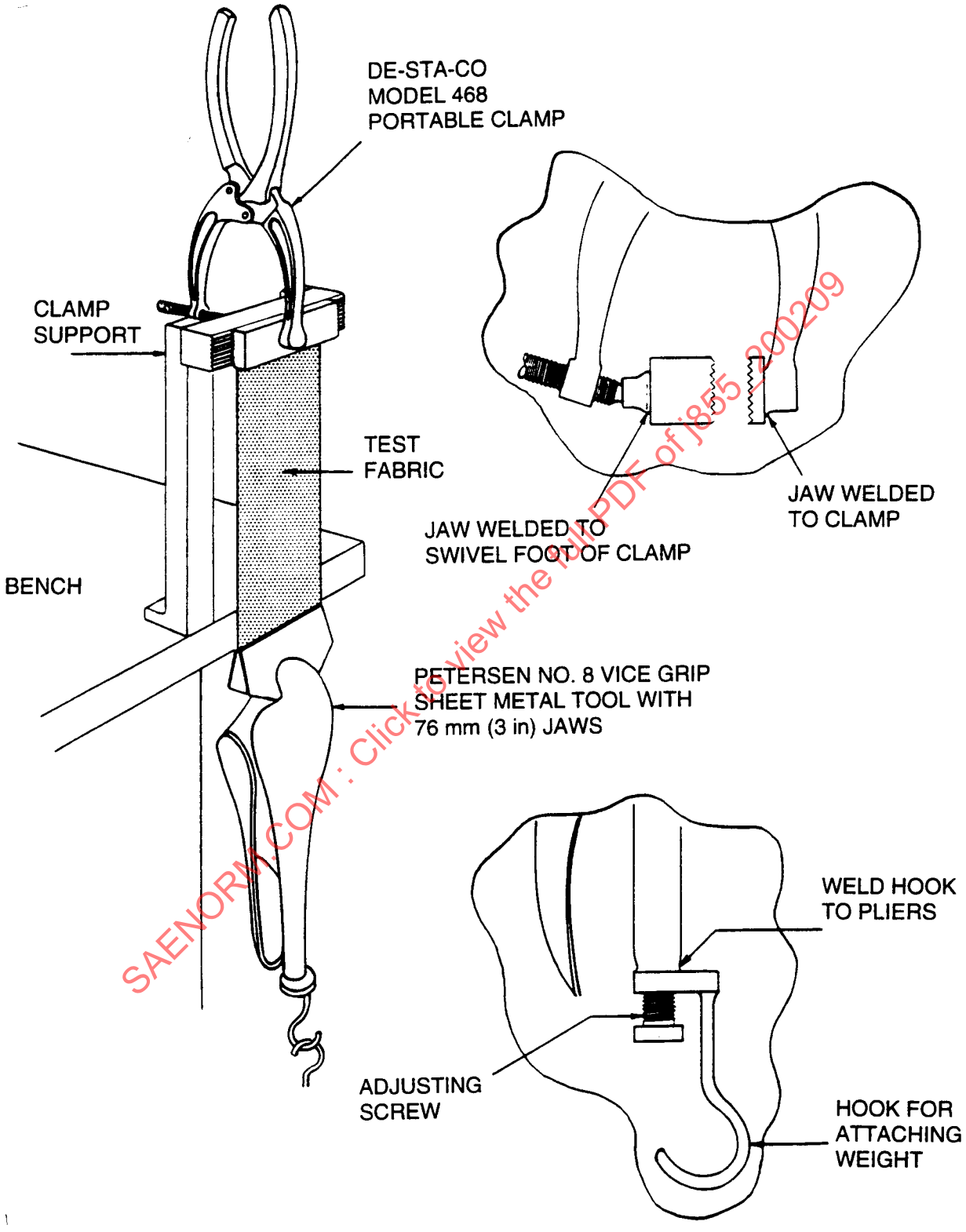

FIGURE 1—CLAMP AND FIXTURE ASSEMBLY FOR STRETCH AND SET OF TEXTILES

6. Calculations and Report—Report the data as percent stretch and percent set calculated as follows in Equation 1:

$$\% \text{ Stretch} = \frac{L_2 - L_1}{L_1} \times 100 \qquad \text{(Eq. 1)}$$

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

where measured lengths are taken between parallel lines at benchmarks:

L_1 = Original length between parallel lines at 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 MD direction specimens as percentage MD stretch and set. Report the average of the results for the AMD three direction specimens as percentage AMD stretch and set. Report the average of the results for all the bias direction specimens as percentage bias stretch and set.

7. Notes

7.1 Marginal Indicia—The change bar (l) located in the left margin is for the convenience of the user in locating areas where revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE TEXTILES AND FLEXIBLE PLASTICS COMMITTEE