TEST METHOD FOR DETERMINING DIMENSIONAL STABILITY OF AUTOMOTIVE TEXTILE MATERIALS

Foreword—This reaffirmed document has been changed only to reflect the new SAE Technical Standards Board format.

1. **Scope**—This test method can be used to determine the dimensional stability of textile materials and vinyl-coated fabrics when subjected to conditions which cause changes in the moisture content of the materials.

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

3. **Test Specimens**—A test specimen 300 mm x 300 mm shall be cut from the material to be tested with one direction parallel to the warp yarns (machine direction) and the other direction parallel to the filling yarns (across machine direction).

4. **Conditioning**—The test specimen shall be conditioned for a minimum of 24 h at 23 °C ± 2 °C and 50% ± 5% relative humidity.

5. **Procedure**

5.1   Mark off accurately a 250 mm x 250 mm square concentric with the square outline of the specimen. This can be done with indelible ink, indelible pencil, or other suitable method, on whichever side of the material is more markable. Also, mark an arrow to indicate the warp (machine direction) of the specimen.

5.2   Place the specimen face side up flat without wrinkles on a 4 mesh screen surface measuring a minimum of 330 mm x 330 mm. Position a similar screen over the specimen using spacers at the corners of the two screens, so that the top screen is not in contact with the top surface of the test specimen. To test more than one specimen at one time, use additional spacers and screens as required.

5.3   Immerse the specimen(s) and screens in a pan or tank of clean tap water containing 1 mL of alkylarylsulfonate synthetic detergent[1] per 21 mL of water at 21 to 27 °C for 1 h or as otherwise specified.

5.4   Remove the specimen(s) and screens from the water and allow to drip dry in an atmosphere having a temperature of 23 °C ± 2 °C and a relative humidity of 50% ± 5% for 30 min. If more than one specimen is being tested, separate the screens so that no specimen will drip on any other specimen.

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1.   Alkylarylsulfonate type of synthetic detergent is available under various trade names from manufacturers of detergents.

5.5 Lay the specimen(s) flat on a table top. Measure the original 250 mm square with a scale calibrated in 1.0 mm. Make three measurements in both the warp and filling directions. The measurements shall be made along the centerlines of the square and along lines parallel to and 50 mm in from each side.

5.6 Average the three measurements in each direction and substitute in Equations 1 and 2:

$$S_{W1} = \frac{W_1 - 250}{250} \times 100 \tag{Eq. 1}$$

where:

S_{w1} = Warp stability
W_1 = Warp measurement wet

$$S_{f1} = \frac{F_1 - 250}{250} \times 100 \tag{Eq. 2}$$

where:

S_{f1} = Filling stability
F_1 = Filling measurement wet

A plus result indicates expansion and a minus result indicates shrinkage.

5.7 Replace the test specimen(s) on the screens and place the specimen(s) and screens in an air-circulating oven maintained at 78 to 83 °C for 24 h.

5.8 Remove the specimen and screen from the oven and allow to cool in the standard atmosphere described in 5.4 for 10 min. After cooling, place the specimen on a flat table top and remeasure as described in 5.5.

5.9 Average the three measurements in each direction and substitute in Equations 3 and 4:

$$S_{W2} = \frac{W_2 - 250}{250} \times 100 \tag{Eq. 3}$$

where:

S_{w2} = Warp stability
W_2 = Warp measurement after drying

$$S_{f2} = \frac{F_2 - 250}{250} \times 100 \tag{Eq. 4}$$

where:

S_{f2} = Filling stability
F_2 = Filling measurement after drying

A plus result indicates expansion and a minus result indicates shrinkage.

PREPARED BY THE SAE TEXTILE/FLEXIBLE PLASTICS COMMITTEE