SURFACE VEHICLE STANDARD

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Test Method for Determining Resistance to Abrasion of Automotive Bodycloth, Vinyl, and Leather, and the Snagging of Automotive Bodycloth

RATIONALE

The method has been revised as follows:

- Implemented minor editorial changes.
- Changed 3.1.4 from “diamond wheel dresser” to “diamond tool refacer.”
- Added “a minimum of” to 3.2.
- Replaced “printing” with “label” in 3.3.2.
- Added 3.3.3.1 to describe the possible need to reface CS-10 wheels during the test.
- Updated description of “diamond refacer” in 3.3.4 to “diamond tool wheel refacer.”

FOREWORD

There are two different tests for wear in this procedure and they are not equivalent. The results from the two test methods—Taber (see Section 3) and Wyzenbeek (see Section 4)—cannot be compared.

1. SCOPE

These methods of test are applicable for determining the resistance to snagging and abrasion of automotive bodycloth, vinyl, and leather.

2. REFERENCES

There are no referenced publications specified herein.

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3. TABER METHOD

3.1 Materials and Equipment Required

3.1.1 Taber abraser complete with vacuum accessory, or equivalent.

3.1.2 H-18 wheels, or equivalent (for snagging test).

3.1.3 CS-10 wheels, or equivalent (for abrasion test).

3.1.4 Diamond tool wheel refacer.

3.1.5 S-11 abrasive paper refacing disc, or equivalent.

3.1.6 S-12 soft bristle brush, or equivalent.

3.2 Test Specimens

Cut specimens approximately 135 mm in diameter (or square). Test specimens are prepared by folding specimen once in each direction and then clipping the folded point to produce a small central hole approximately 6 mm to fit over the turntable clamping screw. Specimens are then conditioned at 23 °C ± 2 °C and 50% ± 10% relative humidity for a minimum of 24 hours.

3.3 Procedure

3.3.1 Mount the accessory masses marked 1000 g to each abraser arm.

3.3.2 Install the wheels on their respective flanged holders as indicated by the label on the side of the wheel. The one marked right (left) side fits on the right-hand (left-hand) mounting with label facing the center of the turntable. H-18 type wheels shall be used when testing snagging resistance and CS-10 type wheels shall be used when testing abrasion resistance.

3.3.3 The CS-10 wheels must be refaced before each test run to remove abraded materials from the wheels that collected from the prior test. Mount the S-11 abrasive paper refacing disc on the Taber abraser turntable and fasten using the clamp plate and nut, and hold-down ring. Reface CS-10 abrasive wheels 25 cycles by running them against the S-11 type abrasive paper refacing disc. Lightly brush the refaced abrasive wheels with an S-12 soft bristle brush to remove any loose debris then remove the S-11 refacing disc.

3.3.3.1 Due to uneven wear and clogging of the surface crevices with fiber particles, sizing, finishing materials, and the like, the CS-10 abrading wheels may need to be refaced or cleaned at established intervals during tests, the frequency depending on the type of material being tested. A soft bristle brush may be sufficient to remove loose debris and abraded material that adheres to the abrasive wheels. When testing leather, the wheels shall be refaced after every 1000 cycles of use.

3.3.4 If the H-18 wheels are worn out of round, crowned, or excessively clogged with abraded material, they should be dressed prior to testing using the diamond tool wheel refacer until the condition is corrected. In cases of doubt about the condition of the abrasive wheels, new wheels shall be used.

3.3.5 Place the test specimen on the turntable with the side to be tested facing up. Adjust the hold-down ring to a tight fit over the specimen and turntable and press the hold-down ring over the circumference of the turntable to pull the test material taut. Remove any wrinkles in the test specimen by adjusting the fabric edges which extend below the hold-down ring. Then, tighten the adjusting screw of the hold-down ring. Place the clamp plate over the turntable screw and tighten the nut. Trim off the excess test specimen material which extends beyond the lower edge of the hold-down ring.

3.3.6 Lower the abrasive wheels carefully from their upright position to the surface of the test specimen. Set the counter mechanism to zero.

3.3.7 Position the vacuum nozzle 3 mm above the surface of the test specimen and set the vacuum in the 60 to 70 range.

3.3.8 Run the specimen the number of cycles specified. 400 cycles shall be run for snagging, unless otherwise specified. 1000 cycles shall be run for abrasion of bodycloth, unless otherwise specified.

3.3.9 Remove specimen for evaluation.

4. WYZENBEEK METHOD

The Wyzenbeek method can be used to determine the resistance to abrasion of automotive vinyl and leather.

4.1 Apparatus and Material Required

4.1.1 Wyzenbeek Wear Tester or Equivalent

The hardness of the rubber pads should measure between 55 and 75 when tested with a type "00" durometer on the flat surfaces. Rubber pads which are outside of this range or do not fit snugly in their respective holders should be replaced.

Due to misalignment or wear during use, the following procedure should be performed when necessary; after cleaning the drum surface with a solvent, insert a piece of 50 grit sandpaper and clamp into position. Lower the arms removing all applied pressure and abrade the rubber pad in 50 cycle increments until they conform to the shape of the drum. Clean the resurfaced rubber pad with a stiff brush. Once a rubber pad has been put through this procedure do not remove or use in any other holder without resurfacing.

4.1.2 100% cotton warp sateen fabric; count 104 x 55, 214 g/m^2 abradant, or as otherwise specified.

4.1.3 Double-faced tape, 3M acrylic adhesive 400 or equivalent.

4.1.4 Masking tape, 76 mm wide.

4.2 Test Specimens

Test specimens 63.5 x 230 mm are prepared to template (see Figure 1) size in both warp and fill directions. The long dimensions are cut parallel to the warp yarns for warp-wise (machine direction) abrasion and parallel to the filling yarns for filling-wise (cross machine direction) abrasion. Condition the test specimens for a minimum of 16 hours at 23 °C ± 2 °C and 50% ± 10% relative humidity. All materials other than rigid, non-stretch materials, shall have the back of the test specimen completely covered with 76 mm masking tape.

4.3 Procedure

4.3.1 Cut the abradant 241 (warp) x 305 (fill) mm and apply one length of double-faced tape in the middle, on the back side of the abradant, parallel to the fill direction. The long floats are on the face side of the abradant.

4.3.1.1 Strip the covered side of the double-faced tape and clamp the fabric on the drum in such a manner that the warp direction is parallel to motion of the drum. When pressing down on the taped portion of the fabric, make sure there is good and uniform adhesion between the drum, the tape, and the fabric. Also, this taped area must be completely free from wrinkles.

4.3.2 Place the specimen in the clamps with the long dimension parallel to the direction of abrasion.

4.3.3 Draw the specimen tight enough to bring the weighted tension scale bar into a horizontal position using a 1.8 kg dead weight load.

NOTE: If the specimen stretches during the test, bring the scale bar back into a horizontal position by adjusting the screw behind the rear clamp.