RESISTANCE OF TEXTILE FABRICS TO ABRASION-INFLATED DIAPHRAGM METHOD

Application

This method is used to determine the resistance to abrasion of woven or knitted textile fabrics and other trim materials by placing the test specimen over a rubber inflated diaphragm under controlled pressure and rubbing it against a specified abradant. The procedure also includes a method of testing the abrasion resistance of high metallic welts.

Apparatus and Materials Required

Wear Tester

The apparatus (see sketch) shall consist of a motor driven reciprocating table to which is attached a rotating clamp and rubber diaphragm, and a weighted and counterbalanced flat plate which holds the abradant over the test specimen. Individual specifications for various parts of the apparatus follow:

Note: A machine which meets the requirements described in the procedure may be purchased from:

Atlas Electric Devices Company
4114 North Ravenswood Avenue
Chicago, Illinois 61613 USA
Phone: (312) 327-4520
Fax: (312) 327-5787

The name of this instrument is the Universal Wear Tester.

Reciprocating Table

The table holding the clamp and diaphragm shall be mechanically driven with a reciprocal motion of 125 +/- 5 double strokes per minute of 25 mm stroke length.

Rotating Clamp

The clamp shall be provided with a pawl and ratchet or other mechanical device which will rotate the clamp one revolution for every 50 - 100 double strokes of the table.

Date	Action	Revisions
2001 09 24	Revised	Editorial – no technical change A. Cockman
1998 10 14		

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Rubber Diaphragm

The rubber diaphragm shall be 108 mm in diameter and have a thickness of 0.5 mm minimum and 1.0 mm maximum. When the 6500 mm^2 clamped area is inflated by a pressure of 7 kPa the elevation of the diaphragm shall be from 12 - 25 mm. The strain distribution in the diaphragm must be uniform so that when inflated without the specimen, it assumes the shape of a section of a sphere.

The rubber diaphragm used in the test shall be purchased without the metal contact in the center. No contact pin is used to shut off the instrument in this test as the specimen is abraded for a given number of cycles rather than to complete destruction.

Clamp

The specimen shall be mounted in a circular clamp over a rubber diaphragm by means of a clamping ring and a tightening collar. The circular opening of the clamping ring shall be 91.4 +/- 0.12 mm. The height from the surface of the clamped specimen to the upper edge of the tightening collar must not exceed 9.5 mm. The clamping area of the body of the clamp and the ring shall be approximately 120 mm in diameter, having gripping surfaces to prevent slipping of the specimen and leakage of air pressure during the test.

Air Pressure

Means shall be provided for supplying air pressure to the body of the clamp so that the pressure under the diaphragm can be controlled between 0 - 40 kPa with an accuracy of +/- 0.4 kPa.

Abradants

The abradants described below shall be mounted on a plate which is rigidly supported by a double lever parallelogram so as to provide for free movement in a direction perpendicular to the plane of the reciprocating specimen clamp. The abradant plate assembly shall be well balanced so that a vertical load of 0 - 25 N can be maintained by means of dead weights.

Sandpaper - Emery Paper Grit No. "0"

Cloth - # 10 Cotton Duck, Greige, Style 426

Source: Test Fabrics, Inc.
P.O. Box 26
415 Delaware Ave.
West Pittston, PA 18643, USA
Phone: (717) 603-0432
Fax: (717) 603-0433

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