STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

AS 2983.9

METHODS OF TEST FOR SYNTHETIC SPORTING SURFACES

METHOD 9: DETERMINATION OF SCRATCH RESISTANCE

1 SCOPE. This Standard sets out a method for determining the scratch resistance of a synthetic sporting surface.

2 PRINCIPLE. Test specimens are checked for scratch resistance by use of a scratch tester which is capable of applying a known force with a scratch tool to a synthetic sporting surface which is rotated under the tool.

3 APPARATUS (see Figure 1). The following apparatus is required:

(a) *Scratch tester,* consisting of a horizontal rotating table (b) and a horizontal projection shaft on which is mounted a pivoted loading beam (c). The beam moves in a vertical plane and has a scratch tool (d) mounted on the underside in such a way that the angle between the cutting edge and the surface of the test specimen is 30 degrees when measured at right-angles to the surface of the test specimen.

(b) *Rotating table,* approximately 100 mm diameter and free to turn in a counter-clockwise direction. A test specimen holder consisting of a screw-clamp with rigid metal washer for holding the test specimen in position during the test shall be located at the centre of the table.

(c) *Loading beam,* mounted on a horizontal shaft on the base of the tester. The shaft shall be located approximately 100 mm from the centre of the rotating table and shall be attached to the base by means of an adjustable bracket which will permit raising or lowering of the shaft as the thickness of the test specimen varies. The loading beam shall be mounted on the shaft by ball bearings, in order to keep friction at a minimum, and arranged to apply an adjustable force of 2 N to 5 N to the scratch tool.

(d) *Scratch tool,* having a sharp tungsten carbide cutting edge 4.75 mm wide, precision ground to a 25 mm radius. It shall be held in the clamp at a 22-degree shear angle in relation to the motion of the test specimen. The tool, when mounted, shall have a clearance of 15 degrees from the surface of the test specimen. Care should be taken in handling and storing the tool to ensure that the cutting edge is not damaged.

4 TEST SPECIMEN. Each test specimen shall be a piece of the surface measuring 75 ±1 mm by 50 ±1 mm. Three test specimens shall be tested. One additional test specimen is required for checking the sharpness of the scratch tool.

5 CONDITIONING. Each test specimen shall be conditioned for a minimum of 3 h at 23 ±2°C, immediately prior to testing.

6 PROCEDURE.

6.1 Calibration of scratch tester. The procedure shall be as follows:

(a) Adjust the projection shaft of the scratch tester vertically by means of the adjustable bracket, to the thickness of the test specimen. The test specimen shall be clamped firmly on the table by means of the test specimen holder.

(b) Gently lower the loading beam, with the scratch tool in position, until the scratch tool rests on the test specimen. The tool shall be at least 6 mm from any edge of the test specimen at all times.

(c) Slowly and steadily rotate the table in a counter-clockwise direction until a scratch 25 mm long is obtained on the surface of the test specimen.

(d) Raise the loading beam, remove the test specimen from the holder, and measure the width of the 25 mm scratch to the nearest 0.1 mm at three equally spaced places.

(e) Position the mass of the counterweight on the loading beam so that the scratch tool produces a scratch 1.3 ±0.1 mm wide on the test specimen.

6.2 Scratch test. The procedure shall be as follows:

(a) Calibrate the machine in accordance with Clause 6.1.

(b) Test three test specimens using the calibrating procedure described in Clause 6.1.

7 CALCULATION OF RESULTS. The mean of the scratch widths on the three test specimens shall be calculated and the result recorded to the nearest 0.1 mm.

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