

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

AS 2983.11

METHODS OF TEST FOR SYNTHETIC SPORTING SURFACES

**METHOD 11:
DETERMINATION OF RESISTANCE TO FATIGUE**

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

2 PRINCIPLE. Resistance to fatigue of synthetic surfaces is determined using a dynamic loading machine which impacts the test surface repeatedly with a 5 kg mass. The test surface is moved randomly within a specific area beneath the point of impact.

3 REFERENCED DOCUMENTS. The following Standards are referred to in this Standard:

AS 1984 Vernier Callipers.

AS 2102 External Micrometers.

4 APPARATUS. The following apparatus is required:

(a) *Dynamic loading machine* with the general principle as shown in Figure 1, capable of repeatedly dropping a load of 5 ± 0.1 kg under gravity.

The frequency of impact shall be 40 ± 2 per min and the plate carrying the test specimen shall traverse backwards and forwards at 800 ± 20 mm per min over a distance of 40 ± 10 mm. The impacting surface shall consist of two bars each measuring approximately 50 mm by 6 mm and held parallel but 48 ± 2 mm apart. The impacting edges of the bars shall have a radius of 1 ± 0.1 mm. These should be positioned in such a way that the long edge of each bar is perpendicular to the direction of traverse. The test specimen is then subjected to random impact over a total area of approximately 50 mm by 85 mm.

NOTES:

1. Suitable equipment is the 'WIRA' Dynamic Loading Machine available through Hardie Trading Ltd., Box 202 P.O., Alexandria, NSW, 2015.
2. See Annex—Explanatory Notes on Dynamic Loading Machine.

(b) *Micrometer* complying with AS 2102 or vernier callipers complying with AS 1984.

5 TEST SPECIMEN. The test specimen shall be a piece of the surface 125 mm by 125 mm.

6 CONDITIONING. Test specimens shall be conditioned for a minimum of 3 h at $23 \pm 2^\circ\text{C}$ immediately prior to testing. Testing shall be conducted in an environment controlled at $23 \pm 2^\circ\text{C}$.

7 PROCEDURE. The procedure shall be as follows:

- (a) Using the micrometer or vernier callipers measure and record the thickness of the test specimen in five positions across the area to be impacted.
- (b) Clamp the test specimen in the apparatus taking care that it does not bow.
- (c) Run the machine until the test specimen has been subjected to 20 000 impacts.
- (d) After a recovery period of $30 +2, -0$ min measure and record the thickness of the test specimen and examine it for any deterioration, ensuring that no undue flexing of the test specimen occurs.

8 REPORT. The following information shall be reported:

- (a) Full description of the surface tested.
- (b) Mean thickness prior to testing.
- (c) Mean thickness after testing.
- (d) Difference in wear thickness.
- (e) Any visual signs of deterioration.