STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

AS 2983.6

METHODS OF TEST FOR SYNTHETIC SPORTING SURFACES

METHOD 6: DETERMINATION OF RESISTANCE TO INDENTATION*

1 SCOPE. This Standard sets out a method for testing resistance to indentation determined by the degree of recovery after the application of a constant load.

2 PRINCIPLE. Resistance to indentation of a surface is measured by applying a known load over a small area for a specific period. Measurements of indentation are made at several intervals during the application of the load. The load is removed and the thickness of the test specimen is measured to determine the rate and extent of recovery after indentation.

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

AS 2103 Dial Gauges and Dial Test Indicators.

4 DEFINITIONS. For the purpose of this Standard the definitions below apply.

4.1 Thickness.

4.1.1 *Thickness (a) prior to loading*—the thickness *(a)* prior to loading is the thickness of the test specimen as measured, prior to testing, with the thickness measuring instrument according to Clause 4.2.

4.1.2 *Thickness (a_B) under load*—the thickness (a_B) under load is the thickness measured in the indentation tester after a defined interval.

4.1.3 *Thickness (a_E) after unloading* (see Figure 1)—the thickness (a_E) is the thickness of the test specimen in the bottom of the indentation after unloading. The thickness (a_E) of the test specimen is measured by means of the thickness measuring instrument according to Clause 4.2 after the recovery intervals defined in Clause 7 have elapsed. The unloading time in min should be indicated by additional subscripts, e.g. thickness e_E after 150 min unloading time: $a_{E,\,150}$.

4.1.4 *Thickness (a_W) at rim* (see Figure 1)—the thickness (a_W) of the test specimen at the rim is measured with the thickness measuring instrument according to Clause 4.2 after the recovery intervals defined in Clause 7 have elapsed. The unloading time in min should be indicated by additional subscripts, e.g. thickness a_W after 1500 min unloading time: $a_{W,\,1500}$.

4.2 Indentation (e_B)—the indentation (e_B) is the difference between the thickness (a) prior to loading and the thickness (a_B) in the bottom of the indentation under load. The indentation is time-dependent and is read directly in the indentation tester after the loading intervals defined in Clause 7.

4.3 Derived quantities.

4.3.1 *Residual indentation (e)*—the residual indentation (e) is the difference between the thickness (a) prior to loading and the thickness (a_E) after unloading.

$$e = a - a_E$$

4.3.2 *Residual indentation (e_w)*—the residual indentation (e_W) is the difference between the thickness of the test specimen at rim (a_W) and the thickness of the test specimen in the bottom of the indentation (a_E) after unloading.

$$e_W = a_W - a_E$$

4.3.3 *Recovery (r)*—the recovery (r) is the difference between the indentation (e_B) and the residual indentation (e) expressed as a percentage of the indentation (e_B). It is calculated by the following equation:

$$r \text{ (percent)} = \frac{e_B - e}{e_B} .100$$

5 APPARATUS.

5.1 Indentation tester. A cylindrical indentor with a circular contact surface of 19.5 mm diameter (equivalent to 3 cm^2) capable of exerting a minor load of 3 ±0.03 N and a test load of 300 ±5 N perpendicular to the surface of the test specimen is required. The indentor consists of a steel cylinder with a Vickers hardness of not less than

* This method is based on DIN 51955 Testing of Organic Floor Coverings (Except Textile Floor Coverings) Indentation Test for Determination of Recovery After Constant Load.

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