AS 4663—2013

Australian Standard®

Slip resistance measurement of existing pedestrian surfaces

This Australian Standard® was prepared by Committee BD-094, Slip Resistance of Flooring Surfaces. It was approved on behalf of the Council of Standards Australia on 16 May 2013. This Standard was published on 28 June 2013.

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- Association of Consultants in Access Australia
- Australian Building Codes Board
- Australian Institute for Non-Destructive Testing
- Australian Institute of Architects
- Australian Resilient Floorcovering Association
- Australian Stone Advisory Association
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- Property Council of Australia
- Safety Institute of Australia
- Think Brick Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee BD-094, Slip Resistance of Flooring Surfaces, to supersede AS/NZS 4663:2004, *Slip resistance measurement of existing pedestrian surfaces*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide users, maintenance organizations and facility managers with standardized methods of testing existing in situ pedestrian surface materials for determination of their slip resistance.

The term ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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FOREWORD

Wet testing is carried out using two types of rubber materials, Slider 55 (also known as TRL rubber), which has been traditionally used for testing outdoor surfaces and Slider 96 (also known as Four S rubber) which was specifically developed to replace the TRL rubber for testing smoother indoor surfaces, as it provides greater discrimination between such internal surfaces.

The use of these rubbers on the pendulum enables universal comparison of test results. The testing does not take into account the performance of different footwear sole materials or profiles. The slip resistance of these materials can vary widely, even within generic groups of polymers such as PVC or polyurethane. The slip resistance of footwear is also a function of the soling material, the tread, effects of ageing, degradation and wear, as well as design and construction parameters. While it may be possible to form sliders using other soling materials, it is outside the scope of this Standard.

This revision incorporates an additional requirement for preparing rubber test feet when testing smooth surfaces. Research has shown that when a slider 96 (Four S rubber) is only prepared with P400 abrasive paper, the pendulum result on smoother surfaces may be more representative of the rubber roughness than the slip resistance of the pedestrian surface that is being tested. A more representative reading that also enables a greater level of discrimination between smoother surfaces may be obtained by preparing the slider on a 3 µm lapping film as detailed in the Standard. A slider prepared in this way is a closer representation of a worn and polished heel and may better reflect the lower slip resistance attributable to the contact of two smoother surfaces under water-wet conditions.

Adoption of the lapping film preparation to condition the slider enables more sensitive differentiation between potentially slippery surfaces than was previously the case. It will cause some pedestrian surfaces to provide a lower result than would have been obtained if tested according to AS/NZS 4663:2004.

HB 197, *An introductory guide to the slip resistance of pedestrian surface materials*, provides guidance for specifying pedestrian surface materials for various locations based on minimum wet slip resistance classifications that are obtained when testing to AS/NZS 4586:2004, *Slip resistance classification of new pedestrian surface materials*. HB 197 recognizes that slip resistance test methods have inherent limitations.

A new pedestrian surface is considered to become an existing pedestrian surface once it has been installed and made available for pedestrian traffic, other than movements specifically for purposes of formal testing to determine compliance with AS 4586. New pedestrian surfaces are to be tested in accordance with AS 4586.

STANDARDS AUSTRALIA

Australian Standard

Slip resistance measurement of existing pedestrian surfaces

1 SCOPE

This Standard provides methods of measuring the frictional characteristics of existing pedestrian surfaces in wet and dry conditions.

NOTE: This Standard does not specifically cover gratings, although it is possible to use the test methods specified herein for some gratings.

2 APPLICATION

The test methods in this Standard shall be used for existing pedestrian surfaces.

This Standard may also be used for evaluating surface applications and treatments, including products such as sealers, polishes and etchants that modify the surface characteristics of pedestrian surfaces.

The method specified for the measurement of wet slip resistance shall be used for all external areas and those internal pedestrian surfaces where such measurements are required. It does not contemplate shoe sole materials, characteristics of individual gaits, or other factors that may contribute to slips.

NOTES:

1 In Appendix A, provision has been made for either of two rubbers to be used in the wet pendulum test method. Clay and concrete pavers have traditionally been tested using Slider 55 (TRL rubber), whereas Slider 96 (Four S rubber) is used for other pedestrian surfaces. When testing highly profiled surfaces such as shown in Figure 1, Slider 55 (TRL rubber) generally produces more consistent results than Slider 96 (Four S rubber). The standard Slider 96 (Four S rubber) was prepared so as to have poor abrasion resistance such that the rubber would be less likely to become contaminated, as fresh surfaces would be produced during testing. It was also formulated to be temperature independent. When assessing products for wet barefoot areas, or unusually rough products, the use of the softer more resilient Slider 55 (TRL rubber) is preferable.

2 Caution should be exercised when comparing friction/slip resistance test results of existing pedestrian surfaces and test results that were obtained on new pedestrian surface materials. The latter may be unexpectedly high on some surfaces because, after installation, the presence of contaminants and surface wear and/or polishing can significantly alter some results.

3 Where heavily profiled surfaces have been specifically manufactured to have high slip resistance, which relies heavily upon the interlock action between the highly profiled pedestrian surface and the heavily profiled soles of some footwear, the 'pendulum test' method in Appendix A may not provide accurate indications of the slip resistance (see Clause 1).

4 The 'dry floor friction' test method in Appendix B is not suitable for heavily profiled surfaces or carpets.

5 Some examples of highly profiled surfaces are shown in Figure 1. Such surfaces generally have a displacement volume greater than or equal to 4 cm^3/dm^2.

6 When conducting a test in situ, adequate safety measures should be in place to maintain a safe working area, as pedestrians may fail to notice the equipment and operator, as they may be well below normal eye level.