AS 4586—2013
(Incorporating Amendment No. 1)

AS 4586—2013

Australian STANDARD

Slip resistance classification of new pedestrian surface materials

STANDARDS Australia

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.

The following are represented on Committee BD-094:

- Accord Australasia
- 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
- Australian Tile Council
- Building Service Contractors Association of Australia
- Cement Concrete and Aggregates Australia
- Concrete Masonry Association of Australia
- CSIRO Manufacturing and Materials Technology
- Engineers Australia
- Housing Industry Association
- Human Factors and Ergonomics Society of Australia
- Insurance Council of Australia
- Local Government and Shires Associations of New South Wales
- Property Council of Australia
- Safety Institute of Australia
- Think Brick Australia

This Standard was issued in draft form for comment as DR AS 4586.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting **www.standards.org.au**

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at **mail@standards.org.au**, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

AS 4586—2013
(Incorporating Amednment No. 1)

Australian Standard®

Slip resistance classification of new pedestrian surface materials

First published as AS/NZS 3661.1:1993.
Revised and redesignated in part as AS/NZS 4586:1999.
AS/NZS 4586:1999 revised and redesignated AS 4586—2013.
Reissued incorporating Amendment No. 1 (June 2017).

ISBN 978 1 74342 520 6

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-094, Slip Resistance of Flooring Surfaces, to supersede AS/NZS 4586:2004, *Slip resistance classification of new pedestrian surface materials*.

This Standard incorporates Amendment No. 1 (June 2017). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

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 and specifiers of pedestrian surface materials (architects, engineers, ergonomists, facility managers, manufacturers and the like) with means for classifying such surfaces according to their pedestrian slip resistance for use in the selection of surfaces.

This revision incorporates an additional requirement for preparing rubber test sliders when testing smooth surfaces. Consequential changes to the nomenclature used for classifying surfaces have been included.

Appendix D will be subjected to revision in consideration of long-term availability of shoes.

This Standard provides a means of demonstrating compliance for the acceptance and rejection of new surfaces for nominated criteria.

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

The terms ‘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.

CONTENTS

Page

FOREWORD

The slip resistance classifications have been determined for unused surfaces using specific conditions, for instance special rubbers, barefoot testing, and so on. These classifications are based on an assessment of the relative contribution of a pedestrian surface to the overall risk of slipping; they will assist in the specification of a minimum slip resistance category for a surface material suitable for most pedestrian applications. Factors such as usage, cleaning systems, applied coatings and patterns of wear may affect the characteristics of the surface after classification.

This Standard does not provide for the conditioning of specimens to account for in-service wear.

When specifying a particular slip resistance classification, specifiers should consider the likely in-service wear and its effects on slip resistance, taking into account the material type, pedestrian and other traffic and environmental conditions including cleaning and sealing.

Additional accelerated wear conditioning may help specifiers to better understand how the slip resistance of an individual product may alter with wear, thus helping to differentiate between products that might otherwise have seemingly similar slip resistance characteristics. This Standard provides no guidance on the conduct of such accelerated conditioning procedures.

HB 197, *An introductory guide to the slip resistance of pedestrian surface materials*, provides guidelines for the selection of slip-resistant pedestrian surfaces classified in accordance with this Standard.

Wet pendulum friction 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 wet barefoot 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.

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 best reflect the lower slip resistance attributable to the contact of two smoother surfaces under water-wet conditions.

Adoption of the lapping film preparation enables better differentiation between potentially slippery surfaces than was previously the case. It will result in some products receiving a lower classification than when the product was tested according to AS/NZS 4586:2004. This is recognized in the guidance provided in HB 197.

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 this Standard. Testing of existing pedestrian surfaces is covered in AS 4663, *Slip resistance measurement of existing pedestrian surfaces*.

STANDARDS AUSTRALIA

Australian Standard

Slip resistance classification of new pedestrian surface materials

1 SCOPE

This Standard provides means of classifying pedestrian surface materials according to their frictional characteristics when determined in accordance with the test methods set out in Appendices A, B, C, D and E. The test methods enable characteristics of surface materials to be determined in either wet or dry conditions.

This Standard does not provide for the conditioning of specimens to account for in-service wear.

NOTE: When specifying a particular slip resistance classification, specifiers should consider the likely in-service wear and its effects on slip resistance, taking into account the material type, pedestrian and other traffic and environmental conditions including cleaning, sealing and carpet wear and stretch.

2 APPLICATION

The test methods in this Standard shall be used for the classification of pedestrian surface materials for use in either the 'wet' or the 'dry' condition.

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

As a minimum, one of the three methods specified for the measurement of wet slip resistance (Appendix A, C or D) shall be used for all external pedestrian surfaces and those internal pedestrian surfaces that have a reasonably foreseeable risk of the presence of wet substances such as water, grease and oil.

NOTES:

1 The indication of the test apparatus relates to the slip resistance potential of the surface tested in the test environment. It does not contemplate shoe sole materials, characteristics of individual gaits, or other factors that may contribute to slips.

2 The inclining ramp test methods (Appendices C and D) are suitable for measuring the slip resistance of gratings, heavily profiled surfaces, tactile indicators, rock, bush-hammered surfaces and resilient surfaces. Appendix E contains an ancillary test method for determining the displacement volume of heavily profiled surfaces. Such surfaces are primarily intended to provide drainage or entrapment of anticipated contaminating materials. Heavily profiled surfaces should take into consideration any requirements of AS 1428.1, such as tripping hazards.

3 Where heavily profiled surfaces have been specifically manufactured to have a high slip resistance, that 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.

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 Figure 1. Such surfaces generally have a displacement volume greater than or equal to 4 cm^3/dm^2.

6 Dry results, including those determined using the 'dry floor friction' test method in Appendix B, that are obtained on dry new surfaces without any contamination may be unreliable in predicting in-service behaviour of surfaces that subsequently become wet or contaminated.