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SINGAPORE STANDARD

Specification for slip resistance classification of pedestrian surface materials

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The Working Group appointed by the Technical Committee to assist in the preparation of this standard comprises the following experts who contributed in their *individual capacity:*

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The organisations in which the experts of the Working Group are involved are:

Building and Construction Authority
Housing & Development Board
Land Transport Authority
Lend Lease Retail Pte Ltd
National Parks Board
SETSCO Services Pte Ltd
Singapore Institute of Architects
TÜV SÜD PSB Pte Ltd

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Foreword

This Singapore Standard was prepared by a Working Group appointed by the Technical Committee on Workplace Safety and Health under the purview of the General Engineering and Safety Standards Committee.

The objective of this standard is to provide users and specifiers of pedestrian surface materials with the means for classifying and selecting such surfaces for use according to their pedestrian slip resistance.

The slip resistance classifications are determined using specific conditions such as special rubbers and barefoot testing. It classifies pedestrian surfaces according to their frictional characteristics in both wet and dry conditions. These classifications would provide indications on the risk of slipping and assist in the specification of a surface material suitable for most pedestrian applications.

It should be noted that factors such as usage, cleaning systems, applied coatings and patterns of wear may affect the characteristics of the surface after classification.

The standard was first published in 2001. This revision is to keep it up-to-date with the revised AS/NZS 4586 : 2004, with more illustrations being included. AS/NZS 4586 was adapted and reproduced with permission from SAI Global. Australian Standards can be purchased online at http://www.saiglobal.com.

Information on the testing laboratories accredited by the Singapore Accreditation Council is available at www.sac-accreditation.gov.sg.

In preparing this standard, reference was made to the following publications:

1)	AS 1683.15.1 : 2000	Methods of test for elastomers – International rubber hardness
2)	AS HB 197: 1999	An introductory guide to the slip resistance of pedestrian surface materials
3)	AS/NZS 4663: 2004	Slip resistance measurement of existing pedestrian surfaces
4)	SS 513-1 : 2005	Personal protective equipment – Safety footwear

Acknowledgement is made for the use of information from these publications.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.*

2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.*

3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Specification for slip resistance classification of pedestrian surface materials

1 Scope and application

1.1 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 Annexes A, B, C and D. These test methods enable characteristics of surface materials to be determined in either wet or dry conditions.

Pedestrian surfaces include public trafficable areas.

This standard does not cover industrial work area where the public is generally excluded. There may be an increased risk of slipping on floors of industrial work area due to a high incidence of substances such as grease, oil, water, dust or other perishable waste or residues.

This standard does not cover carpets.

1.2 Application

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

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

At least one of the three methods specified for the measurement of wet slip resistance (Annexes 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.

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

NOTE 1 – The inclining ramp test methods (Annexes C and D) are suitable for measuring the slip resistance of gratings, heavily profiled surfaces and resilient surfaces.

NOTE 2 – The test methods in Annexes A and B may not apply to heavily profiled surfaces where the surface has been specifically manufactured to be highly slip resistant.

NOTE 3 – Annex A provides for either of two rubbers to be used in the wet pendulum test method. Clay and concrete pavers have traditionally been tested using TRL (formerly TRRL) rubber, whereas Four S rubber is used for other pedestrian surface materials.

NOTE 4 – Caution should be exercised when interpreting individual dry floor friction results. The presence of post-installation contaminants could significantly alter some results, and give unexpectedly high coefficient of friction on some very smooth flat surfaces.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AS 1683.15.1, *Methods of test for elastomers – International rubber hardness*

BS 7976-3, *Pendulum testers – Method of calibration*

SS 513-1, *Personal protective equipment – Safety footwear*