



ADVISORY NOTE

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Slip-resistance for Stairways, Landings and Ramps

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ABCB ADVISORY NOTE

SLIP-RESISTANCE FOR STAIRWAYS, LANDINGS AND RAMPS

Introduction

For many years the Building Code of Australia (BCA), comprising Volumes One and Two of the National Construction Code (NCC) Series, has contained requirements for stairways, landings and ramps to have slip-resistant, non-skid or non-slip surfaces. However, the BCA did not define these terms or provide direction on how they could be measured.

For users of the BCA, this ambiguity resulted in varying interpretations. In some cases this resulted in unnecessarily expensive solutions or restricting surface finish options, while in other cases, possibly under-specifying surface finishes leading to potentially unsafe outcomes. As a result, practitioners regularly sought clarification on ways to verify compliance with the BCA.

The BCA Performance Requirements DP2 (Volume One) and P2.5.1 (Volume Two) generally state:

So that people can move safely to and within a building, any stairways and ramps must be provided with slip-resistant walking surfaces on—

- *ramps; and*
- *stairway treads or near the edge of the nosing.*

For slip-resistance, DP2 and P2.5.1 are the mandatory requirements within the BCA. A number of options are available to demonstrate compliance with the Performance Requirements, one of which is using the Deemed-to-Satisfy (DtS) Provisions.

Prior to 2014, the BCA DtS Provisions for slip-resistance were drafted using qualitative language that essentially reflected the Performance Requirement. However, amendments to the DtS Provisions included in the BCA that came into force on 1 May 2014¹, specify slip-resistance classifications for:

- landings and ramps in Class 2-9 buildings; and
- stair treads or nosings to treads for all classes of buildings.

The DtS Provisions in BCA 2014 require treads or nosings to treads of a stairway, and for certain buildings the surfaces of ramps and landings, to comply with a slip-resistance classification specified in the BCA when tested to the 2013 edition of AS 4586 'Slip resistance classification of new pedestrian surface materials'. This requirement applies to all finishes and surface types (including carpet, tiles, timber, vinyl, concrete and metal).

The purpose of these amendments to the BCA is to provide industry with certainty and clarity on the level of slip-resistance that needs to be achieved.

¹ Subject to State and Territory transitional provisions

Adoption / transitional arrangement in your State or Territory

The adoption of the BCA DtS Provisions for slip-resistance, are subject to transitional arrangements in some States and Territories. The adoption may also vary between commercial and residential buildings. If you are unsure of the adoption/transitional arrangements within your State or Territory, it is recommended that you seek advice from a qualified building certifier, local building authority or building administration in your State or Territory. The State and Territory building administration contact details are available from the ABCB website at www.abcb.gov.au.

The changes in more detail

As outlined above, the BCA 2014 DtS Provisions now include slip-resistance classifications where the previous provisions required only a non-slip finish or an adequate non-skid strip near the edge of the nosings.

The DtS Provisions in Volumes One and Two of the BCA now require:

Stairway treads to have a:

- surface with a slip-resistance classification not less than that listed in Table 1 (refer below), when tested in accordance with AS 4586; or
- nosing strip with a slip-resistance classification not less than that listed in Table 1, when tested in accordance with AS 4586.

In addition, the DtS Provisions in Volume One of the BCA require:

Ramps to have a:

- floor surface with a slip-resistance classification not less than that listed in Table 1, when tested in accordance with AS 4586; and

Landings to have a:

- surface with a slip-resistance classification not less than that listed in Table 1, when tested in accordance with AS 4586; or
- strip at the edge of the landing with a slip-resistance classification not less than that listed in Table 1, when tested in accordance with AS 4586 and where the edge leads to a flight below.

Table 1 Slip-Resistance Classifications

Application	Surface conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

Note: AS 4586 applies to all new pedestrian surfaces. The BCA requirements only apply to stairways in Volumes One and Two and also ramps and landings in Volume One. Therefore, where a general surface requirement is in conflict with a stairway, ramp or landing requirement, the latter takes precedence.

Slip-resistance classifications

There are six slip-resistance classifications within the BCA DtS Provisions and these classifications differentiate between:

- the application;
- the type of test to be used; and
- the surface condition (e.g. wet or dry).

AS 4586 contains four test types, however, only two of these are applicable to the BCA DtS Provisions. The two tests are a wet pendulum test and an oil-wet inclining platform test.

The wet pendulum test provides a classification range of P0 to P5 and can be tested in-situ or in a laboratory. The oil-wet inclining platform test provides a classification range of R9 to R13 and is a laboratory based test.

In respect to determining the appropriate surface condition (as expected at the time of construction), a wet surface includes a surface that:

- is exposed to weather, such as an external stairway; or
- on occasions, becomes wet such as in an entry lobby.

Likewise, a dry surface is one that is not normally wet or likely to be made wet, other than by an accidental spill or general cleaning.

Methods of compliance

Deemed-to-Satisfy Provisions

For finishes such as carpet, tiles, slate, vinyl or rubber, where the product is consistent and does not vary considerably as part of the manufacturing process, a laboratory test may be appropriate. In this case, the supplier or manufacturer will have the necessary slip-resistance information and test reports to show that their product has been tested in accordance with AS 4586. Alternatively an in-

situ test can be conducted using the wet pendulum test as described in AS 4586, or a compliant tested nosing strip could be attached to the treads and landings.

For timber surfaces, where the manufacturer uses pre-coated finishes, they could have these variants pre-tested to AS 4586. Alternatively a compliant tested nosing strip could be attached to the treads and landings.

Timber stairs, particularly those with polished treads that are constructed on-site, may require an in-situ test once the clear finish has been applied to confirm compliance with AS 4586 and the BCA. AS 4586 contains details on how the in-situ test is to be conducted.

Other options such as the application of nosing strips, adhesive tapes, or applied finishes can be assessed through a laboratory test (by the supplier or manufacturer) or by an in-situ wet pendulum test.

Consistent with other BCA requirements, prototype or batch testing can be conducted provided stringent quality control in respect to the tested material and the final product remains consistent.

Alternative Solutions

The BCA is a performance-based document where only the Performance Requirements must be met to achieve compliance with the BCA. Compliance with the Performance Requirements can be demonstrated in a number of ways, including using the DtS Provisions as outlined above.

However, if you do not wish to use the DtS Provisions an Alternative Solution can be used to demonstrate compliance with the Performance Requirements.

Alternative Solutions may be based on (but are not limited to) a scientific study of the combination of pedestrian surface, expected pedestrian traffic, footwear, cleaning, lighting, handrails etc. for a particular application. The outcome of such a study could be an assessment and quantification of the risk of slipping on a surface in a particular application.

To determine that an Alternative Solution complies with the Performance Requirements, one or a combination of the following Assessment Methods must be used:

- documentary evidence to support that the material, form of construction or design meets the Performance Requirement;
- Verification Methods, where provided;
- comparison with the DtS Provisions; or
- Expert Judgement.

Who can undertake the testing?

There are a number of organisations that can undertake both laboratory and in-situ testing in accordance with AS 4586, to verify the slip-resistance classification of a surface or material. The suitability of an organisation will depend on the surface or material being tested and the type of test required.

Some organisations are registered by the National Association of Testing Authorities (NATA) to specifically undertake slip-resistance testing. Organisations registered by NATA are recognised by the BCA to be Registered Testing Authorities.

Further information on NATA registered testing organisations is available from <http://www.nata.com.au>

Transition to AS 4586 – 2013 from AS/NZS 4586 - 2004

Test reports based on the 2004 edition of AS/NZS 4586 and issued prior to 1 May 2014 remain valid for the purposes of achieving compliance with BCA 2014. For the purpose of assessing compliance, the slip-resistance classifications of V, W, and X in reports based on the 2004 edition may be considered to be equivalent to slip-resistance classifications P5, P4, P3 respectively, in the 2013 edition of AS 4586. Refer to Table 2 below.

Table 2 Transitional Slip-Resistance Classifications

AS/NZS 4586 – 2004	AS 4586 – 2013
V	P5
W	P4
X	P3

Other considerations

Premises Standards

Other than the areas identified above, the slip-resistance classifications do not apply to slip-resistance provisions related to disability access (slip-resistance for surfaces on continuous accessible paths of travel, circulation spaces, tactile ground surface indicators, etc.). Any change in respect to the disability access provisions must be undertaken as part of the review of the Premises Standards, which is scheduled for completion by 2016.

Standards Australia Handbook HB 198 –2014

To assist in understanding the requirements of AS 4586 – 2013, Standards Australia has developed an accompanying handbook HB 198 – 2014 '*Guide to the specification and testing of slip resistance of pedestrian surfaces*'. This guide may assist in understanding the requirement of AS 4586 – 2013, however, similar to the Standard, the guide applies to all pedestrian surfaces whereas the BCA only applies to stairways, landings and ramps.

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In particular, the use of this Advisory Note does not—

- guarantee acceptance or accreditation of a design, material or building solution by any entity authorised to do so under any law;
- mean that a design, material or building solution complies with the National Construction Code of Australia (NCC); or
- absolve the users from complying with any Local, State, Territory or Australian Government legal requirements.