ABCB

National Construction Code

Slip-resistance for stairways, landings and ramps

Advisory Note

2020

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Minor edits to align with NCC 2019

Application

NCC Volume/s: One and Two

Section/Part: Section D (NCC Volume One) and Part 2.5 (NCC Volume Two)

Introduction

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

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

The NCC 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 NCC. A number of options are available to demonstrate compliance with the Performance Requirements, one of which is using the Deemed-to-Satisfy (DTS) Provisions.

Background

Prior to 2014, the NCC 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 NCC that came into force on 1 May 2014[1], specified 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 NCC 2014 required 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 NCC 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 NCC is to provide industry with certainty and clarity on the level of slip-resistance that needs to be achieved.

Adoption

The adoption of the NCC DTS Provisions for slip-resistance, were subject to transitional arrangements in some States and Territories. The adoption could also have varied 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 surveyor, 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 (abcb.gov.au).

[1] Subject to State and Territory transitional provisions

The changes in more detail

As outlined above, the NCC 2014 DTS Provisions included 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 NCC 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
- a 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 NCC 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
- a 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	Surface conditions - 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 NCC 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 DTS Provisions and these classifications differentiate between:

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

AS 4586 contains four test types, however, only two of these are applicable to the 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 Solutions

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

Performance Solutions

The NCC is a performance-based code, where the Performance Requirements, in conjunction with the Governing Requirements must be met to achieve compliance with the NCC. Compliance with the Performance Requirements can be demonstrated in a number of ways, including by using a Performance Solution, a DTS Solution as outlined above, or a combination of both.

However, if you do not wish to use a DTS Solution, a Performance Solution can be used to demonstrate compliance with the Performance Requirements.

Performance 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 a Performance Solution complies with the Performance Requirements, one or a combination of the following Assessment Methods, located in the Governing Requirements of the NCC, 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 facilities 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 a facility will depend on the surface or material being tested and the type of test required. Some facilities are accredited by the National Association of Testing Authorities (NATA) to specifically undertake slip-resistance testing. Facilities accredited by NATA are recognised by the NCC to be Accredited Testing Laboratories. Further information on NATA accredited facilities is available from the NATA website (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 the NCC. 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.

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 NCC only applies to stairways, landings and ramps.