

Specifying Compliant Slip Resistant Flooring

Background

Building owners, managers, designers and constructors have a duty of care to provide a safe environment for people occupying buildings (“patrons”). In terms of floor surfaces, this means the floor finish must have the appropriate slip resistance for the floor application.

In Australia, the slip resistance recommendations and/or requirements are outlined in the following Standards, Handbooks and Codes:

1. *Australian Standard AS 4586: 2013, Slip resistance classification of new pedestrian surface materials*, Standards Australia, Sydney, New South Wales
2. *Australian Standard AS 4663: 2013 Slip Resistance measurement of existing pedestrian surfaces*, Standards Australia, Sydney, New South Wales
3. *Standards Australia Handbook HB 198: 2014, Guide to the specification and testing of slip resistance of pedestrian surfaces*, Standards Australia, Sydney, New South Wales
4. *Standards Australia Handbook HB 197: 1999, An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials*, Standards Australia, Sydney, New South Wales
5. *NCC 2016 Building Code of Australia – Volume One, Building Code of Australia Class 2 to Class 9 Buildings*
6. *NCC 2016 Building Code of Australia – Volume Two, Building Code of Australia Class 1 and Class 10 Buildings*

Slip Resistance Classification

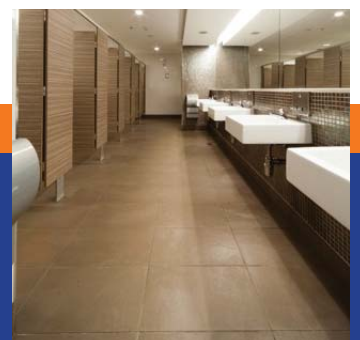
New flooring materials can be assessed into four different classifications:

■ **P Classifications**
– internal or external surfaces where there is a likelihood of the surface becoming wet or contaminated during normal use

■ **D Classifications**
– internal surfaces that should remain clean and dry during normal use

■ **A, B, C Classifications**
– surfaces that are intended for use in predominantly barefoot areas

■ **R Classification**
– profiled and textured surfaces, or surfaces intended to be installed where heavy contamination may be encountered under normal use



Test Methods

Testing of **new** flooring surfaces is conducted in accordance with *AS 4586: 2013, Slip resistance classification of new pedestrian surface materials*. There are four types of slip resistance test methods to determine slip resistance classification within AS 4586:2013.

Testing of **existing** flooring is conducted in accordance with *AS 4663:2013 Slip resistance measurement of existing pedestrian surfaces*.

All testing should be carried out by a NATA accredited testing laboratory using qualified and experienced staff. The test methods are outlined below.

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| <p>1.
<i>Appendix A</i>
– <i>Wet Pendulum Test Method (P Classifications)</i></p> <p>Based on the pendulum test developed by the UK Transport and Roads Research Council this is called a skid tester and requires that the test be carried out wet. It consists of a heavy foot on the end of an arm which pivots such that the foot can swing in a vertical plane.</p> <p>Results are reported in BPN (British Pendulum Number) and the compared against a table which dictates the applicable P classification.</p> | <p>2.
<i>Appendix B</i>
– <i>Dry Floor Friction Test Method (D Classifications)</i></p> <p>Developed on the basis of extensive scientific studies by the British Ceramic Research Association, the Tortus Floor Friction Tester measures the dynamic coefficient of friction between the floor surface and common shoe sole materials. <i>(Because the coefficient of friction measurement is dependent upon a number of factors, including the shoe sole material, Slider 96 rubber has been adopted as the material to be used in this type of test. Some shoe materials may result in lower coefficients of friction, but Slider 96 has been adopted as the International Standard.)</i></p> | <p>3.
<i>Appendix C</i>
– <i>Wet-Barefoot Inclining Platform Test Method (A, B, C Classifications)</i></p> <p>Otherwise known as wet barefoot ramp, the test is carried out by two test persons to determine the angle of inclination at which safe walking no longer occurs under barefoot conditions. The test apparatus used is a flat torsion-resistant platform and has a pitch which can be adjusted in the longitudinal direction for 0° to 45°. During the test, a stream of a soapy water test solution is poured at a continuous and uniform rate to ensure even wetting of the surface.</p> <p>Results of multiple tests by two testers are reported in degrees incline and the compared against a table which dictates the applicable A, B or C rating.</p> | <p>4.
<i>Appendix D</i>
– <i>Oil-Wet Inclining Platform Test Method (R Classifications)</i></p> <p>The oil-wet ramp method is carried out by two test persons, wearing standard test shoes, to determine the angle of inclination at which safe walking no longer occurs after the pedestrian surface material being tested has been coated with engine lubricating oil.</p> <p>Results of multiple tests by two testers are reported in degrees incline and the compared against a table which dictates the applicable R rating.</p> |
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All test methods are a simulation only and are used as standardised methodologies to assess and compare different flooring surface materials. Each test method has its' own inherent limitations and will not necessarily be representative of a real life situation and those potential variables.

Wet Pendulum (P Classification) and Dry Floor Friction (D Classification) tests can be performed in the laboratory or on site strictly following the test standard.

Wet-Barefoot (A, B, C Classifications) and Oil-Wet (R Classifications) Inclining Platform tests can only be performed in a laboratory under strict conditions in accordance with the test standards.

Test Method Observations

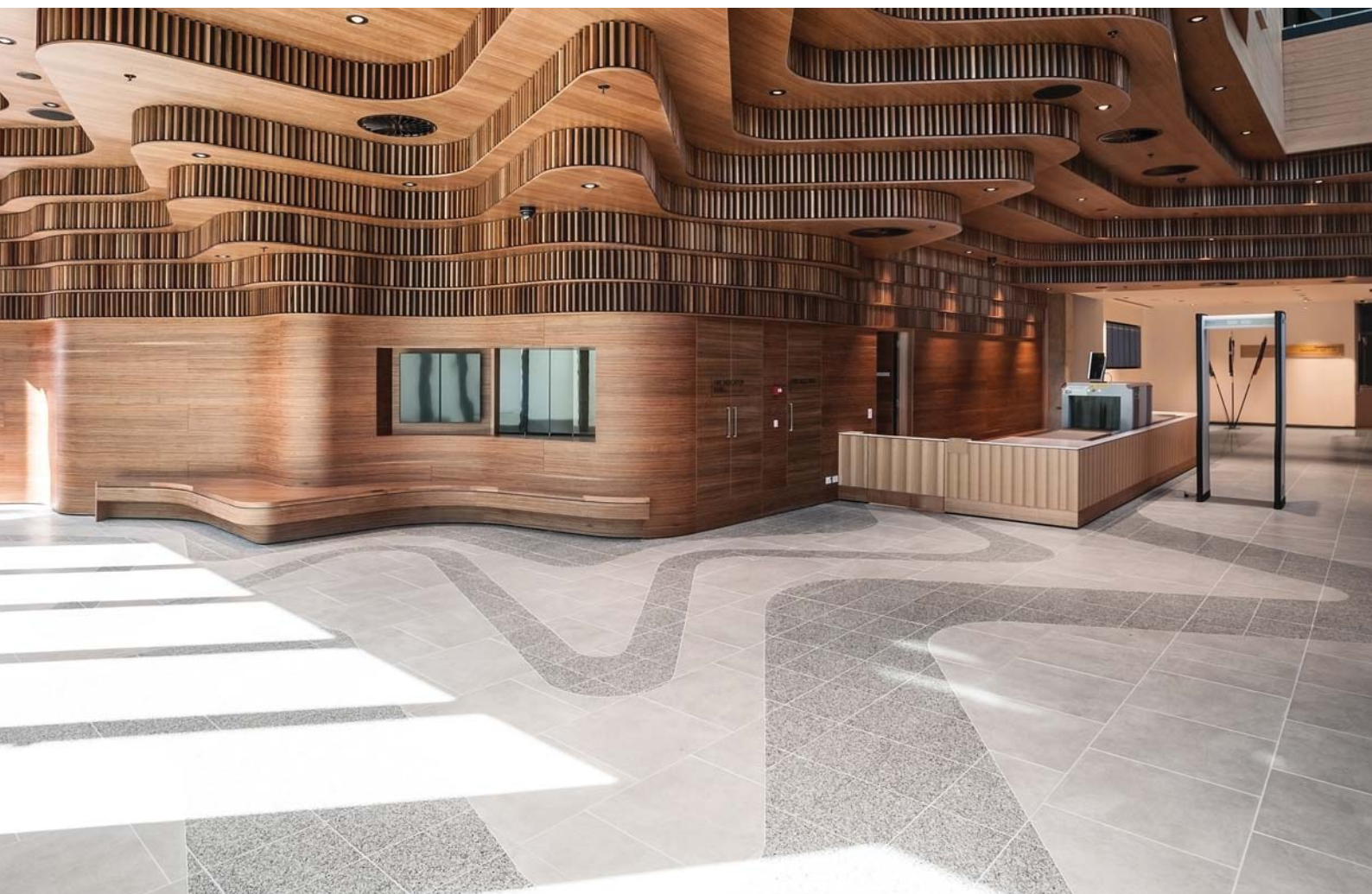
- Internationally the R rating is the dominant slip resistance classification methodology due to its greater use throughout Europe for many years.
- Many international tile manufacturers represent R ratings as part of their product offer, not P ratings as this relates only to Australian Standards.
- **Importantly due to the different test methods, there is no direct correlation between R ratings and P ratings.** Whilst there may be some overlap in the test outcomes, it can never be assumed that a particular R rating correlates with a particular P rating. E.g. it cannot be assumed that an R10 will always be a P3. Historic testing shows an R10 tile may be between a P2 or P4 rated tile.

Guidelines for Specifiers

Tables 3A and 3B of the SA HB 198:2014 Handbook establishes a basis for specifying pedestrian surface materials for various applications in new buildings.

However, slip resistance specification is not simply a matter of looking up tables. Specifiers must consider the intended use of the space, other related flooring standards and operational issues such as cleaning costs.

- How is the space to be used: number of patrons, types of patrons (e.g. elderly, infirmed, walking, running)?
- What type of footwear will patrons use if any? Will there be any footwear soiling? If so, what type?
- Is the area wet or subject to water inundation (showers, sinks, shoe borne water at entrances)?
- Is the area subject to spills? E.g. areas where food is prepared or consumed.
- Is any adjoining area a significantly different slip resistance? **(note under HB 197:1999 standard flooring slip resistance must not equal or exceed 2 levels of slip resistance ratings difference)**



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Slip Resistance & Cleaning

There is a direct link between slip resistance and cleaning practices/costs. A higher slip resistance will require more cleaning effort and therefore an increase in cleaning costs. For example, a recent case study in a shopping centre environment necessitated a 100% increase in cleaning costs by increasing slip resistance from a P2 to a P3 rating.

Cleaning practices can also alter the slip resistance of a floor material detrimentally. For more information refer to our separate information brochure 'Ceramic Solutions: Diligent Decisions and Surface Preservation for Ceramic Tiles.'

How to Specify Fit for Purpose Flooring

- Research the intended use of the floor - speak to your client
- Review adjoining spaces and their floor coverings
- Refer to the various different Australian standards, handbooks and codes
- Speak to a NATA accredited testing laboratory
- Speak to a floor tiling expert as they will know from past experience the practical applications of the standards and what tile manufacturers offer

Ceramic Solutions are here to help. Please contact one of our knowledgeable sales staff who are also well versed in installation matters on 03 9545 5322 or sales@ceramicsolutions.com.au.



For further information contact Ceramic Solutions