



WET PENDULUM SLIP RESISTANCE TEST

Berger - Seidle CeramicStar 2k water-based polyurethane applied to engineered timber flooring

Prepared for: Coating Systems
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Specimen Description: Berger - Seidle CeramicStar 2k water-based polyurethane applied to engineered timber flooring, 500x1000 mm.

No. of Specimens: 5 off (Sampling Conducted by Client)

Specimen Preparation: Washed with water and pH neutral detergent, rinsed then dried.

Test Condition & Slope: Unfixed, N/A

Test Direction: Test conducted parallel with grain of timber.

Air Temperature: 22°C

Test Standard: AS 4586:2013 Slip resistance classification of new pedestrian surface materials, Appendix A - Wet Pendulum Test

Test Location: ATTAR 44-48 Rocco Drive, Scoresby, VIC, 3179

Test Date: 26 October 2022

Test Equipment: Munro Stanley Pendulum Skid Resistance Tester Serial Number 0320, Calibrated 03/05/2022.

Slider Rubber: Slider 96 Batch No. #15 prepared on P400 & 3µm lapping film.

Test Personnel: Dale Siegle

Specimen Number	1	2	3	4	5
Mean British Pendulum Number (BPN)	59	60	55	57	54
Slip Resistance Value (SRV)	57				
Classification	P5				

These results apply only to the specimens tested and it is recommended that before selection of flooring or paving materials the effect of service conditions, including maintenance procedures and wear on their slip resistance be checked. Where alternatives are permitted by the standard, the choice of rubber slider used may also influence the test results obtained.

Reviewed By:



Dale Siegle
Technical Consultant - Compliance Services
Approved Signatory



Marcus Braché
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Approved Signatory

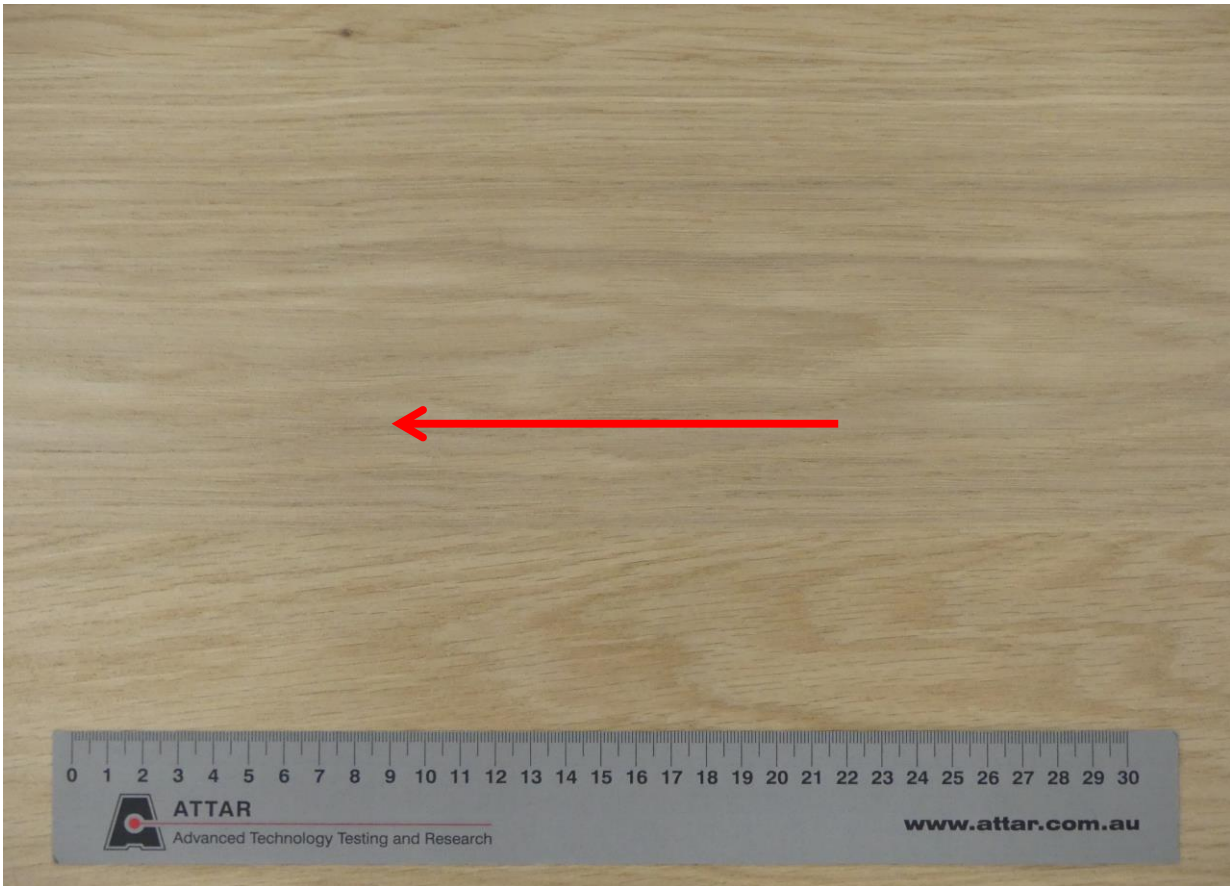


Figure 1: Berger - Seidle CeramicStar 2k water-based polyurethane applied to engineered timber flooring
Arrow indicates direction of testing



CLASSIFICATION CRITERIA – AS 4586 – 2013 **Wet Pendulum Test - Appendix A**

Slip resistance

When this Standard is used for the testing and classification of the slip resistance of carpets (or carpet-like products) in potentially wet locations, the carpet shall be tested using the wet pendulum test method set out in Appendix A of AS 4586, and shall be reported as such.

When this AS 4586 is used for the testing and classification of the slip resistance of carpets in dry locations, the test shall be carried out in the dry condition using the pendulum test method set out in Appendix A of AS 4586, modified in accordance with Paragraph A2, and shall be reported as such.

The 'dry floor friction' test method in Appendix B of AS 4586 is not suitable for heavily profiled surfaces or carpets.

Compliance

The surface shall comply with the stated classification for the test method and test rubber that is nominated and declared by the manufacturer or supplier.

**TABLE 2: CLASSIFICATION OF PEDESTRIAN SURFACE MATERIALS
ACCORDING TO THE AS 4586 WET PENDULUM TEST**

Class	Pendulum SRV (see Note 1)	
	Slider 96	Slider 55
P5	>54	>44
P4	45-54	40-44
P3	35-44	35-39
P2	25-34	20-34
P1	12-24	<20
P0	<12	

NOTES:

- 1 While Slider 96 or Slider 55 rubbers may be used, the test report shall specify the rubber that was used.
- 2 It is expected that these surfaces will have greater slip resistance when dry.
- 3 SDV may be calculated by using the tables that are given in Appendix F of AS 4586, and the minimum SRV that is considered appropriate for a level surface (see examples given in Appendix F of AS 4586).

Means of demonstrating compliance

Pedestrian surfaces that are classified in accordance with Table 2 shall meet the following criteria:

- (a) The mean test results shall be as follows:
 - (i) For the classifications in Table 2, the mean of the test results shall be—
 - (A) within the relevant criteria set out in the table; and
 - (B) each individual result shall be equal to or above the lower limit for the classification or, if below the classification, within the mean of the result minus 20%.

If either criteria is not met, the lot shall be considered to be of lower classification.
- (b) The classification in accordance with Table 2 shall be determined by—
 - (i) selecting and testing at least five specimens at random as specified in Appendices A and B of AS 4586; or
 - (ii) carrying out continuous testing and process control in accordance with AS 3942.
- (c) When testing individual lots, if a particular test fails to produce the expected classification it shall be permissible to—
 - (i) disregard the first sample, resample a minimum of 10 specimens from the whole lot, retest and apply the criteria to the new sample; or
 - (ii) subdivide the lot into smaller lots of different quality, resample, retest and reclassify each of the smaller lots.

SA HB 198:2014 Handbook

Guide to the specification and testing of slip resistance of pedestrian surfaces

5.2 Classifications for particular applications

Table 3B provides guidance for pedestrian surfaces for particular applications. The values represent a consensus view of Committee BD-094, although not all experts agree on all values. The values in Table 3B have been determined by the following process:

- Applications and corresponding values were selected initially from HB 197:1999.
- A subcommittee of Committee BD-094 modified some applications and values, and these were further modified during the review process.
- The contents of Table 3B are subject to further review by Committee BD-094, in its ongoing project to provide guidance on specifying and testing for slip resistance.

For completeness, Table 3A is also reproduced here from the previous Section.

There are some fundamental differences in the purpose and nature of Tables 3A and 3B.

- Table 3A applications and values have been determined by the Australian Building Codes Board for use in regulations based on the NCC. It provides the minimum wet pendulum test or oil-wet inclining platform test classifications that are deemed-to-satisfy specific applications in buildings covered by the NCC. These values may be used as acceptance criteria in a range of situations, including those where the building incorporates only the minimum regulated NCC requirements for handrails, lighting and the like.
- Table 3B applications and values have been determined by Committee BD-094 for use in applications that are not regulated by the NCC. It provides wet pendulum test or oil-wet inclining platform test classifications for applications where the NCC does not specifically require slip resistance. The applications listed are some of those for which slip resistance is warranted for reasons other than NCC compliance. The use of these values should be in the context of design, which also considers abnormal wear, maintenance, abnormal contamination, the presence (or otherwise) of water or other lubricants, the nature of the pedestrian traffic (including age, gait and crowding), the footwear (or lack thereof), slope, lighting and handrails.

TABLE 3A
MINIMUM WET PENDULUM TEST OR OIL-WET INCLINING PLATFORM
CLASSIFICATIONS THAT ARE DEEMED-TO-SATISFY THE BUILDING
APPLICATIONS IN THE NCC

Location	Wet Pendulum test	Oil-wet inclining platform test
Stair Treads and Stairway Landings in Buildings Covered by NCC Volumes One and Two		
Stair treads and a stairway landing (when dry)	P3	R10
Stair treads and a stairway landing (when wet)	P4	R11
Nosings for Stair Treads and Stairway Landings in Buildings Covered by NCC Volumes One and Two		
Dry stair tread, a stair non-skid nosing strip and a stairway landing	P3	
Wet stair tread, a stair non-skid nosing strip and a stairway landing	P4	
Ramps in Buildings Covered by NCC Volumes One and Two		
Ramps not steeper than 1:14 gradient (when dry)	P3	R10
Ramps not steeper than 1:14 gradient (when wet)	P4	R11
Ramps steeper than 1:14 up but not steeper than 1:8 (when dry)	P4	R11
Ramps steeper than 1:14 up but not steeper than 1:8 (when wet)	P5	R12

NOTE: NCC compliance is demonstrated by achieving the values set out in this Table for either the wet pendulum test or the oil-wet inclining ramp test. It is not necessary to meet both criteria.

TABLE 3B
WET PENDULUM TEST OR OIL-WET INCLINING PLATFORM
CLASSIFICATIONS FOR APPLICATIONS WHERE THE NCC DOES NOT
REQUIRE SLIP RESISTANCE

Location	Wet Pendulum test	Oil-wet inclining platform test
External Pavements and Ramps		
External ramps including sloping driveways, footpaths etc. Steeper than 1 in 14	P5	R12
External ramps including sloping driveways, foot paths etc., under 1:14, external sales areas (eg. Markets), external carpark areas, external colonnades, walkways, pedestrian crossings, balconies, verandas, carports, driveways, courtyards and roof decks.	P4	R11
Undercover car parks	P3	R10
Hotels, Offices, Public Buildings, Schools and Kindergartens		
Entries and access areas including hotels, offices, public buildings, schools, kindergartens, common areas of public buildings, internal lift lobbies.		
Wet Area	P3	R10
Transitional Area	P2	R9
Dry Area	P1 (see Note 3)	R9
Toilet Facilities in offices, hotels and shopping centres	P3	R10
Hotel apartment bathrooms, en suites and toilets	P2	A
Hotel apartment kitchens and laundries	P2	R9
Supermarkets and Shopping Centres		
Fast food outlets, buffet food servery areas, food courts and fast food dining areas in shopping centres	P3	R10
Shop and supermarket fresh fruit and vegetable areas	P3	R10
Shop entry areas with external entrances	P3	R10
Supermarket aisles (except fresh fruit areas)	P1 (see Note 3)	R9
Other separate shops inside shopping centres - wet	P3	R10
Other separate shops inside shopping centres - dry	P1 (see Note 3)	R9
Loading docks, Commercial Kitchens, Cold Stores, Serving areas		
Loading docks undercover and commercial kitchens	P5	R12
Serving areas behind bars in public hotels and clubs, cold stores and freezers	P4	R11
Swimming pools and Sporting Facilities		
Swimming pool ramps and stairs leading to water	P5	C
Swimming pool surrounds and communal shower rooms	P4	B
Communal changing rooms	P3	A
Undercover concourse areas of sports stadiums	P3	R10
Hospitals and Aged Care Facilities		
Bathrooms and en suites in hospitals and aged care facilities	P3	B
Wards and corridors in hospital and aged care facilities	P2	R9

NOTES TO TABLE 3B:

- The slip resistances of pedestrian surface materials set out in Table 3B are intended as guidance in the context of design for pedestrian safety, taking account other factors including abnormal wear, maintenance, abnormal contamination, the presence (or otherwise) of water or other lubricants, the nature of the pedestrian traffic (including age, gait and crowding), the footwear (or lack thereof), slope, lighting and handrails.
- The contents of Table 3B are subject to further review by Committee BD-094, in its on-going project to provide guidance on the specification and testing of slip resistance.
- The minimum classifications listed in Table 3B are P1 and R9. It is inappropriate for Table 3B to list the lower classification, P0, since there is no lower limit on Classification P0. Notwithstanding, some smooth and polished floor surfaces, which do not achieve Classification P1, may be considered to provide a safe walking environment for normal pedestrians walking at a moderate pace, provided the surfaces are kept clean and dry; however, should these surfaces become contaminated by either wet or dry materials, or be used by pedestrians in any other manner, then they may become unsafe. Therefore, the type of maintenance, the in-service inspection of floors, other environmental conditions and use should be taken in to account when selecting such products.
- When using the oil-wet inclining platform 'R' classifications, consideration should also be given to the determination and use of volumetric displacement 'V' classifications. In some cases, a specifier may choose either a particular combination of R and V values, or a more severe R value alone. For example, either R10 + V4, or R11.