



Changes to Slip Resistance Australian Standards – 2013

The Australian Standards for slip resistance of pedestrian surfaces have recently been under revision by Standards Australia Committee BD-094. New revisions of these Standards have been published on 28 June 2013:

AS 4586 - 2013 *Slip resistance classification of new pedestrian surface materials*, now supersedes AS/NZS 4586 - 2004.

AS 4663 - 2013 *Slip Resistance measurement of existing pedestrian surfaces*, now supersedes AS/NZS 4663 - 2004.

A number of minor changes have been throughout both Standards, however the Wet Pendulum Test Method has had the most significant change of all the test methods.

The 2013 revision of AS 4586 & AS 4663 incorporates an additional requirement in the Wet Pendulum Test Method for preparing rubber slider test feet with 3 micron lapping film. Research has shown that when a rubber slider is prepared this way, it is a closer representation of a worn and polished heel and may best reflect the lower slip resistance attributable to the contact of two smoother surfaces under water-wet conditions. Adoption of the lapping film preparation to condition the slider enables more sensitive differentiation between potentially slippery surfaces than was previously the case, and as such, will cause some pedestrian surfaces to provide a lower slip resistance test result than what would have been obtained if tested according to the 2004 version of AS/NZS 4586 or AS/NZS 4663. This is likely to have the biggest impact on smooth flooring materials such as glazed/polished tiles, sealed terrazzo, sealed/polished natural stone, polished timber, vinyl, etc.

As the changes to new Wet Pendulum Test Method will potentially change the classifications of some flooring products, a new classification system has been introduced to clearly identify which revision of the Standard it was tested to, AS/NZS 4586 – 2004 or AS 4586 – 2013. The 2004 version used V, W, X, Y or Z Classifications which are no longer being used. The 2013 version of AS 4586 uses the following classification system:

CLASSIFICATION OF PEDESTRIAN SURFACE MATERIALS ACCORDING TO THE AS 4586 WET PENDULUM TEST

Class	Pendulum SRV	
	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	

The Dry Floor Friction Test Method classifications have also changed in AS 4586 – 2013. The 2004 version used F or G Classifications which are no longer being used. The 2013 version of AS 4586 uses the following classification system:

CLASSIFICATION OF PEDESTRIAN SURFACE MATERIALS ACCORDING TO THE DRY FLOOR FRICTION TEST

Classification	Floor friction tester mean value
D1	≥0.40
D0	<0.40

Another significant change is the removal of the interpretation of the slip resistance test results from AS 4663 - 2013. Previously AS/NZS 4663 – 2004 interpreted the test results into one of a number of categories and reported the *notional contribution of the floor surface to the risk of slipping*. This information will be put into the revised version of HB 197 (still yet to be published), and is referenced in AS 4663 2013. In the interim ATTAR will be using the existing Table 2 from HB 197 – 1999 *An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials* for the interpretation of Wet Pendulum test results and Table 2 from AS/NZS 4663 – 2004 for the interpretation of Dry Floor Friction test results.

Wet Pendulum Slip Rating	Wet Pendulum SRV Range	
	Slider 55	Slider 96
P0		< 12
P1	< 20	12 → 24
P2	20 → 34	25 → 34
P3	35 → 39	35 → 44
P4	40 → 44	45 → 54
→ P5	> 44	> 54 ←

Class (2004 Standard)	Class (2013 Standard)	Contribution of the floor surface to the risk of slipping when wet
→ V	P5	Very low ←
W	P4	Low
X	P3	Moderate
Y	P2	High
Z	P1	Very high

Table 1

Location	Pendulum - 2004	Pendulum - 2013	Ramp
External colonnade, walkways and pedestrian crossings	W	P4	R10
External ramps	V	P5	R11
Entry foyers hotel, office, public buildings - wet	X	P3	R10
Entry foyers hotel, office, public buildings - dry	Z	P1	R9
Shopping centre excluding food court	Z	P1	R9
Shopping centre - food court	X	P3	R10
Internal ramps, slopes (greater than 2 degrees) - dry	X	P3	R10
Lift lobbies above external entry level	Z	P1	R9
Other separate shops inside shopping centres	Z	P1	R9
Other shops with external entrances - entry area	X	P3	R10
Fast food outlets, buffet food servery areas	X	P3	R10
Hospitals and aged care facilities - dry areas	Z	P1	R9
Hospitals and aged care facilities - en suites	X	P3	A or R10
Supermarket aisles except fresh food areas	Z	P1	R9
Shop and supermarket fresh fruit and vegetable areas	X	P3	R10
Communal changing rooms	X	P3	A ¹
Swimming pool surrounds and communal shower rooms	W	P4	B ¹
Swimming pool ramps and stairs leading into water	V	P5	C ¹
Toilet facilities in offices, hotels and shopping centres	X	P3	R10
Undercover concourse areas of sports stadium	X	P3	R10
Accessible internal stair nosings (dry) - handrails present	X	P3	R10
Accessible internal stair nosings (wet) - handrails present	W	P4	B ¹ or R11
External stair nosings	W	P4	R11

¹ Ratings for wet barefoot slip resistance test (AS 4586)



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Registered Testing Authority - CSIRO

6 February 2013

Our Ref. EN13 / 2114 03/0212

TEST REPORT No. 6259s

on (date): 9 May 2012
Product Desc.: Foil based print media with textured polyurethane top coating ←

Sampling details:
Where: Delivered
Date: 23 January 2013
By whom: Courier
How (methods): N/A

The results reported relate only to the sample(s) tested and the information received. No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision. CSIRO cannot accept responsibility for deviations in the manufactured quality and performance of the product. While CSIRO takes care in preparing the reports it provides to clients, it does not warrant that the information in this particular report will be free of errors or omissions or that it will be suitable for the client's purposes. CSIRO will not be responsible for the results of any actions taken by the client or any other person on the basis of the information contained in the report or any opinions expressed in it. The reproduction of this test report is only authorised in the form of a complete photographic facsimile. Our written approval is necessary for any partial reproduction.

This test report consists of 4 pages

SUMMARY OF SLIP RESISTANCE TESTS PERFORMED:

		Result	Class
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials Appendix A: WET Pendulum (Four S slider):		
	Mean BPN:	55	V [LOW*] ←
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials, Appendix D: OIL-WET Ramp		
	Mean overall acceptance angle:	35.0°	R 13 [LOW*] ←

* = CSIRO classification

In order to interpret the classifications, please refer to Standards Australia Handbook 197, An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials, which recommends minimum classifications for a wide variety of locations.

It is important to realise that test results obtained on unused factory-fresh samples may not be directly applicable in service, where proprietary surface coatings, contamination, wear and subsequent cleaning all influence the behaviour of the pedestrian surface.



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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

WET PENDULUM TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix A)

Test Date: 30 January 2013

RESULTS: Location: Slip Resistance Laboratory Rubber slider used: Four S
Sample: Unfixed Conditioned with grade P400 paper, dry
Cleaning: Deionized water
Temperature: 23°C

Pendulum Friction Tester: Munro-Stanley (S/N: 9234, calibrated 23/09/09)
Test conducted by: Andy Giang

	Specimen 1	2	3	4	5
Last 3 swings	56	55	55	54	55
	55	55	54	54	55
	55	55	54	54	54
Averages	55	55	54	54	55

Mean BPN : 55 ←

CLASS : **V [LOW*]** ←

* = CSIRO classification



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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

OIL-WET RAMP TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix D)

Test Date: 6 February 2013

Location: Slip Resistance Laboratory

Sample Fixed

Joint width: 0 mm

Surface structure: Smooth
 Profiled
 Structured

RESULTS

Mean overall acceptance angle: 35.0 °

Displacement space: not tested

CLASSIFICATION:

Slip Resistance Assessment Group:

R 13 [LOW*] ←

Displacement Space Assessment Group:

-

* = CSIRO classification



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TILE DESC: Foil based print media with textured polyurethane top coating

Date and Place 6 February 2013, Highett, Vic

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***CSIRO recommended classification of Slip Resistance as determined from:
AS/NZS 4586: 2004 Slip Resistance Classification of New Pedestrian Surface Materials (Appendices A & D).**

Wet Pendulum Class	BPN 4S Rubber	CSIRO Class LOW	CSIRO Class MEDIUM	CSIRO Class HIGH
→ V	>54	54-57	58-61	<← >61
W	45-54	45-48	49-51	52-54
X	35-44	35-38	39-41	42-44
Y	25-34	25-28	29-31	32-34
Z	<25	<18	18-21	22-25
Oil Wet Ramp Class	Angle (degrees)	CSIRO Class LOW	CSIRO Class MEDIUM	CSIRO Class HIGH
R9	≥6 to <10	≥6 to 7.5	7.6 to 9	9.1 to 9.9
R10	≥10 to <19	≥10 to 12	12.1 to 15	15.1 to 18.9
R11	≥19 to <27	≥19 to 21	21.1 to 24	24.1 to 26.9
R12	≥27 to <35	≥27 to 29	29.1 to 32	32.1 to 34.9
→ R13	≥35	≥35 to 36	36.1 to 38	<← ≥38.1

This table should not be read or relied upon without reference to the CSIRO/Standards Australia publication:
AS/NZS 4586 Slip Resistance Classification of New Pedestrian Surface Materials (Appendices A & D).

CSIRO has categorized the AS4586 classifications into sub-groups Low, Medium & High. The slip resistance test classification is still determined according to AS 4586 Australian Standard (Appendices A & D). The added information of Low, Medium and High allows professionals to make a better judgement of pedestrian floor requirements.