# Technical Bulletin

## Testing for slip resistance

*CHANGES TO AS 4586*

June 2013 brought changes to the testing methods and slip resistance classifications of AS 4586 *Slip resistance classification of new pedestrian surface materials*. The accompanying handbook, *SA HB 198 Guide to the specification and testing of slip resistance of pedestrian surfaces*, released a year later in 2014, outlines the acceptable minimum standard of slip resistance and is a guide for selecting the appropriate slip resistance classification for specification in various pedestrian areas.

Three tests are prescribed in AS 4586 to assess the slip resistance of a floor surface. The following will describe the test and changes in the 2013 version of the Standard.

**Wet Pendulum Test (P-rating)** for pedestrian areas that can become wet with rain water. This can be specifically applied to urban stormwater grates.

The Wet Pendulum test uses a Pendulum Friction Tester and a rubber slider. The rubber slider material has been altered in the updated Standard to more accurately represent a worn and polished heel. This means that the test is more difficult to achieve higher levels of slip resistance than previous revisions of the Standard.

The classification methodology has also been changed, previously the 2004 version of AS 4586 used V to Z classifications. This has been superseded by the 2013 release with P0 to P5 classifications - P5 being the highest achievable level of slip resistance. The P-rating system is based on the SRV (Slip Resistance Value) which is the mean BPN (British Pendulum Number) value, a dimensionless unit of slip resistance.

**Table 1** - Wet Pendulum Test slip resistance classifications.

| **Class** (2004 Standard) | **Class** (2013 Standard) | **Pendulum SRV Value** (2013 Standard) | |
|---|---|---|---|
| | | **Slider 96** | **Slider 55** |
| V | P5 | >54 | >44 |
| W | P4 | 45-54 | 40-44 |
| X | P3 | 35-44 | 35-39 |
| Y | P2 | 25-34 | 20-34 |
| Z | P1 | 12-24 | <20 |
| - | P0 | <12 | |



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ACO Polycrete Pty Ltd
134-140 Old Bathurst Road
Emu Plains NSW 2750
Telephone (02) 4747 4000
Facsimile (02) 4747 4040
Email: technical@acoaus.com.au

**Wet-Barefoot Inclining Platform Test (A, B or C rating)** for wet areas where footwear/shoes are not worn. This can be specifically applied to urban stormwater grates in specific areas such as pools, waterparks, beach areas etc.

The Wet-Barefoot Inclining Platform test uses an inclining platform wet with water to assess the slip resistance of a pedestrian floor surface material. The barefoot test person facing downhill moves back and forth on the platform as the angle of inclination is increased until the safe limit of walking is reached.

The angle of inclination obtained is used to classify the degree of slip resistance with an 'A', 'B' or 'C' rating. 'A' being the lowest inclination rating with a mean angle of inclination of 12 to 16 degrees and is therefore the lowest slip resistance. Surfaces with a mean angle of inclination less than 12 degrees is recognised as having 'no classification', which is new in the current Standard.

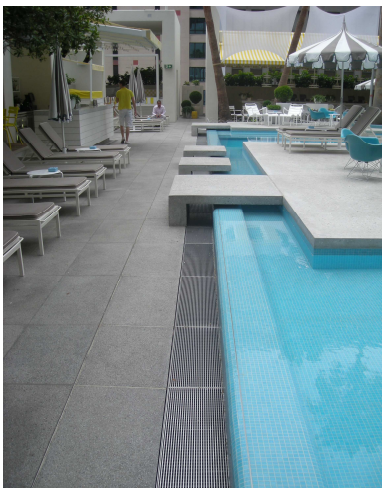


**Table 2** - Wet-Barefoot Inclining Platform Test slip resistance classifications.

| **Class** (2004 Standard) | **Class** (2013 Standard) | **Angle** (degrees) |
|---|---|---|
| - | No Classification | <12 |
| A | A | ≥12<18 |
| B | B | ≥18<24 |
| C | C | ≥24 |

Note, the pedestrian surface should not be installed at the angle reported in the test. This angle provides a means of classification only in controlled laboratory conditions.

**Oil Wet Inclining Platform Test (R-rating)** for commercial and industrial areas that can be contaminated with oil or grease. This can be specifically applied to internal industrial and commercial environments such as commercial kitchens and food processing factories.

The Oil-Wet Inclining Platform test uses the same inclining platform as the Wet-Barefoot test with the test surface coated with engine lubricating oil instead of water and the test person wears a specific test shoe. The test person moves back and forth across the test surface where the angle of inclination is increased until the safe limit of walking is reached.

The angle of inclination obtained is used to classify the degree of slip resistance with an 'R' rating, from 'no classification' for angle less than 6 degrees to 'R9' and up to 'R13'. 'R9' being the lowest inclination and lowest slip resistance rating the Standard classifies. 'No classification' is new in the current Standard.

**Table 3** - Oil-Wet Inclining Platform Test slip resistance classifications.

| **Class** (2004 Standard) | **Class** (2013 Standard) | **Angle** (degrees) |
|---|---|---|
| - | No Classification | <6 |
| R9 | R9 | ≥6<10 |
| R10 | R10 | ≥10<19 |
| R11 | R11 | ≥19<27 |
| R12 | R12 | ≥27<35 |
| R13 | R13 | ≥35 |

Note, the pedestrian surface should not be installed at the angle reported in the test. This angle provides a means of classification only in controlled laboratory conditions.

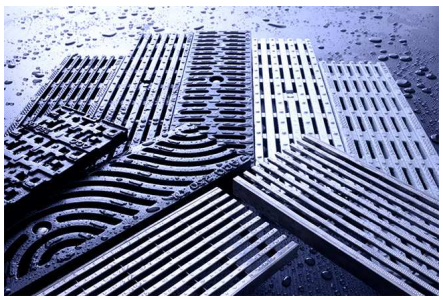
The following table provides guidance on slip resistance for particular applications based on the test methods in AS 4586-2013. For further details, refer to *Section 5 Selection of Pedestrian Surface Materials* in SA HB 198:2014 or go to: http://www.acodrain.com.au/resources/slip-resistance.htm

**Table 4** - Minimum classifications recommended in SA HB 198:2014 for particular applications

| Location | Wet pendulum test | 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, footpaths etc., under 1:14, external sales areas (e.g. 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 areas | P3 | R10 |
| Transitional area | P2 | R9 |
| Dry area | P1 | 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 |
| Shops and supermarket fresh fruit and vegetable areas | P3 | R10 |
| Shop entry areas with external entrances | P3 | R10 |
| Supermarket aisles (except fresh food areas) | P1 | R9 |
| Other separate shops inside shopping centres – wet | P3 | R10 |
| Other separate shops inside shopping centres – dry | P1 | R9 |
| **Loading Docks, Commercial Kitchens, Cold Stores, Serving Areas** | | |
| Loading docks under cover 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 |
| **Hospital 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 |

For more details refer to Section 5 and Table 3B, SA HB 198:2014.

## ACO's Heelsafe® *Anti-Slip* Grates



To help prevent public falls and injuries, ACO believes that small slotted grates should also be slip resistant.

Each **Heelsafe®** *Anti-Slip* grate complies with various user and legislative requirements, including AS 4586 for slip resistance. **Heelsafe®** *Anti-Slip* grates have features for tread durability and are available in a choice of stainless steel, ductile iron and plastic designs. To view details for each grate visit, www.heelsafe.com.au

For a list of slip resistance ratings and the complying **Heelsafe®** *Anti-Slip* grate with reference to the suitable ACO Drain trench drain, go to: http://www.acodrain.com.au/pdf/slip-resistance-of-grates.pdf