



Ceramic

Slip Resistance

AS/NZS 4586:2004 Slip resistance classification of new pedestrian surface materials

Wet Slip Resistance

G-Floor Finish	British Pendulum Number – Mean	Classification
Ceramic 1.9mm	44	X

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Oil-Wet Ramp Slip Resistance

G-Floor Finish	Mean Overall Acceptance Angle	Slip Resistance Assessment Group
Ceramic 1.9mm	11.3°	R10




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TABLE 2
CLASSIFICATION OF PEDESTRIAN SURFACE MATERIALS ACCORDING TO THE
AS/NZS 4586 WET PENDULUM TEST

Class	Pendulum mean (BPN)*		Contribution of the floor surface to the risk of slipping when wet
	Slider 96 (Four S rubber)	Slider 55 (TRRL rubber)	
V	>54	>44	Very low
W	45-54	40-44	Low
X	35-44	-	Moderate
Y	25-34	-	High
Z	<25	-	Very high

*While either of these test methods may be used, the test report shall specify which method was used.
 NOTE: It is expected that these surfaces will have greater slip resistance when dry.

TABLE 3
PEDESTRIAN FLOORING SELECTION GUIDE – MINIMUM PENDULUM OR RAMP
RECOMMENDATIONS FOR SPECIFIC LOCATIONS

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

NOTE:

1. Appropriate measures need to be taken to exclude casual water from dry areas.
2. All floors with a wet pendulum classification of Z should have a dry friction classification of F unless normal usage dictates that the floor should have a low dry coefficient of friction, e.g. dance floors.
3. Table 5 contains higher requirements for some specific types of shops.
4. Refer to Tables 2, 4 and 5 in AS/NZS 4586 for derivation of classifications.

Tables 2 & 3 – From *An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials* HB 197 : 1999, Standards Australia, Sydney, New South Wales.

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TABLE 5
CLASSIFICATION GUIDE FOR COMMERCIAL AND INDUSTRIAL AREAS

Item	Work Rooms and Work Areas	Classification group of slip hazard	Minimum displacement volume
0	General work rooms and work areas		
0.1	Entrance areas*	R9	
0.2	Stairs†	R9	
0.3	Social facilities (toilets, washrooms)	R10	
1	Production of margarine, edible fats and oil		
1.1	Melting of fats	R13	V6
1.2	Cooking oil refinery	R13	V4
1.3	Margarine production and packaging	R12	
1.4	Cooking oil production and filling of bottles	R12	
2	Milk processing, cheese production		
2.1	Fresh milk processing and butter production	R12	
2.2	Cheese production, storage and packaging	R11	
2.3	Ice cream production	R12	
3	Chocolate and confectionary production		
3.1	Sugar processing	R12	
3.2	Cocoa production	R12	
3.3	Production of raw mixtures	R11	
3.4	Production of chocolate bars, eggs and confectionary	R11	
4	Bakery products		
4.1	Dough preparation	R11	
4.2	Rooms in which mainly greasy or liquid mixtures are produced	R11	
4.3	Washing-up rooms	R12	V4
5	Slaughtering, meat processing		
5.1	Slaughterhouse	R13	V10
5.2	Tripe processing	R13	V10
5.3	Meat sectioning	R13	V8
5.4	Sausage kitchen	R13	V8
5.5	Boiled sausage department	R13	V8
5.6	Raw sausage department	R13	V8
5.7	Sausage drying room	R12	
5.8	Smoking room	R12	
5.9	Salting and curing room	R12	
5.10	Poultry processing	R12	V6
5.11	Intestine storage	R12	
5.12	Cold meat slicing and packaging department	R12	
6	Processing of fish, delicatessen products		
6.1	Fish processing	R13	V10
6.2	Delicatessen production	R13	V6
6.3	Mayonnaise production	R13	V4
7	Vegetable processing		
7.1	Production of sauerkraut	R13	V6
7.2	Vegetable tinning	R13	V6
7.3	Sterilizing rooms	R11	
7.4	Rooms in which vegetables are prepared for processing	R12	V4

* These entrance areas refer to locations that are directly accessible from the outside, where moisture can enter or be carried from the outside. Note that Table 3 recommends a higher classification.

† This includes stairs that are directly accessible from the outside, where moisture can enter or be carried in from the outside. However, note that Table 3 recommends higher classifications for the nosing portion of accessible stairs.

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Item	Work Rooms and Work Areas	Classification group of slip hazard	Minimum displacement volume
8	Other wet areas used for food and drink production		
8.1	Storage cellars	R10	
8.2	Beverage bottling, fruit juice production	R11	
9	Catering establishments		
9.1	Hotel and restaurant kitchens		
9.1.1	Up to 100 meals daily	R11	V4
9.1.2	More than 100 meals a day	R12	V4
9.2	Kitchens catering for homes, schools and sanatoriums	R11	
9.3	Kitchens catering for hospitals, clinics	R12	
9.4	Large kitchens catering for industrial and university canteens, contract catering	R12	V4
9.5	Fast food kitchens, snack bars	R12	V4
9.6	Kitchens for heating up frozen meals	R10	
9.7	Coffee and tea kitchens, kitchens in guest houses, stations	R10	
9.8	Washing-up rooms		
9.8.1	Washing-up rooms for 9.1, 9.4, 9.5	R12	V4
9.8.2	Washing-up rooms for 9.2	R11	
9.8.3	Washing-up rooms for 9.3	R12	
9.9	Dining rooms, guest rooms, canteens including serving counters	R9	
10	Cold stores, deep freeze stores		
10.1	For unpacked goods	R12	
10.2	For packed goods	R12	
11	Sales outlets, shops		
11.1	Reception of goods, meat	R11	
11.2	Reception of goods, fish	R11	
11.3	Serving counters for unpackaged meat and sausages	R11	
11.4	Serving counters for packaged meat and sausages	R10	
11.5	Serving counters for fish	R12	
11.6	Meat preparation room	R12	V8
11.7	Florists shops	R11	
11.8	Sales areas with stationary ovens	R11	
11.9	Sales areas with stationary deep fryers or grills	R12	V4
11.10	Shops, customer accessible areas	R6	
11.11	Preparation areas for food for self-service shops	R10	
11.12	Cash register areas, packing areas	R9	
11.13	Sales areas for unpackaged bread, cakes and pastries	R10	
11.14	Sales areas for unpackaged cheese and cheese products	R10	
11.15	Serving counters except for 11.3 to 11.5 and 11.13, 11.14	R9	
12	Health service rooms		
12.1	Disinfection rooms (wet)	R11	
12.2	Sterilisation rooms	R10	
12.3	Excrement disposal rooms, unclean nursing work rooms	R10	
12.4	Pathological facilities	R10	
12.5	Hydrotherapy rooms, medical bath areas	R11	
12.6	Wash rooms of operating theatres, plastering rooms	R10	
12.7	Sanitary rooms, ward bath rooms	R10	
12.8	Room for medical diagnostics and therapy, massage rooms	R9	
12.9	Operating theatres	R9	
12.10	Wards with hospital rooms and corridors	R9	
12.11	Medicine practices, day clinics	R9	

Item	Work Rooms and Work Areas	Classification group of slip hazard	Minimum displacement volume
12.12	Pharmacies	R9	
12.13	Laboratories	R9	
12.14	Hairdressing salons	R9	
13	Laundry		
13.1	Rooms with washing machines for washing laundry with water	R11	
13.2	Ironing rooms	R9	
14	Fodder concentrate production		
14.1	Dried fodder production	R11	
14.2	Fodder concentrate production using fats and water	R11	V4
15	Leather production; textiles		
15.1	Wet areas in tanneries	R13	
15.2	Rooms with skinning machines	R13	V10
15.3	Areas where leather scraps accumulate	R13	V10
15.4	Rooms where grease is used to make leather impermeable	R12	
15.5	Dye mill for textiles	R11	
16	Paint shops		
16.1	Wet grinding areas	R12	V10
17	Ceramic industry		
17.1	Wet grinding mills for raw material processing	R11	V10
17.2	Mixing and handling of tar, pitch, graphite, and synthetic resins	R11	V6
17.3	Pressing (shaping), with tar, pitch, graphite, and synthetic resins	R11	V6
17.4	Moulding areas	R12	
17.5	Glazing areas	R12	
18	Stone and glass processing		
18.1	Stone cutting, grinding and polishing	R11	
18.2	Glass shaping		
18.2.1	Hollow glass, container ware, glass for building purposes	R11	V4
18.3	Grinding areas		
18.3.1	Hollow glass ware, flat glass	R11	
18.4	Insulating glass manufacture, handling of drying agents	R11	V6
18.5	Packaging, shipping of flat glass, handling of anti-adhesive agents	R11	V6
18.6	Etching and acid polishing facilities for glass	R11	
19	Cast concrete facilities		
19.1	Concrete washing areas	R11	
20	Storage areas		
20.1	Store rooms for oils and fats	R12	V6
21	Chemical and thermal treatment of iron and metal		
21.1	Pickling plants	R12	
21.2	Hardening shop	R12	
21.3	Laboratory rooms	R11	
22	Metal processing, metal workshops		
22.1	Galvanising shops	R12	
22.2	Grey cast iron processing	R11	V4
22.3	Mechanical processing areas (e.g., turning section, press working), drawing installation (pipes, wires) and areas exposed to increased oil and lubricant contamination	R11	V4
22.4	Parts cleaning areas, exhaust steam areas	R12	

Item	Work Rooms and Work Areas	Classification group of slip hazard	Minimum displacement volume
23	Vehicle repair workshops		
23.1	Repair and servicing bays	R11	
23.2	Working and inspection pits	R12	V4
23.3	Car wash areas	R11	V4
24	Aircraft service and repair workshops		
24.1	Aircraft hangers	R11	
24.2	Repair hangers	R12	
24.3	Washing halls	R12	V4
25	Waste water treatment plants		
25.1	Pump rooms	R12	
25.2	Rooms for sludge draining units	R12	
25.3	Rooms for screening equipment	R12	
26	Fire bridge buildings		
26.1	Vehicle parking bays	R12	
26.2	Hose maintenance equipment rooms	R12	
27	Financial institutions		
27.1	Counter areas	R9	
28	Garages (with exceptions of areas in number 0)		
28.1	Garages, multistory car park, car parks	R10	
29	Schools and kindergartens		
29.1	Entrance halls, corridors, assembly halls	R9	
29.2	Classrooms, group rooms	R9	
29.3	Stairs	R9	
29.4	Toilets, washrooms	R10	
29.5	Instructional kitchens in schools (see also number 9)	R10	
29.6	Kitchens in kindergartens (see also number 9)	R10	
29.7	Machine rooms for woodworking	R10	
29.8	Special rooms for handicrafts	R10	

Tables 5 – From *An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials HB 197* : 1999, Standards Australia, Sydney, New South Wales.