

## FLOOR SURFACES



### **The following information was provided by Peter Vournechis from “Australasian Slip Testing”.**

With more than 30 years experience, Peter Vournechis is recognised as an expert in the highly specialised fields of slip testing, terrazzo and surface cleaning. A founder and Director of Australasian Slip Testing Pty Ltd, Peter provides slip-testing and hard floor consulting services to some of Australia’s largest retail and commercial property owners.

He sits on various industry committees including Standards Australia Technical Committee BD-094 Slip Resistance of Flooring Surfaces, is a Platinum Member of the Building Service Contractors Association of Australia and regularly consults to professional associations including the Cement and Concrete Association of Australia.



Firstly I will touch on the frequency of wet and dry slip testing which is a question that everybody asks, in many cases that is negotiated between the insurance company, the owners and testing house. The majority of my clients require monthly dry testing interior and quarterly wet slip testing external. The reason they require monthly interior dry slip testing is because the pedestrian floor surface is regular stripped and sealed, types of sealants do vary the slip resistance of the floor surface and if the floor is not maintained correctly the sealant will exfoliate and cause problems. One of our clients manages approximately 40 shopping centres, they have commissioned Australasian Slip Testing to perform monthly dry slip tests and quarterly wet tests, they also stipulate in the cleaning contract (cleaning contractor controls the slip resistance of the floor) that they require a 15 to 20 min turn around from the staff that maintain the floor surface during trading hours. Most cleaning companies do install movement tracking devices in buildings, this is a hand held device the size of a mobile phone which is carried around by cleaners, individual numbered silicon chip buttons are installed around the premises. These electronic logbooks are commonly called “Wands” and they can generate reports to show whether or not the set criteria has been met.

### Maintenance

In many cases service providers such as cleaning companies reduce the service requirements of the premises to obtain the cleaning contract, which reduces the presents of cleaners checking for contaminates on pedestrian surfaces and unfortunately increases the likelihood of someone slipping. Perhaps the most important step is overlooked which is the exfoliated sealant dust from burnishing, plaster dust from refurbishments, air-conditioning dust on start up and wind that blows contaminates into the premises, all this adds up to a very hazardous pedestrian surface. Then you have the water which is walked into the building by pedestrian footwear/umbrellas, which turns the floor surface into a cocktail of contaminates, the addition of water turns the contaminates into a type of paste and will cause

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pedestrians to slip especially if rushing in or out of the premises. Regrettably, some contractors neglect to incorporate those extra few hours to sweep the floor surface before the building is open to the public. The reasons being that the extra hours will increase their contract price and some management companies do like to compare apples with apples, unless there is a valid reason. The extra 2 or 3 hours per night needed to perform a total sweep of a reasonable size centre would increase the tender price. And the amount would possibly put the companies tendering out of the race to win the cleaning contract.

If visiting a shopping centre with a sealed floor between 7.30am and 8.00am, you will see the cleaning staff dusting the dust which has accumulated over night on the furniture, pot plants, public phones, etc. In some cases if the floor is not maintained under the manufacturer's recommendations and the contractor keeps on applying new sealant onto old sealant, the amount of airborne exfoliated dust will increase.

Surface such as large areas of ceramic tiles or high profiled floor surfaces which are scrubbed nightly, will require a different type of scrubber to remove dirt and contaminants from the surface and grout joints. Cylindrical brush scrubber fitted with a powerful vacuum system is suitable for these surfaces. The disk type scrubber will only skim across the surface and the squeegee will only drag the contaminate out off the grout joints which would partially cover the edges of the scrubbed tiled surface and deposit a light film of contaminate.

A service plan should be in place to assure that the scrubber is correctly maintained, especially the squeegee and vacuum motors so all chemical residue and contaminants are removed from the pedestrian surface. The service records of the machinery should be recorded and filled for reference which may be required in future litigation cases where duties of care issues are in question. Cleaning contractors should also teach their staff to observe and report any changes to the pedestrian floor surfaces. Stripping and sealing floors is a very daunting task at the best of times to experienced staff where patience and perseverance are paramount and takes many years of experience and many sealed floors to achieve. Requirements that experienced stripping teams are aware of such as install splash skirts to the high speed propane stripping machine in order to stop splash back on window frames, windows, roller doors, walls etc. When stripping and sealing in a shopping centre complex the tenants that will be effected should be supplied with rags to be places under their roller door to avoid stripper from damaging carpet, timber, vinyl and tiles. After stripping the floor a disc type scrubber fitted with stripping pads is used to remove the dissolved sealant and stripper from the floor then a neutraliser is applied to the surface to remove any residue. Applying the sealant is as important as correctly stripping the floor, the correct consistency in thickness of coats and the amount of coats is very important to the wear of the surface. Manufacturer's guidelines should be adhered to and chemicals recommended should be used. The strip and seal process is usually carried out once a year depending pedestrian traffic flow. Additional scrub back and reseals are carried out every quarter usually after the school holidays.

Another type of potential hazard that can be invisible to the naked eye would be the overspray of aerosol or pump spray furniture polish when being directly sprayed onto the timber surface, which also settle on the floor and is extremely slippery especially dangerous if the furniture is moved to another position. Cleaners must be shown the potential danger of this overspray and trained to spray the polish onto a cleaning rag and then applied to the surface.

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This is one of many examples of how slip testing can assist Property Managers, Property Owners and insurance company's in finding the cause of a slip/fall. During our periodical slip audit at a Shopping Centre in Coffs Harbour, I received a call at approximately 4.00pm from Security at a Shopping Centre in Surfers Paradise, requesting an urgent slip test to be performed. Apparently an elderly gentleman had slipped and was taken away by ambulance. I requested Security to instruct the cleaners not to clean that area and to place "witches hats" where the incident occurred. We arrived at the Centre in Surfers Paradise at 9.30pm and performed the dry tests inside the boundary where the incident occurred. The slip tests results were below the recommended coefficient of friction as set out in AS/NZS 4663:2002.

It appeared that there was an invisible contaminant on the floor surface. We also carried out tests on the outer boundaries of the contaminated area for comparison and established that higher results were achieved here. I then asked the shift leading hand for the cleaners, whether the cleaning product that they clean the floor with was altered in anyway; he informed me that they have been using the same product for 3 years. While I was speaking to the cleaner, Security arrived for a credential check which gave me a chance to ask the security guard that was on duty the previous night whether any contractors carried out any kind of work on-site in this area on the previous night. he informed me that the occupant of the tenancy where the incident occurred was in on that night to clean his shop front exterior wall tiles; the tenant firstly applied methylated spirits to the tiles then pressure pack sprayed silicon sealant on the tiles. I asked the security guard to write his observations in a report and I would include his comments in my report. Through the observation of security and the slip testing, the Centre Management passed the claim onto the person responsible for contaminating the pedestrian surface which caused the incident.

There are many instances where temporary leased areas in shopping centre's have caused problems, especially when cleaning product are used to prepare the items for sale or display, one very dangerous product is "Armour Oil" on tyres, the contaminate is invisible to the naked eye and may cause the sealed floor to be slippery when the temporary leased area is vacant and the pedestrian traffic walk over the area.

### Construction

This example is how one hand doesn't know what the other hand is doing, a very large construction company was in the final stage of handing over a large office and residential building in Brisbane. Company's and residents had moved into the building and were trading with a fully operational coffee shops and reception on the ground floor, one week before the final payment was made to the construction company received a solicitors letter stating that a pedestrian had slipped on the floor surface in the foyer and all payment would stop until the slip/fall matter was finalised. The construction company started a witch hunt to see who was responsible for the selection of the floor surface and whether slip tests were carried out after the installation of the pedestrian surface, they contacted architects, tile suppliers and tile layers unfortunately there were European test but no Australian Standards tests were carried out. I received a call from the project manager of the project requesting a slip test to be carried out on the ground floor of the building, I requested a single tile to be on hand for a visual comparison, we arrived on site and met the project manager and started our testing, the method used to test the surface was from Australian Standards AS/NZS 4663:2002 Appendix A Wet Pendulum Test Method, I found that there was a need to carry more swings on the pendulum to receive a regular reading which only means that there was a contaminate on the surface. I finally finished the testing which took 2 hours instead of one hour and found that the surface slip resistance had met

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the recommendations set out in the Australian Standards. I asked the project manager whether I could call in to the site at night to observed the cleaning procedure in place which he agreed, I arrived to see the cleaner using a mop to clean the foyer which was only spreading any contaminates which may be present on the pedestrian surface, I then asked the cleaner whether he was supplied with a scrubber to clean the pedestrian surface, which he replied yes, but it had broken down and has been out of action for about 2 weeks. I completed my report and sent it of to the construction company. We presently test this surface periodically and have found the surface to meet the requirements set out in the Australian Standards, fortunately the scrubber has been fixed and regular maintenance is carried out on this equipment with report sent to the owners. This only proves that the maintenance of a pedestrian surface is paramount to the slip resistance of the surface and maintenance programs should be in place to maintain the slip resistance.

Please feel free to contact me if you need assistance with any maintenance programs or slip testing in general.

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## **LINKS:**

### **[MITIGATING SLIP & FALL LIABILITY](#)**

Relevant Standards:

**AS/NZS.4663:2004** Slip resistance measurement of existing pedestrian surfaces

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