Grip Potential
Expert independent slip risk assessment

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Cleaning & Slip Resistance

How Clean is Clean?

Effective floor cleaning is essential if safe grip levels are to be maintained over time. Around half of the floors that we assess fail to provide safe grip levels not because the floor is incorrectly specified or damaged, but simply because the floor is dirty.

Floors provide good grip when they have good contact with shoe soles. A rough floor will feature peaks to cut through a film of water (or other contaminant) and troughs to disperse the fluid (see Fig. 1). When dirt is allowed to build up in the surface profile it serves to reduce the roughness of the floor and reduce its ability to disperse a lubrication film (Fig. 2). A smooth floor will typically be slippery when wet regardless of its cleanliness, as it doesn't feature the same peaks and troughs (Fig. 3). Care must still be taken on smooth floors however, to ensure the dirt itself doesn't reduce sole/floor contact and associated grip (Fig. 4).
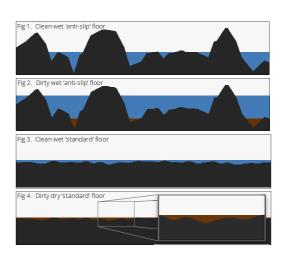
Floor cleaning is typically undertaken to achieve a good aesthetic appearance, or to sanitise the surface. This guide focuses on the removal of physical dirt deposits, key to ensuring optimum slip resistance performance. It is of course likely that removal of dirt deposits will also serve to improve both aesthetics and sanitisation, but just because a floor looks clean, or is free of germs, does not necessarily mean it is 'clean' in terms of slip resistance.

Key Features Of Effective Cleaning

Cleaning a surface effectively is not difficult, but it is likely to mean some changes are required if the ubiqutous mop and bucket are in use.

1) Select the correct product for the environment. Alkali cleaners work best for oily, greasy or fatty contamination whereas acidic cleaners tackle mineral deposits better. Specialist chemicals are likely to be available for specific challenging enviornments (kitchens, wet leisure, WCs, etc).

2) Ensure the cleaning solution is measured out at the correct dilution. Too weak and it will be ineffective, too strong and it can damage floors or leave a residue. Both are likely to adversely impact slip resistance.

Fig 1. Clean wet 'anti-slip' floor

Fig 2. Dirty wet 'anti-slip' floor

Fig 3. Clean wet 'standard' floor

Fig 4. Dirty dry 'standard' floor

3) Allow the cleaning solution sufficient dwell time. Giving the chemicals time to work means they are able to more effectively break down the dirt and bond it to the water. This doesn't have to mean standing around waiting, plan the clean so that other areas can be worked on while the solution sits. Be aware of wet surfaces posing a slip hazard and close and/or barrier off surfaces if necessary.

4) Agitate the surface, loosening the dirt and freeing it from the surface profile. This is more important on rougher surfaces where dirt can sit deep within recesses. For larger areas mechanical aids are essential, not least because tired arms will agitate less effectively.

5) Remove the soiled water/chemical/dirt solution, a crucial part of the cleaning process, otherwise the solution simply settles back in to the floor profile negating all effort made. A mop and bucket method on anything other than the smallest of areas will serve only to dilute dirt on the floor, adding cleaning chemical and failing to properly remove the soil solution. Vacuum removal is a common and entirely acceptable method, and for wet leisure or manufacturing environments (where there is plentiful supply of both water and drainage) rinsing can be very effective. Failure to conduct this step may result in cleaning residues being left on the surface and a situation where cleaning actually reduces slip resistance, particularly on smooth floors (Fig. 4).

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6) Repeat the cleaning process frequently enough to counter contaminating processes. The frequency of cleaning will depend on local factors and traffic rates. Testing of slip resistance during the cleaning/recontamination cycle will allow you to accurately determine how frequently a surface must be cleaned. A combination of thorough 'deep cleans' and less effective but more frequent 'quick cleans' is typical in commercial environments and can be an efficient method, provided the periods between deep cleans are properly considered.

Anti-Slip vs 'Standard' Floors

Requirements and benefits of cleaning will change depending on the floor surface.

It will typically be easier to make smooth 'standard' floors *appear* clean with methods that would be ineffective on rougher surfaces. Cleaning of smooth surfaces can be achieved quickly and easily, but cleaning will not serve to improve the wet slip resistance in the same way as it would on rougher finishes. Properly effective cleaning of smooth surfaces is still necessary however, in order to;

- Avoid a build up of dirt sufficient to form its own lubricating film (see Fig. 4).
- Prevent a build up of dust or grit leading to particles marbling underfoot.
- Ensure no cleaning chemical residues are left on the surface (common with the mop and bucket method) filling the profile with chemical instead of dirt.

Rough 'anti-slip' floors will demand effective cleaning in line with the guidance offered in this note if they are to appear clean, however when cleaned appropriately they will serve to provide safe grip levels for an extended period of time. A benefit of rougher surfaces is that they will typically be capable of holding some dirt whilst continuing to be anti-slip. A safe end use condition can be achieved in most environments with basic effective cleaning at periodic intervals, cleaning doesn't necessarily need to be perfect or conducted as frequently as every day.

Regardless of the floor surface, it is entirely possible to achieve a satisfactory aesthetic appearance and high surface shine with ineffective cleaning methods. The main feature which contributes to a high shine, a smooth finish, also contributes to poor wet slip resistance. A surface that looks clean does not necessarily mean that it is actually clean and/or providing its best possible protection against slip accidents.

It is common for those looking to reduce slip risk by increasing the roughness of floors to cite more difficult cleaning as a hurdle. In reality, effective cleaning requirements for both smooth and rough surfaces are almost identical, but where cleaning is being conducted poorly, smoother floors will tend to appear cleaner than rough floors.

Cleaning & Anti-Slip Treatments

Whilst cleaning is essential in optimising slip resistance, cleaning won't change the floor surface itself, and so is not capable of improving the floor's slip resistance beyond its 'ex-factory' best. If your floor started as anti-slip then it is likely that cleaning alone will be able to return it to that same anti-slip performance and a treatment is not necessary. If a product roughens the floor surface itself then it is an anti-slip treatment.

Making A Case For Cleaning

If current cleaning regimes see a splash of neutral chemical in a bucket before being spread across a floor with a mop, it is almost certain that moving to an effective and worthwhile clean will incur additional time and cost. The benefits for this increased cost may not always be apparent but it is worth considering the following;

Clean floors maximise slip resistance and minimise slip risk.

Statutory requirements demand either a safe walking surface (workplaces), or reasonable provision of a safe walking surface (public spaces).

Failure to provide safe floor surfaces can result in injury, reputational damage, lost time, increased insurance costs, compensation claims and/or prosecution.

Increasing the time spent on cleaning, and buying the appropriate cleaning chemical for the task may increase cleaning costs, but this should be balanced against the significant costs associated with a slip injury. It is common for slip compensation claims to exceed £10,000 in value, and there are costs associated with dealing with claims whether they are successful or not, so preventing just one slip accident is likely to justify changes in cleaning regimes.

Slip testing of dirty floors to highlight problems, or clean floors to show benefits, is often used to add weight to a case for additional cleaning budget. Grip Potential will be happy to help with this.