



Floor Cleaning and Maintenance

Slip and Fall Prevention



Proper cleaning and maintenance of hard flooring helps reduce slips and falls resulting from worn flooring or wet and contaminated surfaces. It is also critical to control abrasive contaminants that accelerate the deterioration of the flooring life span and appearance. Some flooring materials may have an adequate slip resistance when dry and clean, but when contaminants or water are introduced, traction decreases.

Choosing cleaning products that are compatible with the floor is a key element of a floor safety program. When flooring is not cleaned and maintained according to manufacturers' recommendations, floor contaminants (e.g., gravels, water, dirt and cleaning particles) can layer over an original surface, rendering a slip-resistant floor dangerous. In fact, the very products and methods used to clean and maintain floor surfaces can be the direct cause of slip and fall accidents.



Common Issues and How to Avoid Them

Addressing the essential components of a floor plan and maintenance program is essential. Some common pitfalls include:

1. Improper Flooring or Finish Type

- It is critical to **select the proper flooring** type and finish that will be suitable for the type of foot traffic and expected types of contaminants.
- The idea that shiny floors are slippery is not necessarily true: many floor coatings provide both a glossy finish and an adequate level of slip resistance. Knowing the proper coatings for the flooring type is very important.

2. Untimely Removal of Spills or Accumulations of Water

- A formal floor care plan includes inspections.
- A response and remediation plan should be in place to provide immediate clean-up of spills, wet surfaces or tripping hazards.

3. Failure to Clean a Surface in Accordance with the Manufacturer's Recommendations

- The essential components of an effective floor maintenance program should align with the manufacturer's specifications for effective maintenance and to minimize voiding of a warranty. Do not rely on distributor or installer recommendations. The first step is to identify the floor type and brand from the as-built design plans. If the plans are not available, contact either the manufacturer or one of the following organizations that can help identify a building's specific floor covering:
 - [The Institute of Inspection Cleaning and Restoration Certification \(IICRC\)](#)
 - [The National Institute of Certified Floorcovering Inspectors \(NICFI\)](#)

4. Improper Pre-Cleaning by Dust Mopping and Sweeping

Beginning to wet mop without first dust mopping or sweeping can render cleaning efforts ineffective, resulting in the spread of contaminants.

- Vacuum floor mats before sweeping the floors to avoid spreading debris onto the floor when moving mats.
- Dust mop spray oil use: Evaluate the amount of dust sprays applied to the mops. Excessive amounts of spray oils can leave oil residues on the floors creating highly slippery floors. Oily floors become even more dangerous when wet.

5. Improper Spot Cleaning Methods

- Use appropriate spot cleaners to remediate a spill or hazard until the next cleaning cycle. Spot clean to remove the contaminants. DO NOT smear.
- Use acceptable cleaning agents for the flooring material. Read the labels.
- Conduct a test to verify the effectiveness and compatibility of a cleaner.

6. Inadequate Cleaning Technique or Drying Time, Leaving Soap Residue or Water on the Floor

Consult the manufacturers' recommendations for cleaning technique, agents, mixing ratio and other instructions.

- Damp mopping does not mean "overly wet." Too much liquid in the mop leaves the floors too wet, leaving soil on the floor as it dries. Additionally, the floors stay wet longer, which decreases traction and can damage floors over time.

7. Using Improper Cleaning Products

Using an improper cleaning agent can damage the finish of the floor material. Cleaning products are designed to sustain a floor's original coefficient of friction (traction). If they are improperly selected or applied, the friction measurement may be reduced. Cleaning products are derived of four major categories:

- Alkaline-based
- Acidic-based
- pH neutral
- Microbial enzymatic

To help ensure your business uses the appropriate products, always refer to the flooring material manufacturer's recommendations. See [Table 1](#) for an overview of the categories of cleaning agents and some of their attributes.

8. Failure to Follow Proper Floor Exposure Times for Cleaning Agents

Follow the cleaning agent instructions for floor exposure time. Cleaners may not provide the intended level of cleaning if left on the floor too long or not long enough, so be sure to rinse thoroughly at the correct time.

Key Cleaning Takeaways

T.A.C.T

Time – Optimal cleaner contact time

Action – Scrubbing increases oil release

Concentration – Optimal dilution of cleaning agents

Temperature – Each cleaning agent may have different water temperature requirement for mixing and rinsing

9. Inconsistent Cleaning Agent to Water Ratio

Controlling the chemical dilution mix is as important as the exposure time. Too much cleaning agent can leave slippery residues and compound the accumulation of future contaminants, further increasing slipperiness. Too little cleaning agent will not effectively remove the contaminant. To avoid inconsistencies and mixing errors, single-use dosing methods (dilution control devices) such as pre-measured packages or single-dose dispensing systems should be used.

10. Improper Use of Mop Water

- Mop water should be replaced for each area being mopped. Use clean rinse water. Using contaminated mop water spreads and re-contaminates the floor.
- Consider using a color-coded, two-bucket approach, one bucket for a solution of water and detergent, and the other bucket with clean rinse water.
- No-rinse cleaners (if appropriate for type of flooring) can eliminate the need for a clean water rinse.
- Follow the recommendations of the cleaning agent manufacturer for correct water temperature in the dilution ratio.

11. Improper Mop Type and Storage

In addition to the type of product selected, the cleaning method plays an equally important role in achieving ideal maintenance results. Wet and dry mopping are the most commonly used methods. Dry mops are designed to pick up soils before adding liquid and tend to make the cleaning process easier. Since this cleaning method requires no water-based solution, it permits cleaning while the soiled area remains in use. For an overview of the intended uses, benefits and drawbacks of different types of dry mops, see [Table 2](#) "Dry Mop Variations" below.

With respect to wet mopping, the rate of absorbency is determined by the size of the mop head rather than the material. For an overview of the different types of wet mops, see [Table 3](#) "Wet Mop Variations" below.

- Be aware of the recommended mopping method – dry or wet. The flooring manufacturers' specifications should outline the mopping method.

- Different floor types and chemicals require specific mops for cleaning application and rinsing. It can be advantageous to use color-coded mops, one for the mopping water and the other for floor rinsing.
- Dust mops should be shaken out, vacuumed or brushed to remove large particles and re-treated as needed. Avoid using excessive oils.
- Wet mop types can include a cut end, looped microfiber. Mops should be thoroughly rinsed, wrung out and hung up to dry to prevent damage to the ends.
- Mop heads should be replaced after being used to clean heavily contaminated (oily, greasy) spills.
- Wet mops can allow growth of mildew and bacteria that can decrease cleaning.
- Discard old mop heads. Wet mops with lost strands don't perform as well, and once a mop is 75% of its original weight it will increase the mopping time by one-third.

Launder wet mop heads (that can be laundered) when there is evidence they are not rinsing the floor clean.

Mop heads should be replaced every two or three months, and more frequently if they are very dirty.

12. Failure to Strip Old Coatings

Stripping off previous sealers/coatings is intended to return the flooring material to its original state. Degraded floor finishes become emulsified, resulting in poor appearance, embedded contaminants and decreased slip resistance. Once stripped, flooring surfaces should be properly cleaned in preparation for applying a new finish.

13. Improper Deep Cleaning and Buffing

Damp mopping does not always provide a level of cleaning required to remove deep seated floor contamination.

Deep cleaning:

- Should be conducted periodically for most walkways.
- Should be done when normal cleaning does not provide a level of acceptable slip resistance (DCOF) as indicated by regular **slip resistance** testing.
- May be similar to normal cleaning, but with different cleaner concentrations and applicators such as brushes.
- May include steam cleaning or the use of concentrated/harsh chemicals that should only be used outside hours of operation.
- May need to be performed by specialty contractors.

Types of scrubbers and buffers:

- **Auto-scrubbers** can be more efficient than damp mopping because they have more aggressive agitation with pads and brushes and use the vacuum to extract the soiled solution from the pores of the flooring material.
- **Low-speed buffing** (<1000 RPM) polishes out surface scratches to provide a smooth shine and extend the time between recoating. Appropriate pads must be used to prevent floor damage.
- **High-speed burnishing** (>1000 RPM) is even more effective than low-speed buffing. The frequency of burnish must match the specifications of the finish type, and appropriate pads must be used to prevent floor damage.

Documenting Floor Maintenance

The use of checklists and forms to record floor maintenance and cleaning activities is recommended to facilitate a structured cleaning and maintenance program. Records can provide evidence of proper cleaning tasks and inspection frequency. Effective documentation may be beneficial in defending slip, trip and fall claims.

This guide provides example forms for [Daily Floor Maintenance Log](#) and [Walkway Safety Audit for Indoor Walking Surfaces](#).

Selecting Appropriate Pads (Color Codes)

Green & Standard Blue – Scrubbing pads

Red & Tan – General buffing, suitable for most cleaning tasks

White – The softest of the low-speed pads

Coatings and Sealers – Natural Stone

Some floor materials are slip-resistant when dry, but can be slippery when wet. The improper use of sealers, waxes and other coatings can contribute to the decreased slip resistance of flooring and accelerate cracking and deterioration.

Marble, granite, travertine and other natural stone tiles, for example, are sometimes inappropriately coated to increase their shiny appearance or prevent staining from traffic and spills. This does not allow the stone to breathe, causing the stone tiles to crack at the veins and condensation to form on the sealer surface during high humidity. While sealing natural stone tiles is needed to prevent staining, using a penetrating sealant that is lightly buffed into the stone will improve protection and not compromise the natural slip resistance. The best approach may be to minimize the use of waxes and sealers by polishing only.

Training Floor Cleaning and Maintenance Staff

Floor cleaning represents the most significant factor for slip and fall prevention, and must be conducted effectively. There is more to cleaning hard surface flooring than just mopping and sweeping.

Formal training of the cleaning staff should be conducted to impress the importance of cleaning methods relative to slip and fall prevention. Training should include the main points outlined in this document.

Table 1: Cleaning Agents and Attributes

Cleaning Agents	Attributes
Alkaline-based	<ul style="list-style-type: none"> • May react with fats and oils, thereby converting contaminants into soap. • Floors must be fully rinsed with hot water to prevent polymerization (i.e., a buildup of contaminants). • May remove sealers, finishes and waxes. • Is often used in restaurants and dining areas. • Not recommended for natural stone surfaces.
Acidic-based	<ul style="list-style-type: none"> • Utilizes oxide reduction to remove rust, scale and other buildup from flooring surfaces. • Requires thorough rinsing after cleaning for maximum effectiveness. • Commonly used for cleaning porcelain, ceramic tile and grout. • Can scratch the flooring surface if used improperly. Eco-friendly agents, however, will not.
Neutral pH-based	<ul style="list-style-type: none"> • Often used on floors with glossy finishes or surfaces damaged by acid or base cleaners (e.g., terrazzo and natural stone such as marble and granite). • Requires thorough rinsing to be effective.
Microbial enzymatic	<ul style="list-style-type: none"> • Composed of scientifically created bacterial enzymes. • Requires no surface rinse post-cleaning. • Often used to clear drains and clean concrete, tile and grout. • Requires cold water to work properly. • CANNOT use warm or hot water, which can reduce the effectiveness by deactivating the enzymes. • Requires training and enforcement of proper cleaning protocols to reduce slip probability.

Table 2: Dry Mop Variations

Dry Mop Type	Description
Cotton	<ul style="list-style-type: none"> A natural fiber that works well to absorb or collect dirt and debris, but is not very helpful for fine dust particles, which can get lodged in the mop fibers. Often used in combination with a dust mop spray (i.e., a spray applied to the mop head to trap dust). Most sprays consist of natural oil, such as banana oil. Controlling the amount of spray used is important as floors can become slippery following application. Water-based solutions are less effective at trapping dust. To remove residue, a degreasing chemical is needed, which may cause damage to the floor finish. In high humidity situations, cotton dust mops can catch and drag over walkways, affecting their ease of use.
Synthetic	<ul style="list-style-type: none"> Made of plastic or man-made yarn. Often stitched in a looped end pattern that easily attracts particles and prevents fraying. Plastic mop heads collect dust by static electricity, instead of using a dust mop spray. Yarn mop heads create minimum static electricity, so they are easy to shake out. Can be laundered. Not affected by moisture and are much lighter to push regardless of humidity or presence of liquid.
Microfiber	<ul style="list-style-type: none"> Similar to synthetic dust mops but are made of plastic fibers. Can be used on both dry and damp floors. Channels in the separate plastic fibers grab fine dust particles, stopping them from going airborne. Can be rinsed clean or laundered, increasing their life.

Table 3: Wet Mop Variations

Wet Mop Type	Description
Cut end	<ul style="list-style-type: none"> Least expensive wet mop option. Often disposable. Cannot be laundered.
Looped end	<ul style="list-style-type: none"> Designed to pick up floor contaminants. More durable than cut end mops because of its yarn ply-twisted design. May be laundered. Can be made with fibers locked into the yarn that kills or stops the growth of bacteria, mold, mildew and yeast.
Microfiber	<ul style="list-style-type: none"> Made from a blend of polyester and synthetic fibers that easily traps dirt. Tends to be the most sanitary of all mop types. Designed to be hypo-allergenic and non-abrasive. May be laundered. Considered an eco-friendly mop as it requires fewer chemicals to clean.

Learn more about managing slip and fall risks at cna.com/riskcontrol (US) or cnacanada.ca (Canada).