



# Floor Mat Programs

Slip and Fall Prevention



Floor mats play an important role with slip and fall prevention in commercial buildings such as stores, offices, schools, grocery stores, restaurants, laboratories and other structures where the public and employees walk. The primary goal of a floor mat program is to control water, debris and other slippery contaminations on hard surface walking areas that may cause these kinds of falls.

**When Are Floor Mats Needed?**

Floor mats of various types are an essential tool for controlling slips and falls on wet or dirty floors. Loose debris can potentially damage a floor’s finish, which reduces slip resistance and increases the likelihood of slips and falls. A strategically placed floor mat can help mitigate the damage debris can cause and keep employees and the public safer.

Proctor and Gamble estimates that during an average 22-day work month, 1,000 people passing through an entrance can leave an excess of 26 lbs. of dirt. Having a floor mat program in place can help reduce the amount of soil, dirt and moisture that enters the building.

Moisture (rain and snow) and contaminants can be tracked through the entrances of buildings by foot traffic, carried on shopping carts, baby strollers or delivery carts/dollies, or drip off umbrellas and raincoats. Mats can provide a level of slip protection by removing debris and moisture from footwear and can also be a source of traction in areas where wet or contaminated floors are common, such as kitchen cooking areas and entryways.

When the Dynamic Coefficient of Friction (DCOF) for wet and/or contaminated (oil, grease, soap, dirt, food, etc.) floors is less than .42, the use of non-slip mats should be considered. However, floor mats can still be used even when slip resistance is .42 or greater because they can help keep floors cleaner by reducing the amount of contamination tracked on the floor.

Historically, the use of non-slip mats has been one method of preventing slip and falls, with new materials and methodologies constantly being developed. For example, there are now mats specifically designed for outdoor use where they can be protected from the weather by a canopy or awning.

**Scraper (outdoor) mats** are used to scrape off particulate matter and snow or ice.



Figure 2 – Exterior Scraper Mat and Texture

**Secondary (scraper and/or wiper) mats** within foyers and lobbies can be very effective for controlling moisture infiltrations.

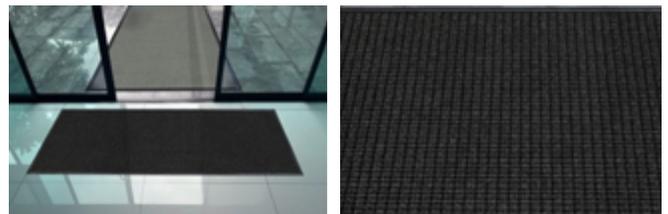


Figure 3 – Interior and Exterior Scraper Mats and texture

**Wiping/finishing mats** should follow the initial scraper mats along the interior of the building. In some cases where an outdoor mat cannot be protected from the elements, the scraping mat area on the interior must be expanded, along with the length of the additional interior floor mats to ensure proper moisture containment.



Figure 4 – Wiper Mat and Texture

There is no “one size fits all” remedy to slip and fall exposure arising from tracked-in moisture. Each individual facility must tailor and test their floor mat program to make sure it is adequate. The only way to ensure that the coverage is sufficient is to examine the floor beyond the end of the mat to see if there are contaminants. This would be indicative of the need for additional coverage. If you see wet footprints, your floor mat program needs improvement.

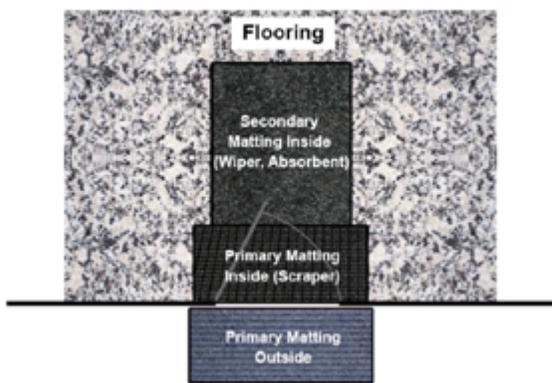


Figure 1– Mat Layout



So where does a building owner/occupant start? The Carpet and Rug Institute recommends that a minimum of 12 to 15 feet of mat coverage be provided to remove 90% of tracked in soil. Consider the number of people using each entrance, along with the use of shopping carts or other wheeled equipment. Finally, consider weather exposure for the time of year, including snow or rain. Snow requires more matting, especially the scraping kind.

The key element in developing a floor mat remedy for building entrances is to determine how many footsteps on mats are needed in order to trap contaminants. A good “rule of thumb” for determining mat running lengths is outlined in Table 1.

Weather Conditions	Number of Walking Steps	Linear Feet (Based on an average 30-inch stride)
Snow	10-12	25-30 feet
Rain	8-10	20-25 feet
Dry	6-8	15-20 feet

Table 1 – Mat Running Lengths

Remember, if there is excess soil, moisture or wear beyond the end of the mat, the floor mat coverage is insufficient. This is one instance where it is always better to have too much coverage than too little.

**Mat Uses by Industry**

Mats are not limited to building entrances. A wide range of industry operations have need for the use of mats. After all, slips and falls can occur anywhere. Some typical mat types include:

- Absorbent to combat water, oil and grease
- Abrasive and rubber slip resistant, which includes anti-fatigue
- Flow-thru/Drainage. See Figure 5.
- Industrial modular tile
- Rolled, self-adhering runners. See Figure 6.



Figure 5 – Flow-thru/Drainage



Figure 6 – Rolled, self-adhering runners

Floor mats should be placed in the following areas:

**Restaurants, Kitchens and Food Services**

- Near cooking equipment. See Figure 7.
- Sinks, dishwashing and food prep areas Figure 8
- Salad bars and buffets. See Figure 9.
- At inside and outside entrances to walk-in freezers.
- Beverage stations and ice machines, using carpet or flow-thru mats specifically (ice on floors is common in aging services facilities). See Figure 10.



Figure 7 – Kitchens



Figure 8 – Food prep stations



Figure 9 – Buffets

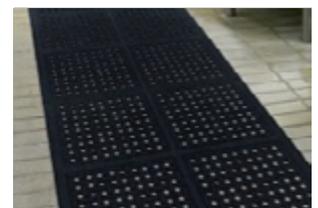


Figure 10- Mat structure

### Grocery Stores

- Produce aisles, specifically carpet or rubber mats.



Figure 11– Produce aisles

### Manufacturing, Food Processing and Laboratories

- Oil absorbent mats near equipment workstations.  
See Figure 12
- Flow-thru/drainage types in wet conditions.  
See Figure 12 & 13.

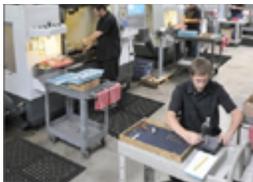


Figure 12 – Oily Floors



Figure 13 – Wet Floors

### Mat Placement and Maintenance

When placing mats, be sure they do not create a trip or slip hazard.

- Mats should have a non-slip rubber backing or a self-adhering feature to restrict the movement of the mat.
- Any mat that exceeds ¼" thick should have beveled edges to eliminate a blunt edge that could result in tripping.
- Bevels should be no greater than a 45 degree angle with good contrast to the floor for high visibility.

Inspection and maintenance of the mats is necessary to monitor cleanliness and deterioration. As mats wear, their edges may become damaged and/or curl upward, increasing tripping hazards.

- Discard mats with damaged or curled edges.
- Bulges or wrinkles should be removed when observed. If this condition continues, the mat should be secured to the floor with non-slip backing or replaced.

All mats should be inspected as needed to assess the amount of contamination and moisture build up that has occurred. Soiled and/or saturated mats serve no purpose and can be the source of contaminating shoe soles, which are then tracked onto the floor surface.

- Extra absorbent mats for building entrances should be kept on hand to replace those that are saturated during wet or snowy weather conditions. Replacing mats may be more frequent during wet weather events. Continuous monitoring and replacement is the best way to make sure you are always providing a safe and dry mat.
- Industrial mats must be slip resistant when exposed to oils and lubricants. When a mat is coated with oils or lubricants it should be replaced and cleaned.

### Mats for Outdoor Walkways

Carpet, non-slip abrasive or heated mats placed on outdoor steps and entrance walkways are good options for providing better traction during winter weather. Carpet mats could be placed on the walking surface once the snow and ice is removed in order to provide a better walking surface during a refreeze. See Figure 14.

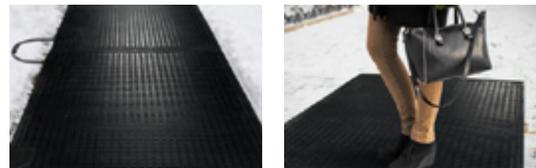


Figure 14 – Electric Melting Mats

### Risk Transfer

Many businesses lease mats from a vendor. Risk transfer should be established through the use of contracts that are clear on each party's responsibilities and liabilities. Legal review of all contracts should be part of the program.

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