Choosing the Right Safety Mat – Quick Tips



Mats can be used to help increase comfort and prevent accidents. To help choose the right type or style, consider why a mat is needed and what it's intended to do.

Entrance Mats

Entrance mats absorb soil and water, and help keep dirt and debris at the door and out of the building. The ISSA® has estimated that 70 to 80 percent of dirt comes in the doors of a facility and for every pound of dirt that gets tracked into a facility; it costs approximately $600.00 to remove it. Entrance mats help reduce dirt, debris and contaminants and keep your facility clean.

There are four things an entrance mat should do:

- Stop soil and water at the door
- Store soil and water for removal
- Minimize tracking of soil and water
- Provide a safe non-slip surface

The most effective entrance mats pull soil and water away from the surface. It is important that the design offers appropriate absorption and ease of removal when the mat is cleaned. Water that flows off the sides of the mat is referred to as seepage. Mats with flat borders allow water to seep off the edges, creating slippery conditions that can lead to a slip or fall. Water seepage can also cause floor damage. High-performance mats provide a dam that will pull the water back from floor surfaces and prevent sticking to shoes.

The amount of soil that a mat allows to be tracked back to patrons' shoes is commonly referred to as the performance threshold. The best mats employ bi-level construction, trapping large quantities of moisture and dirt, and pulling it away from the surface so it can't be tracked further into the facility. Low-performance mats, such as those with a ribbed or square patterned face yarn alone, will not hold up under foot pressure, allowing more water and dirt to reattach to shoes. High-performance mats have a permanent rubber reinforcing membrane that permanently supports the textile face, increasing product unity and extending useful product life.

Mats should be slip resistant. Any water on the mat should be contained in a reservoir below the traffic surface. Rubber-backed mats provide a better slip resistance than vinyl-backed mats. Rubber-backed mats do not curl as do vinyl mats, helping reduce trips and falls. Cleated surfaces enhance non-skid qualities and allow moisture to dry from underneath.

Entrance mats may also be scraper mats that provide the first line of defense against soil. Scraper mats should always be used with other entrance mats that will provide wiping properties to remove fine soil and water from feet.

It is suggested that at least 15 feet of matting is required to remove the majority of dirt and debris from foot traffic. This ensures that each foot will make contact with the matting at least three times, providing adequate scraping and drying to stop most dirt, debris and moisture at the entrance.

Indoor Mats

Indoor scraper mats perform many tasks. In many cases, they are used as dust control or finishing mats when used in conjunction with a scraper entrance mat in a soil management program. Nylon is typically used over olefin because of the high twist level of nylon fibers which allow the mat to more effectively remove soil and spring back up after cleaning. Olefin mats can crush out in as little as 30 days, rendering the mat virtually useless. Other uses of interior mats include spot, spill and soil control in high-use areas such as near vending machines, coffee service areas, copy machines, registration areas, etc. It is important that mats used in these areas provide safe footing that minimizes trip and fall hazards as well as slip resistance. The best interior mats are made with a rubber backing that will resist slippage on any surface, e.g. carpet or hard surface/tile.

There are also specialty interior mats designed to provide enhancements to the environment by controlling the growth of microorganisms that can be disease bearing as well as odor causing. This is done by special additives or treatments that are incorporated into the mat during manufacturing.

Anti-Slip Mats

These mats are engineered to provide safe footing with minimum slippage in most environments, and the surface of these maps are constructed with maximum traction properties. Typical placement includes outside entrances, on ramps and in areas where contaminants such as oil, grease or water are common.

Anti-Fatigue Mats

These mats are commonly used to provide cushioning for workers that do their job while standing on hard surfaces. Adding anti-fatigue or ergonomic mats help provide an environment that encourages optimal performance. This promotes productivity, which is the ultimate goal of ergonomic design.

Researchers that have studied the effects of long-term standing on hard surfaces have found that it negatively affects workers’ productivity and health. Standing on hard surfaces is uncomfortable because leg muscles become static and continuously flexed to keep the body in an upright position.

Standing for long periods reduces the natural flow of oxygen and blood back to the heart, which can cause fatigue and blood pooling in lower extremities. Common ailments that result could be varicose veins, lower back pain, leg pain and fallen arches. Anti-fatigue mats work by encouraging subtle movement of the leg and calf muscles. As the muscles contract and relax, they pump blood back to the heart and eliminate blood pooling in the lower extremities.

Currently there are no Occupational Safety and Health Administration (OSHA) standards regulating anti-fatigue mats; however, anti-fatigue mats may be used as part of an ergonomic program to help eliminate potential musculoskeletal disorders (MSDs).

Logo Mats

Logo mats are available in constructions that allow them to be used as entrance mats or interior mats.

Logo entrance mats should be made with the same construction as non-logo entrance mats in that they should provide the soil and water stopping and storage or scraping properties inherent in the best entrance mats. One of the most common misapplications of matting products is the use of interior logo mats at the entrance to a facility.

Since interior mats do not provide the permanent bi-level construction required in an entrance mat, these mats can become saturated with soil and water and become a source for contaminants. The result is a mat that allows water to seep onto the floor around the mat causing unsightly and unsafe conditions. Interior logo mats are designed for dust and moisture control in conjunction with a planned matting program of scraper and entrance mats.

Switchboard Matting

Switchboard mats help insulate workers, aiding in protection from deadly shocks generated by high voltage equipment. Most often, these mats meet:

- ASTM D178-19specifications
- MIL-DTL-15562Gspecifications

Static Control Mats

Sometimes called specialty matting, these mats are designed to help control the risk of static discharge by quickly draining it from workers. Specialty mats also include electrically conductive and static dissipative mats that help eliminate hazards and help protect sensitive equipment from static electricity. Conductive mats disperse static electricity quicker than static dissipative mats. Conductive and static dissipative matting must be grounded to be effective. Heel grounders must also be worn to allow the static to drain off the body and through the mat.

Critical Environment Mats

Critical environment mats (also known as cleanroom, sanitizing and tacky mats)are used where cleanliness is important. A tacky mat is much like tape with the sticky side up. It acts the same way, and debris literally sticks to the mat. Alternatively, a mat that is in a medical environment, for example, may need to be cleaned or sanitized. A common and effective sterilization method is autoclaving.

Commonly Asked Questions

What are acceptable matting dimensional tolerances?

Acceptable tolerances vary by product type. For example, mats made with strips of recycled tires may be as much as three inches longer or shorter than requested due to the materials used and the manufacturing process. In the case of runner matting, it is widely accepted that the matting may be one to one and one-half inches narrower than specified. Length is not always exact either. Certain materials have a tendency to shrink and others to expand depending on the weather conditions and the manner in which they are packaged. We do however, strive to ensure all of our products are as close as possible to the size specified in our catalog or required by our customers.

What is the difference between a conductive and a non-conductive mat?

A conductive mat helps protect sensitive equipment by drawing static electricity off workers before they touch susceptible equipment. Humans quickly generate static electricity through the friction caused by walking or using chairs with casters. Then with a simple touch, this static electricity is passed to sensitive equipment such as a computer. One such shock can destroy internal microchips or cause a spark that can ignite flammable chemicals. However, if the person steps onto a conductive mat before touching the equipment, the static is conducted off his or her body, and out of the mat through the grounding snap.

Most commonly called switchboard matting, non-conductive mats help insulate and protect workers from deadly shocks generated by high voltage equipment. These mats will not allow the electricity to conduct through the worker, and hence helps protect workers from serious injury.

What does coefficient of friction mean?

Coefficient of friction (COF) is a multiplier or factor that is used to determine how much force must be applied before an object slips. Essentially, the higher the number, the greater the amount of traction. OSHA suggests using a COF of 0.5 as a minimum on flat surfaces.

How is the softness of matting measured?

The actual test for softness is determined by the material and manufacturing process of the mat.

- Compression deflection: This is one way of measuring the softness or comfort level of a sponge mat. It measures how much a person’s foot sinks into the mat; the higher the reading, the softer the mat. The results are affected by the thickness of the sponge backing and the flexibility of the surface material. Some consider 0.2 to 0.5 to be the ideal range. The test is ASTM D575-91(2018).
- Durometer: The measure of hardness/softness of molded rubber and molded PVC mats. As a general rule, the lower the durometer, the softer the mat. Typical mats range between 45 and 70 durometers; some consider 45 to 65 to be the ideal range for molded rubber mats. The test is ASTM D2240-15e1.

Sources for More Information

The Wearwell Company
The Notrax Company
Occupational Safety and Health Administration Technical Manual
ISSA® Articles
ASTM International D178-19 / D575-91(2018)/D2240-15e1

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