



Floor mats and runners

Floor mats and runners have many uses such as protecting floor surfaces, covering floor surfaces that may be slippery, to help track moisture and dirt off footwear during inclement weather or ergonomic applications such as providing relief at work stations when standing for long periods of time.

A floor mat is a piece of flat, coarse material used as a temporary floor covering. Because mats are small enough for easy handling, and many are easily cleaned and stored, they have a variety of uses. (This data sheet does not discuss bathtub mats, adhesive-backed skid-resistant strips or patches, or slip-resistant paints.)

1. A runner is a floor mat that is at least several times longer than it is wide. It is used primarily for pedestrian traffic along its longer dimension. Because the safety features of runners and mats are similar, this data sheet makes no further distinction between the two. Consider the following points before buying, arranging for rental or maintenance service of either item.

USE AND PLACEMENT

To help prevent slips, trips and falls

- 2.** Floor mats and runners are used to provide slip-resistant walking surfaces in areas where floors may be slippery:
 - Inside and outside building entrances they help prevent slips and falls where water, snow or other material might make floor surfaces slippery.
 - In lobbies and corridors they can improve footing, particularly on highly polished floors or in areas where people are likely to make sudden movements that could lead to slipping.
 - Around swimming pools, in shower stalls, around drinking fountains and vending/ice machines, on boat decks, produce aisles and in garages and factories, they protect people where water, oil, food, waste and other materials might make the floor slippery.
- 3.** The color of the mat should contrast with the floor for high visibility. Poor visibility might increase the tripping hazard.

To reduce fatigue (ergonomics)

- 3a.** Adjusting workstations to accommodate workers has proven to reduce cumulative type injuries while improving morale and productivity.
- 3b.** Mats can be used to reduce the stress of standing on hard surfaces, such as concrete floors, for long periods of time.
- 4.** Mats made of soft or cushioned rubber provide comfortable footing that reduces fatigue in people who stand or work in one area for considerable periods of time, such as checkout areas and assembly lines, etc. Ergonomic principles indicate that reducing fatigue can also reduce the possibility of injuries and improves general work efficiency.
- 4a.** The proper amount of cushioning is important. Use a mat with good support, one that is not too soft, which could require more energy to use (similar to standing in sand).
- 5.** Special foot-warming mats with built-in heating elements (listed by Underwriters Laboratories, Inc.) are available to provide comfort for people who must stand in cold climates.

To protect other surfaces

- 6.** Because many mats are easily cleaned or replaced, they often serve as economical protective coverings that reduce wear on floor and stairway surfaces, rugs and carpets, and smooth-surfaced floor coverings. Mats also protect floors and floor coverings from water, oil, dirt and grime.
- 7.** Many types of mats have surfaces that help remove substances from shoes. Such mats reduce the amount of slippery, harmful or contaminant material tracked onto other floor surfaces. Doormats and other mats specifically designed to remove dust, water and other substances from shoe soles are widely used in offices, residential buildings, industrial establishments and retail establishments.
- 7a.** Carpeted entryways are an effective way to remove moisture from footwear during

inclement weather. Both mats and carpet should be designed with enough walk-off distance to remove moisture from footwear. A mat may need to be changed out during the day if it becomes saturated.

To reduce noise and breakage

- 8.** Cushioned mats reduce traffic noise and breakage when items are dropped. These mats are particularly useful in restaurants, hospitals, electronic and glassware plants, offices and supermarkets.

To prevent electric shock

- 9.** Special heavy-duty rubber mats, with high dielectric strength, insulate employees from electric shock at switchboards and around other electrical equipment.

For multiple uses

- 10.** Some applications require mats with multiple characteristics. For example, a mat for use in a food service kitchen should be easily cleaned, sanitary, economical, durable, slip-resistant and resistant to water and grease. It should minimize breakage or damage to glassware, cutlery and knives. In addition, it should lie flat and should be easy to move, store and replace.
- 11.** Indoor-outdoor carpeting is used in many areas where mats and runners were formerly used.

HAZARDS

- 12.** While mats and runners can help reduce hazards, improper use can introduce new loss exposures. The potential hazards associated with using mats and runners are described in the following paragraphs.

Tripping hazard

- 13.** Mats, especially lightweight types, can be torn by handling or excessive wear. The resulting loose or raised areas can catch footwear, creating tripping hazards. Mats that have been

moved and not properly relaid may develop curled or raised edges, which also create tripping hazards. Mats that are not laid flat or fastened securely may pucker, causing toes or heels to catch, leading to falls. (Mats may have inflexible edge bevels to prevent curling but they cannot roll up.)

- 14.** When single-tread mats are used on stairs they may tear or work loose, creating tripping hazards.
- 15.** When possible, thick mats—made of such materials as thick coconut fiber or heavy corrugated rubber—should be recessed with edges closely fitted to eliminate raised edges. Where necessary, drainage should be provided in the recess. If recessing is not possible, mats should be finished with wide, beveled edges, or should be set in a beveled-edge frame to minimize tripping and heel catching. Some companies highlight their mats by using contrasting colors on the beveled edges.
- 16.** Adequate lighting is necessary to further minimize the tripping hazard.

Slipping hazard

- 17.** Grease or water can make mat surfaces slippery. Also, when mats are not suited to the surfaces they cover or are laid with the wrong side down, they may slip, creating greater hazards than the surfaces they cover. To prevent movement a mat should be heavy enough and its bottom made of or covered with slip-resistant material. A double-sided tape affixed to the back of the floor mat also can prevent slipping. The mat could also be taped down if used on a temporary basis.

Miscellaneous hazards

- 18.** Poorly designed and placed mats create other hazards. Mats that are too large or too heavy may strain employees who roll, lift, or move them. Sharp edges on metal parts of mats may cause cuts. Wooden parts may splinter or break, leaving a raised or sharp

edge. Open-link mats may present a hazard to individuals wearing high heels; the heels can catch in the openings and cause falls. Mat designs that contain high ridges may present hazards because they do not provide stable footing.

- 19.** When selecting mats or runners, consider ease of handling. Heavy types may require special moving and storing techniques. They may present special hazards if not handled by enough trained workers using low trucks, dollies, or other appropriate equipment.
- 20.** Proper handling can sometimes correct problems. For example, if a mat has a tendency to curl, turning it over before it is rolled up may reduce curling when the mat is reused.
- 21.** It is also necessary to select the appropriate number and size of mats or runners for your desired location. Having too many mats in an area can create unnecessary elevation changes and disrupt people's natural walking pace.

TYPES OF MATS

Wooden Mats

- 22.** Duckboards (type of wooden mats) are used in plating and fabrication shops and other applications to provide dry footing in a wet or dirty environment. In addition, wood mats are used in saunas, steam rooms, hot tubs, marinas, boat docks/boat yards and similar areas.
- 23.** Wooden mats and runners may be rigid or flexible. Rigid wooden mats (or duckboards) should be built in sections that can be handled easily by one worker. They should be made of long-grained hardwood, which may be chemically treated to prevent rotting and warping. Rigid mats are nailed, bolted or joined with wood screws to crosspieces.
- 24.** Flexible wood mats are joined by stainless steel rope, nylon rope, rust-resistant springs or other oil- and water-resistant connectors that permit the mat to be rolled up.

- 25.** Wooden mats are used over floors in areas that are often wet and slippery. Such conditions are common in food service kitchens, shower rooms, food processing plants, and many other manufacturing plants. Mats used in such areas should be designed to allow water, oil and other slippery substances to drain through openings and not accumulate on the top surfaces.
- 26.** Wooden mats can be lifted easily or moved to allow both the floor and the mat to be cleaned. It is important that wooden mats in wet environments be regularly cleaned and sanitized to prevent the growth of fungus which makes the surface slippery. Durable construction permits frequent and thorough cleaning of the mat itself. Abrasive tapes or coatings can be added to the slats, providing a rough surface that is not easily made slippery by spilled fat.
- ### Rubber mats
- 27.** Rubber mats and runners are useful where resistance to water, rather than oil, is required. They are used in the entrances, passageways and hallways of office buildings, factories, hotels, restaurants, department stores and supermarkets. Rubber mats and runners are also used in locker rooms and around swimming pools. Rubber mats are widely used where electrical isolation is important.
- 28.** Rubber mats come in a wide variety of patterns and thicknesses. Patterns may contain corrugations or ribs running lengthwise, crosswise or diagonally. Basket weave effects, raised knobs, perforations and simulated carpet textures also are available. Corrugated or ribbed surfaces are generally used for one-direction traffic; perforated, knobby, or basket weave designs are used for traffic in all directions.
- 29.** Rubber mats are also made with open-link and tight-link (no opening) construction.
- Some link mats are reversible, permitting use of both slip-resistant surfaces. Perforations or open spaces discourage accumulation of dirt and debris on the mat surface, but shoe heels are less likely to catch in tight link mats. Continuous travel of shopping carts over rubber mats with open or tight links tends to bend the wire linkage, causing the mat to warp and buckle. Frequently check the condition of mats used in such areas.
- 30.** Cushioned rubber mats combine a relatively tough wearing surface with a soft, sponge-rubber, inner-core design that prevents fatigue. Edges are beveled to reduce the tripping hazard. Cushioned mats may not be the best choice for areas where users walking on these mats wear thin or high-heeled footwear.
- ### Vinyl and neoprene mats
- 31.** Mats made of vinyl, neoprene or similar synthetic material have slip-resistant, resilient surfaces that are resistant to grease, oil, chemicals, water and extreme temperatures. These mats are recommended for use in front of machinery and in chemical laboratories, plants and kitchens. Their construction is similar to that of rubber mats.
- ### Flexible metal mats
- 32.** Aluminum or rust-resistant steel mats are made of metal ribbons or links that are woven or fastened together with rods, springs or tempered wire. Metal mats are about 1/8 in. (9.5 mm) deep, providing excellent shoe-scraping surfaces from any direction. They are used to remove mud, grime and grease from shoes. Because they are very durable, they are widely used outdoors and at building entrances.
- 33.** Flexible metal mats are easily rolled up and cleaned.

Coconut fiber mats

34. Thick, brush-like mats made of coconut fiber absorb considerable moisture and provide a good surface for cleaning shoe soles. They withstand hard wear and are slip-resistant. A thinner, woven fiber matting is used in locker rooms and around swimming pools, where water absorbency, rather than durability, is needed. However, coco-fiber mats may be difficult to sanitize. Because they absorb moisture, fiber mats are not suitable for use when freezing temperatures cause ice to form.

Combination materials

- 35.** Mats that are similar to lightweight carpeting and made of cotton, viscose or nylon pile are available with rubberized backs, or they can be inserted into rubber or vinyl frames to keep them in place.
- 36.** Some combination mats are made of tire cord strips or links fastened together with metal rods or links. A combination of metal and wood or fabric links is used in entranceways where removal of water and dirt is important. These mats provide enough cushioning to reduce fatigue, and the materials used are more durable than sponge rubber. The open construction provides good shoe-cleaning action.
- 37.** An exceptionally durable mat made of fabric-reinforced neoprene is slip- and fire-resistant and withstands the harmful effects of grease, fat, heat, chemicals and water.
- 38.** Mats are available with safety messages woven into the mat design.
- 38a.** Major mat rental companies are a resource in the selection of type, material and mat maintenance programs.

Alternatives to Mats

- 38a.** Fixed-carpet entryways are an alternative to using mats in a high-traffic entrance. The carpet provides a transition between the outside and interior walking surfaces while absorbing moisture

during inclement weather conditions. The length of the carpet needs to be long enough to remove the water from pedestrian's feet before reaching the regular floor.

38b. Patterned concrete with ridges or grooved asphalt, or other similar surfaces, provides traction during inclement weather for both interior and exterior applications such as walkways in permanent amusement parks.

Economic Factors

39. When selecting a mat, consider not only the initial cost, but also the cost of cleaning the mat and the surface that the mat protects as well as the durability of the mat and the savings in maintenance and wear costs for the surrounding surfaces. For example, a lightweight fabric walk-off mat and a heavy-duty mat may have the same initial cost. The lightweight mat is less durable but because it is easier to clean it reduces the need to clean, wax and refinish adjacent floor surfaces. Overall, in this case, the reduced maintenance may justify the seemingly high cost of the lightweight mat. Likewise, a small, recessed, highly absorbent, heavy-duty mat used in a building entrance or elevator may reduce maintenance of waxed floors and contamination of other carpets and floor surfaces, thus returning its initial cost and the cost of recessing many times over.

Control measures

40. Establish a regular cleaning and maintenance schedule for floor mats as well as specific, definite procedures for placing, removing and storing them. Employees who put mats in place during inclement weather need clear instructions as to where and when mats should be put down and removed. Delays in putting mats down or placing them too close to doors may result in slippery entrance areas and allow water and dirt to be carried beyond the entrance, creating hazards and maintenance problems in another area.

- 41.** Develop specific procedures for inspecting and checking the condition of mats and for maintaining them in safe condition.
- 42.** Personnel should be trained to keep mats in safe condition. For example, scrap lumber or soft wood should never be used to repair duckboard slats.
- 43.** Employees should be instructed to report unsafe conditions, as soon as possible, such as tears, upturned edges, splinters in wooden mats or broken connectors. They should know how and where to report such conditions and should make a practice of straightening mats or eliminating other mats hazards whenever possible.
- 44.** Everyone involved should understand the policy and procedures required in the event of an accident or incident involving a mat. Note the condition of the mat on the incidents and claim report forms.
- 45.** Inspection checklists should include points on mat placement and condition. This information can help to reduce hazards and also will be valuable in the investigation of accidents involving mats.

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