



## 9. Floors

### 9.1 Floor Finishes

#### 9.1.1 General

This section of the Guidelines addresses issues related to floors that are concerned with Occupational Health and Safety. Refer to Part D for issues related to Infection Control.

The selection of floor finishes is very important. It has direct impact on the safety of patients, staff and visitors. Floor finishes also contribute to the recurrent costs of a facility related to cleaning and maintenance; a low initial cost of a particular floor finish may have a high ongoing cost impact.

#### Fire Safety

Floor finishes must comply with UAE Fire and Life Safety Code and Dubai Universal Design particularly related to fire safety. This is applicable to new installations and renovations requiring replacement of floor coverings.

#### 9.1.2 Balance of Considerations

A number of issues should be considered and balanced when making the choice of floor finish. Designers are encouraged to investigate alternative materials and if necessary organise for realistic onsite tests before making major decisions. The following are general guides to making this decision.

Design considerations include:

- Floor finish characteristics such as wear resistance and cleanability; floor finishes should be impermeable, sealed, easy to clean, scrubbable, able to withstand chemical cleaning have an integral base
- Management policy and maintenance practices (frequency, type and effectiveness of cleaning equipment)
- All floor surfaces in clinical areas should be constructed of materials that allow the easy movement of mobile equipment
- Floor finishes should be selected to conform to imaging equipment technical requirements (e.g., electrostatic dissipation), infection control requirements, and service limitations (e.g., no powered floor cleaners are to be used in MRI scanner rooms)
- The amount and type of expected traffic (vehicles, trolleys, people hurrying, elderly, people with determination with or without walking aids and children)
- Consequences of exposure to contaminants including environmental design factors (visibility issues and contamination minimisation)
- Compliance with Occupational Health & Safety requirements



- Special provision of textured or studded flooring for areas with high potential for slip hazards
- Alternative information sources and relevant standards (use of contrasting colours, tactile indicators and warning signs where applicable)

### **Manoeuvrability**

The floor finishes chosen should make the movement of objects such as trolleys, bed trolleys and wheelchairs sufficiently easy to minimise the potential for injury to staff.

The following should be considered when selecting floor finishes:

- Standard vinyl and similar products are the easiest materials for the movement of trolleys and wheelchairs.
- Carpet, if used should be direct stick, commercial density with short piles, preferably loop piles; a 90/10 or 80/20 wool/nylon mix with rubber backing is recommended.
- Flocked carpet should be considered where the 'look and feel' of carpet is desired with the ease of movement over vinyl.
- Many hospital staff consider that it is harder to move objects over cushioned vinyl. However, cushioned vinyl may still be preferred to standard vinyl for its sound absorption qualities.

### **Acoustic Properties**

Carpet type finishes not only minimise noise generation, they also dampen the noise generated by other sources. Carpet is particularly effective in corridor areas outside Patient Bedrooms where a great deal of noise can be generated. This quality should be balanced against the ease of movement by trolleys, bed trolleys and wheelchairs.

Cushioned vinyl is also effective in minimising noise generation but it does not dampen other noises as effectively as carpet.

Hard surfaces such as ceramic tiles, terrazzo, laminates or similar finishes generate noise from walking staff and visitors, impact such as dropped items and also reflect noise from other sources.

### **OH&S Issues**

In areas where staff must stand for long periods of time, finishes should be chosen that do not contribute to staff fatigue. Carpets and vinyls, cushioned and standard are widely considered to be acceptable for lengthy standing. Hard surfaces such as tiles, terrazzo or finished concrete are considered to be too hard for lengthy standing over several hours and alternatives are recommended in staff work areas. Hard resilient surfaces may be used in public areas or other areas such as cafeterias, foyers, atriums and courtyards.



## Cleaning

Floor finishes selected should be resilient to wear particularly in high traffic areas, and be easy to maintain and clean in order to minimise operating costs.

### 9.2 Anti- static / Conductive Flooring

A distinction must be made between antistatic and conductive flooring. Antistatic flooring reduces the risk of static occurring while conductive flooring absorbs the electrical charge. However, if rubber soled shoes are worn on conductive flooring the effect is negated.

In the past, anti-static flooring was required in Operating Rooms because of the use of flammable anaesthetic agents. These types of anaesthetics are no longer in use, so the requirement for this type of specialised flooring no longer applies in Operating Rooms or Anaesthetic Rooms.

In addition, anti-static flooring is expensive, both to install and maintain. Most public and staff areas do not pose a problem with respect to generation of an electrical charge. Where there is any possibility of such an event, for example a computer technician working with live computer components or a worker in a specialised micro-electronics laboratory, anti-static mats may be used which more than adequately provide the necessary barrier.

In summary, provision of anti-static or conductive flooring is not mandatory in any part of the hospital. Any special requirement may be noted specifically on the Project Brief.

### 9.3 Slip Resistance

Slip resistance is governed by the nature of the anticipated activity. Safety considerations of floor finishes must address all the relevant variables; slip potential is a function of footwear, activities, gait, contamination, environment and other factors.

Selection of floor finishes should consider the slip resistance suitable for the specific location the floor finish will be used. Appropriate floor finish applications include the following:

- Standard slip resistant vinyl may be used in areas where the floor is dry and those using the floor will be wearing shoes.
- Standard textured vinyl is similar to standard slip resistant vinyl but provides greater dry condition slip resistance and may be used where floors may be intermittently splashed with water.
- Studded vinyl flooring provides a higher level of slip resistance, is rated non-slip, is easy to clean and suitable for wet areas with bare feet applications such as patient showers; non-slip finishes in Ensuites and Bathrooms need to consider the use of fine powder such as talcum powder.
- Safety vinyl flooring rated non-slip is suitable in wet areas where trolley movement is also expected, such as SSU Decontamination Areas and Dirty Utilities; this type of safety floor may



be composed of vinyl with metal fragments and is not suitable for bare feet applications.

- Ceramic tiles with an appropriate slip resistance may be used for Ensuites and Bathrooms, but not clinical areas requiring seamless finishes. Smaller ceramic tiles generally provide greater slip resistance. The best combination of slip resistance and easy cleaning is commonly referred to as textured which has an 'orange peel' finish.
- Stone and terrazzo may not be slip resistant and if used in areas such as foyers and lobbies may be treated with non-slip chemicals to improve the slip resistance.

Slip resistance is also an important consideration for ramps and stairways.

#### 9.4 Floor Joints

Thresholds and expansion joint covers should be flush with the floor surface to facilitate the use of wheelchairs and trolleys. Expansion and seismic joints must be constructed to resist passage of smoke in accordance with Municipality Building regulations and Standards.