

INDRF401 DESIGNING RESILIENT FLOOR

INTRODUCTION

The Floor is the surface on the certain level of a building on which the users move. The purpose of a floor is to provide a level surface capable of supporting the occupants of a building furniture, equipment and sometimes internal partitions. To fulfill all these functions enumerated above, the floor has to satisfy the following requirements.

- i. Adequate strength and stability,
- ii. To resist fire ,
- iii. To provide sound insulation,
- iv. To resist friction,
- v. It must have sufficient smoothness,
- vi. To have a good appearance and it has to be easy to clean,
- vii. It must be economical,
- viii. It should not be such that the occupants can slip on it,
- ix. It should be thermal insulation,
- x. To provide an adequate damp resistance.

According to the position where the floor is located they can be classified as:

(1)GROUND FLOOR: This is the floor resting directly on the ground surface.

(2)UPPER FLOOR: The floor situated above the slab of each storey.

- For the ground level, the problem of strength is not of great importance, since it is fully supported at all points. The major problem for the ground floor is damp exclusion, and thermal insulation.
- For the upper floors they have a major problem of strength and stability since they are supported only at their ends on walls, ad beams. The upper floor does not suffer the problem of damp resistance but the adequate one is sound insulation. Another problem for the upper floor is fire resistance.

COMPONENTS OF A FLOOR

A floor is made of two essential components:

1. Sub floor or base course or floor base

2. Floor covering or simply Flooring.

The FLOOR BASE is a structural component which supports the floor covering. For the ground floor; the object of floor base is:

- i. To give the proper support to the covering so that it does not settle;
- ii. To provide damp resistance;
- iii. To provide thermal insulation.

The ground floor may either rest directly on the ground; or may be supported at a small distance above the ground. From this point of view, we distinguish two sub types of ground floor, which are:

- a. **Solid floor:** it is the ground floor supported directly on the ground.
- b. **Suspended floor:** it is the ground floor supported at a small distance from the ground level.

Generally, these types of floors are made in **timber or steel**.

MATERIALS FOR THE CONSTRUCTION OF THE FLOOR

For the construction of the ground floor, the floor base materials which are mostly used are:

- ↗ Cement concrete;
- ↗ Stones;
- ↗ Reinforced cement concrete;
- ↗ Bricks and blocks;
- ↗ Wooden blocks (for wooden floorings)

The selection of a suitable flooring material will always be affected by:

1. **Initial cost:** the cost of materials should be in comparison with the type of building and its suitable use.
2. **Appearance:** the covering of the floor will have to produce a pleasing appearance. It should produce a desired colour effect and architectural beauty.

The flooring of mosaic; floor tiles; and marble will give a good appearance.

3. **Cleanliness:** the flooring should be capable of being cleaned easily. Also it should be non-absorbent. It should have effective resistance against the absorption of oil.
4. **Durability:** the flooring should have sufficient resistance to wear, temperature change, disintegration with time, and decay. **This will simply mean that the floor has to live longer.** The floor of marble; floor tiles, concrete, mosaics, etc. are more durable.
5. **Damp resistance:** the flooring should provide sufficient resistance against dampness. Where there is the risk of dampness; we can use **concrete floor, mosaic floor, tile floor.** But wood, rubber, brick flooring, will not resist dampness very well.
6. **Sound insulation:** the flooring should normally insulate noise. It should also not be such that it produces noise while users are walking on it. Where we need more sound insulation, we can use: **rubber floor, or timber floor.**

7. **Thermal insulation:** the flooring should give good thermal insulation in order to give comfort to the users of the building. For this thermal insulation we will use **wood, rubber, PVC, floor tiles.**
8. **Fire resistance:** it is very important for flooring material should offer adequate fire resistance to have fire barriers between different levels of building. To this point concrete, tile, mosaic, marble, have good fire resistance concrete base.
9. **Smoothness:** The flooring material should be smooth and an even surface
N.B: It should not be slippery.
10. **Hardness:** It should be sufficiently hard to have resistance to indentation marks. This is likely to occur because of the shifting of furniture, equipments, etc.
11. **Maintenance:** The flooring material should require least maintenance. Whenever repairs are required, it should be such that repairs can be easily done, with least possible expenditure (expenses).

Hard covering like tiles, marble, concrete, and require less maintenance in comparison to materials like wood.

Materials used for floor finish or floor covering are:

1. Mud
2. Bricks
3. Concrete
4. Mosaic
5. Tiles
6. Marble
7. Wood or timber
8. Asphalt
9. Rubber
10. Glass
11. Plastic or p.v.c.

Resilient Flooring – Different Types of Resilient Flooring used in Buildings

Resilient flooring is defined as the floors made up of materials like PVC, rubber, linoleum etc. Different types of resilient flooring used in building construction is discussed.

Resilient flooring system is denser and non-absorbent in nature. They assure a pliant surface which makes comfortable walking. These flooring also assure guarantee in having lesser maintenance.

Different Types of Resilient Flooring used in Buildings

There are different types of resilient flooring that can be carried out based on the requirement, material availability and other factors of the needed.

Some of the types of resilient flooring are:

RUBBER FLOORING

Rubber Flooring

L.O 1.1: Identify rubber used according to space function

It consists of sheets or tiles of rubber in variety of patterns and colours with thickness varying from 3mm to 10mm. These sheets are fixed to the concrete base or wood by means of appropriate adhesives. This floor is resilient and noise proof. It is costly (expensive). It is used in offices and public buildings. The rubber as a raw material itself is highly expensive, which make this method more expensive.



Types of rubber used in floor design

- ❖ studded rubber
- ❖ rubber sheet
- ❖ poured epoxy mix, & rubber

❖ Recycled rubber floors

Tips on how to maintain rubber floors

☒ Clean **all spills**: Even though rubber flooring is water resistant, too much moisture can ruin the adhesive that holds the floor in place. Make sure you clean up all spills immediately.

☒ Avoid **harsh chemicals**: Rubber flooring is so easy to clean that no chemicals are needed. In fact, you should avoid using any types of chemicals on these floors. The chemicals and waxes used in floor seals could change the color of the floor and harsh cleaners with solvents or acids can cause the rubber to erode.

Spaces in which rubber floors are used

- ☒☒ Schools
- ☒☒ Sports arenas
- ☒☒ Gyms
- ☒☒ Elevators
- ☒☒ Lobbies
- ☒☒ Airport
- ☒☒ Pros and Cons of rubber flooring

L.O 1.2 Apply rubber floors according to material requirements

- ☒☒ Types of finishes
- ☒☒ Altus floor finish
- ☒☒ Fortius sealer and matte finishes
- ☒☒ Synthetic floor protectant

- ☒☒ Application techniques for rubber tiles
- ☒☒ Interlocking rubber tiles
- ☒☒ Rubber tiles using dowels
- ☒☒ Glue down rubber tiles

- ☒☒ Identify suitable subfloors
- ☒☒ Concrete
- ☒☒ Wood
- ☒☒ Existing flooring