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CONCRETE FLOORING

1. INTRODUCTION

Systems for coating and protecting concrete flooring can range from simple paint solutions (anti-dust) to heavy duty systems with epoxy render mechanically compacted providing high mechanical resistance.

We offer a selection of systems which, depending on the intended use of the flooring (functional needs) and the desired aesthetic requirements, ensure the best solution for the protection and decoration of concrete flooring. The condition of the substrate also determines the selection.

Functional needs

- Mechanical resistance
- Chemical resistance
- Abrasion resistance
- Ease of cleaning
- Non-slip properties

Condition of the substrate

- Hardness
- Humidity
- Contamination
- Unevenness
- Joints
- Porosity

2. PROCESSES AND SURFACE PREPARATION

Processes

Sanding

This is done with a rotating machine equipped with mineral abrasive discs. It is an economic solution suitable for many situations. It is used on smooth concrete flooring or previously painted surfaces to open the pores and obtain the desired degree of roughness for later application of a given coating.

Physical abrasion

This is done with a machine equipped with a revolving drum with segments of carbon and tungsten. It penetrates the concrete to a depth of 7/10 mm.

It is used when the concrete surface is in poor condition, with little consistency, contaminated, with irregularities or when it is necessary to remove the previously applied or badly adhering coating.

The treated surface remains visibly marked with grooves, necessitating the use of a levelling mortar before applying the final coat.

It is advisable to check on a regular basis the status of this guide. The systems recommended were based on commercially available products which CIN can withdraw without notice. This guide is generic and must be viewed as one possible example among many CIN Protective Coatings solutions. Consult CIN directly for a specification for a particular project.

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Blasting

This is done with a machine which projects steel particles onto the concrete surface. This machine is linked to a piece of high powered close circuit equipment which recycles the metal particles in an aspirator, filtering out dust, impurities, cement and old concrete flooring paints.

It is the best preparation treatment possible for flooring and is used to remove previously applied paints and to roughen the surface of the flooring, leaving an open pore texture.

This process scores the flooring, necessitating the application of thick coatings or of a fine levelling mortar.

High pressure water

This involves projecting water onto the surface with a minimum pressure of 200 bar using special equipment. It is used to remove cement laitance and superficial contaminants or to remove grease in conjunction with suitable detergents.

Surface preparation

New concrete:

Remove the cement laitance, loose particles and other impurities which could prejudice the adhesion of the system. Preferably use the grit blasting technique, after which the surface must be swept and vacuumed.

Old concrete:

Remove grease and dirt with the most appropriate method. Light grit blasting may be necessary.

Surface and environmental conditions

The concrete must be allowed to cure for at least 28 days. The substrate must be firm, dry and completely cured before starting the coating process. The percentage of moisture within it must not exceed 4%. During application and drying relative humidity must not exceed 80% and the ambient temperature must be at least 10°C with the temperature of the substrate no less than 3°C above dew point.

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3. PAINT SYSTEM

3.1 Interior anti-dust paint system

Environmental classification:

An easy to apply anti-dust system for concrete flooring such as car parks, warehouses, shopping centres, garages, industrial facilities etc.

Smooth satin finish:

| Type of coating | System | Spread rate approx. (m ² /kg) |
|-------------------------|------------------------------|---|
| Water based satin epoxy | 1 × C-Floor E240 WB dil. 10% | 4 |
| | 2 × C-Floor E240 WB | 2.2 |
| | Total consumption | 1.4 |

Non-slip satin finish of low roughness:

| Type of coating | System | Spread rate approx. (m ² /kg) |
|-------------------------|-----------------------------------|---|
| Water based satin epoxy | 1 × C-Floor E240 WB dil. 10% | 4 |
| | 2 × C-Floor E240 WB ^{a)} | 2.0 |
| | Total consumption | 1.35 |

Notes:

a) the 2nd coat of paint must be prepared with Aditivo Antiderrapante and thinned 5%.

Non-slip satin finish of medium roughness:

| Type of coating | System | Spread rate approx. (m ² /kg) |
|-------------------------|-----------------------------------|---|
| Water based satin epoxy | 1 × C-Floor E240 WB dil. 10% | 4 |
| | 2 × C-Floor E240 WB ^{b)} | 1.9 |
| | Total consumption | 1.3 |

Notes:

b) sprinkle silica Quartz G300 over the 2nd coat of paint

There is also a product with a gloss finish, C-Floor E260 WB, for the same type of systems.

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3.2 Self-levelling mortar system for interiors

Environmental classification:

Easy to clean flooring for the food industry, warehouses, shops and other industrial environments where a very durable system is needed. This provides a smooth gloss finish with high abrasion resistance.

| Type of coating | System | Spread rate approx (m ² /kg) |
|-----------------------------|---------------------------------------|--|
| Solvent free epoxy sealant | 1 × C-Floor Sealer E140 ^{a)} | 2 -2.5 |
| Self-levelling epoxy mortar | 1 × C-Floor E400 SL ^{b)} | 0.4 – 0.45 |

Notes:

a) Depending on the condition of the substrate, it may be combined with appropriate silicas to prepare mortars for levelling and repairing. Consumption varies according to the application process.

b) This product contains silica Quartz G300 and is applied with a toothed spatula.

Consumption varies according to the application process, the intended final dry film thickness and the silica mixture. Consumption given is for a thickness of 1.8-2 mm and a proportion in weight of paint:silica of 1:0.6.

Other systems can be used with C-Floor E400 SL which range from simple application with a roller to non-slip systems and floated mortars of high mechanical resistance. For more information consult the Technical Data Sheet for the product.

3.3 Multi-layer system with coloured silicas for interiors

Environmental classification:

Flooring with high abrasion resistance for the food industry, warehouses and shops. It provides a non-slip gloss or matt finish with the possibility of combining it with silicas of various colours.

System with coloured silicas:

| Type of coating | System | Spread rate approx (m ² /kg) |
|--------------------------------------|---|--|
| Solvent-free epoxy sealant | 1 × C-Floor Sealer E140 ^{a)} | 2 -2.5 |
| Epoxy varnish | 1 × C-Floor E420 QS sprinkled with coloured silicas ^{b)} | 1.1 – 1.3 |
| Epoxy varnish | 1 × C-Floor E420 QS for sealing the silicas | 1.8 – 2.3 |
| Matt polyurethane varnish (optional) | 1 × C-Floor PU380 | 10 -13 |

Notes:

a) Depending on the condition of the substrate, it may be combined with appropriate silicas to prepare mortars for levelling and repairing. Consumption varies according to the application process.

b) This product contains silica Quartz G300 and is applied with a toothed spatula and with an average applied thickness of 0.7-0.8 mm. The final thickness including the silicas is 2.5-3 mm. For systems with white or natural silicas, C-Floor E400 SL must be used in the colour closest to the silicas.

The systems detailed in this guide are the most commonly used ones. CIN has many other systems available for other requirements, finishes and situations.

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