

# FLOOR SYSTEM APPLICATION: SUBSTRATE PREPARATION

## 1. GENERAL GUIDELINES

One of the basic substrates used under epoxy floors is concrete. Its quality significantly influences the floor parameters. The substrate should be made in accordance with good construction practices. Usually, it consists of several layers. The first layer consists of vibrated aggregate or C8/10-class blinding concrete. This first layer is covered with two layers of construction film in order to provide an anti-moisture insulation, as well as with a EPS layer that provides thermal insulation. The next layer consists of C16/20-class concrete (at minimum) with a thickness of 8 – 15 cm. This layer may be reinforced with dispersion fibres or a steel mesh (Ø 12 wire with 20 x 20 cm meshes). For larger surfaces, this layer should be appropriately equipped with expansion joints. The joints should remain open. The surface should be clean, dry (the concrete moisture should not exceed 3%), roughly plastered, free from cement wash and without cracks or scratches. It is absolutely necessary to achieve a substrate with a maximum moisture of 3 %, therefore it is important to control the temperature and moisture of both the substrate and the air when making the epoxy floor. The latter should be a few degrees higher than the dew-point.

In practice, concrete substrates hardly ever fulfil the above requirements. Especially old concrete floors are often cracked, soiled with oil, moist and feature many surface irregularities, etc. Before applying any floor based on synthetic resins, evaluate the substrate condition; in many cases repairs will be necessary, for which a suitable method must be chosen. One of the more popular methods is shot-peening. It may be used to remove the cement wash layer, old polymer coatings and small surface irregularities. It is also used to increase the coarseness of concrete surfaces that are too smooth and which causes insufficient adhesiveness of resin floors. Should it be necessary to remove larger substrate irregularities of a damaged or highly polluted (e.g. soiled with oil) outer concrete layer, another mechanical treatment method is the most efficient: milling.

A simple and cheap substrate preparation under a resin floor is the application of a new concrete layer. This method has one major drawback, however: it forces you to wait ca. 4 weeks until the concrete moisture falls below ca. 3 – 4 %, which is the maximum allowable value for the application of polyurethane floors. In some cases, the use of specific epoxy products (sealers) makes it possible to shorten this period to ca. 2 weeks.

Good substrates for resin floors are also self-levelling concrete compounds. Depending on their thickness, they allow application of subsequent layers in just a few days. The resulting surface is even and smooth, which makes it possible to achieve a better polymer layer quality with lower raw material consumption.

If, apart from levelling the old floor, it is also necessary to reinforce it, a favourable solution is to fill the whole surface with a polyurethane (e.g. NOVOFLOOR P24) or epoxy (e.g. NOVOFLOOR E40) resin complemented by quartz aggregate. This allows to apply subsequent layers already after 24 hours. The same method is often used when repairing small defects; in such a case, instead of special binders, self-levelling coating products may be used that have been condensed with quartz sand. In either case, the substrate should be primed before applying the basic resin layers.

With polyurethane floors, the NOVOFLOOR P10 one-component sealer is used to enhance the adhesiveness of subsequent layers and to slightly reinforce the substrate. With epoxy floors, or when it is necessary to considerably reinforce the substrate and guarantee good adhesiveness to a moist substrate, the NOVOFLOOR E10 sealer is used.

Wooden substrates used in elastic surface floor systems (on wooden grids/frames) should be dry, free from dust and primed. Priming, e.g. with NOVOFLOOR P10, is not always necessary; however it is advisable in order to enhance the surface adhesiveness to wood.

## 2. OILED AND HIGHLY MOIST SUBSTRATES

Sometimes it is technically infeasible to prepare the old substrate for synthetic compounds, as discussed in section 1 (i.e. by sanding, milling or spreading new concrete layers).

When the contractor has to work with oiled or wet concrete, the NOVOFLOOR E11 sealer can be used.

### 2.1 SUBSTRATE PREPARATION

2.1.1 Prior to applying NOVOFLOOR E11 to a wet concrete, it is enough to remove water and proceed with priming by sealing.

2.1.2 If the surface is oiled, the stain is removed by pressure washing or repeatedly scrubbed with a thinner and a hard brush; then the contaminated solvent must be collected immediately. Seal immediately once the solvent has evaporated.

### 2.2 PROCEDURE

Use a mechanical mixer to thoroughly mix component A and component B in the required mixing ratio. Mixing time varies between 3 and 5 minutes, depending on mixing intensity. In order to thoroughly mix components A and B and to avoid any flaws in the finished product, pour the mixture to another clean container and remix.

The first layer of the sealer is applied with a velour roller and immediately rubbed in the concrete with a hard brush. This process promotes penetration of concrete pores by NOVOFLOOR E11, making it more adhesive. Then the wet seal is covered with quartz sand at the grain of 0.10-0.30 mm. The sealer yield is ca. 0.3-0.5kg/m<sup>2</sup>. The second layer of NOVOFLOOR E11 is applied in 24 hours with a velour roller at the yield of ca. 0.3-0.5kg/m<sup>2</sup> and then covered with quartz sand at the grain of 0.10-0.30 mm or 0.30-0.80mm.

Successive system layers can be applied once the sealer has cured, i.e. after approx. 24 hours.

#### **Other informations:**

The effectiveness of our systems results from laboratory research and many years of experience. The data contained herein meets the current knowledge about our products and their application potential. We ensure high quality, provided the user follows the instructions and the work is performed in accordance with good workmanship. It is necessary to do a test application of the product due to its potentially different reaction with different materials. We may not be held liable for defects if the final result was affected by factors beyond our control.