



Code of Practice

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Coloured flowing screeds

Information for planning,
manufacture and application

Code of Practice from the
Industriegruppe Estrichstoffe im
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Coloured flowing screeds

Coloured screeds are used as an alternative with interior design as a wearing or visual surface. All participants should be aware of the options and limitations of this technology, particularly with regards to the implementation feasibility of customer wishes. This Code of Practice is intended for those involved in the technical planning, manufacture and application. Observance of these guidelines and instructions contributes to satisfying customers expectations with a coloured screed surface.

1 What should the architect and planner take into consideration?

Large jointless surfaces are possible as with every flowing screed. The screed can be applied in 2 layers with the upper layer being coloured to reduce costs and to improve the uniformity of the colour (more surface from one coloured batch).

The joints have to be planned in accordance with state-of-the-art technology. In accordance with the technical necessity of specific joints (e.g. continuation of structural joints, doorways, unfavourable room geometries), the effect of a joint on the optical appearance of the room has to be taken into consideration. In the case of U or L-shaped rooms, alternative joint layouts can be taken into consideration. Joint planning requires special planning since cracks or spontaneous joints remain visible even after they have been professionally sealed.

Application as a heating floor screed is also technically possible. However it is necessary to consider that the outlines of heating tubes may be visible on the surface depending on the construction type and temperature stability of the mortar

colour (may vary depending on the pigment type).

The selection of the property categories to DIN EN 13813 or DIN 18560 should take into consideration that the coloured screed is the visible (wearing) surface of the flooring. Meaning that corresponding strength categories (\rightarrow C 30) and the tensile bond strength (B \rightarrow 1.5 N/mm²) should be included in the tender specifications.

The attainable wear values result from the selection of the surface finish quality. This has to be matched to the planned demands. The manufacturer's specifications for the surface finish are to be observed. Contracts for the application of coloured flowing screeds should be awarded to screed layers with relevant experience, and if possible, with appropriate references.

2 What should the manufacturer of the flowing screed mortar observe?

The compatibility of the pigments with the mortar composition has to be proven in the context of the initial type test in accordance with DIN EN 13813. For example, liquid (suspensions / dispersions) and powder-based dyes have an influence on the development of the hardness.



When dosing the dye (pigment) for the flowing screed mortar it should be ensured that a suitable form of delivery (powder, granulate, suspension etc.) is selected depending on the mixing technology available in the manufacturing plant. In the case of delivery in a truck mixer, setting of the consistency has to be carried out completely in the factory. Additional addition of water on the building site should be avoided in order to avoid colour variations through overwatering, etc. In the case of delivery as dry mortar (silo goods), observance of a homogeneous consistency and perfect functioning of the silo mixer has to be ensured. Complete dissolution and homogeneous distribution of the pigment are to be ensured. In addition to the pure mixing time they also depend on the transport distance on the building site. This aspect should be included in the building site planning. Particular care has to be taken when cleaning the building site silos, truck mixers as well as the mixing and transport equipment in the mixing unit in order to avoid divergence in the colour from the previous batches or for the subsequent batches.

3 What should the screed / flooring applier observe?

Application of coloured flowing screeds requires that particular care and attention be paid, since the future appearance of the flooring is also influenced by the application method. Each application or processing fault remains visible. Creation of "trial surfaces" in the object is advantageous so that the influences of the application method on the appearance can be evaluated. Large-surface application in two layers depending on the type and construction height may be prudent. Priming of the first layer ready for covering is required. Joint profiles should be used for the formation of any joints that may be required. Particular care should also be taken during application of corners and curves. Levelling of the coloured flowing screed must be undertaken immediately after application. Depending on the desired coloured effect structure, usage of a brush for the second levelling may be recommended. The impacts with the dappling bar may be clearly evident in the surface of the coloured structure. Depending on the surface finish, specific limits for the residual moisture have to be observed in accordance with the manufacturer's specifications. Measurements on the screed surface are therefore inadequate and only provide reference values. Moisture content measurement with the CCM method results in damage to the

surface and in optical impairments. In this case, measurement points should be selected together with the client where objects will probably be placed permanently (for example kitchen units, etc.). A foil test is recommended as an initial test. CCM measurement should be carried out regardless. Treatment of the surface has a decisive influence on the appearance and the colour shade. Removal of the sinter skin and/or loose components through sanding creates a clearly different colour structure (individual cloudy colouring of the coloured binder matrix in the foreground) than grinding off or milling down to the aggregate grain which results in a terrazzo effect. A clear statement on the part of the architect or client about the desired appearance must be available so that the appropriate treatment method can be selected, and to avoid complaints in advance. The ground surface must always be treated. The protective treatment depends on the intended use. The manufacturer's specifications about the residual screed moisture and the application of the substances are to be observed during waxing, oiling, impregnating, [transparent] coating or sealing. This applies in particular to vapour-tight sealings such as epoxy resins. Instructions on the care of the ready-to-use flooring are to be provided to the planner, client and, if appropriate, the end customer, see also table 1.

4 What should the site management ensure?

Application of the coloured screed has to be integrated in the construction process so that adverse effects to the surface are avoided. Walking on the surface after application and usage to store building materials, etc. during the drying phase are to be avoided. Different drying conditions due to different structure development of the binder matrix can lead to permanent colour differences. Complete covering of the surface with roofing felt base is advisable. The resulting extended drying times are to be taken into consideration and, if appropriate, to be compensated by the use of drying equipment towards the end of the drying process. Since further use of coloured screed mortar residue on other building sites is not easily possible, reimbursement is usually not possible. Clear agreements in advance between the mortar manufacturer and the site management/ contractor/investor are advisable.

5 What does the end customer/ user have to know?

The manufacturer of the coloured flowing screed mortar cannot provide any warranty for the colour appearance of the finished flooring since this can be influenced notably by the application and subsequent treatment. Standardised surfaces or the exact repetition of a surface structure are not possible. Every surface remains unique in its colour structure. Sample surfaces can only provide a general optical impression. Coloured screeds are individual one-off customized surfaces and have their own price level, which can nevertheless represent an alternative to a "classical" floor construction with a high-quality top covering. Instructions of the screed or floor layer regarding protection and care of the finished flooring must be observed. Impregnation as well as waxing and oiling are to be repeated regularly by the user. The manufacturer's specifications of the respective surface finishes have to be taken into consideration here. Table 1 summarizes the practical experience with the usage-dependent treatment and care of coloured flowing screed surfaces.

Every type of use leaves wearing traces to varying degrees depending on the system. Treatment of coloured flowing screeds is comparable to that of parquet flooring. Complete renewal of the surface through sanding and sealing is also possible at any time, but can result in a changed surface appearance when compared to the initial finish.



Pouring the screed



Deaerating with a spiked roller



Freshly poured

Typical surface finishes		Protective and care measures for the surface	Remarks
Wax sealing	<p>Wax sealing is used primarily in residential buildings. It is applied several times depending on the requirements / manufacturer specifications.</p> <p>It forms a protective film on the surface and is thus dirt-repellent.</p>	<p>Care should be carried out using a moist cloth.</p> <p>A floor cleaner with a wax-based care component is recommended as a care product.</p> <p>Areas subject to higher use and wear and tear can be cleaned further with a wax sealant in a suitable mixture with water (manufacturer's specification).</p>	<p>The wax sealing should be renewed regularly as required or acc. to the manufacturer's specifications.</p> <p>Alcohol based cleaning agents should be avoided.</p>
Epoxy resin sealing (water emulsifiable)	<p>Suitable for areas subject to strong wear, such as those with frequent public traffic, or in residential buildings if renewing after some time (see wax sealing), is undesirable.</p> <p>Usually, it offers protection against different types of soiling, considerably improves the chemical resistance (for example diluted acids and bases) as well as the resistance to foodstuff soiling and has a high degree of hardness.</p>	<p>Care should be undertaken using a moist cloth</p> <p>Good experience has been had with all-purpose plant-based cleaners, cleaners with alcohol ("for everything that can be washed") and with liquid soft soap.</p> <p>Full-gloss floor cleaners that are also suitable for stone and ceramic floors (manufacturer specifications) have proven themselves in improving the appearance.</p>	<p>The manufacturers of sealants often offer special care products that change the degree of gloss and can reduce traces of scratches matched to the respective product.</p> <p>The sealing should be set to be permeable to water vapour as far as is possible.</p>
Impregnation	<p>Impregnation reduces the sensitivity to moisture without changing the structure of the surface.</p>	<p>Up to this point only generally commercially available all-purpose cleaners are known to be suitable care products.</p>	<p>Is seldom used in practice since the flooring rapidly absorbs dirt into its structure.</p>

Table 1: Surface finish and care

Literature Internet research

Standards

DIN EN 13813: Screed material and floor screeds - Screed materials - Properties and requirements

DIN 18560 (Parts 1 to 7): Floor screeds in building construction

Code of Practice No. 1; 2011 (published by IGE and IWM) Flowing calcium sulphate screeds in areas of high humidity

Code of Practice No. 2; 2011 (published by IGE and IWM) Drying of flowing calcium sulphate screeds

Code of practice No. 3; 2011 (published by IGE and IWM) Flowing calcium sulphate screeds on underfloor heating

Code of Practice No. 4; 2011 (published by IGE and IWM) Assessment and treatment of the surfaces of flowing calcium sulphate screeds

Code of Practice No. 5; 2011 (published by IGE and IWM) Drying of flowing calcium sulphate screeds

Code of Practice (IWM); Calciumsulfat-Fließestriche in Beton- und Mörtelwerken [*Calcium sulphate flowing screeds in concrete and mortar plants*]

www.pro-fliessestrich.de

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www.iwm.de

Industrieverband WerkMörtel (IWM) e. V.
www.calciumbo.de Industriegruppe Estrichstoffe (IGE) im BV der Gipsindustrie e. V.

www.beb-online.de

Bundesverband Estrich und Belag e. V.
www.flaechenheizung.de Bundesverband Flächenheizungen und Flächenkühlungen e. V.

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