



Needed Carpets

Installation Instructions for *FINETT* Tiles (50 x 50 cm) and Modules (100 x 200 cm)

1.0 General Notes

The technical regulations of DIN 18365 "Floor covering work" including the latest explanations in this connection, as well as the latest technical rules, DIN documents and directives are authoritative for the installation of needed carpets.

Especially:

The technical rules: "Assessment and Preparation of Foundations, Installation of Elastic and Textile Floor Coverings, Laminated Material, Parquet, and Wood-Block Paving; Heated and Unheated Flooring Constructions" published by the Bundesverband Estrich und Belag e.V. (Federal Screed and Floor Covering Association)

as well as

the TKB-8 Technical Rules: "Assessment and Preparation of Foundations for Floor Coverings and Parquets" issued by the "Technische Kommission Bauklebstoffe (TKB) im Industrieverband Klebstoffe e.V. Düsseldorf" (Technical Commission for Construction Adhesives of the Industrial Adhesives Association, Düsseldorf).

This recommendation is a supplement from the product-specific point of view which has been compiled to the best of our knowledge based on experience and testing. No guarantee can be given for its completeness, correctness and applicability in individual cases. If in doubt, carrying out one's own gluing tests is advisable.

Our recommendations are in keeping with the latest developments in installation technology to the extent that we were aware of such at the time of publication.

We have no influence at all on the proper installation, for which reason no guarantee can be given for the results of installation.

The directives for installation provided by the producers and suppliers of priming coat materials, fillers and levelling material, adhesives, etc. are always authoritative, even if, in individual cases, they are different from our respective instructions.

With the publishing of these technical rules, all preceding technical rules in this connection become invalid.

2.0 FOUNDATIONS

2.1 Screeds according to DIN 18 560

In its Sections 2, 3, 4, and 7, DIN 18560 "Screeds in the Building Trade", April 2004 issue, distinguishes between the following constructions and types of screed:

- Screeds and heated screeds on an insulating layer, (floating screeds), Section 2
- Compound screed, Section 3
- Screeds on a separation layer, Section 4
- Highly wear-resistant screeds (industrial screeds), Section 7

Other foundation constructions may be:

Cavity floors
Raised floors
Concrete foundations

Types of Screed

According to DIN 18560 – Section 1, one distinguishes between

- CA calcium-sulphate screed
- AS poured asphalt screed
- MA magnesium-oxide screed
- SR synthetic-resin screed
- CT cement screed

2.2 Dry Constructions

Wooden floors
Particle boards
Plasterboards

2.3 Floor Heating Systems

A distinction has to be made between electric storage-type floor heating systems and hot-water-type floor heating systems.

For this purpose, refer to the latest FBH-D1 Technical Rules/Documentation "Work Sequence for Heated Flooring Constructions" published by the Zentralverband Sanitär – Heizung – Klima (Central Association of the Sanitation – Heating – Air-Conditioning Trades).

3.0 The FLOORER'S DUTIES TO TAKE DUE CARE AND TO POINT OUT INFORMATION WITH REGARD TO THE FOUNDATION AND MATERIAL

Before carrying out his/her work, the foorer is obligated to check and ensure that the construction of the foundation is in accordance with the rules.

If the requirements for the foundation are not met, then the foorer is obligated to give written notification of objection to the client and, if necessary, to notify the obstruction.

The respective foundation for installation has to meet the requirements of VOB, Part C DIN 18365 "Floor covering work" and of the explanations in this connection in their latest version, as well as those of the applicable DIN documents, technical rules and directives.

In general, level foundations are suitable, if they are lastingly dry, free of cracks, clean, resistant to tensile stress, and compression-proof.

Attention must be paid in particular to good surface hardness and strength of the top peripheral area of the foundation.

When he/she inspects the foundation, the foorer is obligated to advance objections in cases of

... major unevenness

With regard to evenness, the foundation has to meet the requirements of DIN 18 202 "Tolerances in Structural Engineering", Table 3, Line 3.

... cracks in a foundation

Any cracks and signs of cracking have to be closed with a suitable two-component resin material, in particular in cases of floating screeds.

... insufficiently dry foundations

All mineral foundations, with the exception of poured asphalt screeds, have an equilibrium of dampness determined by the material of the various types of screed, which also corresponds to the

"age of installation" for floor coverings and which must not be exceeded.

Before doing preparatory work on the sub-floor, the foorer is obligated to take adequate measurements of dampness following the calcium-carbide method, using a so-called CM moisture meter (with mineral foundations) or, with wooden foundations, using suitable special electronic dampness gauges.

For floor heating constructions, the FBH-D4 documentations "Making Screed Ready for Surfacing by Heating" published by the "Zentralverband Sanitär – Heizung – Klima" (Central Association of the Sanitation – Heating – Air-Conditioning Trades) as well as the FBH-M 2 Technical Rules "Preparatory Measures for the Installation of Floor Coverings on Cement and Calcium-Sulphate Heated Screeds" published by the "Zentralverband Sanitär – Heizung – Klima" are all authoritative. In the course of a record of measures, the property developer/client (and also the architect) as well as the heating company have to accept by their dated signatures a confirmation of the heating-up and cooling-down phases. The maximum permissible moisture content of screed constructions and other mineral foundations, when textile floor coverings are glued, are known as follows:

| | | |
|-------------------------|---------------|-----------------|
| Cement screed | (not heated): | ≤ 2.0 CM % |
| Cement screed | (heated): | ≤ 1.8 CM % |
| Calcium-sulphate screed | (not heated): | ≤ 0.5 CM % |
| Calcium-sulphate screed | (heated): | ≤ 0.3 CM % |
| Magnesium-oxide screed | (not heated): | 2 - 12 CM % |

(depending on the proportion of organic component fractions; have client ask manufacturers for empirical values).

Note

In rooms without basements or on ceilings above rooms with high relative humidity and high temperature drops, clients have to provide for and produce appropriate sealing measures and/or vapour seals.

In cases of concrete slabs with and without compound screed, one must bear in mind that the figures determined using measuring instruments usual in the trade might not be sound. The values measured in the upper zone of the foundation do not allow any conclusions about the moisture content of the concrete slab all the way through. Through suitable measures, the client is obligated to provide for the moisture from the foundation being kept away from the priming coat of the filler as well as from the adhesive and the covering.

... insufficiently solid surface of a foundation

The foorer can test the surface strength of a foundation by means of "grid-type scratch tests" or wire-brush treatment and hammer-blow tests. If in doubt, it is a good idea to make test areas (guaran-

tee areas) where you glue the flooring in the manner intended and after the necessary setting time for the adhesive, tear it off again.

... too porous and too rough surface of a foundation

This is tested through visual inspection.

... required closing actuated by gravity of movement joints in the foundation

The functioning of movement joints in the foundation must not be impaired in any manner, i.e. nor should they be covered with floor covering.

... dirty surface of a foundation, e.g. with oil, wax, enamels or paint residues

Cleaning the foundation by scraping and vacuuming are part of the usual preparatory work, removing dirtying of the aforementioned types, however, being a service that has to be paid for additionally.

... unsuitable temperatures of a foundation

The surface temperature of the foundation has to be at least 15 °C, with a floor heating system it should be between 18 °C and 22 °C.

... unsuitable temperature and humidity conditions in a room

According to the VOB, Part C DIN 18 365 "Floor covering work" and of the explanations/comments in this connection, as well as more far-reaching technical rules and directives, it is prescribed that the room temperature has to be at least 18 °C and that the relative humidity shall amount to between 50 and 65 %, but never exceed 75 %. These are the climatic conditions, under which installation materials and needled carpets have to be brought to a moderate temperature/acclimatized.

4.0 Preparatory Work for Foundations

Unless there are other instructions by the client, to guarantee that foundations are suitable for chair rollers, the foorer is obligated to finish foundations with a 1-mm minimum layer of suitable filler and levelling material. Continue by levelling out the foundation to the necessary thickness of the layer to create a suitable, evenly absorbent and level surface for gluing the covering.

The function of the dispersion adhesives recommended by the installation material industry, in particular for achieving short setting times, does not only depend on the suitable room climates, but also on the production of an extremely absorbent base so as to achieve, as soon as possible after gluing, maximum shear forces of the dispersion adhesive.

Depending on the type of foundation, carry out the cleaning measures necessary, it being especially pointed out that the surface of calcium-sulphate screeds always has to be roughened by sanding with a conventional sanding machine in one work-

ing operation, using 16-grain abrasive paper and vacuumed with an industrial-type vacuum cleaner, unless there are different and binding instructions by the manufacturer for preparing the surface.

5.0 Auxiliary Installation Materials

Priming Coats

On foundations to which the filler or levelling compound does not sufficiently adhere, a priming coat should be applied, such as on magnesium-oxide and calcium-sulphate screeds.

On cement screed surfaces and on calcium-sulphate/calcium sulphate floating screeds, magnesium-oxide screeds, and poured asphalt screeds, it always is advisable to apply a priming coat as a bonding course for the subsequent filler.

Today, dispersion priming coats are, usually, used for this, special attention having to be given to suitable film-forming priming coats being used on foundations such as magnesium-oxide screed, particle boards, terrazzo/stone floors, as these are non-absorbent foundations. With old foundations, special attention has to be given to separation layers first being removed from them.

The relevant stipulations of the suppliers/manufacturers of the auxiliary materials have to be considered as binding.

Fillers

The usual fillers/levelling materials in common use are cement-bound. In addition, dispersion fillers and two-component plastic fillers are available for special fields of application.

Bear in mind that poured asphalt screed constructions should be levelled out to a minimum layer thickness of 1.5 mm so that there is a migration barrier opposite the bituminous parts of the foundation.

Wooden foundations can be levelled based on the system with special elastic wooden floor levelling material. Foundations for installation made of type "V 100 E 1" particle boards (glued in the groove-and-tongue area) are usually levelled with dispersion fillers as migration barriers.

Due to the great variety of auxiliary materials available on the market, we point out that there must always be instructions for suitability, intended use according to the technical rules and the properties assured by the supplier/manufacturer.

6.0 Storing Tiles/Modules

The tiles/modules have to be stored flat in their original packaging and protected against soiling and humidity.

7.0 Checking and acclimatizing Tiles/Modules

Check lot numbers. Install only material of identical lots. Before the tiles/modules are installed, they have to be checked for perceptible faults, e.g. – uneven colouring –, as, after completion of the installation work, notifications of faults are not accepted any more. Once the tiles/modules are unpacked, they have to be piled up (not higher than 80 cm) and left in the room for acclimatization for at least 24 hours. The floor temperature should not fall below 15 °C, the air temperature should be in the range of 18 to max. 23 °C, and the relative humidity, if possible, should amount to between 50 and 65 %, however, never exceed 75 %.

The flooring installer is obligated to inform the contractor/client that the room climate must also be maintained after the installation is finished, however, the flooring installer shall not be obligated to ensure that the room climate is actually being maintained.

8.0 Installing Tiles/Modules

The tiles/modules are installed loosely; as to the tiles, we recommend to install them on a suitable adhesion promoter (slip prevention).

In accordance with the explanations in connection with DIN 18365 “Floor Covering Work”, the choice of the type of glue is up to the contractor. The flash-off and setting times given by the glue supplier have to be adhered to/considered, considering the conditions in the building. High-quality, extremely low-emitting dispersion adhesives of a great tensile strength (e. g. acc. to EMICODE EC1 or the “Blue Angel” contract-awarding guidelines) should be used.

For the installation, observe the arrow marks on the rear side of the tiles to make sure that the chosen method of installation is continuously adhered to.

8.1 Method of Installation of Tiles (50 x 50 cm)

You may choose from various methods of installation either at your own discretion or in coordination with your client.

- a) Parallel installation
- b) Checkerboard-type installation
- c) Compound installation
- d) Diagonal installation

For the methods of installation mentioned under a) to d), in particular for methods a), b) and c), it is recommended to check the angle tolerances of the floor surface and/or of the surrounding stationary parts/walls of the building.

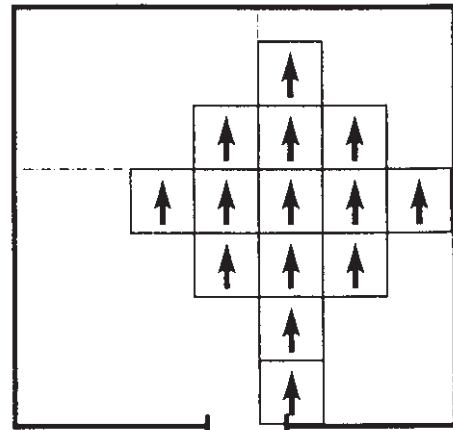
The tiles of the size 50 x 50 cm are rectangular. If, for instance, it has been agreed with the client to lay tiles of different colours, it is important that, in case there are oblique angles in the room, it is previously determined on which side of the room the

tiles shall be laid in parallel and on which side they shall be cut according to the oblique wall angles, so that, in all, an agreeable optical effect which meets the client's request will be produced.

a) Parallel Installation

Mark out with a line a parallel to the main front of the room. The distance to the wall should be identical to the dimension of 2 to 3 tiles, i.e. 100 to 150 cm. Mark the chosen starting point on the line determined.

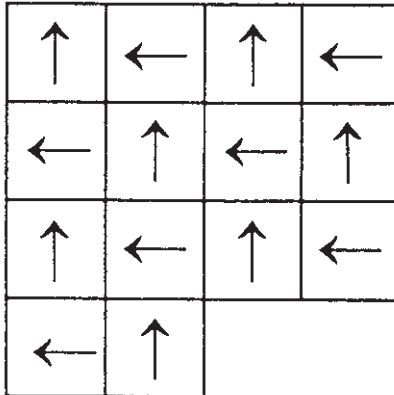
The starting point should be chosen in such a way that, in places which are especially eye-catching (such as door reveal areas) you can, to a large extent, lay entire tiles and are not forced to insert small strips.



Then, install one row of tiles from the starting point along the lining-out. The tile edges have to be tightly butted together, but not pressed to one another. Continue installing the tiles from the starting point into the respective directions. Make sure that, when laying the tiles in parallel, the cross-shaped joints coincide without pressing the tiles.

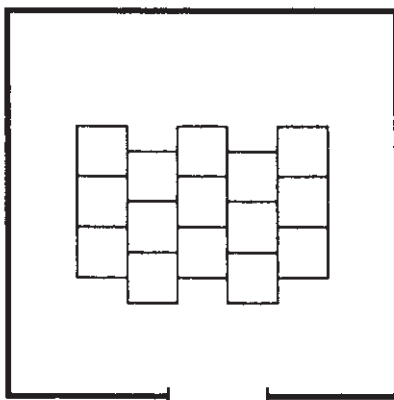
b) Checkerboard-Type Installation

While, for laying tiles in parallel, the arrows on the rear side of the tiles, naturally, point into the same direction, the checkerboard-type method requires them to be turned by 90° and installed as shown in the below sketch.



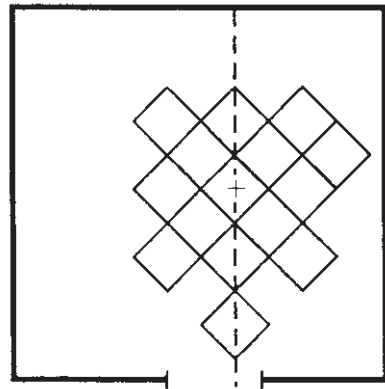
c) Compound Installation

With this method of installation, the tiles are semi-offset to the respective adjacent row of tiles. In this way, no cross-type joints will be produced. This method ensures an optimum surface stability, because two external angles of tiles run against the centre of the longitudinal sides of one tile. Moreover, this method of installation allows to produce interesting effects, when tiles of different colours are installed within one unit of area.



d) Diagonal Installation

When the tiles are installed according to the diagonal method, the layout of the room is the same as for instance with the parallel method of installation. But instead of installing the tiles with one longitudinal side along the line produced by a lining-out, the tile is laid diagonally, centrally to the opposing external angles, as shown on the below sketch.

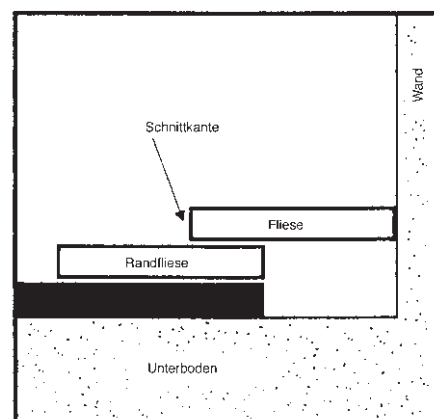


Diagonal installation produces quite an additional expenditure, as does compound installation, because, according to the below sketch, there are more tiles along the wall, which, as marginal tiles, require to be cut in longitudinal or diagonal direction.

Marginal Tiles

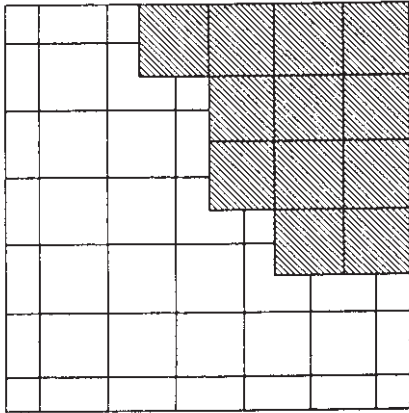
Lay the marginal tile, edge-to-edge, on the last entire tile installed and put the 2nd tile at/on the wall such that a butt joint is formed. For this, see below sketch.

Then, cut the lower tile at the edge of the tile lying on top of it, along a lineal with a knife, or along the tile edge with a trapezoid blade, lift it up and cut it through with a hook-type blade.



Installation on Raised Floor Plates

Tiles laid on raised floor plates have to be installed with their joints offset to the joints of the raised floor plates as shown on the below sketch.



For a parallel installation, the ideal case is given when the cross-type joint of the tiles comes to lie on the centre of a raised-floor plate. When you choose the diagonal installation type, there will not result any parallelism of the butt joints, because of the different dimensions of tiles (for the most part 50 x 50 cm) and raised-floor plates (for the most part 60 x 60 cm).

When installing raised-floor plates, you must ensure that the adhesion promoter used does not get into the joints of the raised-floor plates. In practice, “masking” the joints of the raised-floor plates before applying the adhesion promoter has proven successful. The instructions of the manufacturer of the adhesion promoter should be followed exactly.

8.2 Additional Notes

Finally, when the tiles/modules have been completely installed and glued, protect them against getting soiled until given to the client; we refer in this connection to Section 4.2.1.4 “Supplementary Services, Special Services” of the General Technical Contract Conditions according to DIN 18299 of the VOB.

When using needled carpet materials on the surface of floor heating screed constructions, only use auxiliary materials suited for this application.

The entire content must be taken into consideration of the latest technical rule/documentation “Interface Coordination in case of Heated Floor Constructions” of the Bundesverband Flächenheizung e.V. (Federal Association of Radiant Heating Systems), as well as the latest technical rules and directives including the TKB-8 Technical Rules “Assessment and Preparation of Foundations for Floor Coverings and Parquets”.

Room Air Conditions

Installation materials and floor coverings and, hence, also tiles/modules are designed for rooms in which air conditions generally recommended for the comfort of human beings are lastingly guaranteed.

This includes an air temperature ranging from > 18 °C to approx. 23 °C and a relative humidity ranging from 50 to 65 %.

In this connection, the Technical Rule “Air Conditions in Office Rooms” of the VBG Verwaltungs-Berufsgenossenschaft (Association of Administrative Professions), for example, stipulates the following:

The relative humidity should be in the range of 50 to 65 %, with high temperatures it should be at the lower end of this range.

With sufficiently dimensioned air-conditioning systems, these figures can easily be maintained.

If, nevertheless, people complain about “dry mucous membranes or eyes”, this is mostly due to too high air velocities or polluted air. The occurrence of electrostatic charging, especially in connection with textile or synthetic floor coverings, clearly indicates that the relative humidity is below 50 %, which is too low.

9.0 Concluding Remark

FINETT modular carpets (in the form of tiles and modules) can give the impression of a predominantly homogenous surface that can easily be taken for a floor covering installed in lines. Perceptibility of individual tiles within the units of area is an inherent feature of the product, that means, within large units of area, depending on the viewer’s position and the different light reflections resulting therefrom, it is normally possible to perceive individual tiles. When carpet lines and tiles are combined side by side, this appearance can sometimes be made out more clearly.

Only the explanations in these installation instructions as well as the general technical regulations of the VOB, Part C DIN 28365 “Floor covering work” are authoritative for the delivery, installation and durability (usefulness and utility) of the tiles and modules we supply. If any faults or damages appear on these textile floor coverings which are attributable to non-compliance with these directives, the manufacturer and/or supplier may not assume any liability for the warranty. Any claims of recourse in this connection shall be excluded.

In the course of technical development, we reserve the right to correspondingly alter and/or deliver the tiles/modules we supply and produce.

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