

Needled Carpets

Installation Instructions FINDEISEN Needled Carpet Lines

1.0 General Notes

The technical regulations of DIN 18 365 “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 needled 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.

For the installation of carpets featuring pattern repeats, please see also our technical rule “Supplementary Instructions for the Installation of Needled Carpet Lines featuring Pattern Repeats“.

2.0 FOUNDATIONS

2.1 Screeds according to DIN 18 560

In its Sections 2, 3, 4, and 7, DIN 18 560 “Screeds in the Building Trade“ distinguishes between the following constructions and types of screed:

- Screeds and heated screeds on an insulating layer, (floating screeds), Section 2
- Compound screeds, 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 18 560 - 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 floorer 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 floorer 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 18 365 "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 floorer 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 floorer 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 installer 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):	1.0 - 3.5 CM-%

(depending on the proportion of organic component fractions; 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 floorer 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 (guarantee 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 dirt 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 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 %. These are the climatic conditions under which installation materials and needed 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 casters, 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 working 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.

Carpet Underlays

Carpet underlays may impair i.a. the indentation behaviour, the chair castor suitability, and the fire behaviour of FINDEISEN needed carpets. Therefore, we do not recommend installing FINDEISEN needed carpets on underlays and, in each individual case, it must only be realized where this has been explicitly authorized by us.

6.0 Storing Rolls

The rolls have to be stored upright in their original packaging and protected against soiling and humidity.

7.0 Acclimatizing, installing, and gluing Needled Carpets

After carrying out the necessary testing measures and proper preparatory work for the foundation, lay out in loose fashion the needled carpet lines for them to acclimatize. Before installation, the needled carpets should be rolled out for acclimatization in the respective rooms at a room temperature of $> 18\text{ }^{\circ}\text{C}$ / a relative humidity between 50 and 65 %. The flooring installer is obligated to inform the contractor/client that the room climate must also be maintained after the end of the installation work, however, the flooring installer shall not be obliged to ensure that the room climate is being maintained.

The uniformity of the colour of the needled carpet lines is only guaranteed with identical lot numbers (manufacture). Lines of one and the same lot are marked by identical lot numbers.

Minor commercial colour variations may occur in every lot.

The lines must always be installed in the ascending order of their numbers in the delivery note, even if the sequence of numbers is not continuous.

Observing this instruction does not free the installer from the duty to visually check the needled carpet for colour uniformity and freedom from other defects before the material is glued. Minor colour variations due to production have to be accepted.

Faults given notice of properly may only relate to needled carpets which have not yet been glued; any more far-reaching claims regarding detectable faults in carpets shall be excluded.

All measures for handling needled carpets must exclusively be in keeping with the general technical regulations of the VOB, Part C DIN 18 365 "Floor Covering Work", including the latest explanations in this connection.

Notes

In accordance with the above-mentioned technical rules, the foorer may freely select the direction for installing the needled carpet lines.

By contrast, it used to be standard for the needled carpet lines to be laid longitudinally at right angles to the main window front/light source.

It has to be pointed out that all textile floor coverings can display hues of colour that stand out light or dark in relation to the width of lines and the longitudinal direction as a result of the action of light/reflections and the viewer's line of vision.

These hues of colour are especially perceptible, when the carpet lines are installed crosswise to the main window front/light source.

For this reason, we recommend always to lay/glue needled carpet lines lengthwise per room unit to the main window front/light source.

Adhesives

According to Section 2.2 "Adhesives" of the VOB, Part C DIN 18 365 "Floor Covering Work", it is especially important for the nature of adhesives used to glue the floor covering to be such that using them will produce a solid and lasting connection. The adhesives must not have any detrimental effect on the floor covering or the foundation.

According to the explanations of DIN 18 365 "Floor Covering Work", it says the following about this:

„The selection of the type of adhesive for floor coverings remains up to the contractor.

He shall be responsible for acceptable gluing/fixing of the elastic or textile floor covering on the surface of the foundation.

The dispersion adhesives used to glue our needled carpets have to be "suitable for chair casters" and, as a whole, display good adhesive and cohesive behaviour.

Be sure to moisten the whole surface with adhesive. The flash-off and setting times correspond to the information provided by the adhesive suppliers and must be complied with and allowed for taking into account the circumstances of the property.

Adhesives of the lowest emission class that are free of high-boiling solvents and have a highly shear-resistant glue joint (value $> 2\text{ N/mm}^2$, test acc. to DIN EN 14293) should be used for our carpets. A list of suitable adhesives is available on request.

Important Note:

When the respective building regulation list comes into effect, but from January 1, 2011 at the latest, FINDEISEN needled carpets must only be glued by adhesives that have a General Approval (abZ) of the "Deutsche Institut für Bauaufsicht (DIBt) [German Site Supervision Authority]".

Dry-type adhesives

FINETT 7 may also be installed using the Uzin switchTec(r) gluing technology. More detailed information is available in the instructions for the installation of FINETT 7 using the switchTec (r) gluing technology which are included in every delivery of FINETT 7 carpets.

Conductive Gluing

With conductive installation, our conductive needled carpets, which are labelled as such, are installed on a conductive system (such as conductive priming coats, conductive fillers or copper strips, combined with a conductive dispersion adhesive each) and, via copper strip lug to the potential equalization (neutral conductor), included in the additional electrical protection system of the building. To do

so, a potential equalization connection has to be provided especially for this purpose. This connection is a matter for a master electrician.

Gluing our needled carpets labelled as antistatic with conductive adhesives will boost the anti-static equipping, so that, especially with insulating foundations (such as poured asphalt screed), there will be no impairment of the distribution of the electrical charge within the plane of the floor covering.

Installation

Individuals using the materials are especially obligated to check whether the temperature and humidity in the room are suitable for working with the auxiliary materials and floor coverings. No carpeting work should be carried out with a temperature of the foundation < 15 °C, an air temperature < 18 °C and a relative humidity > 65 %.

Regulate the flow-through amount of the adhesive on the foundation with the B2 or B3 trowel notch size such that the adhesive present amounts to at least 400 to 500 g/m²; pay special attention to properly replacing the trowel notch size in good time so that the amount of adhesive applied remains assured according to the type of adhesive. Follow the instructions of the producer of the adhesive. It is necessary to moisten the entire surface of the rear side/bottom side of the needled carpet.

The seams should be cut according to the dual-cut method before gluing:

For this, overlap the edges of the needled carpet lines by 3 - 5 cm before laying the carpet in the bed of adhesive. Then, cut the carpet edges lying on top of each other in one single cutting operation along a metal rule. Seam cuts made in the bed of adhesive are not considered to be executed according to the technical rules and so is the joining together of the original edges.

Lay the cut needled carpet lines into the fresh bed of adhesive. Then, the entire surface of the carpet lines has to be rubbed onto the foundation; after approx. 15 to 20 minutes, the entire surface of the needled carpet has to be run over with a 50-kg min. pressing roller (roller for rubbing it onto the foundation) once more. After approx. 45 to 60 minutes, it has to be finally checked whether there is a perfect all-over gluing which is suitable for chair rollers (solid and lasting); then, a pressing roller has to be run over the entire surface once more.

The seam edges must not be fixed by special rubbing (e.g. by means of a hammer) in order to avoid light stripes.

Finally, when the needled carpet has been completely installed and glued, protect it 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 latest TKB-8 Technical Rules "Assessment and Preparation of Foundations for Floor Coverings and Parquets".

Any changes in the dimensions/lengths (creating joints) in the area of the seam edges of the respective needled carpet lines will not be chargeable to the manufacturer, if there are any unfavourable climatic conditions in the room with regard to room temperature and low relative humidity or if an unsuitable adhesive has been used. As is known from actual practice, too high humidity results in moisture being absorbed by the hygroscopic needled carpet, and, as a result of this, in changes in form (warping and bumps), and on top of this, the dispersion adhesive for carpeting used is detrimentally affected especially with regard to its initial adhesiveness.

Room Air Conditions

Installation materials and floor coverings and, hence, also FINDEISEN needled carpets 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.

Instructions for the Installation of Carpets featuring Repeats

For this, please see the technical rules "Supplementary Instructions for the Installation of Needled Carpet Lines featuring Pattern Repeats".

8.0 Concluding Remarks

Only the explanations in these installation instructions as well as the general technical regulations of the VOB, Part C DIN 18 365 "Floor Covering Work" are authoritative for the delivery, installation and durability (usefulness and utility) of the needed carpet lines 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 needed carpet lines we supply and produce.

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