

## Needled Carpets | Installation Instructions for glued rolls

### 1.0 General Notes

The technical regulations of VOB Part C 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 FINDEISEN needled carpets.

Especially

The technical rules: "Assessment and Preparation of Substrates, 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 Substrates 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 installation material should be considered.

### 2.0 Substrates

#### 2.1 Screeds according to DIN 18560

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

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

Other substrate constructions may be: Cavity floors | raised floors | concrete substrates

#### 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).

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### 3.0 The FLOORER'S Duties to take Due care and to point out information with regard to the Substrate and Material

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

If the requirements for the substrate 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 substrate 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 substrates 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 substrate.

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

#### ... major unevenness

With regard to evenness, the substrate has to meet the requirements of the latest DIN 18202 "Tolerances in Structural Engineering", Table 3, Line 3.

#### ... cracks in a substrate

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 substrates

All mineral substrates, with the exception of poured asphalt screeds, have an equilibrium of dampness determined by the material of the various types of screed, which also corre-

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

Before doing preparatory work on the subfloor, the foorer is obligated to take adequate measurements of dampness following the calcium-carbide method, using a so-called CM moisture meter (with mineral substrates) or, with wooden substrates, 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 substrates, when FINDEISEN needled 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; have client ask manufacturers for empirical values).

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### **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 substrate do not allow any conclusions about the moisture content all the way through the concrete slab.

Through suitable measures, the client is obligated to provide for the moisture from the substrate being kept away from the priming coat of the filler as well as from the adhesive and the covering.

### **... insufficiently solid surface of the substrate**

The foorer can test the surface strength of a substrate 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 substrate**

This is tested through visual inspection.

### **... required closing actuated by gravity of movement joints in the substrate**

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

### **... dirty surface of a substrate, e. g. with oil, wax, enamels or paint residues**

Cleaning the substrate 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 substrate**

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

Higher temperatures of the substrate may lead to changed reaction times while the installation materials are applied. It is advisable not to exceed a temperature of 22 °C even in case of substrates without floor-heating system.

### **... unsuitable temperature and humidity conditions in a room**

According to the VOB, Part C DIN 18365 "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 40 and 65 %.

These are the climatic conditions, under which installation materials and needled carpets have to be brought to a moderate temperature/acclimatized.

High temperatures of the room air change the reaction times and the drying process of the installation materials, which may change the dimensions of the carpet.

It is advisable not to exceed a room air temperature of 26 °C.

## **4.0 Preparation of the Substrate**

Unless there are other instructions by the client, to guarantee that substrates are suitable for chair rollers, the foorer is obligated to finish substrates with a 2 mm minimum layer of suitable filler and levelling material.

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Continue by levelling out the substrate 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 substrate, 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 a suitable 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

#### Precoats (Priming Coats)

On substrates to which the filler 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.

For this, one normally uses dispersion priming coats. Special attention has to be given to suitable film-forming priming coats being used on non-absorbent substrates such as magnesium-oxide screed, particle boards, terrazzo/stone floors.

In case of old substrates, it is absolutely necessary before installation to remove old separation layers and residues of installation materials.

#### 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 always be levelled out to a minimum layer thickness of 2 mm so that there is a migration barrier opposite the bituminous parts of the substrate.

Wooden substrates can be levelled with special elastic wooden floor levelling materials suitable for the system.

Substrates 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. The relevant stipulations of the suppliers/ manufacturers of the filler material have to be considered as binding.

#### Underlays (e. g. according to DIN EN 14499)

(Insulating) underlays may impair i. a. the indentation behaviour, the chair castor suitability, and the fire behaviour of FINDEISEN needled carpets.

Therefore, we do not recommend installing FINDEISEN needled carpets on underlays of any kind and in each individual case, they 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, humidity, and direct insolation.

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### 7.0 Acclimatizing, Installing and Gluing rolls

In most cases, FINDEISEN carpets have a wear layer of 100 % polyamide.

It is a physical reality that polyamide fibres absorb and/or discharge (air) humidity, resulting in swelling or shrinkage of the polyamide fibre.

Strongly fluctuating climatic conditions may, therefore, lead to changes of the dimensions (growing or shrinking) of the needled flooring. This is true for all needled carpets featuring a wear layer of polyamide.

So it is absolutely necessary after the end of the test measures or after terminating the professional preparation of the substrate to lay the needled carpet lines in loose fashion for them to acclimatize.

Before installation, the needled carpet lines should be rolled out in the respective rooms for min. 24 hours for them to acclimatize.

The floor temperature has to be min. 15 °C, the air temperature between 18 °C to 22 °C (max. 26 °C) and the relative air humidity between 40 % and 65 %.

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

Check lot numbers. Install lines with identical numbers only. 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 these instructions does not free the installer from the duty to check the needled carpet for colour uniformity and freedom from other defects (visible faults) before the material is glued. Be sure to meet the directives of § 377 HGB (Commercial Code).

Minor or unavoidable colour variations due to production have to be accepted. It is expressly pointed to the latest explanation/comment in this connection of the ATV DIN 18 365 "Floor Covering work" (09-2016 version, point 2.8, pages 38 thru 40).

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

### Notes

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

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 in the same direction and lengthwise per room unit to the main window front/light source.



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### Adhesives

According to the latest explanation of the 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 substrate and, after installation, they must not cause annoyance by bad smell.

The dispersion adhesives used to glue our needed carpets have to be "suitable for chair rollers" and, as a whole, display good adhesive and cohesive behaviour. Be sure to moisten the whole surface of the rear side of the carpet 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.

The adhesives used to glue FINDEISEN needed carpets must enable the changes of the dimensions of the carpet lines due to unavoidable fluctuations of the relative air humidity to be compensated.

The higher the tensile strength of the adhesive the lower the risk of changing dimensions of the carpet lines.

We recommend to use extremely low-emitting adhesives that are free of low, medium and high boiling solvents and have a glue joint of a great tensile strength (value > 2 N/mm<sup>2</sup>, testing acc. to DIN EN 14293).

### Important Note

FINDEISEN needed carpets, in Germany, must be glued by adhesives that have a general approval (abZ) of the Deutschen Instituts für Bautechnik (DIBt/German Site Supervision Authority).

### Dry-type Adhesives

FINETT 7 may also be laid using the switch Tec®-gluing technology of Messrs. Uzin. In this regard, please refer to the installation instructions for FINETT 7 with switchTec®-adhesive technology, which you can find here or on our homepage at [www.nadelvlies.de](http://www.nadelvlies.de).

### Conductive Gluing

With conductive installation, FINDEISEN needed carpets, which are labelled as such, are installed on a conductive system (consisting of a cross conducting layer and a conductive dispersion adhesive) and, via copper strip lug connected to the potential equalization (neutral conductor), included in the additional electrical protection system of the building.

There are two possibilities of producing the cross conductive layer:

- Precoating of the expertly prepared substrate with a conductive precoat
- Gluing of a suitable copper strip grid on the expertly prepared substrate.

We recommend to precoat the entire surface of the expertly prepared substrate with a conductive precoat.

When this precoat has dried, a copper strip lug is to be glued with a conductive adhesive on the conductive precoat every 30 m<sup>2</sup>, in a right angle to the wall in the area of the provided earthing points.

The copper strip lug should reach into the room by approx. 1 running metre and contact the earthing point (equipotential) for an adequate time.

Small rooms should have at least two diagonally opposing earthing points. In case of large surfaces the distance between the earthing points must be max. 10 m.

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The part of the copper strip projecting from the wall by at least 0.5 running metres must be connected to the equipotential by an electrician. (Attention: this connection is a matter for a master electrician!)

For the further installation, proceed as described in these installation instructions. Of course, FINDEISEN needled carpet lines must be glued with an adequate conductive adhesive in sufficient quantity, using the earmarked trowel notch size.

### Installation

The floorer is 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 substrate < 15 °C, an air temperature < 18 °C and a relative humidity > 65 %.

Regulate the flow-through amount of the adhesive on the substrate with the B2 or B3 trowel notch size such that the adhesive present amounts to at least 400 to 500 g/m<sup>2</sup>; pay special attention to properly replacing the trowel notch in good time so that the amount of adhesive applied remains assured according to the type of adhesive.

Follow the instructions of the manufacturer 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.

When these preparative works are done, apply the adhesive as prescribed and lay the cut needled carpet lines into the bed of adhesive, taking into account the flash-off and setting times provided by the adhesive supplier.

Alternatively, the seams may also be cut with a seam cutter like those used for lino (e. g. "Lino-cut" or "Greencut").

For this, cut the first needled carpet line at 2 - 3 cm from the carpet edge with the seam cutter before applying the glue. Then, lay the second line the edge of which has not yet been cut, on the first line, overlapping this first line by approx. 2 - 3 cm. Fold both carpet lines back and apply the glue on the substrate as described above.

Then, the two carpet lines are laid into the bed of adhesive taking into account the flashing-off/setting times stipulated by the producer of the adhesive. Then the seam of the second (top) line must be cut along the already cut edge of the bottom line.

Then, the entire surface of the carpet lines has to be rubbed onto the substrate; after approx. 15 to 20 minutes, the entire surface of the needled carpet has to be run over again with a minimum 50-kg pressing roller (roller for rubbing it onto the substrate).

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 never be fixed by special rubbing (e. g. by means of a hammer) in order to avoid light stripes that could show the seams.

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### Further Installation Advices

The carpet must be protected against direct insolation and/or other heat exposure until after the completion of the installation works. Acc. to the VOB, the necessary measures are considered special services and have to be paid for separately.

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 the rule that the supplier is obligated to conserve a completed yet not accepted work (protection of the carpet against getting damaged by subsequent trades). Acc. to the VOB, this is a special service to be paid for separately.

Bear in mind that the glued carpet lines must not be covered until the glue has set (that is, normally after about 72 hours).

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

The entire content must be taken into consideration of 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 Substrates 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 or unsuitable climatic conditions in the room with regard to room temperature and low relative humidity or if an unsuitable adhesive has been used.

### 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. 22 °C (max. 26 °C) and a relative humidity ranging from 40 to 65 %.

### 8.0 Cleaning and Maintenance Instructions

Be sure to demonstrably hand over our maintenance and cleaning instructions to the final user (user of the flooring) as early as possible, usefully together with the offer, but no later than on completion of the installation work.

In this connection we expressly refer to the latest comments on the Technical Rules DIN 18365 "Floor Covering Work", (09-2016 version, point 3.1.5, page 66).

### 9.0 Concluding Remarks

Only the explanations of these installation instructions as well as the general technical regulations of the VOB, Part C DIN 18365 "Floor Covering Work" are authoritative for the delivery, installation and durability (usefulness and utility) of the needled carpet lines we supply.

If any faults or damages appear on our floor coverings which are attributable to non-compliance with these directives, we shall not assume any liability or warranty. Any claims of recourse in this connection shall be excluded.

In case of doubt we recommend to carry out your own convincing installation tests, i.e. to set up test or trial surfaces.

In the course of technical development, we reserve the right to correspondingly alter or adjust the needled carpet lines we supply and produce.



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