

TKB-Technical Briefing Note 5

Installation of Cork Flooring

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1. Introduction

This technical briefing note advises the installer on installation of cork flooring. These instructions shall be adhered to as long as cork and adhesive manufacturers have not issued other recommendations.

2. Classification of Cork Flooring

Cork flooring is mostly offered in form of tiles. In these tiles cork, a natural raw material, in the form of granulated cork and/or cork veneer can be combined with different binders and plastics. The admissible dimensional tolerance of the tiles is specified in the standard requirements (DIN EN 12104).

Colour variations in cork flooring are natural and unavoidable. An even, natural and lively appearance of the installed floor is achieved by mixing tiles from different packages.

The surface of cork flooring must be protected against wear. The following processes are commonly used to achieve this goal:

- application of a PVC wear layer in the factory
- surface treatment, in the factory or on site

2.1 Cork Flooring with PVC Wear Layer according to DIN EN 655

DIN EN 665 “Resilient floor coverings – Tiles of agglomerated composition cork with polyvinyl chloride layer – Specification”. The tiles come with a corkwood layer and in some cases with a decorative layer of cork or wood veneer and a laminated transparent PVC wear layer. On the backing of the flooring tiles, a PVC counteracting film is applied.

2.2. Cork Flooring from Corkwood according to ISO 3813 or DIN EN 12104

ISO 3813 “Resilient floor coverings – Cork floor tiles – Specification” covers homogenous and heterogeneous tiles from corkwood, raw or with factory applied veneer or surface treatment. The backing of these tiles is made from corkwood. DIN EN 12104 “Resilient floor coverings – cork floor tiles” specifies requirements for floor coverings made from corkwood, available in form of tiles, where surface finish and/or sealing is intended.

3. Adhesives for Cork Floor Coverings

According to the German Gefahrstoffverordnung (Ordinance on Hazardous Substances) and the German Technische Regel Gefahrstoffe (Technical guideline for hazardous material) (TRGS) 610, contractor/installer is committed to always use floor covering installation materials posing the lowest possible risks as far as technically feasible. With regard to cork floor coverings, this mainly pertains to the adhesives used.

3.1 Dispersion Adhesives

Today, for reasons of industrial safety, only solvent-free, water-based dispersion adhesives are recommended for the installation of cork floor coverings. Depending on type of flooring, either dispersion contact adhesives for two-sided application or special dispersion adhesives for one-sided application are used. Preferably, use very low emission adhesives with Emission Code EC 1 classification. Of special importance when using dispersion adhesives is the observance of the specified/recommended climatic conditions in installation room (see 4.3 Installation conditions).

Selection of a suitable dispersion adhesive depends on type of flooring (PVC or cork backing) as well as on condition of substrate (absorbency, roughness). Please always observe instructions of

adhesive and flooring manufacturers which might vary considerably.

3.1.1 Dispersion Contact Adhesives

Dispersion contact adhesives are processed with the contact bonding process, i.e. the adhesive is applied to both sides, to the substrate and backing of the tile using a short pile roller. After drying, the cork tiles are exactly fitted into the adhesive bed during open time of the adhesive and rubbed or rolled down firmly or tapped down using a rubber hammer.

Primarily, dispersion contact adhesives require a level substrate which shall be as smooth as possible but does not necessarily need to be absorbent.

With some dispersion contact adhesives, the tiles can be efficiently pre-coated with adhesive and after drying, the tiles can then be stored temporarily in stacks for up to 24 hours. There are also some special adhesives which allow pre-coating up to 6 months prior to installation. At the beginning of the installation, adhesive then only needs to be applied to substrate and must air. Using this method, deformations of the cork tiles caused by swelling can effectively be avoided, since all initial swelling has already subsided.

For durable contact bonding, it is essential that the two applied adhesive layers fuse over the entire area. The following factors play an important role in achieving this goal:

- method of application and adhesive consumption
- airing and open times
- amount of pressure applied

3.1.2 Dispersion Adhesives for one-sided Application

Dispersion adhesives for one-sided application are applied solely to the substrate using a suitable notched trowel. The flooring is then placed in the still wet adhesive bed, observing the specified airing and open time and is rubbed down firmly. After a short while, the flooring is rubbed down again or rolled down using a linoleum roller.

Dispersion adhesives for one-sided application mostly require an absorbent substrate which can be achieved by applying suitable levelling compounds with sufficient layer thickness. Dispersion adhesives for one-sided application for PVC cork flooring according to DIN EN 655 and for corkwood flooring according to ISO 3813 or DIN EN 12104 may vary considerably regarding consistency and properties. Therefore, manufacturers' instructions must always be adhered to.

3.2 Selection of Adhesive

When selecting an adhesive, always follow specifications issued by flooring manufacturer.

4. Installation of Cork Floor Coverings

In order to achieve a natural-looking, lively appearance of the installed floor, it may be advisable to specifically mix cork tiles from different packages. Installation instructions issued by cork flooring manufacturer shall be followed.

4.1 Substrate

TKB Technical briefing note 8 "Assessment and Preparation of Substrates for Installation of Floor Coverings and Parquet" as well as BEB-Merkblatt (BEB-information sheet) "Beurteilen und Vorbereiten von Untergründen. Verlegen von elastischen und textilen Bodenbelägen, Schichtstoffelementen (Laminat), Parkett und Holzpflaster. Beheizte und unbeheizte Fußbodenkonstruktionen" (Assessment and preparation of substrates. Installation of elastic and textile floor coverings, laminate, parquet and wood paving. Heated and non-heated floor constructions) contain detailed instructions and specifications regarding required tests.

4.2. Storage and Conditioning

Cork flooring shall be stored in a dry place. Prior to installation, the material shall condition unpacked for a period of 2 - 3 days at 18 – 22 °C and a relative humidity of 50 – 75 %.

4.3 Installation Conditions

During installation and subsequent surface treatment, if required, as well as for a period of min. 3 days after installation, the following climatic conditions must prevail in installation room:

Air temperature:	min. 18 °C
Substrate temperature:	min. 15 °C
Substrate temperature with underfloor heating:	18 – 22 °C
Relative humidity:	preferably 40 – 65 %, max. 75 %

Temperature of materials used (primers, adhesives and cork flooring) shall match room temperature. Primers and levelling compounds shall be sufficiently dry before next processing step begins. Always observe manufacturer's specifications regarding drying times.

4.4 Bonding of Cork Floor Coverings

The tiles may be installed in a regular or irregular pattern or with cross-joints.

For bonding, use the adhesives described in 3.1.1 and 3.1.2. Always observe manufacturer's specifications.

4.4.1 Bonding of Cork Flooring with PVC Wear Layer

This type of flooring is laminated with a PVC film on both sides (surface and backing).

For bonding, use adhesives with good PVC adhesion which are resistant to plasticizers.

The commonly used wet-bed adhesives for one-sided application require an absorbent substrate, created for example by applying an absorbent levelling compound (see TKB technical briefing note 9 "Technical specification and installation of floor levelling compounds").

During open time, the cork flooring is placed in the adhesive bed free of tension, rubbed down and later rolled down with a lino roller.

4.4.2 Bonding of Cork Flooring made from Corkwood

The main feature of this type of flooring is the natural cork backing.

For bonding, dispersion contact adhesives or special dispersion adhesives for one-sided application have proven especially effective.

Dispersion adhesives for one-sided application are suitable for tension-free cork flooring and require an absorbent substrate which is created by applying absorbent levelling compounds (see TKB technical briefing note 9 "Technical specification and installation of floor levelling compounds").

After the dispersion adhesive for one-sided application has been applied with the specified notched trowel, the cork tiles are placed during open time without tension and are fully rubbed down with sufficient pressure or are rolled down. After a short wait period, this process is repeated.

Dispersion contact adhesives are processed by applying the adhesive to both the tile backing and the substrate using a short pile roller or fine notched trowel. After airing, the cork tiles are placed into adhesive bed free of tension and fully rubbed down with sufficient pressure, rolled down or tapped down using a rubber hammer. The same procedure is repeated after a short wait time.

A durable contact bond generally requires film fusion over the entire area and the following factors playing a decisive role:

- sufficient adhesive quantity
- use of the specified application device
- compliance with airing and open times
- sufficiently high contact pressure

Manufacturers' instructions regarding the application device for contact adhesive, time of adhesive application on cork flooring and process to achieve required full film fusion of the two adhesive films vary greatly to some extent. Consequently, always carefully observe manufacturer's instructions.

5. Surface Treatment

At the earliest, surface treatment of cork flooring shall be performed 24 hours after completion of the bonding work. Treatment is exclusively governed by instructions of the respective cork flooring manufacturer.

6. Relevant Standards and Technical Briefing Notes

In the following, please find the relevant applicable standards and technical briefing notes. They represent the version valid at time of publication of this technical briefing note. The latest version always applies.

6.1 Industrial Safety

Gefahrstoffverordnung (GefStoffV),
Published December 23, 2004 (BGBl. I S 3758),
amended by article 2 of the ordinance of
December 18, 2008 (BGBl. I S 2768)

TRGS 610
Ersatzstoffe und Ersatzverfahren für stark lösemittelhaltige Vorstriche und Klebstoffe für den Bodenbereich

GISCODE für Verlegewerkstoffe
Gefahrstoffinformationssystem der Berufs-
genossenschaften der Bauindustrie, Frankfurt

EMICODE
Gemeinschaft Emissionskontrollierte Verlegewerk-
stoffe, Klebstoffe und Bauprodukte e. V. (GEV),
Düsseldorf

6.2 Standards for Cork Flooring

DIN EN 12104
Resilient floor coverings – Cork floor tiles –
Specification
October 2000

DIN EN 655
Resilient floor coverings – Tiles of agglomerated
composition cork with polyvinyl chloride layer –
Specification
January 1997

ISO 3813
Resilient floor coverings – Cork floor tiles –
Specification
April 2004

6.3 Standards for Adhesives for Cork Floor Coverings

DIN EN 14259
Adhesives for floor coverings – requirements for
mechanical and electrical performance
July 2004

DIN EN 1372
Adhesives - Test method for adhesives for floor
and wall covering adhesives – Peel test
October 1999

DIN EN 1373
Adhesives - Test method for adhesives for floor
and wall covering – Shear test
October 1999

6.4 Standards for Floor Covering Work

DIN 18365
VOB Vergabe- und Vertragsordnung für
Bauleistungen – Teil C: Allgemeine Technische
Vertragsbedingungen für Bauleistungen (ATV) –
Allgemeine Regelungen für Bauarbeiten aller Art -
Bodenbelagsarbeiten
October 2006

6.5 TKB Technical Briefing Notes

TKB-Technical Briefing Note 6
Trowel notch sizes for floor coverings, wood
flooring and tiles
May 2007

TKB- Technical Briefing Note 8
Assessment and preparation of substrates for
installation of floor coverings and parquet
June 2004

TKB- Technical Briefing Note 9
Technical specification and installation of floor
levelling compounds
April 2008

6.6 Other Standards and Technical Briefing Notes

DIN18299
VOB Vergabe- und Vertragsordnung für
Bauleistungen - Teil C: Allgemeine Technische
Vertragsbedingungen für Bauleistungen (ATV) -
Allgemeine Regelungen für Bauarbeiten aller Art
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DIN 1960
VOB Vergabe- und Vertragsordnung für
Bauleistungen - Teil A: Allgemeine Bestimmungen
für die Vergabe von Bauleistungen
May 2006

DIN 1961
VOB Vergabe- und Vertragsordnung für
Bauleistungen - Teil B: Allgemeine
Vertragsbedingungen für die Ausführung von
Bauleistungen
October 2006

6.7 Literature and Commentaries

Harald Kaulen, Günter Hahn, Ortwin Baumann
Erläuterungen zur DIN 18365 –
Bodenbelagsarbeiten und DIN 18299, Ausgabe
2002, 6. Auflage 2004

Arbeitskreis Bodenbeläge im Bundesverband
Estrich und Belag e. V.
Kommentar zur DIN 18365 - Bodenbelagsarbeiten
1. Edition, 2006