

JUNCKERS CLIP SYSTEM

Installing of floors with clips


JUNCKERS
Walking on Danish design

[JUNCKERS.COM](https://www.junckers.com)



WALKING ON DANISH DESIGN

The story of Junckers' beautiful solid hardwood floors began in 1930. It is the story of a passionate and innovative young man, who had a dream of using the forest's resources in the best possible way. Flemming Juncker, son of an estate owner from Southern Jutland, was born in 1904. At 25 he earned a Master of Forestry and established Junckers Sawmill in Køge the following year. To this day, Junckers still uses the same philosophy of resource optimisation. This means that any waste or bi-products, which are difficult to sell, are used in the production of sustainable energy.

JUNCKERS IS A CO₂ NEUTRAL COMPANY

Despite Junckers is using a considerable amount of energy to dry and process the timber, the company produces more energy than it uses. The production's bi-products such as bark, wood-chips and sawdust are delivered to a local power station, which in return provides electricity and steam to Junckers and electricity and heat to the public Danish electrical grid.

As wood is considered a CO₂-neutral material, and because Junckers generates more energy than the business itself can consume, the energy surplus is used to produce CO₂-neutral electricity, which benefits society. That makes Junckers a CO₂-neutral company!

CERTIFIED TIMBER PEFC™ AND FSC®

At Junckers we believe in sustainability and support initiatives that improve environmental awareness. We hold Chain of Custody PEFC™ and FSC® certificates. A Chain of Custody certificate enables the wood to be tracked from the finished floor back to the forest.

PEFC™ and FSC® are organisations that manage foresting to protect nature, wildlife and people.



The mark of
responsible forestry



Ask Junckers for FSC®
certified products

PRODUCT QUALITY

Junckers' product quality management system forms the basis of the company's CE marking of timber floors according to EN 14342, EN 14904 and EU Guidance Paper B and D for CE marking. The quality system is built according to the ISO 9000 series, although this is not monitored by a third party. The system includes employees, production and administrative processes and resources essential to meet the company's quality goals.

CE - DECLARATION OF PERFORMANCE

Junckers' floors are CE marked, which means that the floors must comply with certain common EU standards in relation to safety, environment and health. A declaration of performance forms the basis for the CE marking, which accurately shows how specific legal requirements are met. For example, this is applicable to fire resistance, degassing, compression strength, friction, etc.



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ISO CERTIFICATIONS

Junckers is certified according to ISO 14001. Additionally, the environmental management system comprises areas such as working environment, as well as energy safety in connection with electrical work (SKS).

EPD – ENVIRONMENTAL PRODUCT DECLARATION

We know from consultants, developers and architects how important it is to provide transparency and traceability in relation to materials. Therefore, in collaboration with Ramboll, Junckers has completed EPD's, which evaluate the environmental impact of our solid hardwood floors, and by this we can contribute to simplifying the work process in the selection of floors for a building to be sustainability certified.

The basis of a Junckers Environmental Product Declaration is a life cycle assessment, which focuses on environmental impacts from the following phases:

A1: Extraction of raw materials
A2: Transport of raw materials to factory
A3: Production

The environmental impact of the floors is thus described from cradle to gate and documents CO₂ food print, use of energy resources and waste flows.

Junckers' EPD's are developed in accordance with the European standard EN 15804 and have been verified in accordance with ISO 14025. Independent verification of the declarations and data have been conducted by COWI A/S and the declarations are registered at EPD Denmark.

INDOOR CLIMATE BECAUSE WE CARE ABOUT YOUR HEALTH

Junckers has a wide range of wooden floors and woodcare products certified under the Danish Indoor Climate Labelling scheme. A product with this accreditation has undergone extensive degassing and odour tests. This ensures that there are no chemical substances in the floor, which adversely affect the air quality in the room.

UN GLOBAL COMPACT

Since the establishment of Junckers Industrier, the company's social responsibility has been ingrained in the way we run our business. This is also why Junckers joined the ten principles of the UN GLOBAL COMPACT in 2011 and our progress has been monitored in relation to every single principle in the company's CSR report ever since.



BEFORE YOU BEGIN

The building must be weather tight. The heating system must be installed, tested and during the heating season should be in operation.

Cast concrete elements, screeding and other wet trades, which contribute moisture to the building, e.g. tiling, plastering and priming of paintwork must also be completed and fully dry.

The relative humidity in the building must be between 35 - 65 % RH and the temperature approx. 20 °C.

The residual moisture contained in the concrete or screed must not exceed 90 % RH. (UK: Concrete moisture max. 75 % RH according to BS 8201, when checked by measurement with a hygrometer).

For timber based subfloors the moisture content should not exceed 12 %.

Solid floorboards should always be installed immediately after arrival at the building site. Don't break the packaging open until just prior to installing the floor, i.e. no acclimatising of the floorboards on site must take place.



NB

Before starting the installation carefully read the laying instructions at Junckers Technical Information, www.junckers.com

TOOLS YOU NEED



CLIP



TAPPING BLOCK



CROSS-CUT SAW



JIGSAW



HAMMER



JOINT PULLER



TRY-SQUARE



SYLVAFIX JOINT GLUE



MEASURING TAPE



FOLDING RULE



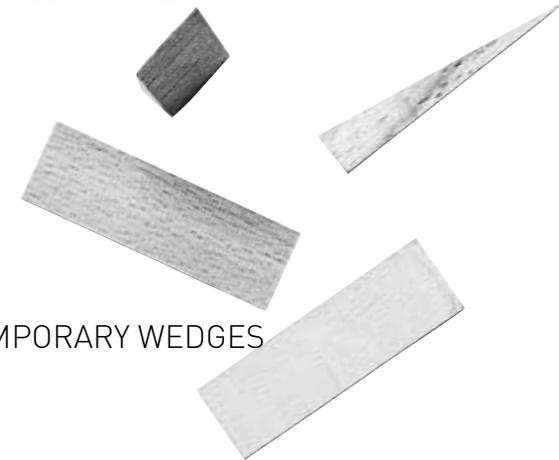
STANLEY KNIFE



STRAIGHT EDGE



BLYANT



TEMPORARY WEDGES

HOW TO INSTALL

01 FLATNESS OF THE SUBFLOOR

The subfloor must be levelled so that any deviations in the flatness do not conflict with the requirements of the method stated below.

Straight edge:

The subfloor must be flat with a maximum deviation of 2 mm under a 1.5 m straight edge.

(UK: 3 mm under a 2 m straight edge).
(US: 10 ft. under a 3/16" straight edge).

Deviations are measured as gaps under the straight edge. The surface must be smooth. Any irregularities must be corrected by grinding or by using a self levelling compound.



02 INTERMEDIATE LAYER

Subfloors of concrete

On concrete and screeded floors use PolyFoam as an intermediate layer, with lapped joints (remember to use the built-in tape) and turned well up at walls, etc.

Subfloors with underfloor heating

Place an extra moisture barrier, Junckers Sylvathene, 0.20 mm PE membrane.

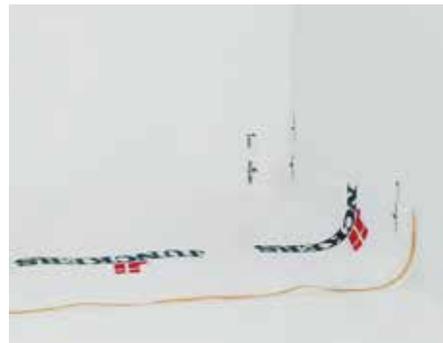
The moisture barrier must be laid with an overlap of 200 mm at all joints, continuing up walls, etc. The moisture barrier has to be taped at all lap joints using a tape 50 mm wide.

Wood based subfloors

On wood based subfloors Junckers Foam is used as an intermediate layer with close fitting joints.

Intermediate layer of Polystyrene

Place Junckers Sylvathene moisture barrier, 0.20 mm PE membrane with 200 mm overlay at all joints. On top of the polystyrene a load spreading sheet of minimum 10 mm chipboard or plywood with tongue and groove is used.



03 CHOOSE THE CORRECT CLIP

Clips are available in different sizes according to various air humidity ranges. The clip size is selected primarily on the basis of the expected maximum relative humidity in the building during the course of the year. See page 9 for instructions on clip size.



CONSUMPTION AND CLIP SPACING

14 AND 22 MM 2-STRIP

Residential: 13 clips pr. m²
(clip spacing 700 mm).

Commercial: 17 clips. pr. m²
(clip spacing 500 mm).

15 AND 20,5 MM PLANK

15 x 129 mm: 17 clips pr. m²
(clip spacing 500 mm).

20,5 x 140 mm: 16 clips pr. m²
(clip spacing 500 mm).

20,5 x 185 mm: 13 clips pr. m²
(clip spacing 500 mm).

SHIPSDECKING: 2-STRIP OR PLANK

129 mm floorboard width: 17 clips/m²
(clip spacing 500 mm).

20.5 x 140 mm: 16 clips/m²
(clip spacing 500 mm).

20.5 x 185 mm: 13 clips/m²
(clip spacing 500 mm)

04

It is recommended to install the floorboards parallel to the longest side of the room. Turn the floor board over and tap the end of the clip with the hole(s) into the groove on the back of the floor board. The plain end of clip must point in same direction as the tongue. This is also the laying direction. (Fig. 4.a).

For 140 mm and 185 mm planks with double clip groove: use the groove closest to the tongue.

Place the floor board with the tongue pointing away from the wall. Continue to the end of the row, gluing the header joints (Fig. 4.b). Cut the last floor board to length, use the off cut to start the next row. Please note that solid floor boards never must be glued lengthwise.

The gap between the end of the boards and the wall is filled with Junckers expansion strip (Fig. 4c). Ensure a close fit. For floors more than 25 m in length it may be necessary to build joints into the floor.



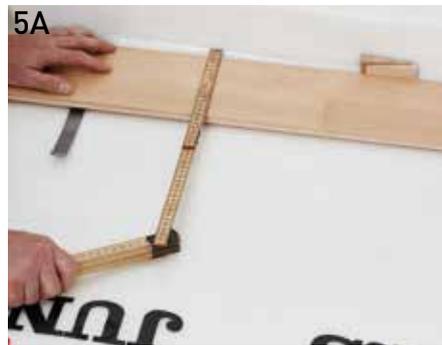
05

The first and last row of floorboards are installed leaving a clear expansion gap at the wall using as follows:

2 mm for every metre of floor width at each side, min. 12 mm (UK: min. 15 mm). (Fig. 5a).

First and last clip against the walls:
Maximum 80 mm from the end of the board. First and last row 400 mm centres. All other rows, either 500 mm or 700 mm depending on product, see section 3.

Always use minimum 2 clips per floorboard.



06

Clips must be staggered by approx. 50 mm. Use temporary spacers or wedges between the wall and the first row of boards to form the expansion gap.

To lay subsequent rows of floor boards, tap the joints together, using a wooden block working evenly along the board.



07

7A | Install the floorboards with the joints in a random pattern. Distribute the header board end joints as far apart as possible. The distance between header joints in two successive rows should be at least 250 mm.

2-strip floors: Stave joints in one row of floorboards should not be in line with stave joints in a neighbouring row, and must be at least 50 mm apart.

7B | Be sure that the clip end is located correctly in the clip groove. When the floorboards are being laid, the loose clip end from the previous floorboard will locate automatically into the clip groove of the next floorboard.

7C | Carefully knock the boards together using a tapping block.



08

8A | The last row of floorboards must be trimmed to width. Remember to leave the clear expansion gap between the floorboard and the wall.

8B | The tongue of floorboards in last row are glued and assembled to the floorboards in previous row. Only the last row floorboards are allowed to be glued lengthwise.

8C | Use a joint puller to slot the last floorboard into place.

Remember to remove spacer blocks before fitting the skirting.



09

9A | Intermediate layer is cut at the upper edge of the flooring surface.

9B | Fit the skirting.



CHOICE OF CLIP

Clips are available in different sizes according to various air humidity ranges. The clip size is selected primarily on the basis of the expected maximum relative humidity in the building during the course of the year.

For residential and commercial floors typically applies as indicated in the clip guide below, but be aware of:

- **Larger areas:** In order to minimize the overall movements of larger floors and allow for varying RH in different types of buildings, it may be necessary to choose a larger clip than the one corresponding to the expected maximum RH.
- **Commercial buildings:** The relative humidity in office buildings, shops and similar can deviate from that in residential buildings, thus requiring a different clip size.

With all clip sizes there will always be gaps when the relative humidity falls to, or below, the lower end of the recommended range.

| CLIP GUIDE | | | | |
|--------------------------|--------------------|-----------|---|---|
| Clip type (label colour) | Humidity range [%] | Clip size | Gaps between floorboards when installed | Note |
| 0-hole (white) | 10-40** | 128.8 mm | Depends on job-site conditions | The 128.8 mm clip is used in arctic and desert areas. Acclimating of the wood prior to installation is necessary. |
| 1-hole (green) | 25-55** | 129,1 mm | 0,1 mm | |
| 2-hole (yellow) | 40-65 | 129,4 mm | 0,4 mm | 15 x 129 mm, 20.5 x 140 mm planks and 20.5 x 185 mm Boulevard planks: Always use minimum a 129.4 mm clip |
| 2½-hole (Black) | 55-75 | 129.6 mm | 0.4 mm | |
| 3-hole (red) | 65-85 | 129,8 mm | 0,8 mm | Shipsdecking: Always use minimum 129.8 mm clip. |
| 4-hole (Orange) | 75-95 | 130.2 mm | 1.2 mm | |
| 5-hole (Light blue) | 75-95 | 131.2 mm | 2.2 mm | The 131.2 mm clip is only suitable for 20.5 x 185 mm Boulevard planks. |

**In a very dry environment there will be some larger permanent gaps between the floorboards. Specifiers are advised to contact Junckers Technical department if such conditions are anticipated.

INTERMEDIATE LAYER GUIDE

The clip system is specially developed for Junckers solid hardwood floors and can be installed over existing dry and flat sub floors, such as old wooden floors, vinyl and linoleum. Installation over concrete floors or screeds is possible, if the residual moisture does not exceed a maximum of 90 % RH. (75 % in UK).

JunckersFoam is an intermediate layer with a good step sound reduction for use with floating floors. Used where moisture barrier is not required.

Junckers 2 mm Polyfoam is an intermediate layer with a built-in moisture barrier and also functions as a step sound reduction layer.

An additional 0.2 mm SylvaThene moisture barrier is required over heated screeds.

| SUBFLOOR | INTERMEDIATE LAYER | JunckersFoam | Junckers PolyFoam (with moisture barrier) | Extra 0,20mm SylvaThene moisture barrier |
|--|--------------------|-------------------|---|--|
| | | Old wooden floors | ✓ | |
| Chipboard/plywood | | ✓ | | |
| Concrete floors | | | ✓ | |
| Tiled floors | | | ✓ | |
| Under floor heating; in screed | | | ✓ | ✓ |
| Under floor heating; in Polystyrene insulation | | | | ✓ |

SHIPS DECKING

It is worth mentioning that the clip system may also be used when installing Junckers Ship Decking floors.

Use a 3-hole clip which provides the following 10-board measurement.

| Floorboard width | 10-board measurement |
|------------------|----------------------|
| 129 mm | 129,8 |
| 140 mm | 140,8 |
| 185 mm | 185,8 |

The general clip laying instructions also apply to Ship Decking floors with the following exception:

The clips will be fitted at 500 mm centres, and clip centres for the first and last row will be 400 mm (step 4).

Ships decking floors are especially suited for rooms with under floor heating. This because the black rubber strips absorb the natural seasonal movement of the floor.



UNDERFLOOR HEATING

Junckers solid wooden floors always feel warm and comfortable, but the floors are of course also suitable with under floor heating.

Under floor heating systems for wooden floors come as electrical or hot water systems. For both systems, it is important that they must provide uniform heat distribution and the surface temperature of the floor must not exceed 27 °C.

When the clip system is laid on concrete or screeded subfloors with cast-in heating pipes or cables, use an intermedia layer of Junckers Polyfoam and an extra layer of a 0.20 mm SylvaThene moisture barrier with 200 mm overlap. Both underlays are taped at the joints and the SylvaThene is turned up against the wall behind the skirting.

Read more about installation with clips and underfloor heating in Junckers Technical Information, Chapter E 4.1, which also describes other types of subfloors and underfloor heating systems.



Read more about installing with clips and underfloor heating at www.junckers.com





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