



fermafloor

Instruction for processing

JK fermafloor VRL11-4-2018

JK fermafloor: High-standard total system for drywall construction

Rudi Maagdelijn

Technical Operational Manager

General: +31 (0)318 63 63 29

Mobile: +31 (0)6 49 49 36 92

E-mail: r.maagdelijn@JK-nl.com

Anton Drenth

Rayon Manager West-Netherlands

General: +31 (0)24 649 51 11

Mobile: +31 (0)6 23 73 02 18

E-mail: anton.drenth@xella.com

Tom Borggreve

Head of Productmanagement

General: +31 (0)53 573 73 73

Mobile: +31 (0)6 13 56 02 00

E-mail: tom.borggreve@uzin-utz.com



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1. Introduction

JK fermafloor is a complete, lightweight and customised drywall construction underfloor heating system which is the result of a collaboration between three companies: fermacell, JK floorheating and Uzin Utz Netherlands.

Drying times, dampness of the building during construction and total weight are considerations that often lead people to choose a drywall construction underfloor system. Aside from these considerations another advantage is that drywall construction systems, by only connecting the elements individually, often lead to less mistakes in building and reduce possible acoustic leaks.



Sustainable and ecological construction

Fermacell's floor elements with felt layer also meet the growing demands for sustainable building materials. Modern felt for a great part consists of fibres from (old) clothing, supplemented with other types of textile fibre (such as carpet).

2. Specific rules for application

- To lay the fermacell Floor Elements it is essential that the floor elements are completely supported by a bearable and constructive floor because the floor elements are not cantilevered.
- The mentioned presentations with respect to tolerable point load, evenly distributed load and heat release are withdrawn from the test results of the supplier-bound testing laboratories and testing methods.
- The situation at the building site always needs to meet the JK Installation Terms and Conditions (JK Installation Terms & Conditions 22-01-2018).
- For the placing of the **fermacell** floor elements in relation to the subsequent grinding of the JK floorheatingssystem specific measures apply with respect to the mechanical fixation of the lip welding using aluminium brad nails from **fermacell**.

The plea for this is as follows:

After applying the floor elements (within the 10 minutes 'open' time of the **fermacell** floor element glue) the necessary pressure and fixation of the elements during setting of the glue is achieved with the aluminium brads (nails). During hardening of the glue will foam out of the cross joint.

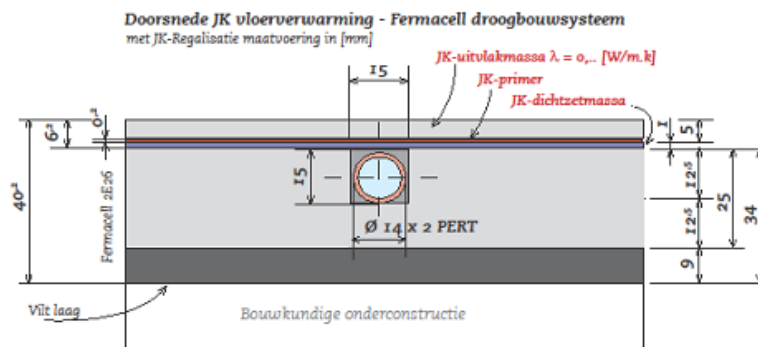
3. Detailing, design & presentation

JK fermafloor is a collaboration between three parties, whereby two systems have been developed which have been well substantiated with tests. The functionality of these two systems are guaranteed, provided that they are processed correctly. Processing of the floors can only be done in accordance with the two released systems or in accordance with a tailor-made advice by Uzin Utz Netherlands.

Option A: JK sealing compound

- Floor element: **fermacell** floor element 2E26 (2x 12.5 [mm] incl. 9 [mm] felt layer); 15x15 [mm] ground in
- Pipe work: \varnothing 14 [mm] JK flextube Inverse Soft, the surrounding empty spaces and the plate surface are solidly filled and closed with the JK sealing compound (2-component sealing layer with a basis of epoxy resin).
- Finish: a layer of primer and on top of that a smoothing compound, in accordance with advice from Uzin Utz Netherlands.

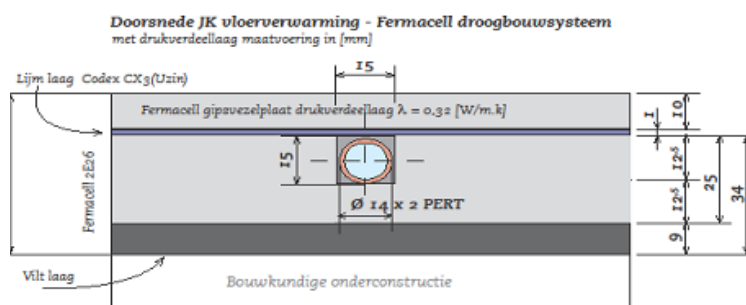
Fire-resistance: 30 minutes



Option B: JK fermafloor levelling compound with top plate

- Floor element: **fermacell** floor element 2E26 (2x 12.5 [mm] incl. 9 [mm] felt layer); 15x15 [mm] ground in
- Pipe work: \varnothing 14 [mm] JK flextube Inverse Soft, apply JK fermafloor primer for adhesion, after which the empty spaces are filled with the JK fermafloor levelling compound
- Finish: 10 [mm] **fermacell** gypsum fibreboard (top plate), solidly bonded through the JK fermafloor levelling compound

Fire-resistance: 60 minutes



4. Instructions for processing

Mind the 'General terms and conditions for the processing'

Just like all material that is being used at a building site, **fermacell**'s gypsum fibreboards are also susceptible to expansion and shrinkage when under the influence of temperature and humidity. For the perfect finish of floors the terms and conditions for the processing, which are listed below, need to be complied with:

- The construction needs to be wind- and rainproof. **fermacell** floor elements can be placed at an average relative humidity of ≤ 80 [%].
- From a processing technical point of view the **fermacell** floorelements have to be bonded at an average relative humidity of ≤ 80 [%] and a room temperature of at least $+ 5$ [°C]. With that the temperature of the glue needs to be $\geq + 10$ [°C]. The floor elements need to have adapted to the climate of the room and are not allowed to change much during the first twelve hours after bonding. Due to lower temperatures and relative humidities hardening can take longer. Frost, during transport and storage, is not harmful for the **fermacell** floor element glue.
- Heating with a gas burner can cause damage because of possible condensation. This is especially true for cold rooms with bad ventilation.

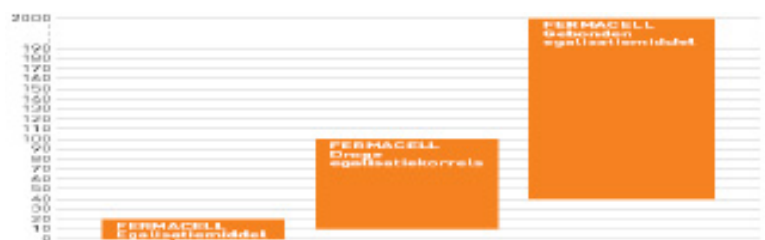
4.1 Phase 1. Placing the fermacell floor elements

4.1.1 Rating the foundation

The **fermacell** floor elements can be placed directly onto a level and load-bearing foundation. It is then necessary that the floor elements are completely supported by an architecturally bearable and constructive floor, because the floor elements are not cantilevered. The condition of this foundation/construction floor needs to be examined by a structural engineer. There are several different foundations possible.

If it turns out that the surface of the foundation is not level, it is possible to utilise one of the flattening agents listed below to level out the foundation:

- Small irregularities of 0 to 20 [mm] on rigid foundations: With small irregularities up to 20 [mm] it is possible to use **fermacell** smoothing compound for floors. The advantage of this products is mainly its short drying time and suitability in thin layers going back to 0 [mm]. Weight is approximately 14.0 [kg/m²]/10 [mm] layer thickness.
- Medium size irregularities up to 60 [mm] (housing construction up to 100 [mm]) (minimum pouring height: 10 [mm]): With greater irregularities of up to 60 resp. 100 [mm], **fermacell** dry smoothing grains can be used in combination with **fermacell** protection foil (to prevent leaking of the grains between the floorparts and knob holes). The advantage here is that there is no drying time needed and that any possible pipe work can be included in here (an extra smoothing layer of 10 [mm] needs to be applied on top of this). The product sheet can be found on the website www.jkfermafloor.nl/en/. Weight is approximately 4.0 [kg/m²]/10 [mm] layer thickness.
- Large irregularities (minimum pouring height: 40 [mm]):
With irregularities from 30 [mm] up to 2000 [mm] **fermacell** bound smoothing compound can be used. The advantage is the limited height and very short drying time (possible to lay the next layer after 1 day). Weight approximately 3.5 [kg/m²]/10 [mm] layer thickness.



4.1.2 Applying fermacell floorelements

Cf. standard instructions for processing "fermacell floorelements Guidelines for processing" by fermacell B.V. The current version will be revealed on the website www.fermacell.com (fermacell.com --> Documents --> Brochures).



4.1.3 Required materials

- **fermacell** flattening agents: Only applies when the foundation is uneven, product choice based on what stands below, explained in "§ 4.1.1 Rating the foundation".
- **fermacell** floor element 2E26: 2*12.5 [mm] **fermacell** Gypsum fibreboard with 9 [mm] felt; measurement 1500*500*34 [mm].
- **fermacell** floor element glue: for mutually connecting floor elements and load-distributing layer (10 [mm] **fermacell** gypsum fibreboard).
- Mechanical fixation: to achieve the required pressure force and fixation of the elements during hardening of the **fermacell** floor elements glue using one of these two possibilities:
 - **fermacell** fast construction screws: dimensions: $\varnothing 3.9 \times 22$ [mm]; OR
 - Nails: BRADS SK 425 ALU, according to a yet to be determined placement pattern in accordance with JK floorheating.

4.2 Phase 2. Installing the JK floorheating system

BEWARE: When using fermacell fast construction screws, these screws need to be removed BEFORE the grinding commences!

Cf. standard instructions for processing JK floorheating and within restrictions of the specified designs in this report, see chapter "Detailing, design & presentation" on page 4.

This system is especially suitable for applying floorheating (LT system) in situations where the **fermacell** floor elements (type 2E26) are already present. This often occurs in new construction where drying times and humidity play an important role during the construction process.

With renovation projects, both housing construction and utility construction, this floor system offers the possibility to apply an LT system with a minimal build-up height on top of wooden construction floors or concrete floors.

Using a specially for grinding floorheating designed and patented grindingmachine (floorgrinder) slots are ground in the **fermacell** floor elements, by JK floorheating. After this the JK flextube Inverse Soft $\varnothing 14 \times 2$ [mm] floorheating pipes are placed inside these slots. This methode of assembling means customised LT release systems are made every time.

At the WTP (Warmtetechnische Prufgesellschaft mbH Akkreditiertespruflaboratorium nach DIN en ISO/IEC 17025) the heat release is researched and recorded in a technical report.

Prior to this research JK floorheating has already determined an approximate heat release. This heat release is based on previous rese-arches and references.

At least 2 electrical groups need to present in the house (secured with at least 10 Amp.). During grinding of the floorheating no other appliances may be used. This is important for the power supply of the floorgrinder.

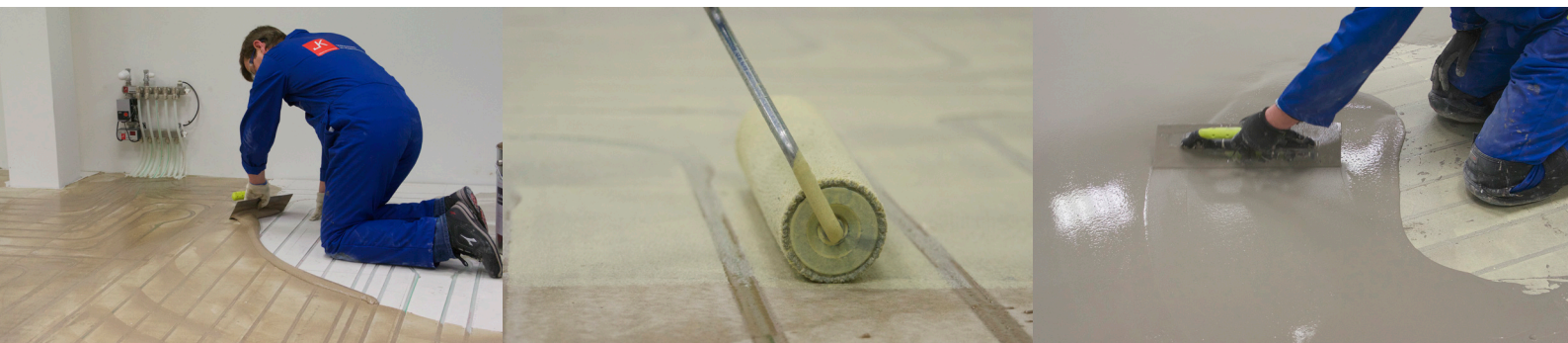
4.3 Phase 3. Applying finish, choice between system A or B

4.3.1 Phase 3A. Applying JK sealing compound with smoothing compound

When choosing option A the floorheating pipes are sealed with the functional JK sealing compound, which seals the pipes and creates a solid intermediate layer. After this layer the floor system needs to be finished in accordance with the JK fermafloor regulations with a primer and smoothing compound, both advised by Uzin Utz Netherlands (tailor-made advice). Then, with the correct floor additives one of the released JK fermafloor floor finishes can be applied for a beautiful, aesthetic floor finish. This finish provides a 30-minute fire-resistance.

4.3.1.1 Required materials

- JK sealing compound (2-componenten sealing layer based on epoxy resin)
- Primer (advised by Uzin Utz Netherlands)
- Smoothing compound (advised by Uzin Utz Netherlands)



4.3.2 Phase 3B. Applying JK fermafloor levelling compound with top plate

When choosing option B, the first layer that is applied is a layer of JK fermafloor primer, to ensure optimal adhesion of the next layers. After this the 10 [mm] pressure distribution plate (top plate) is bonded using the specially designed JK fermafloor levelling compound, which also secures the floorheating pipes. If necessary, this option can also be fitted with a **fermacell** smoothing layer, suitable for gypsum fibreboards like the top plate. Then, with the correct floor additives one of the released JK fermafloor floor finishes can be applied for a beautiful, aesthetic floor finish. This finish provides a 60-minute fire-resistance.

4.3.2.1 Required materials

- JK fermafloor primer
- JK fermafloor levelling compound (flexible, hydraulically hardening and improved with plastic thin-bed mortar)
- 10 [mm] pressure distribution plate from **fermacell**





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NEDERLAND

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5. Preliminary examination & warranty

Preliminary examination has proven that early involvement in the developing stages of a project contributes to the determination of a specific for that project generated solution. During the warranty process JK floorheating, fermacell and/or Uzin Utz Netherlands are being requested to get involved in the early developing stages of a project, for a project-based, intermediate (before completion) assessment on:

- 1. The spatial condition of the project, during the duration of the project.**
- 2. The influence of the qualified, uneven foundation and the mechanisms for levelling on the smoothness of fermacell floor elements.**
- 3. Presence of all coherent and required components of the fermacell floor system, such as:**
 - acoustic and fire-technical disconnection of the architectural structural elements (with **fermacell** mineral wool border strips)
 - supplementary fire-prevention measures to prevent penetration of the floor system (with fire-assisting application of **fermacell** floor elements)
 - waterproofing systems for sanitary rooms
- 4. The quality of the mutual, constructive connection of the fermacell floor elements and possibly the fixation of the pressure distribution plate cf. Option B (for this Uzin Utz Netherlands' expertise can be utilised).**
- 5. Potential consideration dilation distances with large floor surfaces ≥ 20 [m²].**
- 6. Product managing.**
- 7. Managing the JK installation terms & conditions before and during the installation work.**

Hoping this advice will provide you with enough information,

Kind regards,

Rudi Maagdelijn
JK floorheating B.V.

Anton Drenth
fermacell B.V.

Tom Borggreve
Uzin Utz Netherlands