

PlusFloor®

Installation Guide

Stonework



## Materials

Plusfloor Stonework is suitable for all interior floor surfaces, above, on or below grade, and over concrete or wood substrates. Plusfloor Stonework is manufactured under ISO 9001:2000, Quality Management Systems and ISO 14001 Environmental Management System. Suitable for recycling and for under floor heating.

## Suitability

It is essential to conduct a calcium chloride test (moisture test) on all concrete floors. The test should be conducted around the perimeter of the room, at columns, and where moisture may be evident. The moisture emissions from the concrete should not exceed 5lbs/1000sf/24 hrs (2.27 kg/ 92.9sm/24 hrs).

If the concrete exceeds moisture limitations, the installation should not proceed until the problem is corrected. A moisture problem can be corrected by sealing the concrete with any one of the many brands of concrete sealers available. After the sealer has been applied, re-test to ensure that the problem has been corrected. It is important to note that a moisture test indicates conditions at the time of testing only. The flooring contractor cannot be held responsible if moisture appears in the future causing adhesive failure.

Please note that new concrete subfloor contain a high percentage of moisture and must be allowed to dry out. The drying time will depend on several conditions, such as the type of concrete used, average air temperature, thickness and location of the slab. The addition of fly ash to the concrete can adversely affect the long term performance of adhesives. Please contact your representative before proceeding.

## Storage and Handling

During this preliminary moisture-testing period, Plusfloor Stonework should be present at job site to allow an appropriate period for product to acclimatize. Remove material from packaging, spread out if possible and allow to condition in room where installation is to take place at a constant temperature of 18°-26° for a period of 24 hours prior to installation. This temperature should be maintained during installation, and for a 24 hour period after installation.

## Subfloors

1. PlusFloor Stonework may be installed over non-porous surfaces and existing vinyl floors or used in wet use areas using certain adhesive. Please consult your local agency for your particular application.
2. All supporting surfaces shall be structurally sound, solid, stable, level, plumb and true to a tolerance in plane of ¼" in 10 feet (6 mm in 3 m) for floors. They shall be dry, clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, old adhesive or any deleterious substance and debris which may prevent or reduce adhesion.
3. Mechanically sand, bead blast or scarify the substrate to completely remove all paint, loosely bonded topping, loose particles, construction debris, old adhesive and any contaminant that may prevent or reduce adhesion.
4. Remove any trace of strong acid or alkali from the substrate prior to the application of the surface product and/or the adhesive.
5. The supporting surfaces shall be dry. The moisture emission shall not 5 lbs/1000sf/24 hrs (2.27 kg/ 92.9sm/24 hrs) for concrete. For wood underlayment, the moisture content should meet with the requirements of the wood manufacturer and/or flooring manufacturer, generally 8-10% using a "Wood Moisture tester".
6. In all cases, the structural design of floors shall not allow a deflection of more than 1/360 of span under live or dead loads.

## Concrete Subfloors

1. Concrete substrates shall be free of sealer or curing compound. The substrate shall be cured for a minimum of 42 days and tested for moisture emission using the anhydrous calcium chloride method. Test results shall be no more than 5 lbs/1000sf/24 hrs (2.27 kg/ 92.9sm/24 hrs) prior to the installation of the floor covering.
2. Concrete substrates shall be finished using a flat trowel. The surface shall be sound, true and level to a tolerance in plane of ¼” in 10 feet (6 mm in 3 m) for floors.
3. The installer shall be responsible to complete a humidity test and provide the general contractor and/or the architect with the written results prior to the execution. A humidity test has to be done at least 96 hours (4 days) prior to commencing work and the results shall not exceed 5 lbs/1000sf/24 hrs (2.27 kg/ 92.9sm/24 hrs) with the anhydrous calcium chloride test.
4. All new concrete surfaces should be steel trowel finished. A moisture barrier with a permeance of less than 0.2 metric perms as measured according to the ASMT-96 standard must be present under concrete slabs that are on or below grade. This barrier must be resistant to deterioration as well as to puncture during construction and must remain intact and continuous.
5. Any repair to the concrete substrate shall be made using the proper surface preparation product specified subparagraph 2.1. Where self-smoothing surface preparation material is required, the concrete shall be bead blasted or scarified. Where a fast setting screed mortar or fast setting polymer-modified premixed mortar the concrete shall be scarified.
6. Neutralize any traces of strong acid or alkali prior to application of the surface preparation product or the adhesive.

## Wood Underlayment

1. Particleboard, strand board and flake board are not recommended for use as a substrate for Plusfloor Stonework.
2. Plywood substrate and underlayment shall be group 1, exterior grade plywood, CC plugged or better conforming to APA classification and U.S Product Standard PS 1-95 or a select or (SEL TF) COFI classified.
3. The installation of wood underlayment shall comply with ASTM F499-84 standard.
4. All wood underlayment shall be new and acclimated for at least 24 hours to the job site condition prior to installation.
5. When required, the wood underlayment shall be filled and patched to correct seams, cracks, indentations and other subfloor irregularities using the proper products. PLANI/PATCH: Fast setting cement-based polymer modified patching compound and PLANI/PATCH PLUS: Acrylic latex additive for use with PLANI/PATCH are recommended. Other types of levelers, such as calcium sulfate/plaster/gypsum based compounds are not recommended.

## Old Substrates

1. Cement, ceramic tile, vinyl composition tile, and non-cushioned mineral fibrous felt-back sheet vinyl, if already in place, should be in a sound, solid, well-adhered, flawless condition. They must be thoroughly stripped or sanded clean, devoid of dust, wax, grease, soap residue, or any detrimental substances that may hinder adhesion.
2. When utilizing adhesive, Nature's Core can be installed over a single layer of non-cushioned resilient flooring if the following criteria are met:
  - a. The existing flooring must be fully adhered and firmly bonded.
  - b. The subfloor or underlayment beneath the existing resilient floor should meet the requirements for LVT dry-back flooring.
  - c. Any cuts, gouges, dents, or irregularities in the existing floor, as well as any embossing or texture, should be leveled to prevent telegraphing.
  - d. Embossed vinyl flooring must be adequately leveled using a polymer-modified, cement-based patching compound to ensure proper adhesion.
  - e. All waxes or finishes must be completely removed and thoroughly rinsed with clean water.
  - f. If the existing floor has been installed over concrete below grade, one calcium chloride moisture test must be conducted for every 1000 square feet. The results of the test must meet the requirements of both the existing floor. Moisture tests should be performed in an area where the existing floor and adhesive have been entirely removed.

## Adhesives

1. When applying PlusFloor Stonework over porous subfloors like concrete or wood, it is essential to use adhesive approved by the dealer.
2. Similarly, when applying PlusFloor Stonework over non-porous surfaces, existing vinyl floors, or in wet areas, it is crucial to use adhesive approved by the dealer.
3. For specific application guidance, please consult your dealer.
4. Avoid installing over excessively cold concrete floors or radiant-heated floors with temperatures exceeding 85°F (25°C). Turn off radiant heating 12 hours before starting the installation.
5. To ensure adequate adhesive coverage and achieve 95% transfer to the backing of the floor covering, use the recommended notched trowel size:
  - a. Harbinger S600 adhesive: 1/16"x1/32"x1/16"
  - b. Harbinger S21 adhesive: 1/32"x3/64"x13/64"
6. Work in small areas to ensure that PlusFloor Stonework is placed into the adhesive immediately before it starts to dry or form a skin. The working time for the adhesive is approximately 20 minutes under normal conditions. Position the plank in the adhesive without sliding, pressing firmly, and paying particular attention to the tile edges, corners, and staggered ends for an aesthetically pleasing result. Periodically check by lifting a tile to ensure that at least 95% of the adhesive pattern has transferred to the back of the plank or tile. If the adhesive starts to set or form a skin, remove it and apply fresh adhesive.
7. PlusFloor Stonework tiles must be installed in consecutive lot numbers when placed adjacent to each other.
8. After completing each section, roll the floor in both directions immediately using a 100 lb. three-section roller or a hand roller for smaller areas. Re-roll the entire area after one or two hours. Promptly remove fresh adhesive smudges with a clean cloth dampened with water, and use mineral spirits for dried adhesive.
9. Ensure that all tile and planks are kept free from regular foot traffic for 24 hours following installation.
10. Refrain from washing or polishing the floor for a minimum of 48 hours after installation.
11. The manufacturer or supplier cannot be held liable for any loss, damage, or complaints if the specific installation procedure outlined in this guide is not followed.

## Subfloor Preparation

It's important to follow these moisture guidelines and ensure that the subfloor conditions meet the recommended moisture levels before proceeding with the installation of Formation Plank flooring. Adhering to these requirements helps to prevent issues such as moisture-related damage, warping, and adhesive failure, ensuring a successful and long-lasting installation.

*Note: Before installing Formation Plank flooring, the installer must thoroughly evaluate the subfloor and installation environment. This assessment involves checking for flatness, smoothness, moisture levels, structural integrity, contaminants, and defects. Factors like subfloor type, installation method, and flooring requirements should also be considered. By conducting a comprehensive assessment, the installer can address any necessary floor preparation, ensuring suitable installation conditions. This minimizes the risk of problems like unevenness or adhesive failure, resulting in a durable and high-quality flooring.*

## Acclimatisation

Prior to installation, it is essential that the Formation Plank flooring is allowed to acclimatise in the designated room or a similar space for a minimum of 24 hours. This time is necessary for the product to reach the appropriate ambient temperature, which should fall between a minimum of 18°C and a maximum of 27°C.

To facilitate a gradual acclimatisation process, it is advised to store the planks or tiles in straight piles, ensuring they are kept away from any sources of heat, cooling, or direct intense sunlight. This precautionary measure will help achieve the desired gradual adjustment of the flooring material to its surroundings.

## Temperature Condition Before Installation

Before proceeding with the installation, it is important to ensure that the ambient temperature in the room falls within the range of 18°C to 27°C. Additionally, the temperature of the subfloor should be maintained above 15°C. These temperature conditions are necessary for the proper installation of the Formation Plank flooring.

## Temperature Condition During and After Installation

During and after the installation process, it is crucial to maintain a consistent temperature that does not deviate by more than 5°C per day. It is important to ensure that the ambient temperature in the room falls within the range of 18°C to 27°C. The room temperature should not fall below the recommended 18°C, while the subfloor temperature should remain above 15°C. This temperature stability should be upheld for a minimum of 24 hours prior to installation and throughout the entire installation process.

## Underfloor Heating

Formation Plank flooring is compatible with traditional water-based underfloor heating systems, in accordance with standard EN 1264 part 1 to 5. However, it is not recommended to use wired electrical systems unless they are encased in a minimum of 9mm of suitable levelling compound. It is important to avoid direct contact between the flooring and electrical wired heating systems. The surface temperature should never exceed 27°C. If you have any doubts or questions, it is advisable to seek additional advice.

## Installation of the Patterns

After the installation is completed, it is necessary to gradually increase the temperature of the underfloor heating system over a period of 72 hours. This should be done in increments of 5°C per day until it reaches the standard operating temperature conditions, with a maximum operating temperature of 27°C. It is important to refer to the manufacturer's instructions to ensure the suitability of the system.

*Please note that the following information is specific to the installation on PlusFloor looselay self-adhesive underlays. While some infrared heating panels may be suitable, caution should be exercised as certain systems can generate sudden heat gain, which is not recommended. Regardless of the circumstances, the surface temperature must not exceed 27°C. If you have any doubts, it is recommended to seek further advice.*

## Underfloor Cooling

Formation Plank flooring is suitable for installation over floor cooling systems. However, it is important to ensure that the supply temperature of the cooling water does not fall below the dew point temperature. To prevent condensation and potential damage to the adhesive and floor covering, it is recommended to maintain the temperature of the subfloor at least 3 degrees above the dew point. Keeping the subfloor temperature above the dew point helps to avoid the Formation Plank of moisture on the surface. It is crucial to adhere to these guidelines to maintain the integrity of the installation and the longevity of the Formation Plank flooring.

## Required Expansion Gap

Formation Plank flooring is compatible with floor cooling systems. However, it is essential to ensure that the supply temperature of the cooling water does not drop below the dew point temperature. Maintaining the subfloor temperature at least 3 degrees above the dew point is crucial to prevent condensation. Temperatures below the dew point can lead to moisture accumulation, which can be detrimental to the adhesive and the floor covering. To protect the integrity of the installation and preserve the quality of the Formation Plank flooring, it is vital to adhere to these temperature guidelines.

## Installation Methods

Formation Plank flooring offers various installation methods to accommodate different preferences and requirements. The following are the commonly recommended options:

1. Semi-looselaid on a tackifier/release adhesive (preferred option): This involves using a tackifier or release adhesive to partially secure the Formation Plank panels. It offers stability while still allowing for some flexibility and ease of removal if needed.
2. Fully looselaid using PlusFloor adhesive tabs: This method involves using adhesive tabs provided by PlusFloor to connect the panels together. It is suitable for smaller areas, and the maximum length and/or width should not exceed 5 meters.
3. Fully adhered to the subfloor with a permanent adhesive: This method requires using a permanent adhesive to fully adhere the Formation Plank flooring to the subfloor. It provides maximum stability and is suitable for high-traffic areas or where extra durability is desired.
4. Adhered to a looselaid underlay: In this method, the Formation Plank flooring is adhered to a looselaid underlay, which is placed on the subfloor. The underlay provides additional cushioning and stability.
5. Adhered to an underlay which is adhered to the subfloor: This method involves using an underlay that is adhered to the subfloor, and then the Formation Plank flooring is adhered to the underlay. It offers enhanced sound insulation and comfort.

It's important to note that for any alternative installation methods not mentioned here, it is advisable to seek technical advice directly from PlusFloor to ensure proper guidance and compatibility with the product.

## Installation of the Patterns

### Semi-looselaid on a Tackifier/Release Adhesive (Unlimited m2)

For the semi-looselaid installation method using a tackifier/release adhesive, the following steps should be followed:

1. Ensure that the Formation planks or tiles are laid without tension, allowing them to be positioned smoothly and securely.
2. Butt the Formation planks or tiles continuously against each other, creating a seamless appearance. Make sure they are also firmly pressed against the walls or plinths.
3. Apply a recommended tackifier/release adhesive evenly over the entire subfloor. The adhesive should be spread in the right amount to ensure proper bonding.
4. Allow the adhesive to tack-off, which means letting it reach its initial bonding strength. The specific open time required will depend on the adhesive being used. Refer to the adhesive's specifications or instructions for more information.
5. Once the adhesive has reached the appropriate initial bonding strength, continue with the installation process, pressing the Formation planks or tiles firmly into the adhesive.

It is essential to consult the specifications of the adhesive being used for detailed instructions and to ensure that the chosen adhesive is suitable for the specific Formation Plank flooring and installation conditions. Following the adhesive manufacturer's recommendations will help ensure a successful and durable installation.

### Advantages of Using Tackifier/Release Adhesive

Using a tackifier/release adhesive for the installation of Formation Plank flooring offers several advantages:

1. **Reduced sensitivity to movement:** The tackifier/release adhesive helps to minimize the effect of movement on suspended subfloors. It provides additional stability and reduces the potential for the Formation Plank flooring to shift or move, especially in areas with wheeled furniture or rolling loads.
2. **Ease of installation and removal:** The tackifier/release adhesive is user-friendly and straightforward to install. It allows for efficient and hassle-free application, saving time and effort during the installation process. Similarly, when it comes to removal, the adhesive can be easily detached, making it convenient for repairs or replacements.
3. **Fast installation, even in occupied environments:** The use of tackifier/release adhesive enables quick installation, making it suitable for projects where minimizing downtime is essential. It allows for immediate accessibility to the installed area, reducing disruption and inconvenience for occupants or users of the space.
4. **Time and cost savings:** The efficient and fast installation process facilitated by the tackifier/release adhesive helps save both time and costs associated with labor and project completion. The simplified installation method can result in overall project savings without compromising the quality and performance of the Formation Plank flooring.
5. **Flexibility and easy access to the subfloor:** The tackifier/release adhesive offers flexibility in terms of access to the subfloor. It allows for easy removal and repositioning of the Formation Plank flooring if necessary, without causing damage to the subfloor. This flexibility can be particularly advantageous for future modifications or renovations.
6. **Easy repairs:** In the event of localized damage or issues with specific areas of the Formation Plank flooring, the use of tackifier/release adhesive simplifies the repair process. The affected sections can be easily addressed and replaced without the need for extensive and time-consuming repairs.
7. **Removability and reusability:** The tackifier/release adhesive allows for the Formation Plank flooring to be removed without causing permanent damage to the subfloor. This feature is especially beneficial in situations where the flooring needs to be temporarily or partially removed, such as for maintenance or renovation purposes. The reusable nature of the adhesive provides added convenience and cost-effectiveness.



## Installation of the Patterns

Overall, the use of tackifier/release adhesive offers practical advantages in terms of installation efficiency, durability, flexibility, and cost savings, making it a preferred choice for many Formation Plank flooring projects.

### Fully Adhered Installation with Dispersion or 2-Component Epoxy/PU Adhesive

When installing Formation planks or tiles, it is important to lay them without tension, ensuring a continuous and snug fit against walls or plinths.

To achieve optimal results, the entire area should be affixed using the recommended adhesive, following the manufacturer's instructions. This adhesive fixation offers several benefits, including reduced sensitivity to movement on suspended subfloors, improved resistance to wheeled furniture or rolling loads, and increased durability in areas with temperature and humidity fluctuations.

The advantages of using a permanent adhesive include:

1. Dispersion Adhesive: Suitable for all types of surfaces and areas with heavy use or moderate temperature variations. It can be combined with other areas that are installed using a tackifier/release adhesive.
2. 2-Component Adhesive: Ideal for areas prone to periodic wetting, such as entranceways, and spaces with significant temperature fluctuations, like non-temperature controlled conservatories or areas in front of large glass windows.

For any specific conditions, including installation suitability, underfloor heating compatibility, and the selection of the appropriate adhesive, please reach out to the knowledgeable PlusFloor Technical team.

### Recommended Overlay

Consideration can be given to installing Formation Plank on an underlay in addition to the traditional methods of tackifying or direct adhesion to the subfloor. PlusFloor offers underlay options that cater to both looselay installation and improved acoustic performance. It is crucial to select an underlay that has been specifically tested and approved by PlusFloor for use with the floorcovering. Please note that PlusFloor disclaims any responsibility for non-approved combinations. It is important to adhere to the recommended and approved underlay options to ensure optimal performance and warranty compliance.

PlusFloor offers a Heavy Duty Use underlay designed to provide enhanced performance and durability. Here are some key features and benefits of the PlusFloor Underlay:

1. Improved sound insulation: The underlay is engineered to enhance sound insulation, achieving a sound reduction rating of  $b.Lw=15$  dB when combined with a 5 mm IVC Commercial floorcovering.
2. Quick and easy installation: The underlay features a release foil and pressure sensitive adhesive film, ensuring convenient and efficient installation.
3. Compatibility with underfloor heating and cooling: The underlay is suitable for use with underfloor heating and cooling systems, allowing for efficient temperature management.
4. Excellent dimensional stability: The underlay offers excellent dimensional stability, helping to maintain the integrity and appearance of the Formation Plank floor over time.
5. Suitable for heavy rolling loads: The underlay is designed to withstand roller castor chairs and rolling loads of up to 250kg, providing reliable support and durability.

When using PlusFloor Underlay, you can expect improved acoustics, ease of installation, compatibility with underfloor heating, enhanced stability, and the ability to handle heavy rolling loads.



## Installation of the Patterns

The PlusFloor underlay offers the advantage of smoothing out minor irregularities up to a maximum width of 5mm. This feature allows for installation over various existing floor coverings, including linoleum, compact PVC floors, wooden floorboards, and ceramic tiles (without crossing the joints). The underlay minimizes the visibility of subfloor irregularities, providing a smooth and even surface.

During installation, it is crucial to ensure that the floor has a minimum surface temperature of 18°C. Monitoring and recording these conditions throughout the installation process is highly important, and maintaining the records serves as evidence of proper installation conditions.

When installed on PlusFloor underlay, the Formation Plank flooring becomes a "floating" floor. In stable temperature conditions, a tension-free installation is sufficient, leaving a 1 to 2mm expansion gap at the perimeter of the room or area. For innovative solutions to cover the expansion gap, refer to the 'finishing your floor' section.

## Tools Required

- Tape measure
- Chalk line/laser line
- Underlay Tabs
- Utility knife
- Pencil
- Roller minimum 50kg
- Set Square
- Tackifier or adhesive

## Recommended Overlay

Install the PlusFloor underlays by placing the sheets next to each other without leaving gaps, ensuring that the edges are in direct contact. The underlays should be positioned perpendicular (at a 90° angle) to the direction in which the new floorcovering will be laid. In cases where the underlay has a printed side, make sure to lay it with the printed side facing up.

It is not necessary to fasten or attach one sheet to another. Once the underlays are properly laid, you can proceed with installing your new floor following the provided fitting instructions. It is important to note that using adhesive should be discussed with the technical services of PlusFloor beforehand. They can provide guidance on whether adhesive is required and the appropriate type to use for your specific installation.

## General Steps

The installation method described in the section "Installation methods" involves laying the Formation planks or tiles in a semi-loose laid manner using a tackifier/release adhesive. The planks or tiles are laid without tension and are continuously butted against each other and the walls or plinths.

To achieve this, the entire area should be adhered with the recommended tackifier/release adhesive. The adhesive should be spread evenly over the subfloor, allowing it to tack-off until it reaches its initial bonding strength. This method reduces the sensitivity of the Formation Plank to movement on suspended subfloors and provides greater resistance to wheeled furniture or rolling loads.

It is important to consult the specifications of the adhesive being used for further information and to follow the manufacturer's recommendations.

## General Steps

**Step 1:** Determine the installation direction of the PlusFloor flooring and mark a straight line parallel to the longest wall. For adhered installation, proceed to step 2. For loose-laid underlay installation, refer to the section "installation of loose-laid underlay." For adhesive tabs installation, refer to the section "installation methods."

**Step 2:** Create a section to be glued, typically around 5 rows wide. Read the manufacturer's instructions before using the adhesive.

**Step 3:** Apply the adhesive evenly on the subfloor and let it tack-off until it reaches its initial bonding strength. Consult the adhesive specifications for more details.

**Step 4:** Lay the planks or tiles in the tacked-off adhesive, following the direction of the backing arrows. Use a new panel for each row and avoid using leftover pieces from the previous row. Cut the planks or tiles without tension against the wall or skirting. Only apply adhesive for a manageable section at a time.

**Step 5:** Press each plank or tile firmly into the adhesive with a rubbing block or hand roller for full contact.

**Step 6:** Remove excess adhesive with a damp cloth.

**Step 7:** If using full contact adhesive, immediately roll each section with a minimum 50kg flooring roller in different directions during the adhesive working time.

Repeat **steps 2 to 7** until the entire installation is completed.

### INSTALLATION AND WARRANTY

All PlusFloor floors should be installed by a skilled and competent installer who will consider the unique circumstances of each site. The PlusFloor warranty will be applicable only to floors that have been installed by a competent flooring installer conforming to the standards comparable to BS8201 in the UK or an equivalent standard worldwide.

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PlusFloor Unit 11,  
Carnforth Business Park,  
Oakwood Way, Carnforth,  
LA5 9FD  
Tel no. +44(0)1524 481 118  
Fax. +44(0)1524 481 171  
info@plusfloor.com  
www.plusfloor.com

# PlusFloor®

**01524 481 118**  
**info@plusfloor.com**  
**plusfloor.com**

**London Showroom**  
23 Pear Tree Street  
Clerkenwell  
London, EC1M 3AP

**Innovation + Distribution Centre**  
11 Oakwood Way  
Carnforth Business Park  
Carnforth, LA5 9FD