

Jotafloor PU Crete Plus

Product description

This product is seamless, self smoothing, solvent free polyurethane based hybrid antimicrobial flooring system. It has high impact resistance, sustains abrasion and resistant to many chemicals being used in day to day life.

Scope

The Application Guide offers product details and recommended practices for the use of the product.

The data and information provided are not definite requirements. They are guidelines to assist with efficient and safe use, and optimum service of the product. Adherence to the guidelines does not relieve the applicator of responsibility for ensuring that the work meets specification requirements. Jotun's liability is in accordance with general product liability rules.

The Application Guide (AG) must be read in conjunction with the relevant specification, Technical Data Sheet (TDS) and Safety Data Sheet (SDS) for all the products used as part of the coating system.

The AG is a guide for flooring applicators in the installation of Jotafloor PU Crete. The successful installation of the product is the sole responsibility of the flooring applicator. The product application requires a high degree of skill, tools, and equipment. Jotafloor PU Crete is only available for installation by trained and experienced applicators.

Referred standards

Reference is generally made to ASTM and SSPC Standards. When using standards from other regions it is recommended to reference only one corresponding standard for the substrate being treated.

Application

Acceptable environmental conditions - before and during application

The concrete substrate should be at least 7 days old and should have a minimum compressive strength of 25 Mpa or 3626 psi. The pull strength of the substrate should be 1.5 mpa or 218 psi. Before the application, test the atmospheric conditions in the vicinity of the substrate for the dew formation according to ISO 8502-4.

The moisture content should not exceed 8%. Prior to the application the substrate should be surface dry and free from rising dampness and ground water pressure.

A damp/ moisture proof membrane is essential to prevent the rising moisture as it may cause the concrete to become saturated and negative pressures will adversely affect the bond to the Jotafloor PU Crete Plus flooring.

Jotafloor PU Crete Plus flooring system is impermeable to liquids but must not be used as a substitute for a membrane or vapor barrier.

The Relative Humidity should not exceed 80%.

Minimum and maximum temperature should be 15°C and 27°C respectively.

Substrate temperature should be at least 3°C above the dew point.

Do not apply when the ambient temperature is more than 30 degrees.

Do not apply Jotafloor PU Crete Plus under direct sunlight or on to hot substrates.

The PH of the concrete should be 7-9.

The following restrictions must be observed:

- Only apply the coating when the substrate temperature is at least 3°C above the dew point
- Do not apply the coating if the substrate is wet or likely to become wet
- Do not apply the coating if the weather is clearly deteriorating or unfavorable for application or curing
- Do not apply the coating in high wind conditions.

Things to consider for application at high and low temperatures:

The ideal temperature for the application of Jotafloor PU Crete Plus is 15° - 27° C.

The challenges while installing above 27° C are:

- (i) Poor pot life
- (ii) Lesser time to lay down on to the floor
- (iii) Spike marks
- (iv) Blisters on the final finish

For overcoming these challenges while working above 27° C, it is necessary to cool down the material before its application to increase the working and open time and thus reducing the chance of blistering due to excessively fast skin formation.

Storing the material in a climate-controlled (air-conditioned) chamber will allow to bring down the temperature before application. Hence, it is important to cool the materials at a temperature between 15° C to 23° C for 24 hours before application.

Alternatively placing parts A and B in ice water will also bring its temperature down, but ensure that Part B does not meet water, as it can react. This should be done just one hour before the application. The mixed temperature of components A and B should not be less than 15° C. It is better to check the temperature using a thermometer before the application.

Note: To improve the workability of Jotafloor PU Crete Plus never remove any amount of component C from the mix to make it more resin rich. The required quantity is an important part of the reaction and may cause the appearance of blisters or surface irregularities and pin holing. This action will void any guarantee over the product.

The challenges while installing below 15° C are:

- (i) Workability due to high viscosity
- (ii) Poor levelling
- (iii) Increased trowel and spike marks
- (iv) Increased curing time.

While the temperature is 15° C or less, it is important to raise the temperature of the stocked material. The entire materials required for the application can be placed under a tent or a covered area and can be heated using electric radiators or hot air blowers.

Surface preparation

The required quality of surface preparation can vary depending on the area of use, expected durability and if applicable, project specification.

Preferred surface profile for Jotafloor PU Crete Plus is CSP3-CSP9 as per the ICRI guideline mentioned in 310.2R. 2013.

The substrate should be mechanically abraded to leave a clean, sound, stable base on which Jotafloor system can be applied.

The preferred method of abrading the substrate is dust-free captive blasting, scarifying or appropriate diamond disc grinder to create high profile. Both the equipment should be connected to an industrial vacuum machine for a dust-free environment. Whichever surface preparation method is employed, ensure that the laitance (powdery material on the concrete surface) and loose particles are removed from the concrete surface.

Weak concrete must be removed, whether manually or mechanically and surface defects such as blowholes and voids should be fully exposed.

After the surface preparation is completed, remove all the dust formed on the surface using an industrial vacuum machine.

Once surface preparation is completed, it is necessary to use the following material for concrete repairs.

Repairs to the substrate and the blowholes and voids up to 10 mm can be carried out with Jotafloor PU Crete Plus during scratch coat.

Areas to be repaired that are greater than 10 mm should be filled with a slurry (a combination of Jotafloor Easyflow Primer HS and non-slip aggregate medium 0.3 mm – 0.6 mm in a ratio of 1Ltr:7Kgs). Ensure that after drying of slurry the surface should be leveled using a disc grinder.

In order to prevent the visibility of the cold joints on the surface, we must ensure that the joints must be filled with Jotafloor PU Crete Plus during scratch coat.

The coating should not be relied upon to improve the tolerance or flatness levels in the substrate. The substrate should be prepared for the appropriate tolerance prior to the application of coating. Tolerance's can be corrected but this is a separate operation that must be completed before installing the coating.

Jotafloor PU Crete Plus will correct the tolerances up to 6 mm. It is better to maintain the substrate to the appropriate tolerance levels prior to the application of Jotafloor PU Crete.

Anchor Grooves

Saw-cut anchor - Retaining grooves to prevent curling of the Jotafloor PU Crete Plus during hardening and curing of the coating.

Open the grooves twice as wide and deep as the Jotafloor PU Crete Plus thickness. Use a suitable double blade saw with connection to an industrial vacuum cleaner.

Open the grooves wherever a free edge of the Jotafloor PU Crete Plus is possible. Also, wherever there is a discontinuity in the Jotafloor PU Crete Plus that will occur like around the perimeter of a bay, along channels, drains or expansion joints, at doorways, around the feet of machinery, plinths and columns.

A minimum of 5 cm distance is recommended from the perimeter of the walls.

The maximum distance between anchor grooves in either possible direction is 16m. If the floor is broader than 16m on either side, then extra anchor grooves will be required to be provided. If the floor size is less than 16m on either side, it is still necessary to properly provide anchor grooves at the corresponding distance.

If the room is too large to complete in a single working day, then the PU Crete should typically end at an anchor groove (Day joint). The following day's work should start at the next anchor groove. This can be decided in advance and should be cut once the day's work is planned.

Jotafloor PU Crete Plus should not be carried through a door without anchor grooves across the doorway.

The external corners of the doorways especially when the wall is cast into the floor should have an extra 45-degree groove cut coming out from the external corner which should continue into the floor twice the width of the wall structure. In case if the width of the wall is 50 mm then the anchor groove should be 100 mm.

Expansion Joints

Expansion joints on the floor must continue through the Jotafloor PU Crete Plus and should be filled with flexible sealant.

For better and stronger edges of expansion joint it is best to saw cut the material after application. This will produce a more uniform joint when compared to one made by placing a piece of wood in the concrete and applying the Jotafloor PU Crete Plus to either side.

There are few areas where it is advisable to deliberately create expansion joints as these areas will be subjected to thermal or vibrational movements during service.

(i) Boundaries between different floors or flooring materials

(ii) Load bearing columns on the floor

(iii) Areas around ovens, freezers and other equipment's which are subjected to high temperatures can cause thermal stress.

(iv) Cold storage rooms should be separated from a surrounding room by expansion joints. Inside the cold storage rooms if the concrete floor is not laid on an insulating layer then an additional movement joint (provide anchor groove as mentioned under induced movement joint) will be necessary inside the cold room.

(v) Expansion joints must always be filled with a suitable flexible joint sealant. The best joint sealant for any application will depend upon the width of the joint and the amount of anticipated movement as well as the chemical nature and temperature of any spillages likely to impact the floor.

(vi) Anchor grooves should always be created at termination like expansion joints. It is important to provide the groove next to the expansion joint to anchor the Jotafloor PU Crete Plus. The groove should be twice the width and depth of Jotafloor PU Crete Plus.

Control Joints or Induced Movement Joint

(i) Movement joints are provided on to floor to accommodate movements especially if the expansion joints are not placed at enough distances.

(ii) The depth of the movement joints should be $\frac{1}{4}$ th of the concrete screed thickness. The width should be a minimum of 5 mm to accommodate the sealant.

(iii) Anchor groove should be provided at 50 mm from the movement joint to hold the Jotafloor PU Crete Plus.

Material storage conditions

Jotafloor PU Crete Plus must be protected from frost, moisture, and direct sunlight.

Store the product in a dry, shaded area, protected from rain and direct sunlight and other external heat sources. Please, ensure Jotafloor PU Crete Plus Component C is always kept on a raised platform ensuring that it is not in direct contact with the floor.

Shelf life

Jotafloor PU Crete Plus has a definite shelf life and is dependent upon storage conditions.

If the material is utilized after the shelf life has lapsed, the results will not be satisfactory with visible blisters and cracks on the final finish.

The shelf life of Jotafloor PU Crete Plus is 9 months.

Product mixing

Product mixing ratio (by volume)

| | |
|--------------------------------|--------------|
| Jotafloor PU Crete Plus Comp A | 2.49 part(s) |
| Jotafloor PU Crete Plus Comp B | 2.41 part(s) |
| Jotafloor PU Crete Plus Comp C | 5.3 part(s) |
| Jotafloor PU Crete Plus Comp D | 0.43 part(s) |

NO PART MIXING.

Use a slow speed drill and mixing paddle.

Pour the full contents of the mixed material onto the floor immediately after mixing is completed.

Provide adequate protection around the mixing areas to prevent contamination of the concrete underneath. A plastic sheet or cardboard should be placed to protect the floor around the mixing areas.

Cover the prepared substrate before application with a plastic sheet to avoid spilling of materials to prevent outgassing and bubbling. Avoid mixing under direct sunlight.

A slow speed mechanical mixing agitator with a speed of 300-400 rpm shall be used for mixing.

While, using mixing drills use an appropriately sized bucket to ensure the mixing head is fully submerged to avoid entrapping too much air. If the bucket is too big for the volume of material, then mixing efficiency will be poor.

Stir comp A separately and add Comp D. Further add Comp B to the mixture and continue mixing. Ensure that the speed is consistent at 300-400 rpm.

Next add Comp C to the original mixture and continue the mixing. Ensure the comp C is released gradually. Allow part C to blend for a further minimum of 2 minutes to ensure a homogenous mix is achieved.

During the operations, scrape the sides and bottom of the container with a flat or straight edge trowel to ensure complete mixing.

Next empty the complete mix into a third container to ensure that the Comp C is consistently mixed. This must be done to ensure that the white lumps from Comp C is not visible on the coating.

It is important that the final mixing of all the 4 components is done at slow speeds (300-400 rpm) to avoid the entrapment of air and the risk of random blistering. Improper mixing may lead to poor flow, trowel marks, blisters and undulations.

Mixing at temperature below 20 °C:

Ideally it is best to mix for 3 minutes (including the time for adding comp C). Ensure that all the components are thoroughly mixed.

Mixing at temperature above 20 °C:

Ideally it is good to mix for 2 minutes (including the time for adding Comp C). Ensure that all the components are thoroughly mixed.

When discharged from the mixer Jotafloor PU Crete Plus should be at least 15°C.

Mix full units and no part mixing is allowed.

It is important that the mixed Jotafloor PU Crete Plus is laid on the floor immediately and that mixing of the subsequent batch starts straight away. This ensures good consistency between mixes.

Induction time and Pot life

Paint temperature **23 °C**

Pot life 15 min

The temperature of base and curing agent is recommended to be 18 °C or higher when the paint is mixed.

Thinner/Cleaning solvent

Cleaning solvent : Jotun Thinner No. 10

Thinner not to be used to dilute the product.

Application data

Important factors to note before application:

Jotafloor PU Crete Plus is a fast curing coating and has a pot life of maximum of 15 minutes at 23°C and will decrease at higher temperatures. If in case the coating is worked upon after 15 minutes, the appearance of the finished coating may be damaged.

It is advisable to lay the coating in bays, with the width of each bay being a maximum of 6 meters so that the mixed coating can be easily spread.

Once a bay is laid it is needed to be ensured that the applied previous bay is not touched again as it can damage the final appearance.

Ensure that there is more than one mixing agitator if the area is large and enough manpower is available to carry out mixing and application. Any delay would cause the visibility of the joints.

It is important that the application is planned so that the junction between the various bays of a large floor can be placed in the optimum locations to give the best aesthetic result. These junctions can be made to coincide with joints or hidden under a plant or machinery. It is ideal to avoid many junctions in the main traffic areas where it will be seen. These joints are inevitable and cannot be avoided.

Priming and Scratch Coat

Substrate sealing is normally not required if the concrete is not porous. In such cases, a scratch coat of Jotafloor PU Crete Plus can be applied directly. In case the concrete is highly porous we recommend a coat of Jotafloor Easyflow Primer HS to be applied @5 sqm/liter.

Insufficient, curing of primer before overcoating can cause delamination at lower temperatures. Due to variations in concrete quality, substrate conditions, surface preparation, and ambient conditions, reference test areas are recommended to determine whether priming is required to prevent the possibility of blisters, de-bonding, pinholes, and other aesthetic variations.

Scratch coat should be applied at 1 sqm /liter to achieve a thickness of 1 mm. This is to produce a smooth and sealed substrate for the application of the finished coat and ensure the best aesthetic results.

Ensure the Jotafloor PU Crete Plus scratch coat is properly cured and dry to the touch before the application of the finished coat. If the time between coats exceeds 48 hours, or if condensation or water has an impact on the surface then it is required to do light grinding to abrade the surface before overlaying.

Ensure that all the anchor joints created should be filled only partially while applying the scratch coat so that some part of the joint is visible while applying the finished coat.

After 24 hours spread the mix evenly over the substrate using a notched trowel at the required thickness. Additionally, use a steel trowel for edgework. Spread the mix @ 0.25 sqm /litre for 4 mm and 0.17 sqm/liter for 6 mm thickness.

Use a spiked roller to produce a smooth even finish. The whole floor should be spike rolled twice only. On the first pass, the spiked roller should be pushed right through the depth of the coating to assist the flow, remove notched marks and to level the floor.

During the second pass ensure the roller is not forced into the coating to provide a perfect finish.

To ensure an even "finishing" all spike rolling and use of trowel should be completed before the mix is more than 10 minutes old at 23°C.

Avoid throwing resin onto the already scattered floor by the too aggressive use of the spiked roller as this will create surface defects.

Avoid the rolling on to the previously applied area to protect the floor from any gloss and color variations. The spike marks also tend to remain on the final finish.

Repair of coating system

Using an angular diamond blade cut around the perimeter of the area to be repaired.

Using a hammer and chisel remove the damaged coating and clean the surface and ensure the area is free of all dust and debris.

It is necessary to create a groove around the perimeter of to be repaired area to anchor the repaired material.

Proceed with the scratch coat and then the finished coat as mentioned under application.

Later just adjacent to the groove saw cut again and fill the joint with a PU sealant.

Film thickness per coat

Typical recommended specification range

| | |
|----------------------------|-----------------------------------|
| Dry film thickness | 3000 - 6000 μm |
| Wet film thickness | 3000 - 6000 μm |
| Theoretical spreading rate | 0.33 - 0.16 m^2/l |

Spreading rate depends on film thickness applied, type of texture, surface porosity, imperfections, temperature, wastage during painting etc.

Ventilation

Sufficient ventilation is very important to ensure proper drying/curing of the film.

Drying and Curing time

| Substrate temperature | 23 °C |
|--|-------|
| Surface (touch) dry | 8 h |
| Walk-on-dry | 12 h |
| Dry to over coat, minimum | 12 h |
| Dry to over coat, maximum, atmospheric | 48 h |
| Dried/cured for service | 72 h* |

* Light Traffic - 24 hours / Full Traffic - 72 hours

Drying and curing times are determined under controlled temperatures and relative humidity below 85 %, and at average of the DFT range for the product. Time intervals given are approximate & based on controlled laboratory results. It varies based on ambient & substrate condition, particularly temperature & humidity.

Surface (touch) dry: The state of drying when slight pressure with a finger does not leave an imprint or reveal tackiness.

Walk-on-dry: Minimum time before the coating can tolerate normal foot traffic without permanent marks, imprints or other physical damage.

Dry to over coat, minimum: The recommended shortest time before the next coat can be applied.

Dry to over coat, maximum, atmospheric: The longest time allowed before the next coat can be applied.

Temperature below 23 degree C will make application more difficult and careful considerations should be given to storage of materials in cold conditions. Consult Jotun technical team for assistance in such cases.

Equipment List

- A heavy duty slow speed drill
- Mixing paddle, MR3 type or equivalent
- Forced action screed mixer if available
- Industrial vacuum cleaner
- Paint brush, 50mm wide is the most suitable, or paint roller for the application of primer
- 2 steel or wooden screed rails, size, 6mm x 20mm x 2m, straight edge, wooden or aluminum
- Steel trowel
- Wooden or plastic float
- Medium-sized flat bladed screwdriver (for opening tins)
- Sharp knife (for opening bag of aggregate)
- Cleaning cloth
- Jotun Thinner 10
- Soft bristled sweeping brush or broom
- Spike roller

Quality assurance

The following information is the minimum required. The specification may have additional requirements.

- Confirm that all welding and other metal work has been completed before commencing pre-treatment and surface preparation
- Confirm that installed ventilation is balanced and has the capacity to deliver and maintain the RAQ
- Confirm that the required surface preparation standard has been achieved and is held prior to coating application
- Confirm that the climatic conditions are within recommendations in the AG, and are held during the application
- Confirm that the required number of stripe coats have been applied
- Confirm that each coat meets the DFT requirements in the specification
- Confirm that the coating has not been adversely affected by rain or other factors during curing
- Observe that adequate coverage has been achieved on corners, crevices, edges and surfaces where the spray gun cannot be positioned so that its spray impinges on the surface at 90° angle
- Observe that the coating is free from defects, discontinuities, insects, abrasive media and other contamination
- Observe that the coating is free from misses, sags, runs, wrinkles, fat edges, mud cracking, blistering, obvious pinholes, excessive dry spray, heavy brush marks and excessive film build
- Observe that the uniformity and colour are satisfactory

All noted defects shall be fully repaired to conform to the coating specification.

Caution

This product is for professional use only. The applicators and operators shall be trained, experienced and have the capability and equipment to mix/stir and apply the coatings correctly and according to Jotun's technical documentation. Applicators and operators shall use appropriate personal protection equipment when using this product. This guideline is given based on the current knowledge of the product. Any suggested deviation to suit the site conditions shall be forwarded to the responsible Jotun representative for approval before commencing the work.

For further advice please contact your local Jotun office.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not inhale spray mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

Accuracy of information

Always refer to and use the current (last issued) version of the TDS, SDS and if available, the AG for this product. Always refer to and use the current (last issued) version of all International and Local Authority Standards referred to in the TDS, AG & SDS for this product.

Colour variation

Some coatings used as the final coat may fade and chalk in time when exposed to sunlight and weathering effects. Coatings designed for high temperature service can undergo colour changes without affecting performance. Some slight colour variation can occur from batch to batch. When long term colour and gloss retention is required, please seek advice from your local Jotun office for assistance in selection of the most suitable top coat for the exposure conditions and durability requirements.

Reference to related documents

The Application Guide (AG) must be read in conjunction with the relevant specification, Technical Data Sheet (TDS) and Safety Data Sheet (SDS) for all the products used as part of the coating system.

When applicable, refer to the separate application procedure for Jotun products that are approved to classification societies such as PSPC, IMO, SSPC etc.

Symbols and abbreviations

min = minutes
h = hours
d = days
°C = degree Celsius
° = unit of angle

TDS = Technical Data Sheet
AG = Application Guide
SDS = Safety Data Sheet
VOC = Volatile Organic Compound
MCI = Jotun Multi Colour Industry (tinted colour)

μm = microns = micrometres
g/l = grams per litre
g/kg = grams per kilogram
 m^2/l = square metres per litre
 mg/m^2 = milligrams per square metre
psi = unit of pressure, pounds/inch²
Bar = unit of pressure
RH = Relative humidity (% RH)
UV = Ultraviolet
DFT = dry film thickness
WFT = wet film thickness

RAQ = Required air quantity
PPE = Personal Protective Equipment
EU = European Union
UK = United Kingdom
EPA = Environmental Protection Agency
ISO = International Standards Organisation
ASTM = American Society of Testing and Materials
AS/NZS = Australian/New Zealand Standards
NACE = National Association of Corrosion Engineers
SSPC = The Society for Protective Coatings
PSPC = Performance Standard for Protective Coatings
IMO = International Maritime Organization

Disclaimer

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.
