Jotafloor Anti-Static

Product description

This is a two coponent amine cured electrically conductive epoxy coating. It helps in discharge of static electricty and is used for floors where an anti-static surface is required. It is self smoothing, easy to apply and can be easily cleaned leaving a hygienic surface.

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.
Jotuns 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.

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 28 days old and should have a minimum compressive strength of 25 MPa or 3626 psi. The pull of 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 4%.

The Relative Humidity should not exceed 80%.

Minimum and maximum temperature should be 23°C and 40 °C respectively.

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

Do not apply when the ambient temperature is more than 40 °C

Do not apply Jotafloor Anti-static under direct sunlight or on to hot substrates.

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

Important consideration for application at high temperatures:
• It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice:
• Store unmixed materials in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight.
• Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment, which will come into direct contact with the material itself.
• Try to avoid application during the hottest times of the day.
• Make sufficient material, plant, and labour available to ensure that application is a continuous process.

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 Anti-Static 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 or scarifying. 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.

The flatness of the finished floor is important. High spots on the concrete substrate should be ground off and low spots filled out. Weak concrete must be removed, whether manually or mechanically and surface defects such as blow holes and voids should be fully exposed. Repairs to the substrate the blow holes and voids up to 10 mm can be carried out with Jotafloor filler plus.

Areas to be repaired that are greater than 10 mm should be filled with a slurry (a combination of Jotafloor SF PR 150 and non -slip aggregate medium 0.3 mm – 0.6mm in a ratio of 1Ltr:7Kgs). Ensure that after drying of slurry the surface should be leveled using a disc grinder.

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.

Product mixing

Product mixing ratio (by volume)

Jotafloor Anti-Static Comp A	2.8	part(s)
Jotafloor Anti-Static Comp B	1	part(s)

No part mixing of this product is allowed. Use a slow speed drill and mixing paddle.

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

Component A should be thoroughly stirred before Component B is mixed. Mix both the components using a slow speed drill and mixing paddle for 2 minutes. The entire content should be poured on to a third container and edges of the container should be scrapped. Mix the material for an additional 20 seconds. The mixed material should be given an induction time of 3 minutes before application. Do not add solvent thinners at any time

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.

Induction time and Pot life

Paint temperature	**23 °C**

Pot life	30 min.

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

Thinner/Cleaning solvent

Cleaning solvent : Jotun Thinner No. 17

Thinner not to be used to dilute the product.

Application data

Priming

Prepared substrates should be primed using Jotafloor Sealer HS. Two coats of Jotafloor Sealer HS is required to completely the seal the porosity of the concrete.

Jotafloor Sealer HS is a two-component product supplied as the base (Comp A) and the hardener (Comp B). Add the entire content of Comp B to Comp A and mix for 2 minutes using a slow speed mixing agitator. No part mixing is allowed.

Once mixed Jotafloor Sealer HS should be applied immediately to the prepared substrate using a roller at 8 m²/l to achieve a desired thickness of 100 microns DFT. It should be well rubbed into the substrate to ensure full coverage. Leave it to dry for 24 hours at 23°C.

Apply the second coat of Jotafloor sealer HS as above.

Earthing using copper tapes

• Fixing of copper tapes and Earthing connections are a must before the application of Jotafloor anti-static systems.
• Copper tapes are fixed to the surface of the cured Jotafloor sealer HS and before the application of Jotafloor antistatic conductive primer.
• Copper Tape should be an electrically conductive and should be self - adhesive. The quality of the adhesive is highly important to have high adhesion over Jotafloor sealer HS.
• Copper tape should follow the following specifications

Property - Value
Colour - Copper
Adhesive - Acrylic conductive
Type of Backing - Copper
Backing thickness - 1.4 mils (0.04mm)
Backing width - 9-12 mm
Electrical resistance - 0.05 Ω

• When primer is full dried the self-adhesive copper tape should be fixed to the primed concrete.
• The butter paper is firstly removed, and the adhesive side of the copper strip is kept exposed. Stick the self-adhesive copper strip on to the clean primed substrate.
• At the periphery, near to the walls, stick the self-adhesive copper strip at a distance of 6 inches from the walls (fig)
• Stick the self-adhesive copper strip on to the clean primed substrate at a distance of 2 meters to each other, lengthwise and breadth wise.
• Each grid will be thus 4 m² and ensure that each strip is linked to each other.
• Extended end of the copper tape is then run up the wall to connect which should be connected to the earthing points. The connection to earthing points should be done by an electrical engineer.
• A minimum of 3 earthing points should be in any one room which is isolated from any other areas. For larger rooms more earthing points will be required. If a thumb rule must be fixed for every 100 m², a minimum of 3 earthing points should be provided.

Fixing of copper in an expansion joint

• Fix copper tape on either side of the joint and ensure that the tape within the joint is looped at least 2cm below floor level.
• Copper tape should be bridged over exposed joints around columns or expansion joints or connecting different

concrete slabs separated by exposed joints.
• Over coat the entire area with Jotafloor anti-static primer and within the joint apply using a brush.
• Overcoat the exposed copper tape with Jotafloor anti-static primer.
• Fill top of joint with closed cell polythene backer rod and overlay joint completely with Jotafloor antistatic ensuring that path of joints is clearly marked.
• When cured saw cut out topping - replace rod at required depth and seal joint with suitable joint sealant. Ensure that the copper tape is not damaged while cutting the joint.

Application of Jotafloor Anti-static Primer

• It should be applied within 24 hours of the primer curing. Since it is water based adequate ventilation is a must.
• After mixing Jotafloor antistatic primer should be applied to the primed surface using a medium pile roller at 6.6 m²/litre at a WFT of 150 microns and to achieve a DFT of 50 microns.
• Do not pour directly onto the substrate as this may result in occasional patches of thick material, which may then cure poorly.
• Do not roll the anti-static primer out too far as this can affect the product's electrical properties when installed.

• Use a small (25mm) paintbrush to work the anti-static primer near columns, expansions joints as good contact is essential at these points.
• The anti-static primer will cure in less than 24 hrs depending upon conditions.

A finger drawn across the surface should pick up only minimal black traces indicating that the surface is ready to be recoated with Jotafloor Antistatic topcoat.

Application of Jotafloor Anti-static

• Application of Jotafloor Antistatic should be within the over coating time.
• After mixing, the mixed materials should be poured on to the prepared and primed substrate and spread evenly using Notch trowel/pin screed leveller.
• To achieve a DFT of 1500 mic apply at 0.64m²/litre and at a WFT of 1562.5 microns. Similarly, to achieve a DFT of 2000 mic apply at 0. 48m²/litre and at a WFT of 2083 mic,.
• After spreading the material with notch trowel/pin screed leveler, it should be firmly rolled using spike roller to release entrapped air and level, remove any tool marks on the coating surface.
• Care should be taken not to over work the resin and mixed materials should be used within its specified time.
• The spike rolling should be done in "back and forth" technique along the same path and should be rolled perpendicularly to each side.

Inspection and testing

Test methods according to IEC 61340 -4-1:

Surface resistance to ground

The method of conductivity measurement must be stated in the specification, method statement and bidding documents. It sets the reference of the upcoming application.

Resistance to ground

Surface Resistance electrode/probe
Weight: 2.50 kg (+/- 0.25 kg)
Diameter: 65 mm (+/- 5 mm)
Rubber pad hardness: Shore A 60 (+/- 10)

Typical average resistance to ground (RG):
102 Ω - 104 Ω* (IEC 61340-4-1)
* Readings might vary, depending on ambient conditions (i.e. temperature, humidity) and measurement equipment.

The measurement of resistance to earth is recommended as follows

Applied area - No of measurements
<10 m² - 6
<100 m² - 10-15
<1000 m² - 40-50
<5000 m² - 80-90

Measurement Procedure:

1. Place the electrode on the floor and connect the probe via wire to the ohm meter
2. Connect the second wire first with the earthing point and second with the ohm meter
3. Take measurements
4. Number of measurements must be coordinated with the ESD-representative

Ventilation

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

Repair of coating system

Damages to the coating layers:

Prepare the area through sandpapering or grinding, followed by thorough cleaning/vacuuming. When the surface is dry the coating may be over coated by an additional coat or by another product, ref. original specification.

Always observe the maximum over coating intervals. If the maximum over coating interval has been exceeded the surface should be carefully roughened in order to ensure good intercoat adhesion.

Damages exposing bare Substrate:

Remove rust, loose paint, grease or other contaminants by captive blasting, mechanical grinding, water and/or solvent washing. Feather edges and roughen the overlap zone of surrounding intact coating. Apply the coating system specified for repair.

Film thickness per coat

Typical recommended specification range

Dry film thickness	1500	-	2000	µm
Wet film thickness	1600	-	2100	µm
Theoretical spreading rate	0.6	-	0.5	m²/l

Drying and Curing time

Substrate temperature	**15 °C**	**23 °C**	**40 °C**
Surface (touch) dry	48 h	20 h	7 h
Walk-on-dry	48 h	24 h	8 h
Dried/cured for service	10 d	7 d	24 h

For maximum overcoating intervals, refer to the Application Guide (AG) for this product.

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.

Maximum over coating intervals

Maximum time before thorough surface preparation is required. The surface must be clean and dry and suitable for over coating. Inspect the surface for chalking and other contamination and if present, remove with an alkaline detergent. Agitate the surface to activate the cleaner and before it dries, wash the treated area by low-pressure water cleaning using fresh water.

If maximum over coating interval is exceeded the surface should in addition be carefully roughened to ensure good inter coat adhesion.

Areas for atmospheric exposure

Average temperature during drying/curing	23 °C	40 °C
Itself	2 d	1 d
Epoxy	2 d	1 d

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 17
- Soft bristled sweeping brush or broom

Quality assurance

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

- 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

TDS = Technical Data Sheet
AG = Application Guide
SDS = Safety Data Sheet

°C = degree Celsius
° = unit of angle
µm = microns = micrometres
g/l = grams per litre
g/kg = grams per kilogram
m²/l = square metres per litre
mg/m² = 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

VOC = Volatile Organic Compound
MCI = Jotun Multi Colour Industry (tinted colour)
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.