

PURLINE®

Adhesive	Moisture Limits	Application Method	Coverage
MI 3500	≤ 100% RH **	1/32" x 1/16" x 1/32" U-Notch Trowel (FFA)	~ 170 - 220 ft ² / gal.
	<i>** with declining RH values and an intact moisture retarder</i>		

Tested following the protocol of ASTM F2170, the results must not exceed the published limits.

It may not be the flooring contractor's responsibility to conduct moisture testing. It is, however, the flooring contractor's responsibility to make sure these tests have been conducted and that the results are acceptable prior to installation. Testing should be performed by an International Concrete Repair Institute (ICRI) certified concrete slab moisture testing technician (CCSMTT); please visit https://www.icri.org/page/ccsmtt_list.

All on or below grade concrete subfloors must also have a confirmed effective vapor retarder pre-installed underneath that meets the requirements of ASTM E1745. If not, then use a moisture mitigation system that conforms to ASTM F3010. This system must be applied following the manufacturer's written instructions.

Subfloor Preparation

Document every process of the testing, preparation and installation with video or photographs.

Do not install any material that has visible defects or damage. A contractor that installs any material that has visible defects or damage assumes responsibility for the damaged material.

Proper glides must be used on all furniture that may slide directly across the floor, consult the furniture manufacturer for recommendations for use on resilient flooring. Heavy objects must not be moved directly across the floor; use protective boards.

Direct sunlight can cause UV damage (fading or bleaching) to most interior finishes, so Low E glass should be selected that will reduce the UV transmission to less than 1%. If not, applying 3M™ protection film (or similar) on the windows is recommended.

Underfloor heating is suitable, providing the substrate does not exceed 85°F, and the system is not used for 72 hours after the installation. When it is used, the temperature must not be increased by more than 5°F per day, or thermal shock may cause bond failure.

Do not install over a chemically abated subfloor, contact Technical Support in the Customer Care department (customercare@mattersurfaces.com).

Warning

The Occupational Safety and Health Administration (OSHA) has exposure limits for people exposed to respirable crystalline silica; these limits must be followed. All local, state and federal regulations must be followed; this includes but is not limited to the removal of in-place asbestos containing material.

Concrete subfloor

Unless stated otherwise, follow the requirements of ASTM F710. If the subfloor has standing water, hydrostatic pressure, ASR, or if a chemical adhesive remover has been used, do not install; contact Technical Support in the Customer Care dept. (customercare@mattersurfaces.com).

The substrate must also be smooth (ridge-free) with a flatness tolerance of $\leq 3/16$ -inch over 10-foot maximum plane variation and if required, smooth using a commercial grade (≥ 3000 psi.) suitable leveling underlayment or skim coat with a suitable patching compound. Follow the manufacturer's written instructions and limitations which must also meet the moisture requirements / test results for the project including allowing sufficient time to dry / cure.

Porosity

When using either MI 3500 the substrate can be porous or non-porous. Test for porosity according to ASTM F3191, the water droplet test. For more information and guidance regarding porosity and suitable concrete substrate preparation, contact Technical Support in the Customer Care department (customercare@mattersurfaces.com).

On & Below Grade

All on and below grade concrete slabs must have a confirmed and effective vapor retarder installed directly underneath the slab that meets the requirements of ASTM E1745. If this cannot be confirmed, then use an appropriate moisture mitigation system in consultation with Matter Surfaces Technical Department.

Moisture Mitigation System

If the moisture test results are too high, making the surface porous and allowing it to dry to an acceptable level is recommended. If that is not possible, then we recommend only moisture mitigation systems that conform to ASTM F3010, which must be applied following the manufacturer's written instructions.

Other products like floating or bonded membranes are available; these are not covered by our limited warranty. Only adhesives suitable for non-porous substrates must be used over such membranes and Matter Surfaces will only provide a one-year product defect warranty unless it is a recommended Matter Surfaces product.

Joints & Cracks

Do not install over any expansion or moving joints as any subfloor movement may cause installation failure. Use a suitable industry standard expansion joint assembly system, as required.

Gypsum Subfloors

Unless stated otherwise, all Gypsum subfloors must be prepared in accordance with ASTM F2678. The gypsum products must be installed following the manufacturer's written installation instructions including any requirements for priming. The substrate must be smooth (ridge-free) with a minimum flatness and gradient tolerance of $\leq 3/16$ -inch over 10-foot.

Wooden Subfloors

Unless stated otherwise, all wooden subfloors must be prepared in accordance with ASTM F1482. The substrate must be clean (without contaminates), dry ($\leq 8\%$ moisture content).

In summary, wooden subfloors must be double-layer construction with a minimum total thickness of 1". The subfloor must be rigid, free from movement and have at least 16" of well-ventilated air space below. Sleepers must not be directly in contact with concrete or earth, and the ground beneath the subfloor must be covered by a suitable vapor retarder. Do not install directly over Masonite™, lauan, fire retardant treated plywood, particle board, chipboard, etc. – all wooden panels must be finish-grade, fully conforming to ASTM F1482. The substrate must also be smooth (ridge-free) with a minimum flatness and gradient tolerance of $\leq 3/16"$ over 10'.

All Other Subfloors

For all other subfloor/substrates, please contact Technical Support in the Customer Care department (customer@matter.com) before proceeding.

Conditions, Storage & Acclimation

Conditions

The conditions of the project and on-site storage areas must both be at a constant ($\pm 5^\circ\text{F}$) service temperature that is between 68°F and 80°F with ambient relative humidity between 35% - 65% for at least 48 hours before acclimatization begins and for 72 hours after installation. The substrate must also be at least 5°F above the dew point.

Storage

Rolls may be shipped horizontally. If shipped & received in this manner, **place them in an upright position** on a clean, flat, solid surface in an interior, climate-controlled space. The area must be secure and fully enclosed from the weather. Never store the rolls laying down horizontally, outdoors or in shipping containers.

Planks and Tiles must be stored flat and neat (without overhanging). If appropriate, they can be left on the transport pallet. Never store outdoors or in shipping containers.

Product Acclimation

Rolls: All rolls must have been stored upright, and delivered to the jobsite location for acclimation. Total acclimation time is 48 hours on-site. Once delivered to the jobsite location, deliver individual rolls to jobsite installation location, remove transport materials from rolls and place in an upright position.

Remove all transit packaging and individual wrapping from each roll and loosen the roll from the core to:

- 1.) remove winding tension.
- 2.) allow for temperature to normalize throughout the material.
- 3.) allow for RH to normalize throughout the material.
- 4.) allow the rolls to acclimate in this position & location for 48 hours, to arrive at project operating environment conditions.

Planks & Tiles: All cases must be delivered to the jobsite location for acclimation. Total acclimation time is 48 hours on-site. Remove transport materials from skids, remove cases from skids and deliver individual cases to jobsite installation location.

Place cases on a smooth, flat, dry, hard surface. Do not stack more than (3) cases high.

Plank and Tile cases must be stored flat and neat (without overhanging box edges).

Leave cases unopened and allow to acclimate 48 hours prior to the start of the installation.

General Note

Following the preceding instructions for both formats, stable acclimation of all PURLINE® floor covering takes a minimum of 48 hours to accomplish and may take up to 72 hours or longer depending on storage and jobsite environmental conditions.

Installation Instructions

Required Tools

Flooring: Personal protective equipment (PPE) – HEPA filtered vacuum – 3M® Easy Trap Duster – tape measure – cork board – straight edge – pencil – string line – blue painters tape – utility knife with blades – scribing tool – thermo-hygrometer – 150-lb. three section roller – Infrared thermometer – edge trimmer (details covered in mandatory POC review) – camera phone.

Welding: Hot air welding gun with a 5mm round speed nozzle – grooving tools, with new 3.5mm blades – Mozart trimming tool.

Layout

Follow the detailed layout drawings provided or agreed upon by the designer, architect or end user. Calculate and mark out your start lines using a string line, straight edge, and pencil. Any loose dust, debris, etc. left on the subfloor during layout marking will act as a contaminant and may cause bond failure.

Roll Goods Direction

All 'non-wood visual' sheet installations must be installed in alternating roll directions as shown in Diagram 1 below. Pattern matching is not required for PURLINE®; however, wood designs are installed with rolls running in the same direction and must be lined up properly. Wood grain styles have a pattern repeat of 2 meters. Install all rolls in increasing roll number sequence.

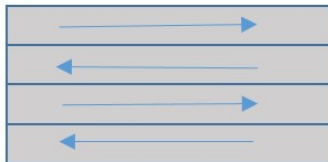


Diagram 1

Roll Goods Acclimation

To reinforce the 'Product Acclimation' section above: rolls must be stored standing up. Acclimation is a total of 48 hours. Upon receipt at jobsite, stand all rolls upright, remove the wrapping from the rolls and loosen the rolls to remove roll winding tension. After that time, make rough cuts as detailed below.

IMPORTANT NOTE: PURLINE® is an entirely new category of floorcovering. It is a bio-based polyurethane product, and must not be handled with the same methods as you would vinyl, rubber, linoleum, etc. Failure to thoroughly follow these instructions, and any technical field training/instruction will result in damage to the material and void any material warranty or claim.

The substrate must also be smooth (ridge-free to CSP 1) with a flatness tolerance of $\leq 3/16$ " over a 10-foot maximum plane variation. If required, attain the required flatness tolerance using a commercial grade (≥ 3000 psi) cementitious underlayment. Any rough surface should be skim-coated with a high-moisture patch prior to PURLINE installation, (i.e. Planiprep PSC 421 for skimming, Ultraplan-Extreme 2 with Primer X321 for self-levelling).

Clean Substrate:

The substrate must be completely free of debris and contaminants which may impact bonding. Use only a dry method of dust and debris removal.

1. Vacuum – with a brush attachment to remove any loose debris.
2. Tack mop – to remove any remaining fine particles or dust that could inhibit bonding. Tack-mopping with a dry system such as 3M Easy Trap Duster™ is a preferred method of fine particle removal.

Troweled Adhesive Application & Installation (for all PURLINE® Roll Goods and PURLINE® Planks & Tiles)

MI 3500 Adhesive - Roll Goods Installation

$\leq 100\%$ RH with declining RH values and an intact vapor retarder is the maximum allowable moisture content for concrete subfloors when tested following the protocol of ASTM F2170. MI 3500 is a 2-part, reactive, water-based, transitional adhesive provided in a 3.5 gallon unit with 2.5 gallon useable adhesive. To properly mix the MI 3500 adhesive for use: remove the activator pouch (Part A) and tray from beneath the pail lid, this will reveal the adhesive base (Part B) in the bottom of the pail; squeeze all of Part A (blue) into Part B (creamy beige); thoroughly mix using a variable low-speed drill with mixing paddle; mix until you achieve a homogeneous consistency and light blue-green color with no streaking. MI 3500 is now ready to be troweled.

Adhesive Trowel Requirements

MI 3500 adhesive must be applied using a $1/32$ " x $1/16$ " x $1/32$ " U-notched trowel (FFA), holding the trowel at an angle of approximately 60° to the prepared substrate without voids or puddles. Do not make any sharp turns with the trowel to avoid an uneven application of the adhesive. Replace all trowels after every 3.5 gallon unit to ensure proper spread rate; do not re-notch.



Allow approximately 20-30 minutes of open time (depending on site conditions). Installation can begin when the adhesive becomes clear and does not transfer to the fingertips when tested with pressure. Open working time to place the PURLINE® into the adhesive is 2 hours. When placing the sheets into the adhesive make sure the seams are not compressed, they must be flush. Only if the seams are to be heat welded is a slight gap permitted (1mm, ~ utility blade thickness).

1. First, ensure the area is clean and dust free using a HEPA filtered vacuum.
2. Dry-lay (without adhesive) the flooring in the correct positions (alternating direction, if necessary) following your start lines while lapping up the wall at each end and overlapping the seams by at least 1”.
3. Make your rough cuts, allowing for 2” – 3” oversizing; allow the rough-cut flooring to lay flat in place for up to 2 hours; installation **may** proceed at this point **if** the roll material has fully relaxed; if any residual roll curl memory remains after 2 hours of being flat-laid, then Roll Goods may require further conditioning and relaxing prior to installation into adhesive bed: proceed to back-roll rough-cut roll material into a loose coil (~ 1’ diameter) if necessary to relax any residual roll memory; 3 equally-placed bands of non-marking blue or green painter’s tape can be used to secure loose coils. Stand upright for 24 hours prior to the installation of the sheets.
4. Do not allow rough-cut, flat-laid flooring to remain on substrate overnight, stand back up (as described in #3 above) and loosely roll to resume installation procedure next-day.
5. For all finish cuts, first - score the flooring using a utility knife, then - with a second pass - finish the cut using a hook knife. This process will avoid fracturing the edge.
6. For the seams, remove the selvage edge for heat welding and then underscribe to complete the seam.
7. When heat welding is conducted, allow for a 1mm gap between each of the sheets after trimming.
8. Once the sheets are in position, carefully pull back at least half of each sheet (on top of itself) to expose the substrate. DO NOT fold the sheet the long way – avoid tubing the roll.
9. When placing the sheets onto the PSA adhesive bed make sure the seams are not compressed, they must be flush. Only if the seams are to be heat welded is a slight gap permitted (1mm, ~ utility blade thickness).
10. After the sheets have been laid onto the adhesive bed, use the **Cork Rubbing Board** to press the material onto the adhesive bed. Rub each sheet down the length and out to each edge forcing the sheet onto the adhesive bed establishing your initial seating of the backing and initiating a tight bond to the substrate.
11. Use a hand roller to roll the seam.
12. Lay material consistently as each section of adhesive reaches its proper tack, and within the correct open working time.
13. After the sheet has been seated with the cork rubbing board, use a 150-lb (70kg), three-section floor roller to set the flooring by slowly rolling the sheet once in each direction, left to right and front to back.
14. As you proceed across the floor, drop back to roll each installed sheet a total of 3 times.
15. Once finished, roll the entire floor again, paying particular attention to roll edge seams for complete adhesion.

MI 3500 Adhesive – Planks & Tiles Installation

≤ 100% RH with declining RH values and an intact vapor retarder is the maximum allowable moisture content for concrete subfloors when tested following the protocol of ASTM F2170. MI 3500 is a 2-part, reactive, water-based, transitional adhesive provided in a 3.5 gal. unit with 2.5 gal. useable adhesive.

To properly mix the MI 3500 adhesive for use:

1. remove the activator pouch (Part A) and tray from beneath the pail lid, this will reveal the adhesive base (Part B) in the bottom of the pail;

2. squeeze **all** of Part A (blue) into Part B (creamy beige);
3. thoroughly mix using a variable low-speed drill with mixing paddle;
4. mix until you achieve a homogeneous consistency and light blue-green color with no streaking.
5. MI 3500 is now ready to be troweled.

MI 3500 adhesive must be applied using a 1/32" x 1/16" x 1/32" U-notched trowel (FFA), holding the trowel at an angle of approximately 60° to the prepared substrate without voids or puddles. Do not make any sharp turns with the trowel to avoid an uneven application of the adhesive. Replace all trowels every 3.5 gallon unit to ensure proper spread rate; do not re-notch.



Allow approximately 20-30 minutes of open time (depending on site conditions). Installation can begin when the adhesive becomes clear and does not transfer to the fingertips when tested with pressure. Open working time to place the PURLINE® Planks and Tiles into the adhesive is 2 hours.

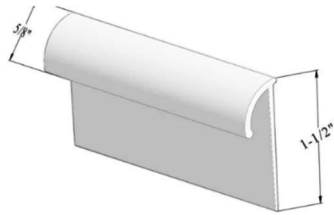
1. Ensure proper layout by marking your start lines using a straight edge and pencil.
2. Ensure the area is clean and dust free using a HEPA filtered vacuum.
3. Make all cuts as you go with utility and hook knife.
4. Apply the MI 3500 trowel adhesive to a workable area of flooring at a time, planning for appropriate productivity.
5. After each course of planks and/or tiles have been placed onto the adhesive bed, (distance of outstretched arms), use the Cork Rubbing Board to press the material onto the adhesive bed.
6. Rub each section down the length and out to each edge forcing the planks or tiles onto the adhesive bed to seat the backing onto the adhesive bed, initiating a tight bond to the substrate.
7. After the plank and/or tile installed section has been seated with the Cork Rubbing Board, use a 150-lb (70kg), three-section floor roller and roll the planks or tiles once in each direction to set the flooring.
8. As you proceed across the floor, drop back to re-roll each installed section a total of 3 times.
9. Once finished, roll the entire floor again.

PURLINE Roll Goods – Flash Cove & Seam Treatment

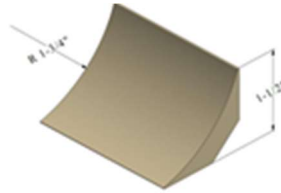
Roll Goods Flash Coving

1. This product may be flash coved.
2. If proceeding with integral flash coving: Do not use the “Butterfly” method; use the “Boot” method only.
3. Use primer and MI 3500 adhesive to install PURLINE® sanitary flash cove installations.

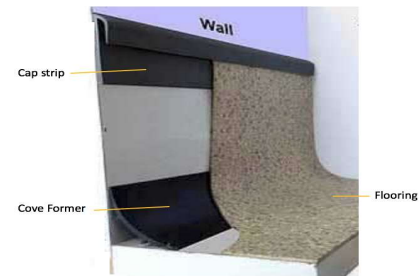
4. If field producing sanitary flash cove using the body and border method, utilize Cove Stick / Cove Forma sanitary cove cap – purchased separately from an appropriate manufacturer (e.g.: Johnsonite, etc.) See *diagram below for specific and required dimensions.*



Cove Cap example



Cove Stick/Cove Forma example



Sanitary Flash Cove example

5. As an option, pre-formed skirting lengths, pre-formed inside corners & pre-formed outside corners can be special ordered from Matter Surfaces.
6. Please contact Technical Support in the Customer Care department (customercare@mattersurfaces.com) prior to installation of any PURLINE® Roll Goods flash coving.

Roll Goods Heat Welding Process

Only when required, (typically for sterile or wet areas), PURLINE® sheet flooring seams must be heat welded using the heat weld method according to ASTM F1516. Practice on scrap material (bonded to a substrate) before welding the actual floor to become familiar with the products. Test the strength by tugging at the welding rod, which should break before pulling away from the flooring.

When using MI 3500 for installation, welding or seam sealing may proceed immediately following final rolling application.

When heat-welding according to the following process, please note that a 2-step skiving process is required (detailed below).

Groove the joint to a depth of 2mm and a width of ~ 3.5mm. Ensure the U-shaped groove is equal on both sides and the blade is not worn. All dust and debris must be removed from the prepared groove.

Weld using a hot air welding gun set to 842°F (450°C) and a 5mm round, narrow speed nozzle (Leister model #105.433). Recommended steady speed is approximately 4 to 6 linear feet per minute; however, that may need adjusting by the installer. It is important to make sure that the “wash” is present on both sides of the applied welding rod. Make sure the nozzle is directly over the gap and not leaning over to one side.

Weld approximately 10-15 linear feet at a time, as the first trim needs to be completed while the welding rod is still warm.

Heat Weld Seam Trimming:

First pass - use a Mozart trimming knife with the 0.7mm spacer claw attached to remove top portion of the heat-welded seam to release internal heat, (for constant & efficient seam management, another option is to have a second person perform the first trimming before the welding rod cools).

Second pass - after another fifteen minutes to allow the heat-welded seam to fully cool, use the Mozart trimming knife with the spacer claw removed to finish trimming the remainder of the weld, smooth and flat to the PURLINE® installed sheets. The finished weld must be smooth, glazed and on the same plane as the flooring.

Note: Glazing must be performed on PURLINE® heat welded seams after the final, flush trim. This is achieved by using a hot welding gun and melting the top surface of the heat-welded seam (until slightly glossy) and allowing it to cool. During this process do not touch the flooring or weld with the hot nozzle to avoid any damage.

Roll Goods – Alternate Joint Sealing Process (PURseam - 1K Polyurethane)

This alternate joint sealing process utilizes the PURseam 1K polyurethane system as manufactured by Sarkozy. The system includes the Sarkozy joint sealer cartridge and the distribution round tip.

Practice on scrap material (bonded to a substrate) before seam sealing the actual floor to become familiar with the products. The PURseam compound is applied using a conventional caulking gun.

PURseam Procedure

1. Mechanically groove the seam joint with an electric groover to a depth of 2mm and a maximum width of 2.5mm. Ensure the U-shaped groove is equal on both sides and the blade is not worn. All dust and debris must be removed from the prepared groove.
2. Tape off the grooved seam with appropriate tape to both outside edges of the groove.
3. Insert the nozzle of the cartridge into the seam and fill the groove, dispensing the seam sealer 8 to 10 linear feet at a time.
4. After 8 to 10 linear feet of the groove has been filled, run the rounded-tip “putty knife” finishing tool down the joint to smooth the PURseam material. Lift the majority of the “putty knife” 10° off the surface allowing the round tip to smooth the surface of the PURseam bead, making it level with the surface of the sheets being sealed.
5. As you run the rounded-tip putty knife finishing tool down the seam, you should feel the tip of the knife run on the surface of the PURLINE®, not the tape.
6. After the PURseam has been applied and properly smoothed, remove the tape from both sides of the seam.

The PURseam joint will be ready for light traffic in 24 hours and heavy rolling loads in 72 hours.

Finish Installation

Clean up all debris, take photographs and if required, protect the flooring from traffic and have the end user or representative sign a “Job Completion Ticket”.