Forbo NR 99 Acoustic System with Marmoleum Modular

Recommended for Use With

Marmoleum Modular, Marmoleum Modular Striato, Marmoleum Composition Tile (MCT)

IMPORTANT!! Forbo strongly recommends that prior to the placement of concrete on site that concrete professionals are consulted regarding the terms for performance of the acoustic underlayment listed below. This will ensure that the necessary and appropriate admix design is specified to eliminate any unnecessary cost or loss once the concrete slab has been poured. If the concrete surface does NOT meet the required level of porosity, failure may occur, and such use voids the warranty of this underlayment.

System Specifications

- Sound Rating: IIC = 51dB
  Sound results are based on testing using Forbo NR 99 Acoustic System with Marmoleum Modular, performed in accordance with the latest version of ASTM E 492 on a 6" concrete slab with no drop ceiling.
- VOC Emissions: 0 grams per liter (calculated per CA South Coast Rule 1168)
- Meets requirements of CDPH 01350 for indoor air quality

Forbo NR 99 Adhesive Step 1 Specifications

- FloorScore Certified by SCS Global Services
- High Quality Acrylic Emulsion
- Packaged in biodegradable plastic pails
- Non-flammable; 100% Solvent free
- Storage: Freeze-thaw stable 1 cycle at 20° F (-6° C). If the pail is opened and found to be frozen, let it set closed and undisturbed at room temperature until thawed. **DO NOT** try to mix frozen adhesive.
- Shelf Life: 2 years in unopened container
- Appearance and Odor: Yellow paste with little to no odor
- VOC Emissions: 0 grams per liter (calculated per CA South Coast Rule 1168)
- Spread Rate: Approximately 1,200 square feet per pail
- Applicator: 3/8" nap roller. Replace the roller when proper coverage is no longer attainable.
- Available in four-gallon units only.

Forbo NR 99 Underlay Specifications

- Gauge: 0.080" (2.0 mm)
- Width: 79" (2 meters)
- Length: 114.83 feet (35 meters)
- Roll Size: 84 square yards (70 square meters)

Forbo NR 99 Adhesive Step 2 Specifications

- FloorScore Certified by SCS Global Services
- Acrylic Polymer
- Packaged in biodegradable plastic pails
- Non-flammable; 100% Solvent free
- Storage: Freeze-thaw stable 1 cycle at 20° F (-6° C). If the pail is opened and found to be frozen, let it set closed and undisturbed at room temperature until thawed. **DO NOT** try to mix frozen adhesive.
- Shelf Life: 2 years in unopened container
- Appearance and Odor: Blue paste with little to no odor
- VOC Emissions: 0 grams per liter (calculated per CA South Coast Rule 1168)
- Spread Rate: Approximately 600 square feet per pail
- Applicator: 1/32" x 1/16" x 1/32" fine notch trowel. Replace the trowel when proper coverage is no longer attainable.
- Available in four-gallon units only.

Substrate & Testing Requirements

- Forbo NR 99 Acoustic System can be used on all grade levels of concrete, approved suspended wood floors and approved existing resilient floors. All concrete substrates must be prepared in strict accordance with the conditions set forth in the latest version of ASTM F 710. The substrate must be dry, clean, smooth, and structurally sound. **IMPORTANT!** The installation of a permanent, effective moisture vapor retarder is a requirement of ASTM F 710. Forbo NR 99 Acoustic System is not intended for use on slabs where no moisture vapor retarder is in place. For additional information, contact Forbo's Product Support and Education Services.
- Concrete surfaces that are hard troweled or tight must be mechanically abraded in order to create the necessary level of porosity for adequate adhesive performance prior to installation.
- The concrete porosity should be determined by testing in strict accordance with the latest version of ASTM F 3191. A concrete surface profile (CSP) of 1 – 2 is required. Water should penetrate into the slab within 5 – 10 minutes to be considered acceptable. If water penetrates too rapidly or too slowly, adjustments to the concrete surface must be made to provide the proper surface profile. Concrete slabs determined to be overly porous, dusty or generally insufficient may need to be primed using a primer according to the manufacturer's recommendations to regulate the porosity level of the slab and to meet the porosity conditions noted above. Forbo additional information, contact Forbo's Product Support and Education Services.
- The concrete surface must be dry and have a value of 5 or less when tested in strict accordance with the latest version of ASTM F 2659 using a surface moisture meter such as Tramex CME-4 or equivalent.
- The surface pH of the concrete must not exceed a pH of 12.0. Concrete surfaces with pH readings less than 8.0 or above 12.0 will require remediation prior to installation.
- The internal relative humidity must not exceed 99% as determined by testing conducted in strict accordance with the latest version of ASTM F 2170.
- Conduct adhesive mat bond testing before beginning the installation. Bond testing will aid in identifying both the working characteristics of the adhesive, such as the appropriate open and working times for the site conditions, and also any potential bonding problems to the substrate.

General Installation Guidelines for Forbo NR 99 Underlay

- Always refer to and follow the recommendations in ***Forbo's General Installation Guidelines*** prior to installing Forbo NR 99 Acoustic System.
- Always refer to and follow the recommendations in ***Forbo's Substrate Evaluation and Preparation Guidelines*** prior to installing Forbo NR 99 Acoustic System.
- Beginning the installation is an implied acceptance of site conditions and liability for any failure directly related to inadequate site conditions becomes the responsibility of the installer and/or flooring contractor.
- Forbo NR 99 Acoustic System may be installed on approved substrates on all grade levels.
- For the tolerance in the sequence of carton numbers for Marmoleum Modular, refer to ***Forbo's General Installation Guidelines***.
- Use only Forbo NR 99 Adhesive Step 1.
- Cutting too full or back rolling Forbo NR 99 Underlay may result in bubbles or wrinkles.
- Store Forbo NR 99 Underlay rolls standing upright.
- Do not allow heavy traffic or rolling loads for a minimum of 72 hours following the installation. The Forbo NR 99 Underlay is non-porous surface and additional time may be necessary to allow the adhesive to dry and fully cure.
- Wait a minimum of five (5) days following the installation before conducting initial cleaning. The Forbo NR 99 Underlay is a non-porous substrate and additional time may be necessary to allow the adhesive to dry and fully cure.
- Take pride in your work and be Professional at all times.
- **For additional information, contact Forbo's Product Support & Education Services at 1-800-842-7839 or www.forboflooringNA.com.**

Cutting and Fitting the NR 99 Underlay

Forbo NR 99 Underlay is flexible and easy to handle. It must be cut all the way to all edges and doorways to ensure full coverage under the finished flooring product. Following these recommendations will give the installer the best opportunity to manage the open time and working time of the adhesive and ensure that the underlayment is placed into semi-wet adhesive.

- Measure the area to be installed and determine the direction in which the material will be installed and seam placement. Seams should be a minimum of 6" away from underlayment and concrete joints, saw cuts, etc.
- Unroll the NR99 Acoustic System with the foamed texture downwards. The preferred method of laying NR99 is perpendicular to the direction of the flooring material. When this is not possible, the joints of the NR99 must be offset from the seams of the flooring by at least 20" (50cm).
- Cut the required length off the roll, adding approximately 2" - 3" for extra trimming at each end.
- Push the length of the sheet as close to the starting wall as possible, letting the extra length run up the wall at each end.
- Position the fitted sheet in place against the main wall.
- Dry lay the pieces, butting the factory edges for seaming. Make sure that the seam edges are net fit, with no fullness or gaps. It must be cut all the way to all edges and doorways with no gaps to ensure full coverage under the finished flooring product.
- Cut the required length for the second sheet off the roll, adding approximately 2" - 3" for extra trimming at each end.
- Position the second sheet butting the factory edge to the first sheet.
- Repeat these steps for as many sheets necessary to complete the job or as many sheets that can be installed that day.

Adhering the Forbo NR 99 Underlay

- Lap halfway back one sheet at a time. ***Do NOT back roll Forbo NR 99 Underlay.***
- Draw a pencil line along the area where the adhesive will be spread to assure an even and straight line of adhesive.
- Apply the Forbo NR 99 Adhesive Step 1 with a 3/8" nap roller. For the best results, pour the adhesive into a paint tray and fully cover the roller with adhesive. ***Do NOT apply adhesive to the roller directly from the pail.***
- Spread the adhesive over the entire area. Be sure to spread adhesive all the way to the pencil line without leaving any voids. Be careful not to leave any heavy spots or puddles.
- The open time and working time of adhesives will vary depending on site conditions such as ambient temperature and humidity, the porosity of the substrate and air circulation. It is the installer's responsibility to make adjustments to specific conditions as may be necessary to ensure proper transfer to the material backing. A general indication of proper open time is when a light touch produces no transfer of adhesive to the finger, but a firm touch will require some force to remove the finger from the adhesive. Refer to ***Forbo's Adhesive Guidelines*** for additional information.
- Allow the adhesive to setup and be "dry" to the touch. The underlayment ***MUST*** be placed into the adhesive within two hours to develop the required bond strength to the material backing.
- Forbo NR 99 Underlay must be carefully placed into the adhesive to prevent bubbling from occurring. Push the lapped underlayment from the fold into the adhesive one sheet at a time, working towards the wall. Do not flop the underlayment into the adhesive. This will trap air under the underlayment causing bubbles.
- The underlayment **must remain in contact with the adhesive while the adhesive is curing.**
- Immediately roll the underlayment in all directions using a 100 lb. roller to ensure proper adhesive transfer. Additional rolling is required during adhesive setup to ensure that the material is flat and fully adhered.
- The use of a three-section wall roller or steel seam roller is required at walls, under toe kicks or anywhere the full weight of a 100 lb. roller cannot access or be applied.
- Remove fresh adhesive residue immediately with a clean white cloth. Dried adhesive can be removed with a clean white cloth and Forbo Adhesive Remover. If this is not available, a solution of properly diluted neutral pH cleaner may be used. The area should then be rinsed with clean, cool water to remove all residues from the floor.
- Repeat the same procedure on the other half of the sheet until the job is completed. Take caution not to overlap adhesive lines or leave ridges of adhesive, as it may telegraph through the material.
- The Marmoleum Modular can be installed immediately following the installation of the NR 99 Underlay.

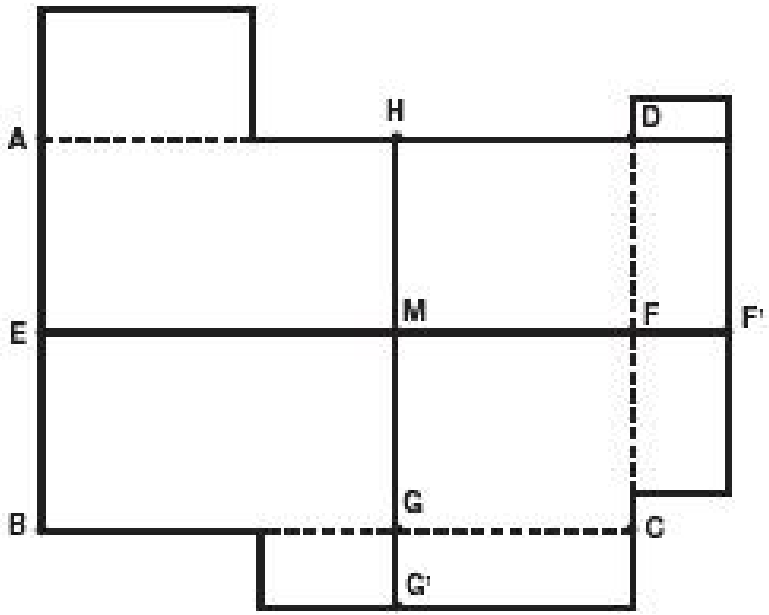
Planning the Layout of Marmoleum Modular

Marmoleum Modular and MCT flooring products are fit using conventional tile fitting techniques.

It is customary to start from the center of the room. In corridors and small spaces, it may be simpler to work lengthwise from one end, using the center line as a guide.

The center line is drawn as follows (Figure 1): A chalk line is snapped from center of wall A/B (Point E) to the center of wall C/D (Point F). The center of line E/F is found (Point M). Draw a perpendicular line through Point M using the 3:4:5 method to establish G/H.

Starting at Point M, measure out lengthwise and widthwise to the walls to make sure you will have at least a half of a tile at the border. Adjust lines E/F and G/H if necessary.



General Installation Guidelines for Marmoleum Modular

- Always refer to and follow the recommendations in ***Forbo's General Installation Guidelines*** prior to installing Forbo NR 99 Acoustic System.
- Always refer to and follow the recommendations in ***Forbo's Substrate Evaluation and Preparation Guidelines*** prior to installing Forbo NR 99 Acoustic System.
- Beginning the installation is an implied acceptance of site conditions and liability for any failure directly related to inadequate site conditions becomes the responsibility of the installer and/or flooring contractor.
- Forbo NR 99 Acoustic System may be installed on approved substrates on all grade levels.
- For the tolerance in the sequence of carton numbers for Marmoleum Modular, refer to ***Forbo's General Installation Guidelines***.
- Use only Forbo NR 99 Adhesive Step 2 to adhere the Marmoleum Modular.
- Store Marmoleum Modular and MCT cartons unopened.
- For Marmoleum Modular products, use material from the same batch/dye lot. Do not remove more tile from the carton than can be installed in approximately 1 hour.
- Install Marmoleum Modular cartons in consecutive order. To avoid shading throughout the installation of Marmoleum Modular, it is recommended to shuffle tiles from several cartons.

- Marmoleum Modular and MCT in the square format have a directional pattern and should be installed in alternating directions (quarter turned). Marmoleum Modular in the rectangular format can be installed in any direction. The tolerance in the sequence of carton numbers should not exceed 100. Tolerance in the sequence of carton numbers for 10" x 10" (25 cm x 25 cm) should not exceed 200.
- Do not allow heavy traffic or rolling loads for a minimum of 72 hours following the installation. The Forbo NR 99 Underlay is non-porous surface and additional time may be necessary to allow the adhesive to dry and fully cure.
- Wait a minimum of five (5) days following the installation before conducting initial cleaning. The Forbo NR 99 Underlay is a non-porous substrate and additional time may be necessary to allow the adhesive to dry and fully cure.
- Take pride in your work and be Professional at all times.
- **For additional information, contact Forbo's Product Support & Education Services at 1-800-842-7839 or www.forboflooringNA.com.**

Installing Marmoleum Modular

- After establishing the starting lines, spread the Forbo NR 99 Adhesive Step 2 using a 1/32" x 1/16" x 1/32" fine notch trowel.
- Be sure to spread adhesive all the way to the starting line without leaving any voids.
- Begin laying tiles at the starting point, ensuring that the tile is placed exactly along the layout lines. If the first few tiles are not installed accurately, the entire installation will be affected.
- The tiles must be installed into wet adhesive. Do not spread adhesive in an area larger than can be installed while ensuring 100% wet transfer to the backing of the material.
- The open time and working time of adhesives will vary depending on site conditions such as ambient temperature and humidity, the porosity of the substrate and air circulation. It is the installer's responsibility to make adjustments to specific conditions as may be necessary to ensure 100% wet adhesive transfer to the material backing. A general indication of proper open time is when a light touch produces transfer of adhesive to the finger, but a firm touch will flatten and "smear" the adhesive. Refer to ***Forbo's Adhesive Guidelines*** for additional information.
- A short open time will be necessary. The adhesive should be allowed to develop body before placing the flooring material into the adhesive, but **DO NOT ALLOW THE ADHESIVE TO DRY**.
- Check for adhesive transfer frequently. There must be **100% wet** transfer of adhesive to the material backing in order to achieve a secure bond. 100% wet transfer is a continuous film of adhesive, when wet, on both the backing of the material and the substrate with no trace of trowel marks or ridges. The flooring material **must remain in contact with the adhesive while the adhesive is drying and curing.**
- Immediately roll the flooring in all directions using a 100 lb. roller to ensure proper adhesive transfer. Additional rolling is required during adhesive setup to ensure that the material is flat and fully adhered.
- The use of a three-section wall roller or steel seam roller is required at walls, under toe kicks or anywhere the full weight of a 100 lb. roller cannot access or be applied.
- Proper tile placement and rolling will result in a complete "explosion" of the trowel ridges, creating a continuous flat film of adhesive. Complete transfer of the tile backing will appear as only the impression of the tile backing in the surface of the adhesive. No standing trowel ridges should be visible.
- The time it takes to mark and cut the border tiles must be considered when planning the installation. Without adequate planning, the working time of the adhesive around the perimeter may be exceeded before the tiles are installed. This will result in an inadequate bond of the perimeter tiles. Always plan the sequence of spreading adhesive so that the perimeter tiles can be cut and placed into the adhesive before the adhesive working time has been exceeded.
- Remove fresh adhesive residue immediately with a clean white cloth. Dried adhesive can be removed with a clean white cloth and Forbo Adhesive Remover. If this is not available, a solution of properly diluted neutral pH cleaner may be used. The area should then be rinsed with clean, cool water to remove all residues from the floor.
  NOTE: If using Forbo 660 adhesive, refer to ***Forbo's Adhesive Guidelines*** for additional information.
- Forbo does NOT recommend the application of adhesive tape on Marmoleum. Adhesive tape may cause damage to the factory coating of resilient flooring products. When using floor protection materials, tape the seams of the floor protection together and secure the floor protection by weighing down in corners and against walls. DO NOT secure floor protection materials by taping them directly to the surface of resilient floor coverings.

Marmoleum Modular Tile Edge Curl

Tile edge curl is often indicative of an installation failure. Marmoleum Modular and MCT flooring products are an all-natural wood-based product. Like other wood-based flooring products, improperly installed Marmoleum can be affected by extreme changes in the ambient relative humidity. When exposed to excessively low ambient relative humidity, the edges of tiles which are **NOT FULLY BONDED** may exhibit a tendency to curl along one or both length edges. This is an INSTALLATION FAILURE, not a material defect. This installation failure is avoided by following the installation recommendations and by properly using the recommended Forbo adhesive.

Marmoleum Modular and MCT flooring products that are set into wet adhesive and thoroughly rolled in all directions with repeated rolling during the course of the installation will achieve proper transfer to the substrate and remain flat and fully bonded. Curled edges will lay completely flat and will be well bonded. Proper tile placement and rolling will result in a complete "explosion" of the trowel ridges, creating a continuous flat film of adhesive. Complete transfer of the tile backing will appear in the surface of the adhesive. NO trowel ridges should be evident.

What is Ambering?

Ambering is the slight yellow hue to Marmoleum when it is first removed from the packaging. This is a natural phenomenon that happens with Marmoleum and is completely normal. Linseed oil, a natural oil extracted from flax seeds and one of the main ingredients in Marmoleum is what causes this yellow hue. This very important ingredient in Marmoleum provides several unique characteristics:

- Linseed oil, along with wood flour, makes the floor naturally antistatic, repelling dust, making Marmoleum easy to clean.
- When exposed to air and light, the linseed oil oxidizes from within the Marmoleum and continues for the life of the product. This makes the material harden over time and become more durable.

As time passes, the ambering will fade as Marmoleum is exposed to light, but its unique characteristics will not. The process may take as little as a few hours in bright sunlight, but it can take longer with artificial light. Areas that are not exposed to any light will retain the yellow hue until they are exposed to light. If an area of Marmoleum is covered for an extended period, it's possible the yellow hue will re-appear. Don't be alarmed – it will fade once again when it's exposed to light.

Because this is a natural occurrence in the product, there is no set time frame for the yellow hue to fade. This is not a material defect. It's actually a sign that Marmoleum is revealing its unique and valuable characteristics! Performing floor care procedures will not inhibit the process. It just takes a little bit of time and understanding what great benefits this process brings to Marmoleum! All colors of Marmoleum are subject to ambering, however it can be more noticeable in certain colors. Light blues, greens, greys, and beiges will display a more visible yellow hue than darker colors. To discover the true color of Marmoleum, follow these few simple steps:

1. Take a piece of Marmoleum and cover one half with heavy paper, cardboard, or another piece of Marmoleum.
2. Place these pieces in direct sunlight for approximately 1 hour.
3. After the time has passed, remove the cardboard or heavy material and see the visual difference firsthand.

Forbo's Installation Guidelines contain additional information and are available for download at www.forboflooringNA.com. For additional information, contact Forbo's Product Support & Education Services at 1-800-842-7839.