

Heat Welding Marmoleum® & Linoleum Products

General Guidelines

- Heat welding Forbo Marmoleum® and linoleum products is optional.
NOTE: Do NOT heat weld seams on Marmoleum® Textura products.
- It can also be used to provide an artistic element to an installation.
- Marmoleum® and linoleum products may be heat welded with either a matching solid welding rod, a multi-colored welding rod or a contrasting colored welding rod.
- No heat welding should be done sooner than approximately 24 hours after installation.
- The depth of the groove on 2.0 mm and 2.5 mm material **MUST** be down to the jute fibers but not through them. Grooving to the proper depth ensures a secure bond of the welding rod.
- The material should be grooved to a 3.5 mm wide U-shape.
- Use a 5 mm welding tip.
- The optimal recommended temperature for welding Marmoleum® and linoleum products is 662° F (350° C).
- Always practice on a scrap piece of material to assure proper temperature and speed.
- Use only Forbo Marmoweld® welding rod.
NOTE: Forbo's multi-colored welding rod is square shaped instead of round. All tools and installation procedures are the same as for the standard round solid color rod.
- Marmoweld® is made of a solidified adhesive which is melted, by use of a hot air welding gun, into a joint that has been grooved to the correct depth in the material.
- Material should always be visually inspected prior to installation. If there are any questions regarding the quality of material, contact Forbo's Product Support & Education Services PRIOR to installation.
Any costs (including labor) associated with the replacement of material that was installed with visual defects that could have been seen prior to installation are not covered under warranty.
- Always refer to and follow the recommendations in the **General Installation Guidelines section** of the Forbo Installation Guide prior to beginning the installation.
- Always refer to and follow the recommendations in the **Substrate Evaluation and Preparation section** of the Forbo Installation Guide prior to beginning the installation.
- 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.
- 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.**

Heat Welding vs. Not Heat Welding Marmoleum®

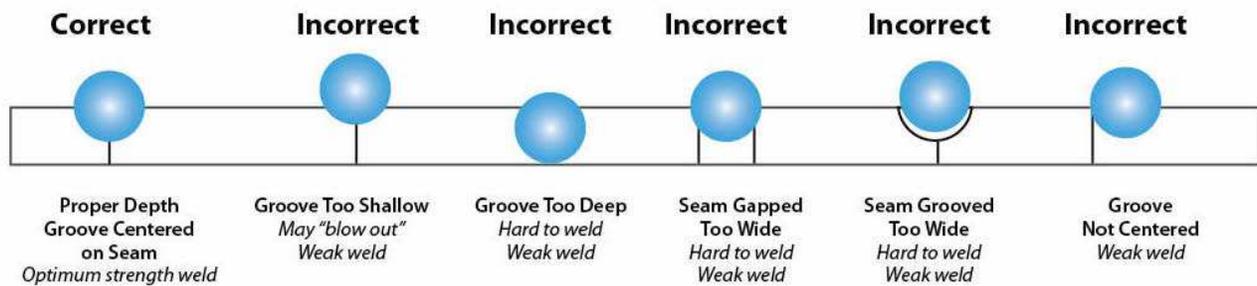
- Forbo has been in continuous production of linoleum products for over 150 years. The process of heat welding linoleum was not introduced until the late 1980's and early 1990's as a preventative measure against topical moisture with the introduction of water-based (100% solvent free) adhesives. Due to the developments and advancements made over the last decades with the combination of Topshield™ (Forbo's factory finish for Marmoleum®), improvements in water-based adhesives, and with our commitment to education of proper installation, care and maintenance procedures and environmental stewardship, heat welding is **no longer necessary for most applications**. Forbo will continue to support heat welding for installations where a hygienic seam is required.
- Forbo **requires** net fit seams whether they will be welded or not. Seams **MUST** be under scribed, net fit with no gaps or fullness, placed into wet adhesive and rolled immediately with a hand seam roller. It is also crucial to roll each drop, or cut, of the installed material immediately after placement into the adhesive with a three-section 100 lb. roller in all directions, first through the width and then the length, to achieve proper adhesive transfer. Additional rolling after the seaming is complete is required to ensure that the material is flat and fully bonded. Forbo's current adhesives offer a high resistance to topical and subfloor moisture. When Marmoleum® is installed following the recommended installation guidelines with the recommended Forbo adhesive, the result will be a highly water resistant seam, which does **not** require heat welding. This can aid in reducing the cost and time required for installation. It also helps to reduce the environmental footprint of the installation.
- Refer to the **Installing Marmoleum® & Linoleum Sheet Flooring section** of the Forbo Installation Guide for additional information.
- Some of the benefits of eliminating heat welding where it is not absolutely necessary are:
 - Reduced overall cost.
 - Improved aesthetics with no weld lines to disrupt the visual and accent the seams.
 - Improved environmental performance with substantial reduction in CO2 footprint by eliminating the use of a high wattage heat gun for installation of weld rods.

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- Certain applications may still require heat welding, such as hospital patient rooms or applications where insufficient care and maintenance procedures are performed. Your Forbo Product Support and Education Specialist can assist you in determining the best course of action for your project. Whether the specification calls for heat welding or not heat welding Forbo Marmoleum®, when installed using Forbo’s recommended procedures and adhesives, the materials are covered by Forbo’s published warranty.

Procedure

- Seams should be prepared net fit according to recommended seaming procedures. If there are any gaps in the seam, the integrity of the heat weld may be compromised. Refer to the **Installing Marmoleum® & Linoleum Sheet Flooring section** of the Forbo Installation Guide for additional information.
- Groove the seam using the Forbo Groover, an electric grooving tool or a hand groover. Ensure that any grooving tool being used produces a 3.5mm wide U-shaped groove. The depth of the groove on 2.0 mm and 2.5 mm gauge **MUST** be down to the jute fibers but not through them. On thicker gauge materials, groove to a depth of 2.5 mm. Grooving to the proper width and depth is critical to ensure the welding rod can achieve a secure bond to the flooring material.



- At the ends of the seam, in doorways or other areas where the Forbo Groover or electric groover cannot reach, complete the groove using a Hand Groover.
NOTE: Use blades on all tools that provide a 3.5 mm wide u-shape groove to ensure the width of all finished heat welds will be consistent throughout the installation.
- The optimal temperature setting for heat welding Marmoleum® and linoleum products is 662° F (350° C).
- Always practice on a scrap piece of material to assure proper temperature and speed.
- The welding gun should be fitted with a 5 mm welding tip. Preheat the welding gun for several minutes before beginning to heat weld. This will allow the gun to reach the proper welding temperature.
NOTE: Forbo recommends using only professional quality heat welding equipment. Equipment of lesser quality often does not operate at a consistent temperature and using such equipment may result in an inadequate bond of the heat weld.
- Make sure the groove is thoroughly clean before beginning to heat weld. Make sure that all electrical cords are laid out without tangles and that there are no obstructions along the seam to be welded.
- Start the weld at one wall and weld toward the center of the seam. To begin the weld, first position the welding tip near the starting point before inserting the welding rod into the tip. Once the welding gun is in position, insert the welding rod through the welding tip, place the welding rod into the seam against the wall, and while applying a firm downward force, feed the welding rod into the welding tip while pulling the welding gun away from the wall. In order to avoid pulling the welding rod out of the seam, continue feeding the weld rod into the welding tip for the first few inches of weld. After welding the first few inches, the weld rod at the beginning will be bonded well enough that the welding gun can simply be guided along the seam without further need to feed the welding rod.
- To ensure a proper weld, the base of the welding tip should be held parallel to the flooring surface in line with the seam and directly over the groove. A slight downward pressure should be maintained so that the welding tip will force the melting welding rod completely into the groove. The optimal welding speed and temperature is determined by observing the way the welding rod is melting into the groove. It should be allowed to melt enough so that the melted rod reaches the bottom of the groove. The top of the welding rod should flatten slightly and a small bead should form on either side of the welding tip. If the welding speed is too slow, the welding rod will tend to become liquid and puddle around the tip. If the welding speed is too fast, the welding rod will maintain a rounded appearance on the top and will not flow into the groove.

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- After completing the weld for the first section of seam, the excess weld rod must be trimmed. Make the first trim pass using a crescent shaped knife and trim plate. When trimming, apply uniform pressure to the trim knife and trim in one continuous movement rather than short, choppy movements.

NOTE: The first trim pass must always be made while the welding rod is still slightly warm (not hot). In some cases, it may be necessary to weld shorter sections of the seam so that the first trim pass can be completed before the weld rod cools too much. Alternatively, a colleague can begin the first trim pass while the remainder of the seam is being welded.
- After completing the first trim pass, inspect the welded seam to ensure that the heat weld is properly bonded for the entire length. If there are areas where the welding rod is improperly bonded, a new piece of rod can be welded into its place and trimmed as follows:
 - Prepare the area to be repaired by grooving out the improperly bonded weld rod. Do not pull out the loose weld rod because doing so may damage the groove.
 - At each end of the area to be re-welded, cut a V-shaped notch into the end of the remaining welding rod. Cutting this notch will aid in providing a smooth transition between the new and the existing weld.
 - After preparing the area, begin to heat weld on top of the existing welding rod at one end of the repair area. Overlap the weld approximately 1" – 1½".
 - Continue welding and overlap the existing welding rod on the other end approximately 1" – 1½" to complete the repair.
 - Again, using the crescent shaped knife and trim plate, make the first pass trim to remove the excess weld from the repaired area.

NOTE: All welding repairs should be made before making the final trim. Once the final trim has been completed, it is very difficult to blend the repair to the existing heat weld.
- When weld and first trim pass on the first half of the seam have been completed, prepare the end of the weld to receive the heat weld from the other end of the seam by cutting a V-shaped notch at the open end of the first section of the weld.
- Following the same procedure used for the first end of the seam, begin heat welding at the opposite wall and overlap the second heat weld over the first heat weld approximately 2" where they join.
- First trim pass the excess weld using a crescent shaped knife and trim plate while still warm. Complete any repairs that may be necessary.
- Before making the final trim pass, wait until the welding rod has completely cooled to the touch. After it has cooled, make the final trim over the entire seam using only the crescent shaped knife to complete the heat weld. When trimming, apply uniform pressure to the knife and trim in one continuous movement, rather than short, choppy movements.

NOTE: Making the final trim pass while the welding rod and material is still warm can cause permanent damage to the surface of the flooring.
- A heated smoothing tool may be used to touch up minor irregularities in the finished weld.
- The heat weld will achieve maximum bond strength in 24 hours.
- **When Marmoleum® and linoleum products are installed adjacent to a vinyl flooring product, Marmoweld® welding rod must be used to heat weld the seam if heat welding is specified. A vinyl welding rod will NOT bond to Marmoleum® and linoleum products, but Marmoweld® will achieve an adhesive bond to most vinyl flooring products.**

Forbo's Installation Guide contains additional information and is available for download at www.forboflooringNA.com. For a hard copy, or for additional information, contact Forbo's Product Support & Education Services at 1-800-842-7839.