

ToughGuard II

Installation System

Product	Gauge	Adhesive	Comments
StrataMax Good	0.065" (1.65 mm)	Modified loose lay method: Acrylic double-faced tape	Seams: Double-cut
British Autumn Caspia CastleRock Colonial Seasons Harpeth StrataMax Better	0.070" (1.78 mm)	Full Spread Releasable Adhesive method: S-289 Releasable Adhesive	Seam treatment: Apply S-500 Seam Coating or S-761 Seam Adhesive
Equity Expeditions Nassour StrataMax Best Telstar	0.085" (2.16 mm)	Conventional Full spread method (not releasable): S-288 & S-289	

LIGHT COMMERCIAL USE ONLY

Product	Gauge	Adhesive	Comments
Equity Expeditions Nassour StrataMax Best Telstar	0.085" (2.16 mm)	Conventional Full Spread method (not releasable): S-288 & S-289 Flooring Adhesive S-580 Flash Cove Adhesive (when using the S-288 Flooring Adhesive only)	Seams: Double-cut Seam treatment: Apply S-500 Seam Coating or S-761 Seam Adhesive

Installation:

- Location: All grade levels
- Pattern Match: Yes; do not reverse pieces of patterned material (TM edge to non-TM edge)
- Seam Method: Double-cut
- Seam Treatment: Apply S-500 Seam Coating or S-761 Seam Adhesive
- Fitting: All methods

General Information:

ToughGuard II flooring can be installed by three installation methods. It is designed as a floating floor when installed by the modified loose lay installation method using only acrylic double-faced tape under the seams. The modified loose lay method requires that the flooring be cut 1/8" (3.2 mm) to 3/16" (4.8 mm) away from all vertical surfaces (such as walls, cabinets, pipes, etc.). This gap must then be filled and the edges sealed with a good quality silicone or acrylic caulk.

Summary of Residential ToughGuard II Installation Options

	Modified Loose Lay	S-289 Releasable Adhesive	S-288 Flooring Adhesive S-289 Flooring Adhesive (adhered permanently)
Spacing (gap) at vertical surfaces (walls, pipes, etc)	1/8" (3.2 mm) to 3/16" (4.8 mm)	1/8"	None
Base cabinets on top of flooring	Yes	No	Yes
Island cabinets on flooring	Yes	Yes	Yes
Bathrooms	Yes	Yes	Yes
Stairs, landings or rooms with floor drains	No	No	Yes
Seams on suspended wood underlayments	Multiple OK	Multiple OK	Multiple OK

Suitable Substrates:

All substrates listed below must be properly prepared and meet certain requirements discussed in the Subfloors and Underlayments category. There may be certain exceptions and special conditions for these substrates to be suitable for the ToughGuard II Installation System.

- Concrete (on all grade levels)
- Approved Suspended Wood
- Single-layer, Fully Adhered, Existing Resilient Floors
- Ceramic Tile, Terrazzo, Marble
- Polymeric Poured (seamless) Floors
- Approved Suspended single layer wood Subfloor system (Modified Loose Lay Installation only)

NOTE: For wood subfloors and underlayments, the moisture content must be 13% or less.

Do not install over:

- Particleboard or waferboard panels
- Existing resilient tile floors that are below grade
- Existing cushion-backed vinyl flooring
- Carpet
- Hardwood flooring that has been installed directly over concrete

ToughGuard II materials can also be installed directly over suspended single-layer wood subfloors such as plywood or oriented strand board (OSB) **when using the modified loose lay method**. The subfloor system must be designed to meet or exceed applicable building codes with a minimum of 18" (45.7 cm) of well-ventilated air space below. It must be installed according to the subfloor manufacturer's recommendations. The moisture content must be 13% or less for direct installation of ToughGuard II materials.

The subfloor panels must have a smooth, sanded face and show no swelling of edges or surface due to exposure to weather conditions or construction traffic. “Base grade” subfloor panels are not recommended as they generally do not provide a sanded face or the moisture resistance of “better” and “best” grade panels. The panels cannot be contaminated by staining agents. **Otherwise, an additional 1/4" (6.4 mm) or thicker underlayment is recommended.**

Single-layer wood subfloors increase the potential for staining from the panel components, coated nails, construction adhesives, spills, overspray, and show-through from texture and mechanical or water damage when resilient flooring is installed directly over them.

Job Conditions/Preparation:

- Resilient flooring should only be installed in temperature-controlled environments. It is necessary to maintain a constant temperature before, during, and after the installation. Therefore, the permanent or temporary HVAC system must be in operation before the installation of resilient flooring. Portable heaters are not recommended as they may not heat the room and subfloor sufficiently. Kerosene heaters should never be used.
- All substrates must be sound, dry, clean, smooth, and free from excessive moisture or alkali. Remove dirt, paint, varnish, wax, oils, solvents, other foreign matter, and containments that could cause staining or interfere with a good bond.
- Do not use products containing petroleum solvents or citrus oils to prepare substrates as they can cause staining and expansion of the new flooring.
- In renovation or remodel work, remove any existing adhesive residue* so that 100% of the overall area of the original substrate is exposed.
- When fully adhering flooring over an existing resilient floor, use S-194 Patch, Underlayment & Embossing Leveler/S-195 Underlayment Additive to fill and smooth any embossing in the old floor.
- With the modified loose lay method, typical embossing of rotogravure floors (less than 3/16" (4.8 mm) wide and less than 1/32" (0.8 mm) deep) would not show through and would certainly not cause performance problems. Deeper embossing such as on old inlaid Designer Solarian floors, deeply embossed tile floors, and ceramic tile grout joints should be leveled even for the loose lay method.
- The area to receive resilient flooring and the flooring materials and adhesives should be maintained at a minimum of 65°F (18°C) for 48 hours before installation, during installation, and for 48 hours after completion. Maintain a minimum temperature of 55°F (13°C) thereafter.
- For concrete substrates, conduct moisture testing (moisture vapor emission rate [MVER]) and/or percent relative humidity (in-situ probe). Bond tests must also be conducted for compatibility with the substrate. Please refer to Chapter III Subfloors and Underlayments section.

* Some previously manufactured asphaltic “cutback” adhesives contained asbestos (see warning statement on page x). For removal instructions, refer to the Resilient Floor Covering Institute’s publication [Recommended Work Practices for Removal of Resilient Floor Coverings](#).

Precautions for All Installation Options:

- Do not wash or scrub the new flooring for at least 5 days after the installation. This will help prevent excess moisture and cleaning agents from interfering with the bond of the fresh adhesive or vinyl flooring tape.
- When moving appliances or heavy furniture, lay a plywood panel on the floor and “walk” the item across it. This protects the floor from scuffing and tears.
- Use floor protectors, such as Armstrong Floor Protectors, on furniture to reduce indentation. The heavier the item, the wider the floor protector needed.
- The flooring material should not be exposed to sudden changes in temperature and moisture/humidity. The site needs to be closed in with HVAC operating. In new construction, do not power wash the basement and introduce excessive moisture to the subfloor above after the flooring has been installed.
- ToughGuard II materials need to be protected from rolling loads and construction traffic by other trades. Kitchen cabinets, water heaters, furnaces, and other appliances being hauled over the flooring can cause problems if the flooring is not protected with boards.

Keys to Successful Installation:

- Proper conditioning of both the job site and the flooring is necessary. Do not expose the installation to wide ranges in temperature and moisture/humidity levels in the home.
- Store, transport and handle the flooring so as to prevent creases or other distortions in the sheet. Always roll face-out on a cardboard tube. Distortions will generally not disappear or shrink on their own. Sheet must be lying flat at time of installation.
- Just prior to installation, unroll flooring so it can acclimate to the job site conditions. Allow the roll-up stresses to relax and the flooring material to flatten out.
- Undercut door trim to allow for free movement of the flooring.
- Island cabinets are permissible on top of the flooring but perimeter base cabinets should be cut around as noted above.
- Seams must be double-cut, net, with no fullness. Do not straight edge and butt seams. Do not stretch or compress at seams as this will lead to small buckles.
- Do not compress the edges of the sheet in any way when installing adjacent flooring materials. Installation of carpet, metal strips, and other transition moldings should not push fullness into the flooring.
- Always protect flooring from rolling loads from other trades and replacement and/or movement of appliances.
- Radiant heated substrates must not exceed a maximum surface temperature of 85°F (29°C).

- As with many flooring products, the full spread adhesive methods generally require somewhat more attention to the condition of the substrate so that it will not telegraph irregularities through the finished floor.

Fitting:

- Recommended Fitting procedures include pattern scribing, straight scribing, and freehand knifing.
- Do not cut full or compression fit.

Planning and Layout:

- Plan the layout so seams in the new flooring fall at least 6" (15.2 cm) away from seams and joints in existing flooring and underlayments.
- Remove wall base and quarter-round moldings.
- The decorative trim and jamb moldings at doorways should be under-cut to allow flooring to slip underneath as you can't hide perimeter gap with wall base in these areas.
- After preparation work is completed, be sure to sweep and vacuum entire work area, taking extra care to remove all dirt and debris.
- Do not install over expansion joints.

Armstrong cannot be responsible for:

- Joint or texture show-through.
- Tunneling and ridging over board joints.
- Discoloration from stain sources in the panel, regardless of the type of panel used.
- Problems caused by local climate conditions, basement wall and subfloor construction, or improper installation.

Use of S-135 Armstrong VapArrest Professional Moisture Retardant System:

If the concrete slab does not meet the water vapor emission rate, ToughGuard II materials can be installed by the modified loose lay method over the S-135 Armstrong VapArrest Professional Moisture Retardant System. The VapArrest must be allowed to cure for a minimum of 3 days until tack-free. Use double-faced acrylic tape for the modified installation method.

For concrete subfloors, the percent relative humidity must be 80% or less as determined by the ASTM F2170 test method. If subfloor internal relative humidity levels exceed the recommended limit, the concrete must be allowed to dry prior to installing the floor.

Modified Loose Lay Method

Keys to Successful Modified Loose Lay Installation over OSB:

- Not all subfloors will be suitable for direct installation. The builder basic panel is generally not sanded and will have poor resistance to moisture exposure leading to swollen edges, flake pops, and general gauge and fastener issues.
- Use subfloors with a smooth sanded face and properly installed with recommended joint spacing. Most boards are designed to have 1/8" (3.2 mm) gap at joints.

- Do not use staining agents such as plumber's primer or construction adhesives on the surface.
- Do not take short cuts in timing of installation or conditioning the home. Follow standard vinyl recommendations for conditioning of both job site and flooring materials.

Keys to Successful Modified Loose Lay Installation:

- Tape may be used at doorways if needed, but the preferred method is to use transition strips, similar to a "T" molding, that cover the edge of the flooring while at the same time allowing for some movement of the flooring beneath the molding. **Do not use the tape around the entire perimeter of the room and do not install base cabinets on top of the flooring.**
- Multiple seams are allowed when this method is used over concrete subfloors.
- Tape may also be needed under relief cuts that were made to slip around pipes and other objects. and at some doorways where transition moldings cannot be used. Do not overuse tape and do not tape around the entire perimeter of the room.

Adhesive Open Times and Trowel Notchings

Adhesive (Modified Loose Lay Installation)	Set-in-Wet for Porous Substrates	Dry-to-Touch for Existing Resilient Flooring and Other Nonporous Substrates
S-288 Adhesive 2" (5.08 cm) to 3" (7.62 cm) wide band under the seams	Open Time: Minimum of 10-20 minutes Fine Notch: 1/32" (0.8mm) deep, 1/16" (1.6mm) wide, 5/64" (2mm) apart	Open Time: 30 minutes or more Fine Notch: 1/32" (0.8 mm) deep, 1/16" (1.6 mm) wide, 5/64" (2 mm) apart
	Set-in-Wet	Dry-to-Touch for all Substrates
S-289 Releasable Adhesive 2" (5.08 cm) to 3" (7.62 cm) wide band under the seams	Not Recommended	Allow the adhesive to set open until dry-to-touch, approximately 45 to 60 minutes. The adhesive should be tacky with no transfer to fingers Short nap roller

Procedure:

This type of flooring is designed for modified loose lay installation using acrylic double-faced tape, S-289 Releasable Adhesive, or S-288 Adhesive only at seams and other critical areas. In bathrooms, the acrylic double-faced tape, S-289 Releasable Adhesive or S-288 Adhesive should be used to secure the flooring in front of tubs and shower enclosures. Other critical areas are doorways where trim cannot be used to cover an exposed edge or an area in the kitchen with a heavy movable appliance. **Do not use the acrylic double-faced, S-289 Releasable Adhesive, or the S-288 Adhesive around the entire perimeter of the room.**

The small gap allowed around all vertical surfaces provides enough space where caulk must be used to seal the edges to prevent moisture from

getting under the new flooring. All edges must be sealed with a good quality siliconized or acrylic caulk, even in areas where trim moldings or vinyl wall base will be put on top. ToughGuard II flooring should not be cut full or snug. Make sure all areas are lying flat before applying caulk in the perimeter gap.

CAUTION:

Do not stand or walk on the release liner, as it is extremely slippery. Place it in a wastebasket immediately upon removal from the tape.

Procedure:

- If more than one piece of flooring is used, the pieces should be pattern matched and double-cut prior to placing the acrylic double-faced tape, S-288 Adhesive, or the S-289 Releasable Adhesive under the seam.
- When installing with S-289 Releasable Adhesive, apply adhesive at the seam and let dry to the touch prior to cutting the seam.
- When installing with the S-288 Adhesive, cut seams dry then apply adhesive.
- The edges where the seam will be cut should be overlapped with a piece of scrap material under the seam to protect the substrate while cutting through both pieces of flooring. It is important that the seam be cut in a straight line using a straight edge as a guide. The knife should be held completely vertical to put a clean 90° edge at the seam. Seams should be cut net, not full or snug, which can result in buckles.

S-500 Seam Coater (Seam Treatment)

- After the flooring has been properly fit and positioned in the room, gently fold back the seam edges and apply the acrylic double-faced tape, S-288 Adhesive or the S-289 Releasable Adhesive centered under the seam. When installing with the tape method, before removing the release liner from the top of the tape, use a clean cloth and hand pressure to thoroughly bond the tape to the subfloor.
- Then, remove the release liner from the tape and carefully reposition the seam for a net fit. Thoroughly roll the seam with a hand roller to complete the bond.
- S-500 Seam Coating Kit may be used to coat the seams at the completion of the installation.
- Prepare the S-500 Seam Coater as per instructions.
- Practice applying the coating on scrap material to get a consistent 1/8" wide bead of coating.
- Tilt the applicator to an angle of about 30 degrees while applying coating.
- Do not attempt to insert the nozzle into seam.
- Apply 1/8" wide bead of coating centered on top of seam.
- The freshly applied seam coating must be protected for several hours from dirt, dust and traffic. Follow instructions on package.

S-761 Seam Adhesive (Seam Treatment)

- Acrylic Double-faced Tape: Double-cut the seam before applying the tape.
- S-289 Releasable Adhesive: Apply S-289 Releasable Adhesive at the seam and let dry to the touch prior to cutting the seam.

- S-288 Adhesive: Cut seams dry and then apply the adhesive, allowing proper open time before setting material into the adhesive.
- After applying the tape or after proper open time for the adhesive, place one side of the material back down.
- Using the S-761 applicator bottle, apply a 1/8" bead of S-761 Seam Adhesive along the seam edge.
- Tuck the seam edge into place, forcing the S-761 Seam Adhesive up through the seam.
- Clean adhesive residue from the surface of the flooring using a clean, white cloth dampened with neutral detergent and water.
- Roll the seam using a hand roller.

NOTE: S-761 Seam Adhesive is highly recommended for patterns that do not contain grout lines.

Replace or install wall base and quarter-round moldings to cover the gap around the perimeter of the room. Do not pinch the molding down on top of the flooring. Leave a slight clearance between the molding and flooring so any effects of seasonal movement in the home due to temperature or humidity changes will be minimized.

Full Spread Method with S-288 & S-289 Flooring Adhesive

Procedure:

If seams are involved, they should be double-cut dry prior to spreading adhesive in the seam area. Use a piece of scrap material under the seam when cutting.

Adhesive Open Times and Trowel Notchings

Adhesive	Porous	Nonporous
S-288 & S-289	Open Time: Minimum of 10-20 minutes Fine Notch: 1/32" (0.8 mm) deep, 1/16" (1.6 mm) wide, 5/64" (2 mm) apart	Open Time: 30 minutes or more Fine Notch: 1/32" (0.8 mm) deep, 1/16" (1.6 mm) wide, 5/64" (2 mm) apart

NOTE: Allowing proper open time will help to minimize knee marks, roller marks, and trapped blisters. The amount of open time will vary according to job conditions – temperature, humidity, air flow, and type of substrate.

S-761 Seam Adhesive (Seam Treatment)

- Double-cut the seam before applying adhesive to the seam area. Leave 1-2' back from the edge of the seam area after full spreading of adhesive on floor.
- Place one side back down.
- Using the applicator bottle, apply a 1/8" bead of the S-761 Seam Adhesive along the seam edge.
- Tuck the seam edge into place, forcing the S-761 Seam Adhesive up through the seam.
- Clean adhesive residue from the surface of the flooring using a clean, white cloth dampened with neutral detergent and water.
- Roll the seam using a hand roller.

- Then, starting at the center and working toward the edges, roll the flooring in two directions using a 100-lb. roller.

S-500 Seam Coating Kit (Seam Treatment)

- Starting at the center and working toward the edges, roll in two directions using a 100-lb. roller. Seams must be hand rolled, then rolled again with a 100-lb. roller. Give special attention to cleaning adhesive residue from the seam areas as they must be clean and dry in order to proceed with the application of S-500 Seam Coating. Clean excess adhesive from the surface of the flooring using a clean, white cloth dampened with detergent and water. Mineral spirits will remove dried adhesive residue.
- The freshly applied seam coating must be protected for several hours from dirt, dust, and traffic. Follow the instructions on the package.

Replace or install wall base and quarter-round moldings as needed. Fasten molding to the vertical surface. Do not nail through the new floor.

Full Spread Method with S-289 Releasable Adhesive – Residential Installations Only

Adhesive	Open Time	Comments
S-289 Releasable Sheet Flooring Adhesive	Allow the adhesive to set open until dry-to-touch, approximately 45 to 60 minutes. The adhesive should be tacky with no transfer to fingers	Use a short nap paint roller (3/16") to apply S-289 Releasable Adhesive.

General Information:

S-289 Releasable Adhesive is a pressure sensitive adhesive with releasable bonding properties. It improves performance of vinyl-backed sheet flooring that is typically loose laid or modified loose laid, but still allows easy removal of the flooring at any time, without tearing the backing or damaging the substrate. The releasable installation system is ideal for reducing the remodel workload in rental units, condominiums, or other spaces that undergo frequent replacement of the flooring.

The releasable adhesive system can be used over recommended substrates in areas not always suitable for loose lay applications. Examples include installations that have multiple seams over wood underlayments, in bathrooms, and in areas of the home that have small rolling appliances such as portable dishwashers or microwave carts. Flash coving with S-289 Releasable Adhesive is not recommended. In certain areas of the country where seasonal moisture and humidity changes are severe, the movement in wood subfloors can cause a raised area or a buckle in the flooring near a perimeter pinch point. Typically, if this happens, it will occur during prolonged periods of cold weather when interior conditions become very dry and the wood subfloor/underlayment components dry out and shrink. Or, it can occur in new construction when job site and product conditioning recommendations are not followed. Should this happen and a buckle occurs, the flooring should be gently lifted and pulled back from the pinch point and re-trimmed.

NOTE: The full spread method using S-288 Flooring Adhesive is required in rooms with floor drains, where flooring is installed on stair treads or landings, and where net fitting is required around the perimeter of the room.

Procedure:

Seams are to be double-cut after the S-289 Releasable Adhesive is spread and dry-to-touch. Scrap material is not recommended under the seam when double cutting to prevent excess fullness with the releasable system.

Tube or lap back the sheet flooring to expose approximately half of the substrate and use a short nap (1/4" to 3/16") roller to apply the S-289 Releasable Adhesive. Follow adhesive open time and working time recommendations on the adhesive label. To ensure releasability, the adhesive must be allowed to dry completely to a tacky state where there is no transfer to your fingers or the back of the flooring when placed into the dried film. This can take 45 minutes or more. The amount of open time will vary according to job conditions – temperature, humidity, air flow, and type of substrate.

S-761 Seam Adhesive (Seam Treatment)

- Place one side of material back down.
- Using the applicator bottle, apply a 1/8" bead of S-761 Seam Adhesive along the seam edge
- Tuck the seam edge into place, forcing the S-761 Seam Adhesive up through the seam.
- Clean adhesive residue from the surface of the flooring using a clean, white cloth dampened with a neutral detergent and water.
- Roll the seam using a hand roller.
- Starting at the center and working toward the edges, roll in two directions using a 100-lb. roller. Seams must be hand rolled, then rolled again with a 100-lb. roller. If any adhesive gets on the face of the flooring, use a clean, white cloth dampened with detergent and water to remove it. Mineral spirits will remove dried adhesive residue.

S-500 Seam Coater (Seam Treatment)

- After both pieces of material have been placed into the adhesive, roll the seams with a hand roller and then, starting at the center and working toward the edges, roll in two directions using a 100-lb. roller. Seams must be hand rolled, then rolled again with a 100-lb. roller. If any adhesive gets on the face of the flooring, use a clean, white cloth dampened with detergent and water to remove it. Mineral spirits will remove dried adhesive residue.
- Apply S-500 Seam Coating Low Gloss Seam Coating at the seams at the completion of the installation. The freshly applied seam coating must be protected for several hours from dirt, dust, and traffic. Follow the instructions on the package. S-761 Seam Adhesive is highly recommended for patterns that do not contain grout lines.

Replace or install wall base and quarter-round moldings as needed to cover the 1/8" perimeter gap. Fasten molding to the vertical surface. Do not pinch the flooring and do not nail through the new floor.

Seams:

If a seam is required in a primary part of the room, it should be made after the product has been rough cut and is lying flat in its proper position in the room, but prior to final cutting and fitting around the perimeter. Overlap the selvage edges of both pieces of flooring so that the proper pattern match is achieved. Then, carefully fold back the seam edges without shifting the sheets, so that a strip of scrap material can be placed under the product where the seam will be cut. This will save your knife blade and prevent scoring the substrate directly beneath the seam. Reposition the two edges, ensuring a good pattern match.

Seams must be double-cut. The straight edge and butt method of seaming is not recommended for this product. The seams of the flooring should not be stretched or compressed to obtain pattern match as this will create buckles in the flooring adjacent to the seams.

Use a sharp utility knife with a straightedge as a guide to double-cut through both pieces of material. Most patterns will have a grout line where the seam should be cut. Hold the knife blade vertical, at a 90° angle, to the floor when cutting the seam to ensure a straight, clean cut.

Fold back one side of the cut seam and remove the scrap material and selvage. Mark a pencil line on the substrate along the seam to be used as a reference for positioning the acrylic double-faced tape. Install the tape, centering it under the seam. Use a hand roller or clean cloth to press it against the substrate. Peel the release layer off of the tape and begin to carefully reposition the two sides of the seam on top of the tape. (On long seams it may be easier to just remove only a portion of the release layer at a time until you are sure the seam is falling back into position properly.) When both sides of the seam are properly positioned on top of the tape, use a hand roller to ensure a complete bond.

Use only acrylic double-faced tape intended for use with vinyl flooring. Ordinary carpet tapes may “telegraph” through and cause vinyl discoloration.

NOTE: At the installer’s discretion, a 2" (5.08 cm) to 3" (7.62 cm) wide band of S-288 Adhesive or S-289 Releasable Adhesive under the seams can be used in place of the acrylic tape under the seams and in front of tub and shower enclosures, etc.