

Commercial Linoleum Sheet Flooring Installation System

Product	ADHESIVE AND SEAMING OPTIONS					May Flash Cove
	Highly Recommended		Optional	Optional	Required	
	Full-Spread/ S-760 and Heat Weld Seams	S-240 in Static and Dynamic Load Areas	Full-Spread/ S-760 with S-761 at seams	Full-Spread/ S-760 with no seam treatment	Full-Spread/ S-240 and Heat Weld Seams	
Marmorette Granette Colorette Linorette Uni Walton	X	X	X	X		X
Linodur	X			X		
Linodur in Industrial Areas					X	

Suitable Substrates:

All suitable substrates listed below must be properly prepared and meet the requirements discussed in Section IV, Subfloors and Underlayments. There may be other exceptions and special conditions for these substrates to be suitable for the Commercial Linoleum Sheet Flooring Installation System.

- Concrete (on all grade levels)
- Steel, Stainless Steel, Aluminum, Lead, Copper, Brass
- Approved Suspended Wood
- Ceramic Tile, Terrazzo, Marble
- Existing Resilient Floors
- Polymeric Poured (seamless) Floors

Job Conditions/Preparation:

- Substrates must be dry, clean, smooth and free from paint, varnish, wax, oils, solvents and other foreign matter.
- In renovation or remodel work, remove any existing adhesive residue* so that 100% of the overall area of the original substrate is exposed.
- Allow all flooring materials and adhesives to condition to the room temperature a minimum of 48 hours before starting the installation. Do not place in direct sunlight.
- The area to receive resilient flooring should be maintained at a minimum of 65°F (18°C) and a maximum of 100°F (38°C) for 48 hours before, during and for 48 hours after completion. **When using S-240 Epoxy Adhesive the maximum room temperature should not exceed 85°F (29°C).**
- During the service life of the floor the temperature should never fall below 55°F (13°C). The performance of the flooring material and adhesives can be adversely affected below this minimum temperature.

* Some previously manufactured asphaltic "cutback" adhesives contained asbestos (see warning statement on page xi). For removal instructions, refer to the Resilient Floor Covering Institute's publication Recommended Work Practices for Removal of Resilient Floor Coverings.

- Conduct calcium chloride tests. Bond tests should also be conducted for compatibility with the substrate. Please refer to Section IV, Subfloors and Underlayments.
- Radiant-heated substrates must not exceed a maximum surface temperature of 85°F (29°C).
- Concrete floors should be tested for alkalinity. The allowable readings for the installation of Armstrong flooring are 5 to 9 on the pH scale.

Fitting:

When installing several rolls in one area, make certain the batch numbers are the same. Also read the sequence numbers and install rolls that are within 20 numbers of each other. Install the rolls in sequential order.

Keep all material rolled face out until ready to begin the installation. Pieces that are cut and fit in the morning should be adhered that morning. Pieces that are cut and fit in the afternoon should be adhered that afternoon.

Before installing the material, plan the layout so seams fall at least 6" away from subfloor/underlayment joints. Do not install over expansion joints. When installing over an existing resilient floor, plan the layout so the new seams are a minimum of 6" away from the original seams. When installing over tile, seams should fall in the center of the tile.

Recommended fitting procedures include straight scribing, pattern scribing, and freehand knifing. The lines on the back of the linoleum represent trademark edges.

Abutting Different Gauges of Resilient Flooring: When installing thinner gauge material next to thicker gauge materials, install thicker material first and then butt a 12"-wide piece of S-153 Scribing Felt against the thicker material. Adhere the Scribing Felt to the subfloor with S-235 Adhesive. Use the fine notching of the Armstrong S-891 Trowel over nonporous substrates such as existing resilient flooring, and use the regular notching of the Armstrong S-891 Trowel over porous subfloors such as wood and concrete. Use Armstrong S-184 Fast-Setting Cement-Based Patch and Skim Coat or S-194 Patch, Underlayment and Embossing Leveler to feather the edge of the S-153 Scribing Felt to the level of the substrate. Allow the patch to dry completely before installing the flooring. Scribing Felt is not recommended to be used under the entire installation.

Adhesive Open Times and Trowel Notchings

Adhesive	Porous	Nonporous
S-760	Open Time: Up to 10 minutes Regular Notch: 1/16" deep, 1/16" wide, 3/32" apart	Open Time: 10–20 minutes Regular Notch: 1/16" deep, 1/16" wide, 3/32" apart
S-580 Brush-On	Open Time: Minimum of 20–30 minutes Brush-On	Open Time: Minimum of 20–30 minutes
S-240	Open Time: Approximately 10–20 minutes Fine Notch: 1/32" deep, 1/16" wide, 5/64" apart	Open Time: Approximately 10–20 minutes Fine Notch: 1/32" deep, 1/16" wide, 5/64" apart

Note: Allowing the proper open time will help to minimize knee marks, roller marks and trapped air blisters. The amount of open time will vary according to job conditions, temperature, humidity, air flow and type of substrate. **Initial blisters are caused by inadequate open time and will begin to show within one hour after rolling.**

Procedure:

See Section VI, Adhesives, Trowel Notchings, and Seam Treatments.

■ **Full-Spread S-760 and Heat-Weld Seams:**

1. Before installing, plan the layout so seams fall at least 6" away from subfloor/underlayment joints. Do not install over expansion joints.
2. Cut pieces to the proper length, allowing enough material at each end to flash 2–3" up the walls for fitting.
3. Fit piece #1 by pattern scribing or straight scribing methods.
4. Prepare the seam edge by trimming the factory seam edge using the S-33 Edge Trimmer or a Linoleum Edge Trimmer.
5. Draw a pencil line on the subfloor along the trimmed factory edge.
6. Carefully lap the material back halfway to expose the subfloor.
7. Starting at the lap point and working toward the end wall, apply the S-760 Linoleum Adhesive up to the pencil line using the regular notching of the S-891 Trowel.
8. Allow the recommended open time before placing the material into the adhesive.
9. Starting at the center and working toward the edges, roll the material in two directions using a 100-lb. roller. Clean any excess adhesive residue from the surface of the flooring using a clean white cloth dampened with water.
10. Repeat steps #6 through #9 for the remaining half of piece #1.
11. Cut piece #2 to the proper length.
12. **Do not reverse pieces. Install pieces TM edge to non-TM edge.**
13. Overlap piece #2 to piece #1 approximately 1/2" to 1". Prepare the seam edge on the opposite side of the sheet by trimming the factory seam edge using the S-33 Edge Trimmer or a Linoleum Edge Trimmer.
14. Repeat steps #5 through #9.
15. Starting at the center and working towards the edges, roll the material in two directions using a 100-lb. roller.
16. Clean adhesive residue from the surface of the flooring using a clean, white cloth dampened with water.
17. Recess scribe the half of the seam that is adhered using an S-83 Recess Scriber. Seams should be recessed scribed slightly open (0.010") to compensate for the expansion that occurs in the width of the material when placed into the adhesive.
18. Insert a piece of scrap material beneath the scribe mark. With the scrap on the same side as the cutting hand, cut the seam holding a straight blade knife straight up and down.
19. Roll the seam into place using an S-77 Hand Roller and roll again with a 100-lb. roller.
20. Repeat steps #6 through #9 for adhering the remaining half of piece #2.

21. Repeat steps #17 through #19 for seaming the remaining half of piece #2.
22. Remove the burr at the seam by carefully skiving with the back of the S-92 knife.
23. Follow the same procedures for the remaining pieces, completing one piece at a time until the job is finished.
24. If seams are to be heat-welded, please refer to the Heat Weld Section.

■ **Full-Spread S-760 with S-761 Seam Adhesive:**

1. Before installing, plan the layout so seams fall at least 6" away from subfloor/underlayment joints. Do not install over expansion joints.
2. Cut pieces to the proper length, allowing enough material at each end to flash 2-3" up walls for fitting.
3. Fit piece #1 by pattern scribing or straight scribing methods.
4. Prepare the seam edge by trimming the factory seam edge using the S-33 Edge Trimmer or a Linoleum Edge Trimmer.
5. Draw a pencil line on the subfloor along the trimmed factory edge.
6. Carefully lap the material back halfway to expose the subfloor.
7. Starting at the lap point and working towards the end wall, apply the S-760 Linoleum Adhesive up to the pencil line using the regular notching of the S-891 Trowel.
8. Allow the recommended open time before placing the material into the adhesive.
9. Starting at the center and working toward the edges, roll the material in two directions using a 100-lb. roller. Clean any excess adhesive residue from the surface of the flooring using a clean white cloth dampened with water.
10. Repeat steps #6 through #9 for the remaining half of piece #1.
11. Cut piece #2 to the proper length.
12. Do not reverse pieces. Install pieces TM edge to non-TM edge.
13. Overlap piece #2 to piece #1 approximately 1/2" to 1". Prepare the seam edge on the opposite side of the sheet by trimming the factory seam edge using S-33 Edge Trimmer or a Linoleum Edge Trimmer.
14. Repeat steps #5 through #9.
15. Starting at the center and working toward the edges, roll the material in two directions using a 100-lb. roller (staying approximately 6" to 12" away from the seam area).
16. Clean adhesive residue from the surface of the flooring using a clean white cloth dampened with water.
17. Repeat steps #6 through #9 for adhering the remaining half of piece #2.
18. Using an S-83 Recess Scribe, recess scribe all seams net (no fullness).
19. Insert a piece of scrap material beneath the scribe mark. With the scrap on the same side as the cutting hand, cut the seam holding a straight blade knife straight up and down.
20. Apply a 1/8" bead of S-761 Seam Adhesive along the seam edge of piece #1 using an applicator bottle.
21. Tuck the seam edge into place, forcing the S-761 Seam Adhesive up through the seam.

22. Clean adhesive residue from the surface of the flooring using a clean, white cloth dampened with water.
23. Roll the seam into place using an S-77 Hand Roller and roll again with a 100-lb. roller.
24. Remove the burr at the seam by carefully skiving with the back of the S-92 knife.
25. Follow the same procedures for the remaining pieces, completing one piece at a time until the job is finished.

■ **LINODUR in Industrial Areas with S-240 Full Spread:**

Follow the installation and seaming details for S-760.

1. Mix entire contents of Part A and Part B together with a stirring motion while at the same time lifting from the bottom. Mix thoroughly for 3 to 5 minutes to a uniform color. **Do not over mix.** Never mix S-240 Epoxy Adhesive on the subfloor surface.
2. **Immediately pour the entire unit of mixed adhesive onto the substrate. Do not leave mixed adhesive in containers as it shortens pot life and working time and may generate excessive heat.** Maximum pot life of S-240 Epoxy Adhesive is approximately 15 minutes depending on temperature and humidity.
3. Apply S-240 Epoxy Adhesive with the recommended trowel notching.
4. After troweling the S-240 Epoxy Adhesive, allow 10-20 minutes open time before placing the flooring into the adhesive. **Do not allow the S-240 Epoxy Adhesive to dry completely.**
5. When using S-240 Epoxy Adhesive in conjunction with the recommended Armstrong full-spread Adhesive, plan out the open times so that the flooring may be placed into both adhesives at the same time. Working time of S-240 Epoxy Adhesive is 60 minutes.
6. After allowing the proper open time, carefully place the flooring into the S-240 Epoxy Adhesive to ensure that air bubbles are not trapped beneath the flooring.
7. Within 30 minutes of the S-240 application, roll the material using a 100-lb. roller. Starting at the center and working toward the edges, roll the material in the direction of the trowel notches and then again in the opposite direction (staying 2" away from any seams). Do not work on newly adhered flooring except to roll; if necessary use a kneeling board.
8. Clean any adhesive residue from the surface of the flooring using a clean white cloth dampened with a neutral detergent and water. **Dried S-240 Epoxy Adhesive cannot be removed.**
9. Repeat rolling procedure at 1 hour, and 2 hours after the initial application of S-240 Epoxy Adhesive.
10. **Seams must be heat-welded. Wait a minimum of 10 hours before heat welding.**
11. Do not allow traffic on the flooring for 24 hours after installation.
12. Newly installed flooring should not be exposed to rolling load traffic for at least 72 hours after installation to allow setting and drying of the adhesive.

■ Concentrated Static and Dynamic Loads with Linoleum and S-240 Epoxy Adhesive:

Product Performance under Concentrated Static and Dynamic Loads

Armstrong Commercial Sheet Flooring is used in many applications where it is subjected to heavy static and dynamic loads. Some furnishings, appliances and equipment in certain environments may be equipped with wheels, casters, rests or other floor contact devices, which concentrate rather than distribute the load over the surface of the flooring. Hospital patient beds are one such example. With respect to portable furnishings and equipment, while concentrated wheel/caster loadings provide for easier mobility they can be particularly damaging to resilient flooring installations. Armstrong recommends that any furnishings or equipment be fitted with floor contact devices, which avoid concentrating weight loads.

Our experience has shown that the use of hard-setting reactive adhesives like our Armstrong S-240 Epoxy Adhesive, offer advantages and may help protect against damage, such as delamination, when used to install flooring underneath such furnishings and equipment. Depending on the application, the epoxy may only be necessary in limited areas of any particular installation such as an area immediately underneath and adjacent to the primary areas of contact with the flooring. In the case of certain heavy hospital beds, the application of the epoxy adhesive in an area that extends a minimum of one foot beyond the wheel base or footprint of the four casters (approximately 4 feet by 8 feet) may be sufficient.

1. Plan layout of the Armstrong S-240 Epoxy Adhesive so it extends approximately one foot beyond the load area. Use the recommended Armstrong full-spread Adhesive in all other areas.
2. Mix entire contents of Part A and Part B together with a stirring motion while at the same time lifting from the bottom. Mix thoroughly for 3 to 5 minutes to a uniform color. **Do not over mix.** Never mix Armstrong S-240 Epoxy Adhesive on the subfloor surface.
3. **Immediately pour the entire unit of mixed adhesive onto the substrate. Do not leave mixed adhesive in cans as it shortens pot life and working time and may generate excessive heat.** Maximum pot life of Armstrong S-240 Epoxy Adhesive is approximately 15 minutes depending on temperature and humidity.
4. Apply Armstrong S-240 Epoxy Adhesive with the recommended trowel notching.
5. After troweling of the Armstrong S-240 Epoxy Adhesive, allow 10–20 minutes open time before placing the flooring into the adhesive. **Do not allow the Armstrong S-240 Epoxy Adhesive to dry completely.**
6. When using Armstrong S-240 Epoxy Adhesive in conjunction with the recommended Armstrong full-spread Adhesive, plan out the open times so that the flooring may be placed into both adhesives at the same time. Working time of Armstrong S-240 Epoxy Adhesive is 60 minutes.

7. After allowing the proper open time, carefully place the flooring into the Armstrong S-240 Epoxy Adhesive to ensure that air bubbles are not trapped beneath the flooring.
8. Within 30 minutes of the Armstrong S-240 application, roll the material using a 100-lb. roller. Starting at the center and working toward the edges, roll the material in the direction of the trowel notches and then again in the opposite direction (staying 2" away from any seams). Do not work on newly adhered flooring except to roll; if necessary, use a kneeling board.
9. Clean any adhesive residue from the surface of the flooring using a clean white cloth dampened with a neutral detergent and water.
Dried Armstrong S-240 Epoxy Adhesive cannot be removed.
10. Repeat rolling procedure at 1 hour, and 2 hours after the initial application of Armstrong S-240 Epoxy Adhesive.
11. **Seams must be heat-welded. Wait a minimum of 10 hours before heat welding.**
12. Do not allow traffic on the flooring for 24 hours after installation. Newly installed flooring should not be exposed to rolling load traffic for at least 72 hours after installation to allow setting and drying of the adhesive.

■ **Decorative Borders and Insets:**

1. Accurately measure and mark the position of the border on the subfloor. Using a pencil, trace around the borders and/or insets.
2. Apply the S-760 Adhesive up to the pencil line. Allow the proper open time before placing the material into the adhesive. If necessary, weigh down the border or inset.
3. Carefully roll using a S-77 Hand Roller and a 100-lb. roller.
4. Install the field material in the normal manner.
5. Carefully cut the field material so it overlaps the border and/or inset. Recess scribe the seam between the field and the border and/or inset using an S-83 Recess Scribe.
6. Insert a piece of scrap material beneath the scribe mark. With the scrap on the same side as the cutting hand, cut the seam holding a straight blade knife straight up and down. Roll the seam into place before the adhesive dries using an S-77 Hand Roller and then roll again using a 100-lb. roller.
7. If heat welding the seams, follow the recommendations for heat welding linoleum seams.

Precautions:

- Linoleum will grow slightly in the width and shrink slightly in the length of the material when placed into the wet adhesive. Following the recommended installation procedures will help compensate for this movement.
- Heat welding is optional, but required in areas exposed to direct sunlight, in areas exposed to topical moisture and/or temperature fluctuations and when installed over radiant heated subfloors.

- S-761 Seam Adhesive is not for use with Linodur.
- Heat welding: See Section VIII.
- Flash coving: See Section IX.

Linoleum Color Change:

“Drying room yellowing” sometimes referred to as “seasoning bloom,” “drying room film” or “stove yellowing” is a natural phenomenon that occurs during the manufacturing process of all linoleum. As linoleum cures in the drying room, a yellowish cast may develop on the surface due to the oxidation of the linseed oil. This is not a product defect. Any change in the product’s appearance because of this yellow cast is temporary and disappears after exposure to either natural or artificial light. The time required for the yellow cast to disappear ranges from a few hours to several weeks depending on the type and intensity of the light source. Typically, the yellow cast disappears more quickly with exposure to natural light. The application of floor finishes will not interfere with the dissipation of the yellow cast. Disappearance of the yellow cast will not occur on areas not exposed to light.