ENVERGE® | PROFILL® OPEN CELL SYSTEM

APPLICATION GUIDE

PRODUCT USAGE

Enverge® ProFill Open Cell System is a two-component open cell polyurethane foam designed specifically for injection into a variety of empty cavities in both residential and commercial applications. The two components leave the gun as a liquid and react inside the cavity to create foam.

SAFETY

PERSONAL PROTECTIVE EQUIPMENT (PPE)

SKIN - Wear gloves, coveralls, apron and boots as necessary to prevent contact of liquid components or partially-cured spray foam with skin. When handling liquid components, gloves should be made of nitrile, neoprene, butyl, or PVC.

EYES - Protect eyes while handling liquid components or spraying with safety goggles or safety goggles combined with a face shield. During spray application, eye protection may be provided by a full-face or hood respirator.

RESPIRATION - Contractors engaged in the application of Enverge spray foam must have a written respiratory protection program for employees handling or applying Enverge spray foam materials. Depending on the situation, respiratory protection may include dust masks, air-purifying respirators (APR), powered air-purifying respirators (PAPR), or supplied-air respirators (SAR).

VENTILATION - Provide ventilation and other engineering controls to exhaust vapors from work areas and to protect building occupants and other workers on site.

HANDLING OF LIQUID COMPONENTS

Applicators should use engineered controls and proper PPE before handling liquid components. Use caution in removing bungs from 55-gallon drums. Loosen ¾-inch bung and let gas escape before completely removing. In case of chemical contact with eyes, flush with water for at least 15 minutes and get medical attention. For further information refer to "Working with MDI and Polymeric MDI: What You Should Know," Reference No. AX 205, published by Alliance for the Polyurethanes Industry, 1300 Wilson Boulevard, Arlington, VA 22209, www.polyurethane.org.

START UP & APPLICATION PROCEDURES

AMBIENT CONDITIONS

For best results, ambient air should be less than 85% relative humidity and not within 5ºF (-15ºC) of dew point.

APPROVED SUBSTRATES

Approved for application to gypsum, wood, concrete, metal, and masonry.

SUBSTRATE REQUIREMENTS

Prior to installation, all substrates must be secure, dry, and free of foreign materials, oil, grease, rust, or other contaminants. Check substrates with Moisture Detection Paperstrips (MDP) for metal or a mositure meter for wood to verify dryness. Primers should be used where necessary. Mask off all areas not to receive spray foam with masking tape and plastic sheeting. Recommended substrate temperatures are 0°F to 120°F (-17°C to 48°C). Temperatures colder than what are recommended can result in the foam cracking and popping off of the substrate.

MIXING

Mix on high speed to achieve a milky solution prior to application or recirculation. If Enverge ProFill Open Cell System resin is in the line from the previous spray day, it must be recirculated into the drum and mixed before spraying can take place. **Enverge ProFill Open Cell System must be continuously mixed during application.**

DRUM TEMPERATURE REQUIREMENTS

Drum temperature for application should be a minimum of 70°F (32°C).

SPRAY RIG & DRUM PREP

If this installation requires changing the spray rig system from a closed cell product to an open cell product ***OR*** an open cell to a closed cell, flush B-side (resin) with soapy water to remove the product first. Then flush the water in the system out with the new open cell or closed cell product. Remember to flush the entire B-resin side including recirc lines, proportioner, and spray hose. For additional information on air purge visit **EnvergeSprayFoam.com/documents.**

In order for the drum to be ready for use, the drum must be in a temperature range where your proportioner can reach required spray temperatures.

PLEASE REFERENCE THE EQUIPMENT SETTINGS AND TEMPERATURE SETTINGS EXAMPLE ON THE NEXT PAGE FOR PROPER APPLICATION TEMPERATURES.

START UP & APPLICATION PROCEDURES (CONT.)

EQUIPMENT SETTINGS

Pre-Heaters - Iso (A)	115°F to 145°F (46°C to 63°C)
Pre-Heaters - Poly (B)	115°F to 145°F (46°C to 63°C)
Hose Heat	115°F to 145°F (46°C to 63°C)
Recommended Spray Pressure	1,000 to 1,200 psi (dynamic)
Shelf Life	A Side: 12 Mon. | B-Side: 6 Mon.

*The values in the Equipment Settings chart show initial optimum settings. Actual operating temperatures vary as ambient air, humidity, moisture, and substrate temperatures vary. Extreme conditions will affect the adhesion, cured physical properties, and yield of the foam. Applicator must make adjustments depending on conditions.

TEMPERATURE SETTING EXAMPLE

> If your drum temperature is 80°F (27°C) and you have a rig with a delta T of 50°F (10°C), your max spray temperature can only be 130°F (54°C). With this information it is important to know the delta T of your proportioner and drum temperature to achieve the proper spray temperature.

OVERSPRAY & LEAK PREVENTION

Inform the owner or builder of the need to take preventive measures that will prevent property damage due to potential overspray. Explain the precautionary measures you'll take to protect windows, doors, floors, HVAC equipment, vents or other equipment. Take preventative measures to isolate HVAC equipment, especially in retrofit applications.

It is highly recommended to lay down polyethylene film underneath the trailer and hoses to prevent damage in the event of hose rupture.

REQUIRED EQUIPMENT & ACCESSORIES

Same Proportioner, Hoses and Gun as used for Enverge Open Cell and Closed Cell Spray Foam

Pour Tip for Gun - recommended models include the following:

Graco Fusion Air-Purge (AP & PC) Pour Adapter Kit, Part # 248528. This kit includes an Air Cap, 2 Teflon Rings (1 for flat mixing chamber and 1 for round mixing chamber), and 2 feet of hose.

- Pour kits are also available for the P2 and the PMC gun.
- Tips and Kits are available from your regular parts supplier.

REQUIRED EQUIPMENT & ACCESSORIES (CONT.)

STAPLERS, STAPLES, AND AIR HOSE

Recommended models are listed below. Contact your Enverge spray foam area manager for information on convenient accessory kits containing the recommended staplers, staples and optional air hose.

SPEED STAPLER (FOR FACE STAPLING)

Senco SFT 10-H Auto Double; ½" x 5/16" staples
Bostitch Speed Stapler 21680B-ALM; ½" x 5/16" staples
Fasco F1B7C-16 Fine Wire, 11186F; ½" X 5/16" staples
Bea 80/14-450 ALM; ½"x 5/16" staples

WIDE CROWN STAPLER (FOR INSET STAPLING)

Senco WC 150XP Wide Crown Stapler; 1" x 1-1/4" staples
Hitachi N5024A2 Wide Crown Stapler; 1" x 1-1/4" staples
Makita AT2550A Wide Crown Stapler; 1" x 1-1/4" staples
Paslode S200-W16 Wide Crown Stapler; 1" x 1-1/4" staples

MEMBRANE & VAPOR RETARDER

Choose the correct Enverge ProFill Open Cell System SYSTEM membrane (available from Enverge) to meet code requirements for the Climate Zone and construction type where the foam is being installed:

CLIMATE ZONES 5-8 AND MARINE 4 (NORTHERN):

These heating-dominated Climate Zones may require a Class I, Class II or Class III vapor retarder.

Option 1:
Enverge ProFilm Reinforced Poly Film Membrane – 10' x 200'. Enverge ProFilm is rated as a Class I vapor retarder.

Option 2:
Enverge Fabric Membrane – 10' x 375'. This product will not provide vapor retarder performance. Depending on the construction type, latex or enamel paint typically provides a Class III vapor retarder. See R702.7.1 of the 2012 International Residential Code for limitations.

MEMBRANE & VAPOR RETARDER (CONT.)

CLIMATE ZONES 1-4 (SOUTHERN):

A vapor retarder is not required in Climate Zones 1-4.

Enverge Fabric Membrane – 10’ x 375’ is the recommended membrane.

ENVERGE PROCAP FIXTURE SYSTEM

Optional – this aluminum cap fixture system consists of 2” x 1” x 1/8” channels in 90” and 72” lengths for applying tension to the Enverge ProFilm Poly Membrane or Enverge ProWeb Fabric Membrane to expedite installation of the membrane. Cap fixture angles (1-1/2” x 1” x 1/8”) in 90” lengths are also included for use on the ends of walls and on double stud cavities.

Cap fixtures are fastened to the face of studs with an impact drill using screw type fasteners supplied with the system; the cap fixtures are to be removed after the cavities are completely filled with EnvergeProFill and moved to the next room to be re-installed and the procedure repeated until the job is completed.

The Enverge ProCap Fixture System multi-piece kit is available for purchase from Enverge, please contact your Enverge representative for more information.

GENERAL PROCEDURES

JOBSITE PREP

Before installing the membrane:

1. Check for cracks and gaps that would allow the foam to seep through onto unprotected areas.

2. Seal joints, penetrations, window rough openings, and electrical boxes. Make sure all wiring is pushed back away from stud face.

3. Make sure the exterior sheathing is sealed at all butt joints and against the bottom and top plate so foam does not get outside the house behind the siding. If gaps are present seal them with appropriate caulk, canned foam or tape.

MEMBRANE INSTALLATION

1. Cut the membrane to the appropriate size by referencing the length of the wall, Take care to not cut the membrand short.

2. Roll the membrane out on the floor and make sure the piece is long enough to avoid seams whenever possible. Save any extra membrane you cut off for possible use later in smaller areas such as closets.

3. Use care to not tear the membrane during cutting or installation (scissors work best); note the web (fabric) membrane is not as durable as the reinforced poly membrane and tears easier.

4. Avoid wiring when stapling the membrane, including horizontal wiring. Mark the position of wires on surface of membrane prior to face stapling. If there is any piping that protrudes out of the wall, cut a small “X-Shape” hole in the membrane and push the pipe through; no additional stapling is needed.

NOTE: On walls that are taller than 10’, overlap top half of membrane over bottom half of membrane (by at least 3”) to prevent foam from running between overlapping layers.

GENERAL PROCEDURES CONTINUED ON THE NEXT PAGE

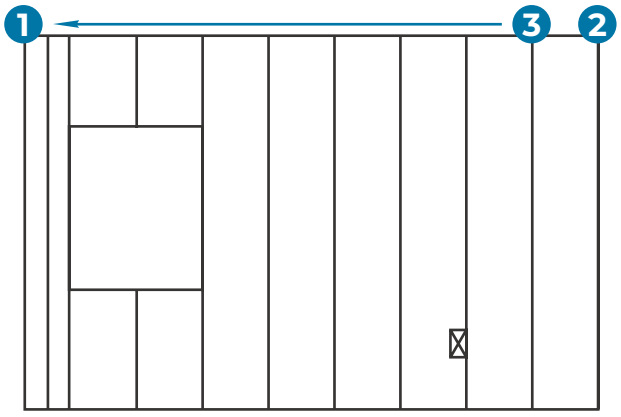
GENERAL PROCEDURES (CONT.)

MEMBRANE INSTALLATION - FACE STAPLING

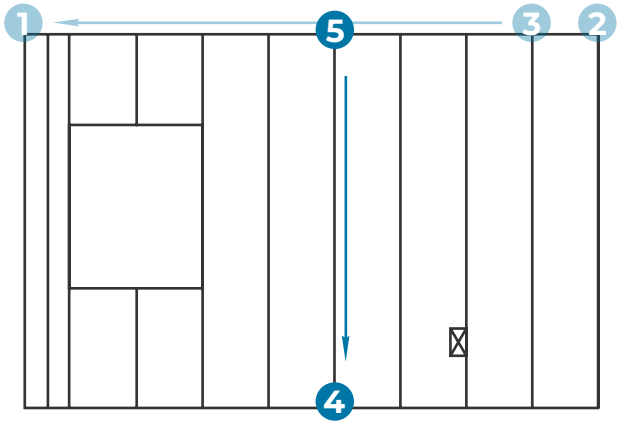
To begin installation, stretch the membrane down over the wall cavity. Staple membrane in place as follows using a Speed Stapler. Make sure to pull any wires out through the membrane.

1. Face-staple the membrane starting at the top left corner of the stud face.
2. Face-staple the right top corner of the stud face.
3. Face-staple across the top of the stud face.

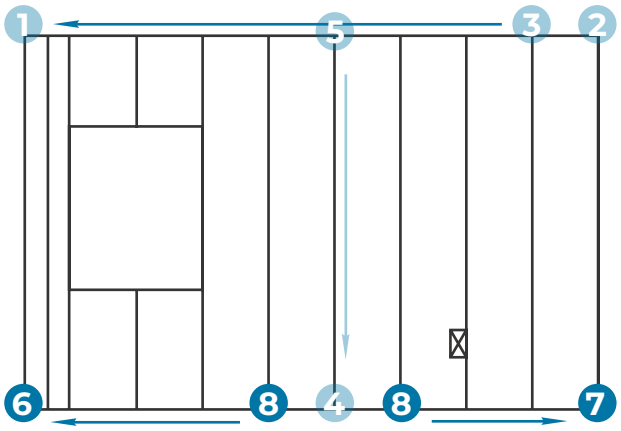
NOTE: Pull any wires through plastic that may need to be outside the wall bay.



4. Pull the membrane tight down the middle of the wall from top to bottom and face-staple to bottom plate.
5. Face-staple from top to bottom in the middle.

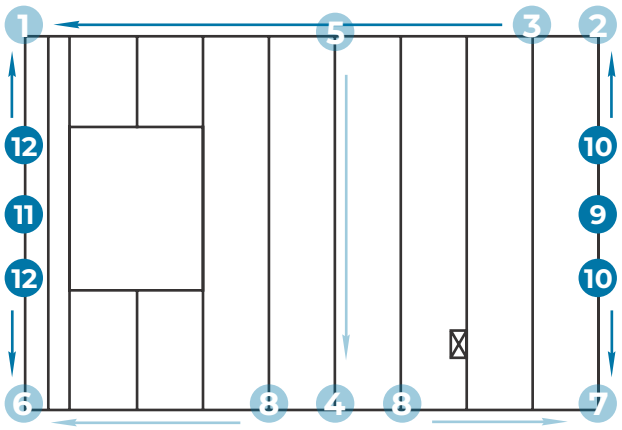


6. Pull membrane tight in bottom left corner and face-staple to stud face in the corner.
7. Pull membrane tight in bottom right corner and face staple to stud face in that corner.
8. Face-staple bottom plate from middle to left corner, and from middle to right corner.

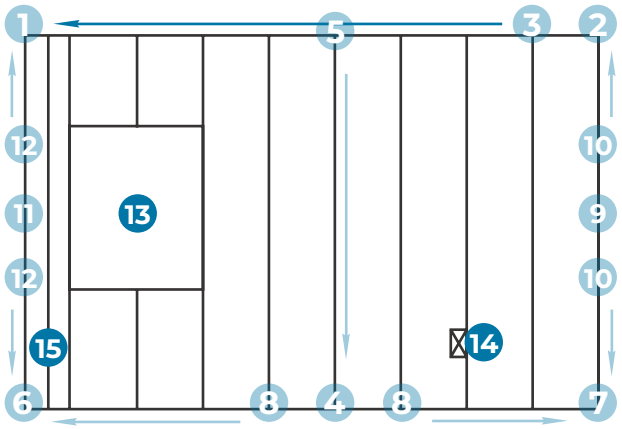


MEMBRANE INSTALLATION - FACE STAPLING (CONT.)

9. Pull membrane tight on right side and face staple to the stud face in the middle.
10. While continuing to pull the membrane tight, face staple the stud face from the middle up to the top, and then middle down to the bottom.
11. Pull membrane tight on left side and face staple to the stud face in the middle.
12. While continuing to pull the membrane tight, face staple the stud face from the middle up to the top, and then middle down to the bottom.



13. Press membrane in over the windows and face staple the stud face around the windows on the stud closest to the wall bays.
14. Face staple membrane on stud face right next to electrical outlets.
15. Note that all narrow bays must be double face-stapled to eliminate the need for inset stapling.



MEMBRANE INSTALLATION

To complete the installation, choose one of the following options:

Option #1: To complete the installation by stapling, use a Wide Crown Stapler to inset-staple (sometimes called lip-staple) the membrane to ensure tightness on both sides and the top and bottom of each bay. Stapler should be held horizontal to exterior stud at a 45-degree angle so that the head of the staple will be parallel with stud when inserted. All staples should be about 1" apart and no more than 2" apart.

MEMBRANE INSTALLATION (OPTION # 1 CONT.)

1. First, inset-staple ½" in from the stud across the bottom of every cavity and then across the top of every cavity.
2. Next, start from the top left side of membrane while on scaffolding and inset-staple ½" in from right side of stud, working from top to bottom. Move to your right to the next stud and inset- staple ½" in from right side of stud, working from top to bottom again. Continue the process until you get to the right side of the membrane or middle stud that was speed stapled.
3. Turn the stapler over and now inset-staple ½" in from left side of stud, working from top to bottom. Move to your left this time and again inset-staple ½" in from left side of stud, working from top to bottom. Continue the process until you get to the left side of the membrane.

Check to make sure electrical wires have been pulled through membrane before beginning installation of foam.

Option #2: To complete the installation using the Enverge ProCap Fixture System, use the Wide Crown Stapler to inset staple the tops and bottoms of each stud cavity. Also inset-staple any odd sized cavities above or below electrical receptacles, windows, doors or areas that cannot be handled by the cap fixture system.

Apply a cap fixture to the face of each stud starting from the bottom making sure to center each cap fixture over the stud face. Fasten the cap fixture in the middle hole first and snug to apply tension to the membrane. Do not over tighten the fastener, you are only trying to snug and apply tension to the membrane. Fasten the top and bottom of the cap fixture to complete the installation of the cap fixture system ensuring to snug the membrane without over tightening the fasteners.

Cap fixture channels are 90" long to fit just inside a standard 8' stud cavity. Use the 72" long cap fixture channels above electrical receptacles on standard 8' stud cavities. Use the 90" cap fixture angles on the ends of walls and on double stud cavities.

After the cavities are completely filled with Enverge ProFill Open Cell Foam, you will remove the cap fixtures, move to the next room and repeat the installation procedure until the job is completed.

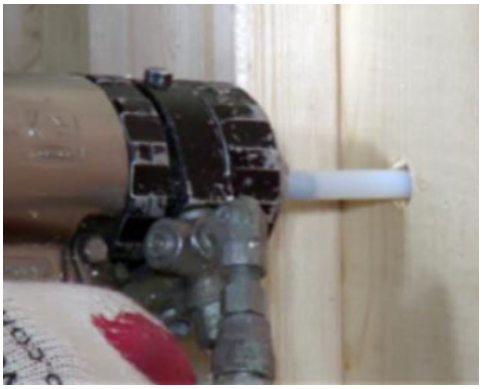
NOTE: The Enverge ProCap Fixture System saves up to 70% on the installation time of the membrane and reduces the cost of the 1" crown staples by the same amount.

FOAM APPLICATION

Always perform a test spray into a trash bag first to check for mix and rise before installation in walls. NOTE: It will splatter if a trash bag is not used.

For the first injection within each cavity, insert tip inside membrane approximately 2 feet up from the bottom – do not inject above an electrical box if one is present. Aim the tip downward towards the back side of the cavity. The foam will expand outward and upward within the cavity. Use your hand to help guide the foam up the cavity and push the membrane in to keep it from over bulging. If there are any unavoidable seams or tears in the membrane, be sure to hold them together by hand when installing foam and guide the foam over the seam or torn area.

Watch for swelling and draw-back of foam. If there is no draw back after two minutes, dial up the spray temps 5°F. If the foam does not draw back into the wall cavity or it is not even with studs, push in the foam with the palm of your hand while it is still warm (within 3 minutes.)



Work your way across the wall one cavity at a time as high as you can reach. After injecting first lift and seeing it start to expand, inject next lift approximately 2' above and repeat until you can't reach above rising foam. Once the foam has completely expanded, use this footage to gauge how much you should install in the next cavity. After the wall is completely filled, look it over to see if there are any low spots or voids and fix by injecting foam.

Start at one end of the house and work your way around, completing each area before moving to the next area.

NOTE: If there is a closed off void in the framing, drill small holes into the void, attach tubing to the pour cap on the gun, and inject foam into the void.

FOAM APPLICATION (CONT.)

Recommended best practice for 2x4 and 2x6 stud cavities:

With an AR4242 (01) mixing chamber at 1000 psi line pressure you can fill a 2x4 16” on center cavity with foam at the rate of 1 second trigger pull per foot of rise in the foam.

With an AR5252 (02) mixing chamber at 1200 psi line pressure you can fill a 2x6 16” on center cavity with foam at the rate of 1 second trigger pull per foot of rise in the foam.

AFTER APPLICATION

INSPECT APPLICATION

Look for good cell structure and adhesion. Remove any unreacted chemical from wall due to pressure imbalances while triggering spray gun. Look for a consistent skin surface of the foam and be sure product is curing.

CLEAN UP

Clean off all overspray and overfill from the interior stud facings. Where stud cavities have been overfilled, shave off the foam face to provide a surface flush with the stud for drywall installation. Remove all masking materials.

RE-ENTRY & OCCUPANCY

ProFill spray foam reacts and cures within seconds of application.
Re-entry can occur 1 hour after application with proper ventilation. Occupancy times will vary depending on factors including ventilation. Typically, when ventilating you need 10 air exchanges per hour for a 24 hour period following the conclusion of spray application and occupancy may occur at that time.