

PRODUCT USAGE

Enverge® ProFill Closed Cell System is a two-component closed cell polyurethane foam designed specifically for injection into concrete masonry unit (CMU) block fill 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 5°F (-15°C) of dew point.

APPROVED SUBSTRATES

Approved for application to masonry, solid wall, solid face, and metal.

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 moisture 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 40°F to 120°F (4°C to 48°C). Temperatures colder than what are recommended can result in the foam cracking and popping off of the substrate.

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](https://www.envergesprayfoam.com).

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

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. Do NOT recirculate or agitate Enverge Profill.

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 months – B side, 6 months

*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.

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, and floors. 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

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

Pour Nozzle/Air-Cap Kit Assembly 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, Probler and PMC guns. Tips and Kits are available from your regular parts supplier.

Plastic Tubing –1/4" internal dimensions (ID)

Drill and Bits – 3/8" or 1/2" Drive Hammer Drill with 3/8" and 7/16" masonry bits are recommended for drilling holes for block fill applications; Use 3/8" to 1/2" wooden dowels to plug holes after filling. Drills, Bits and Dowels are available at your local hardware store.

Block Mortar Mix – Check with the masonry contractor on site for a block mortar mix and recommended tools for spot patching of holes made in the block and mortar joints. The masonry contractor can help you with your selection of materials and tools to make patching the holes fast and easy.

REQUIRED EQUIPMENT & ACCESSORIES (CONT.)



InfraRed Thermal Imaging Camera, i.e. FLIR

A thermal imaging camera is required to check the reliability and consistency of installation and to provide traceability and documented proof of the installation.

Enverge ProFill can reach temperatures up to 180°F (82°C) in a wall cavity during the installation and curing process.

GENERAL PROCEDURES

DRILLING FILL HOLES

Using a 3/8" to 1/2" drive drill with a 3/8" or 7/16" masonry bit, begin drilling holes 4 courses off of the floor into the 3/8" mortar joint centering over the core of each half block. Holes should be drilled every 4 to 5 courses depending on bond block location.

Care should be taken to avoid drilling on mortar joints with wire block reinforcement. If block reinforcement is encountered, move up or below a course and begin drilling or drill on the block itself.

Holes should be drilled in each half block side by side at the mortar joint or between mortar joints in the center of each half block itself to ensure drilling into the core.

Trial and error fills will help the applicator get a feel for the substrate temperature and ambient temperature to help develop a timing sequence that fills the wall quickly and efficiently without applying too much pressure.

It is important to know your equipment, nozzle sizes, temperatures and pressure settings and from there, getting to know the fill rates and just having a general feel for processing the chemical and performing the application will improve over time with experience.

GENERAL PROCEDURES (CONT.)

SPRAY FOAM GUN SET UP

Method 1

With pour cap and tube (referenced in required equipment) installed on gun, place tube into cavity spraying from the bottom of the wall up, taking care to fill each and every cavity.

Method 2

Use 3/16" copper tubing with a flared end or 3/16" steel brake line that is already flared (remove nuts), insert from back side of extension tip aircap, the nylon seal, and attach to the gun. Place flared end of tubing or brake line into cavity and spray foam from the bottom of the cavity up.

Method 2 Accessories for Graco Fusion AP and PC Guns:

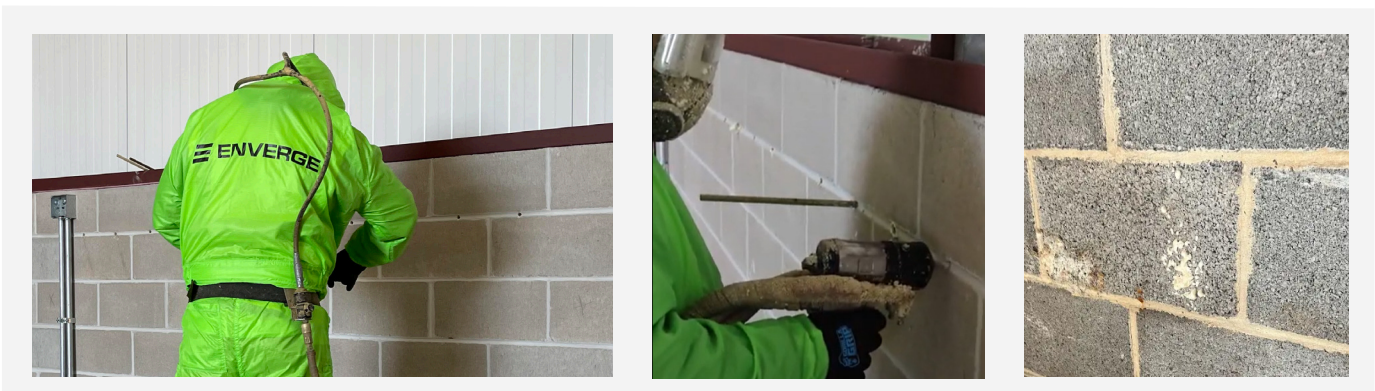
- Extension tip air cap part no. 248020
- Nylon packing part no. 248019



Example steel brake line

Before filling any block wall cavities, the foam should be sprayed out into a trash bag to check the cream time of the product. Cream time is the time it takes before the product actually begins to rise and expand to its final thickness.

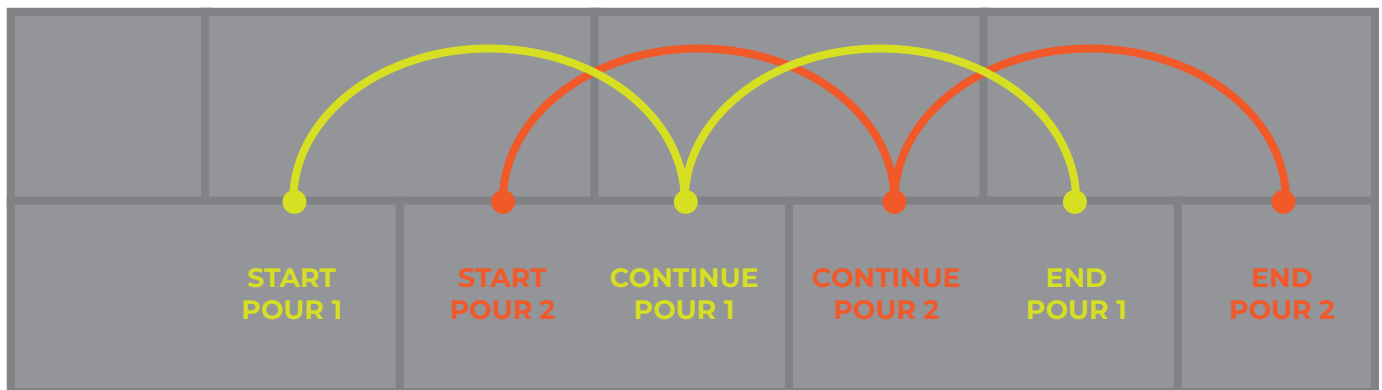
Application will be trial and error and must be tested and checked on every job. When injecting, count down the number of seconds you are injecting to develop a feel for how much foam is required to fill a core. Doing this preliminary trial will develop the hole/fill pattern for the entire project. Again, a check with a thermal camera helps ensure every core cavity is being filled.



GENERAL PROCEDURES (CONT.)

INSTALLATION OF ENVERGE PROFILL POLYURETHANE FOAM (CONT.)

- When foam is installed in an 8" concrete block, it can travel 1 foot on a 1 second trigger pull using a Graco AR4242 (01) mixing chamber in a Fusion AP gun depending on machine temperature, pressure settings and concrete block temperature. When injecting, count down the number of seconds you are injecting to develop a feel for how much foam is required to fill a core. Doing this preliminary trial will develop the hole/fill pattern for the entire project.
- It is wise to skip cores. This allows for a minimum amount of stress to be placed on the concrete block adjacent to the one being injected. Do the first pour (POUR 1) on every other core, then return and apply the second pour (POUR 2) on all skipped cores. If another pour is needed repeat the process starting with the first core poured on (POUR1). Repeat until the core is completely filled.



- As the cores are filled, a tapered wooden dowel pin should be inserted into the fill hole once the tubing is removed to keep the foam from spilling out of the fill hole as the applicator moves down the wall.
- Core fill times may vary from core to core as Brick Masons can throw varying amounts of mortar in block cores. Extreme care must be taken when finishing the last fill shot in each cavity so as not to overfill. It is best to use short 1 to 2 second bursts to minimize cavity overfill.

NOTE: The applicator should make sure that the fill holes are clean enough for repair by the installer.

GENERAL PROCEDURES (CONT.)

THERMAL IMAGING



Thermal imaging cameras are required as part of this application:

Thermal imaging should be done during application of each wall as the foam exotherms heat showing the contrast that can be documented. Polyurethane foam is a warm-applied product with an exothermic reaction allowing you to use thermal imaging as an inspection tool.

- They help the spray foam contractor ensure that the entire cavity is being filled.
- They provide a photographic record of the job proving that every cavity is filled.

A documented folder of the thermal imaging of all walls, should be completed when using Enverge ProFill in CMU blockfill applications as it provides a permanent record for each project.

CLEANING AND PATCHING FILL HOLES

Clean the fill holes with a drill/wire brush attachment to insure a cleanhole before patching. The Enverge ProFill foam is very easy to clean and remove from concrete block. Once the filling has been completed and the fill holes are cleaned of any excess foam, the repairs can be made on the fill holes with mortar caulk. Fill holes may be cleaned and repaired four hours after the foam has been injected.

Recommended mortar caulk:

- Quikrete Mortar Repair
- Sika Mortar Fix

Check the interior and exterior of the structure for any Enverge ProFill that may have seeped out of any holes or gaps in the block wall.

COATING/SEALER

Please be advised that it is always recommended that a moisture resistant coating or sealer be specified to be applied on the exterior of CMU construction when using ProFill for filling concrete block cores.

The descriptions, data, designs, and information contained herein are presented in good faith and believed to be accurate. This information is provided for guidance ONLY. Many factors will affect the processing or application of Enverge products. It is necessary that you make tests to determine ultimate suitability for Enverge products for your particular application. All persons involved in construction projects including spray polyurethane foam have an independent obligation to ascertain that their actions are in compliance with current federal, state and local laws, codes, and regulations and should consult with legal counsel concerning such matters. The guidance is necessarily general in nature and individuals may vary their approach with respect to particular practices based on specific factual circumstance, the practicality and effectiveness of particular actions and economic and technological feasibility. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described, data, or designs presented. In no case shall the descriptions, information, data, or designs provided be considered a part of our terms and conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. You expressly agree to release Holcim Solutions and Products US, LLC from liability in tort or contract based on the technical information provided. All such information is accepted at your own risk.