

CertainTeed
OPTIMA[®]

Installation Instruction Manual



CertainTeed 

Quality made certain. Satisfaction guaranteed.[™]

LOOSE FILL FIBER GLASS INSULATION FOR CLOSED CAVITY APPLICATIONS.

This installation manual presents standardized guidelines for using the OPTIMA® system with the expectation of product quality and uniform performance.

OPTIMA is the result of several years of research and development which relied a great deal on practical field testing in new construction. A number of contractors, utilizing their own machines and crews, field tested OPTIMA to help validate the system.

A key point is that while proper product and fabric will go a long way towards ensuring optimum insulation performance, proper installation procedures are essential because they directly influence the physical properties and performance of the installed product.

This manual covers the basics. Of course, we cannot cover all variables which will occur in the field. Therefore, whenever you encounter a situation not covered here, we encourage you to call your local CertainTeed representative for consultation.

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PRODUCT DESCRIPTION

OPTIMA is a highly-engineered fiber glass insulation which yields outstanding thermal performance when properly installed in closed cavity applications.

The OPTIMA system is similar to the Blow-In-Blanket® System, but with these differences:

- Specially designed fabric
- A fiber that provides better flow of material

The term OPTIMA refers to three things: the OPTIMA system itself; the OPTIMA insulation; and the OPTIMA fabric.

The OPTIMA system requires that OPTIMA insulation be pneumatically installed behind OPTIMA fabric (or equivalent), using properly maintained and CertainTeed-approved equipment, in full accordance with these installation instructions. Only then can OPTIMA perform consistently and uniformly.

OPTIMA is also acceptable for closed cavity retrofit applications. See OPTIMA Sidewall Specification Sheet (30-24-225) for more information.

Important: The OPTIMA system is not suitable for open blow applications. It should always be covered with a building material (such as drywall) suitable to the application.

FABRIC INSTALLATION

The OPTIMA system requires the use of OPTIMA non-woven fabric or an equivalent having the following properties:

- Frazier air permeability = 420 cfm ft² at 0.5" H₂O
- Coulter average maximum pore size: 200 micrometers
- Grab tensile strength, lb./inch, average: MD: 22, CD: 22

Steps—Wood Studs

1. Cut a piece of fabric that extends approximately 1' beyond each end of the wall.
2. Tack the corners—top and bottom on one side—stretching the fabric after each tack.
3. Staple every 1"-1½" vertically, down the face of the studs (starting with the stud to which the corners were tacked) pulling the fabric tight with free hand as you go.
4. Repeat above step on the plates, top first, then bottom.
5. Fill in by stapling (as above) to the remaining studs.

Steps—Steel Studs

1. Due to the manufacturing process, an oily film is sometimes left on the steel studs. This film has the potential to interfere with almost any adhesive's ability to bond to the stud. A wiping of all steel surfaces with a rag or cloth, wherever the adhesive will be applied, is usually sufficient.
2. Double-sided carpet tape is recommended to hold the fabric in place while the adhesive is setting up. (The tape may remain in place after the adhesive is applied.) Place six-inch strips of the double-sided tape at the left and right ends of the top plate and the right and left ends of the bottom plate. Place additional strips of the tape every three to four feet along the length of the top and bottom plates. The strips of tape should be parallel with the floor.
3. CertainTeed has tested many adhesives to see which would best hold OPTIMA fabric to steel studs. Of those tested, four construction grade adhesives performed exceptionally well. These adhesives are:
 - OSI® Pro Series® Formula #38™ Adhesive
 - PL 400 Structural & Sub-Floor Adhesive
 - Liquid Nails® for Projects & Construction Adhesive
 - Liquid Nails Construction & Remodeling Adhesive

FABRIC INSTALLATION (CONT.)

4. Before curing, these adhesives are flammable and give off dangerous/hazardous fumes. Observe all precautions mandated by OSHA and other safety-oriented agencies that exercise regulatory authority at the job site. Also, read and observe any safety precautions printed on the adhesive packaging. At the very least, keep the work area well ventilated and be sure that no open flame, intense heat source or smoking is permitted.
5. Begin the installation of the fabric at one end of the top plate. Carefully press the top corner of the fabric into the first piece of tape while an assistant stays four or five feet away, keeping the fabric positioned straight and fairly tight.
6. With an assistant holding the fabric up and out of the installer's way, apply a 1/2" bead of adhesive across the top plate (put adhesive between double-sided tape) between the first two studs then down the first two studs. Do not put adhesive on the bottom plate at this time. Lower the fabric over the adhesive, keeping it straight and tight. Using a tool such as a putty knife or wallpaper roller, press the fabric thoroughly into the adhesive. Continue this process to the end of the wall. If starting or ending at a corner, leave enough fabric to make the 90° turn and reach the next stud. Next, put a bead of adhesive along the bottom plate and secure the bottom of the fabric. Trim away the excess fabric with a utility knife. After the adhesive has cured, the OPTIMA® insulation can be blown into the cavities.

Notes

- Staples applied at a 45° angle hold better than when vertical or horizontal.
- Fabric has vertically dotted lines printed every 7" to help you align it with studs.
- To assure the required performance, pull fabric tight across studs as you staple. If you leave slack, the insulation will bulge out, and drywall will not lay flush to the studs.
- See our Right Way Video *"Insulating with the OPTIMA System"* for more information.

INSULATION INSTALLATION

With the OPTIMA fabric in place, you are ready to fill the cavities with OPTIMA insulation. Some experimentation and practice may be necessary to achieve the correct installed density.

Steps

1. Make a small (approximately 4") vertical incision in the fabric midway in one test cavity. (On an 8' cavity, one hole may suffice; however, on a 9' or greater cavity, a second hole may be necessary. If you prefer to cut one hole only and wait and see, follow step 5.) Another method is to use the tip of the nozzle to poke a hole in the fabric.
2. Insert the hose into the hole and fill from the bottom up, working the hose side to side as you go. For cavities with two holes, begin with the lower hole.
3. Upon reaching the hole, turn the hose 180° and fill from the top down while continuing to move the hose.
4. Check insulation density:
 - If you have achieved target density as specified on the bag, proceed with step 5.
 - If density is light, adjust your technique and/or machine settings, fill test cavity to specification, and proceed.
 - If density is heavy, adjust your technique and/or machine settings, leave test cavity as is, and proceed.
5. Now fill remaining cavities. If you have only used one hole per cavity, and cavities have not filled to the top, cut a second hole near the top of each cavity and add insulation as necessary. It is best to do this using a ladder.
6. Finish off by smoothing each cavity with either a roller or broom to minimize bulge.
7. Visually examine and/or feel each wall cavity. If you detect any voids or light density areas, make a small incision and fill further.

CertainTeed has prepared a training video in our Right Way series. Ask your supervisor to make it available for your viewing.

NOZZLE USE

The use of a nozzle for the installation of OPTIMA is optional.

BLOWING MACHINE EQUIPMENT

While there are many pneumatic insulation machines available today, only certain ones are recommended for use with the OPTIMA system. Recommended initial machine settings for these machines appear on pages 6–7.

In order to apply OPTIMA properly, the machine you use must meet CertainTeed performance criteria of:

- Proper fiber conditioning
- Uniform material flow
- Proper air volume

To meet these criteria, pneumatic equipment normally requires:

- Adequate shredding system
- Air lock on feeder section
- Adequate air volume and pressure
- Adequate feed control into and out of shredder section
- Control on all the above

With any recommended equipment, there are two ways of controlling application density: adjusting machine settings, and modifying application technique. The latter method tends to be the most important.

MACHINE SETTINGS

CertainTeed has tested and evaluated a number of blowing machines to determine the appropriate machine settings for OPTIMA fiber glass insulation. Settings may vary depending on machine condition, climatic factors and application techniques.

These machine settings were developed using machines in good working order and application techniques considered to be acceptable in normal field operations.

In some cases, it may be necessary to adjust initial settings in order to fine tune the performance of your blowing equipment as well as to achieve target density.

Make it a habit to experiment and adjust accordingly to achieve the best results. With the OPTIMA system and its recommended equipment, application technique is the most important factor.

MACHINE SETTINGS (CONT.)

Ark-Seal Big Blower and Big Blower Deluxe

Unisul, Inc.
 P.O. Box 1310
 Winter Haven, FL 33882
 1-800-237-7841
 1-813-294-3206 (FL)

Component	Settings
Engine RPM	Typically equipped with Onan engines, their RPM settings are controlled by the throttle. With Big Blower Deluxe, 2800 RPM is recommended for OPTIMA®. Operating below recommended RPM level may result in inadequate product performance.
Air Pressure	Both blowers are equipped with air bypass valves (vs. air relief valve and weights) which must be maintained in good working condition. Air pressure controls velocity of material flow through the hose into the cavity. Opening and closing the air bypass valve regulates density. With the Big Blower Deluxe, this valve should be ¼ open when installing OPTIMA.
Gate Opening	Both machines utilize a series of pins or rods to control material feed rate into the shredder. Removing these rods increases feed rate and reduces blowing time, but may increase installed density.
Gear	Neither blower has a gear box; rather, both vary RPM to control the arm speed of the auger and hopper. In most cases, RPM setting is effective at the recommended level.
Hose Set-up	Both blowers use 150' of 3" and 50' of 2½" internally corrugated hose when installing OPTIMA. Larger diameter hose will reduce air pressure, which may reduce material conditioning and increase density.

Meyer® 1300 Series and Meyer® 1400 Series

William E. Meyer & Sons, Inc.
 8261 Elmwood Ave.
 P.O. Box 105
 Skokie, IL 60077
 1-800-797-8227

Component	Settings
Engine RPM	Both series machines are designed to operate at maximum engine speed. While some may be equipped with a PTO or diesel engine, all set-ups should rotate the jack shaft at the manufacturer's recommended setting. Jack shaft speed is controlled by adjusting the throttle of the power source.
Air Pressure	An air relief valve and weights regulate air pressure. The cap and three large weights are usually adequate, the number of weights required will depend upon size and length of hose used.
Gate Opening	1300 Series machines should have a gate opening of 8"; and 1400 Series machines should be 4"
Gear	A 4-speed transmission, with 2nd gear recommended for installing OPTIMA, is common. Higher gear settings may increase material feed rate, reducing material conditioning and increasing product density.
Hose Set-up	A 4" hose outlet is common. When installing OPTIMA, both series use 50' of 4", 150' of 3" and 50' of 2½" internally corrugated hose.

Universal Volu-Matic® IV

Unisul, Inc.
P.O. Box 1310
Winter Haven, FL 33882
1-800-237-7841
1-813-294-3206 (FL)

Component	Settings
Engine RPM	A hydraulic engine requires hydraulic fluid warm up before use. Reference manufacturer's handbook to ensure that all hydraulic components are functioning properly before operation. The jack shaft is controlled by the engine throttle and should be set at maximum RPMs.
Air Pressure	An air relief valve and pressure gauge are controlled by an air lever on the face of the machine. Adjust to recommended air pressure of 3.5–4.0 PSI on the pressure gauge.
Gate Opening	An 18" slide gate should be opened 6"–8" when installing OPTIMA. Adjusting this gate will reduce or increase material feed rate and either extend or reduce blowing time.
Material Lever	Within a range of slow to fast, the lever should be approximately $\frac{2}{3}$ open from the slow setting when installing OPTIMA. This should rotate the auger at 75 RPM.
Hose Set-up	A 4" hose outlet is standard. Use 50' of 4", 150' of 3" and 50' of 2½" internally corrugated hose when installing OPTIMA.

Universal Volu-Matic® II and Universal Volu-Matic® III

Unisul, Inc.
P.O. Box 1310
Winter Haven, FL 33882
1-800-237-7841
1-813-294-3206 (FL)

Component	Settings
Engine RPM	The engine RPM for both machines should be set to run the jack shaft at 1000 RPM. To accomplish this, set the engine throttle at the manufacturer's recommended setting.
Air Pressure	An air relief cap plus weights (two recommended for OPTIMA) control air pressure on the Volu-Matic II. (A frozen cap may generate excessive air pressure.) An air relief valve (3.5–4.0 PSI setting recommended for OPTIMA) controls air pressure on the Volu-Matic III.
Gate Opening	Both machines utilize a series of pins or rods to control material feed rate into the shredder. Removing these rods increases feed rate and reduces blowing time, but may increase installed density.
Gear	Both machines have a 4-speed gear box, with 2nd gear recommended for installing OPTIMA.
Hose Set-up	Both machines use 150' of 3" and 50' of 2½" internally corrugated hose when installing OPTIMA. Larger diameter hose will reduce air pressure, which may reduce material conditioning and increase density.

INSTALLATION COMMON SENSE AND SAFETY

Working at a construction site always offers the potential for accidents. During any OPTIMA® installation, you should be fully aware of all OSHA regulations and practice sound work habits not only at the site, but while proceeding to and from each location.

In particular, working with blowing machines requires taking basic safety precautions. Here is a brief summary of the key points to remember. Of course, if your company has stated safety regulations, you should be familiar with and follow them as well.

1. Take care when loading bags of OPTIMA insulation and rolls of OPTIMA fabric onto the truck. Handle only one bag or roll at a time, being sure to always use proper lifting techniques.
2. When loading the hopper, lift only one bag at a time. To open each bag, always cut away from yourself.
3. Never overfill the hopper: usually, three bags is maximum. This may vary by machine.
4. Never put your hands, brooms or other foreign objects into the hopper for any reason while the hopper is in operation.
5. If you drop something into the hopper, always turn the machine completely off before trying to retrieve the object.
6. Never adjust the machine with its engine running. Turn it completely off first.
7. Make sure the engine is vented to the outside of the truck.
8. Always wear a disposable dust respirator and ear plugs when feeding the machine, or even when standing nearby,
9. Always follow CertainTeed's recommended safety procedures, such as wearing a disposable dust respirator, when installing OPTIMA. Please read the WARNING section on the bag for details.
10. Clean up periodically during installation so that you don't trip over the materials you've laid out for the job. Also, when installation is complete, be sure to take all leftover materials and accessories.

COVERAGE CHARTS

Sidewall, Cathedral Ceiling and Other Closed Cavities That Are Compression Filled.

Coverages are based on 28lb. nominal bag weight.

THICKNESS INCHES	R-VALUE	DENSITY LBS. PER CU. FEET	MINIMUM WEIGHT 1,000 SQ. FEET	BAGS PER 1,000 SQ. FEET	MAXIMUM SQ. FEET COVERAGE PER BAG
3.5 (2x4)	15	1.8	0.525	18.8	53.3
5.5 (2x6)	23	1.8	0.825	29.5	33.9
7.25 (2x8)	30	1.8	1.088	38.8	25.7
9.25 (2x10)	39	1.8	1.388	49.6	20.2
11.25 (2x12)	47	1.8	1.688	60.3	16.6
13.25 (2x14)	56	1.8	1.988	71.0	14.1

Floored Attics—Closed Cavities That Are Not Compression Filled.

THICKNESS INCHES	R-VALUE	DENSITY LBS. PER CU. FEET	MINIMUM WEIGHT 1,000 SQ. FEET	BAGS PER 1,000 SQ. FEET	MAXIMUM SQ. FEET COVERAGE PER BAG
3.5 (2x4)	12	1.0	0.292	10.4	96.0
3.5 (2x4)	13	1.2	0.350	12.5	80.0
3.5 (2x4)	14	1.4	0.408	14.6	68.6
3.5 (2x4)	14	1.6	0.467	16.7	60.0
5.5 (2x6)	19	1.0	0.458	16.4	61.1
5.5 (2x6)	21	1.2	0.550	19.6	50.9
5.5 (2x6)	22	1.4	0.642	22.9	43.6
5.5 (2x6)	22	1.6	0.733	26.2	38.2
7.25 (2x8)	26	1.0	0.604	21.6	46.3
7.25 (2x8)	27	1.2	0.725	25.9	38.6
7.25 (2x8)	29	1.4	0.846	30.2	33.1
7.25 (2x8)	30	1.6	0.967	34.5	29.0
9.25 (2x10)	33	1.0	0.771	27.5	36.3
9.25 (2x10)	35	1.2	0.925	33.0	30.3
9.25 (2x10)	36	1.4	1.079	38.5	25.9
9.25 (2x10)	38	1.6	1.233	44.0	22.7

INSTALLATION FOR EXPOSED APPLICATIONS

Introduction

OPTIMA® is approved for use in the Blow-In-Blanket® System (BIBS®) and may be used for exposed applications such as the underside of roof decking under the following conditions. OPTIMA fiber glass insulation must be used in conjunction with OPTIMA fabric. By design, this system is not to be covered by any other material. This application should not be exposed to any ultraviolet light or any synthetic light source that produces ultraviolet light.

Note: it is the end-user's (homeowner, builder, contractor) responsibility to validate whether this system is suitable for use with any particular roof system.

FABRIC INSTALLATION

2x4 Constructions—Pillow Effect

The fabric is manufactured with a width of 27" to be applied to 2"x4" framework with 24" centers, leaving a slight pillow profile, thus providing an average installed thickness of 5¼" with a peak thickness of no less than 6½". This will yield a density of 1.8 pcf and R-Value of 22. In cases where the cavity width is less than 24" on center, apply the fabric in such a fashion to achieve an average installed thickness of 5½" thus leaving a slight pillow effect.

Steps to achieve pillow effect

1. Cut a piece of fabric to fit the cavity length.
2. Starting from the top, tack the sides (width) of the fabric flush with the outside of each of the left and right studs.
3. Staple every 1"–1½" vertically down the face of the stud, keeping staples at a 45° angle to the studs to better hold the fabric.
4. Some pleating of fabric may be required at the corners of each cavity due to the designed width of fabric as well as performance of the system.

2x6 Constructions—No Pillow Effect

When applying the fabric to 2"x6" framework with 24" centers, pull the fabric tight as the pillow effect is not necessary to achieve an installed thickness of 5½".

Insulation Installation

With the OPTIMA fabric in place, you are ready to fill the cavities with OPTIMA insulation. Since your ability to maneuver the hose within the cavity will depend on feed rate, and can affect density, experimentation is usually helpful. First consult the charts and the instructions on the bag, then test the density and adjust as necessary.

Steps

1. Make a small (approximately 4") incision in the fabric midway in one test cavity. On an 8' or less cavity, one hole may suffice; however, on a 9' or greater cavity, a second hole is recommended.
2. Insert the hose into the hole and fill from the bottom up, working the hose side to side as you go. For cavities with two holes, begin with the lower hole.
3. Upon reaching the hole, turn the hose 180° and fill from the top down while continuing to move the hose side to side.
4. Check insulation density:
 - If you have achieved target density as specified on the bag, proceed with step 5.
 - If the density is light, adjust your technique and/or machine settings, fill test cavity to specification, and proceed.
 - If density is heavy, adjust your technique and/or machine settings, leave test cavity as is, and proceed.
5. Now fill remaining cavities accordingly. If you have used only one hole per cavity, and cavities have not filled to the top, cut a second hole near the top of each cavity and add insulation to capacity.
6. Visually examine and/or feel each cavity. If you detect any voids or light density areas, make a small incision and fill further.

PVC Pipe Use

The use of PVC pipe (as rigid hose extension) for the installation of OPTIMA, exposed is optional, though recommended. A diameter of 2½" and a length of 4' to 6' with one end cut at a 60° angle is also recommended for longer cavities. PVC pipe is available at your local home improvement center.

GLOSSARY

Air Relief/Bypass Valve

The number of weights on, or adjustment to, this valve can affect product density. Air pressure also relates to length and type of hose and elevation.

Air Pressure

The measurement of air provided to the blowing machine by the blower. Usually measured in pounds per square inch (psi).

Agitator Arms

The arms which rotate inside the hopper, serving to break up material before it enters the shredder.

Bag Count

The specified number of bags required to insulate a given area. This is a critical factor in assuring the thermal performance of a blowing insulation by installing the proper weight per square foot.

Blow Back

Air pressure which escapes from the feeder back into the hopper and prevents the smooth flow of material into the shredder. This condition results from worn feeder seals.

Blower

The blower provides the air pressure necessary to move the blowing material from feeder through blowing hose. Its air relief cap uses either weights or an air bypass valve to regulate the amount of air pressure into the feeder.

Blowing Hose

The blowing hose delivers conditioned material from the blowing machine to the area where the insulation is to be installed. Since final product conditioning is accomplished in the hose, CertainTeed recommends using an internally corrugated hose. The hose length will affect both performance and density of the blowing insulation. Additional lengths of hose, when needed, may require additional air pressure to sustain material flow.

Blowing Machine

Pneumatic equipment designed to condition and install blowing insulation.

Density

The weight per cubic foot of blowing material, expressed in pounds per cubic foot (pcf).

Feed Rate

The rate at which blowing insulation passes through the blowing machine and hose, usually expressed in pounds per minute or minutes per bag.

Feeder (Airlock)

A series of rotating vanes inside a cylinder at the point where air is introduced to material to yield a desired material-air ratio. When well-maintained, the seals on these vanes prevent air leakage in each chamber.

Hopper

The box or holding tank located above the blowing machine's working components which holds material being fed into the machine. Most large blowing machines have hoppers designed to hold several bags of material, and work most efficiently when their hoppers are loaded near capacity.

Jack Shaft

The mechanism that transfers mechanical power from the machine's engine to its other components.

Product Conditioning

The process of opening and sizing the blowing material, essential to achieving the specified thermal performance.

R-Value

The measure of an insulating material's ability to resist the flow of heat. The higher the R-Value, the greater the insulating power. CertainTeed's blowing insulation installed at the proper weight per square foot, at or above the minimum thickness, achieves the R-Value specified.

Slide Gate

An adjustable gate which directly affects the feed rate of blowing material by controlling the amount of material entering/exiting the shredder. Located before or after the shredder, it is an important factor in proper material conditioning.

Shredder

The shredder conditions the material into a smaller, more uniform size, while also moving material to the feeder section at a constant rate.

Weight

The pounds per square foot necessary to achieve the desired R-Value as listed on the bag label.

CertainTeed is the right choice for your business.

THE RIGHT PRODUCTS.

CertainTeed has been making quality building products for more than 100 years and is part of the largest building materials company in the world, Saint-Gobain. We offer you a full line of fiber glass insulation products to meet the needs of your business and your customers.

And even though we've been doing this for a long time, we're always looking for new and better ways to improve our products and increase productivity. Many of our manufacturing plants are registered to ISO 9001:2000 standards. So you know you're getting the best products possible.

THE RIGHT PERFORMANCE.

Our fiber glass insulation products have achieved GREENGUARD® Certification for superior indoor air quality performance. This means our products will contribute very low levels of volatile organic compounds (VOCs) and other pollutants to the indoor environment.

THE RIGHT DELIVERY.

It's tough for you to sell something when it's not there. CertainTeed delivers product when we say we will—or we will credit you 3% of the invoice amount. Our Customer Bill of Rights guarantees it.

THE RIGHT PROGRAMS.

Our ultimate goal, of course, is to deliver the absolute best products and programs for your business. We offer solutions that streamline inventory and incentives to maximize sales as well as margins.

THE RIGHT SUPPORT.

We don't just sell insulation. We listen. We want to understand the unique needs of your business in order to deliver solutions that actually work. From our Building Science department to our dedicated sales team, we work to earn your trust and your business—order after order, year after year.



For questions regarding specifications, building codes and installation practices, contact our Technical Services Department at (800) 233-8990.

In addition to our residential fiber glass insulation products, CertainTeed offers a full line of commercial and HVAC insulation products.

ASK ABOUT OUR OTHER CERTAINTEED PRODUCTS AND SYSTEMS:

EXTERIOR: ROOFING • SIDING • WINDOWS • FENCE • RAILING • TRIM • DECKING • FOUNDATIONS • PIPE
INTERIOR: INSULATION • WALLS • CEILINGS

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