

CertainTeed  
**InsulSafe<sup>®</sup> SP**

Installation Instruction Manual



This installation instruction manual presents guidelines for installing InsulSafe® SP Fiber Glass Blowing Insulation using appropriate pneumatic blowing equipment.

CertainTeed has field-tested InsulSafe with most of the blowing machines designed to install fiber glass insulation. The information in this manual is based on that field testing and the recommendations of the major equipment manufacturers.

This manual covers the basics. Of course, we cannot cover all variables that 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

InsulSafe SP is a fiber glass blowing insulation specifically designed for pneumatic applications. It can be used for attic or ceiling plenums open blow, retrofitting existing wall or floor/ceiling cavities, and insulating behind netting or fabric in new construction using the Blow-In Blanket® System.

### **InsulSafe SP offers these benefits:**

- Thermally efficient
- Excellent sound control
- Noncombustible
- Won't settle
- Won't rot or decay
- Won't absorb moisture or support fungal growth
- GREENGUARD® Gold Certified
- Environmentally sustainable
- Formaldehyde-free

## HEALTH AND SAFETY

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

In particular, working with blowing machines requires additional 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. Also follow the safety precautions provided by your particular blowing machine manufacturer.

1. Take care when loading bags of insulation and other equipment onto your truck. Handle only one bag at a time, being sure to always use proper lifting techniques.
2. When loading the hopper, lift only one bag at a time. When opening each bag, always cut away from yourself.
3. Never overfill the hopper. Spillover material can pile up, affecting machine operation and creating an unsafe working environment.
4. Never put your hands, broom handles or other foreign objects into the hopper for any reason while the machine is in operation.
5. If you drop something into the hopper, always turn the machine completely off first. Use the machine emergency shut off switches to quickly stop the machine and avoid damage to the equipment.
6. Never adjust the machine with its engine running. Turn it completely off first.
7. Make sure the engine exhaust is vented to the outside of the truck and away from the blower air intake.
8. Always wear eye protection, a disposable dust respirator and ear protection when loading the machine, or even when standing nearby.
9. Always follow CertainTeed's recommended safety procedures, such as wearing a disposable dust respirator, when installing InsulSafe SP. Read the section called WARNING 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.

## GLOSSARY OF TERMS

### **Agitator**

The rotating shaft(s) located within the hopper to which paddles are attached for breaking apart the compressed insulation. The paddles move the material toward the auger or directly toward the shredder section.

### **Air Relief/Bypass Valve**

A device in line with the positive air pressure side of a blower that is used to regulate the air volume in use, typically controlled by a ball valve.

### **Arc Length**

The distance conditioned insulation is pneumatically thrown from the end of the blowing hose when held horizontally at waist height. Generally stated as a range in feet corresponding to the greatest thickness of accumulated insulation; i.e., 10 to 14 feet.

### **Area**

The amount of surface as defined by boundary measurements, job take-offs; expressed in square feet (sq.ft.). Net area to be insulated is total or gross area minus deductions for framing, openings and obstacles.

### **Bag Count**

The number of bags used to insulate the given area.

### **Blow Back**

Air escaping from the feeder (airlock) into the machine hopper caused by worn or damaged feeder vanes, seals or housing.

### **Blower**

A device that produces a current of air that is channeled through the vaned rotary airlock and blowing hose.

### **Blowing Machine**

An apparatus comprising mechanical and pneumatic components for the conditioning and installation of loose-fill insulation.

### **Coverage**

The maximum net area that a bag of insulation is designed to cover at or above the minimum thickness required for the specified R-value; expressed in square feet (sq.ft.).

### **Cupping**

Using a hand to direct the insulation as it leaves the end of the blowing hose. This should be minimized since it causes compaction of the conditioned material and always done wearing a glove.

### **Density**

The mass per unit volume of blown insulation; expressed in pounds per cubic foot (lbs./ft<sup>3</sup>).

### **Feeder (Airlock)**

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

### **Feed Rate**

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

### **Hopper**

The machine component containing space, agitators and augers for the expansion, preconditioning (opening) and movement of material toward the shredder section.

### **Drive (Jack) Shaft**

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

### **Joists**

The wood framing members in the floor/ceiling assemblies.

## **Overblow**

The condition that occurs when the product label maximum coverage is exceeded when installed at the minimum initial installed thickness.

## **Overusage**

The condition that occurs when more than the required number of bags are installed in order to achieve the R-value required minimum initial installed thickness. This condition results from underblowing the maximum label coverage.

## **Product Conditioning**

The process of opening and sizing the particles or nodules of insulation to achieve the specified installed coverage, thickness and thermal performance.

## **PTO**

Refers to the machine's source of power being taken off the blowing truck engine.

## **R-Value**

The measure of a material's resistance to heat flow. The higher the R-value, the greater the insulating power. Associated terms include thermal resistance (R-value), thermal resistivity (r/inch), and thermal conductivity (k-value); expressed in the following units:

$(ft^2 \times hr \times ^\circ F)/Btu$ ;  $(ft^2 \times hr \times ^\circ F)/(Btu \times in)$ ;  
and  $(Btu \times in)/(ft^2 \times hr \times ^\circ F)$ , respectively.

## **Shredder**

The final machine fiber conditioning component containing relatively high RPM rotating fingered or tined shafts or a single rotating shaft with stationary bars or rods.

## **Slide Gate**

The adjustable plate that changes the opening area into or out of the shredder section, thus controlling material feed rate and affecting product conditioning.

## **Underblow**

The condition that occurs when the product label maximum coverage is not achieved when installed at the minimum initial installed thickness.

## **Underusage**

The condition that occurs when less than the required number of bags are installed while achieving the R-value required minimum initial installed thickness. This condition results from overblowing the maximum label coverage.

## **Weight**

The mass per unit area of blown insulation necessary to achieve the desired R-value as listed on the bag label; expressed in pounds per square foot ( $lbs./ft^2$ ).

## BLOWING EQUIPMENT

While there are many pneumatic insulation machines available today, only certain ones are recommended for use with this product. Recommended initial machine settings for select machines, along with general settings guidelines, appear on the next page.

**In order to apply InsulSafe SP properly, the machine and hose you use must meet CertainTeed performance criteria of:**

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

**To meet these criteria, equipment normally requires:**

- An adequate shredding system comprising one or more relatively high RPM fingered shafts
- A gasketed and vaned rotary airlock feeder section
- A positive displacement type blower capable of providing at least 2 PSI air pressure
- A slide gate to control feed into and out of the shredder section
- Internally corrugated plastic blowing hose

## GENERAL SETTINGS GUIDELINES

The following general guidelines are applicable for most machines recommended for fiber glass applications by their manufacturers.

### Gate

Slide gates are typically one-half to fully open for open blow while one-half or less for cavity fill applications. Opening the slide gate increases material feed rate while closing does the opposite.

### Gear

Machines outfitted with transmissions or gear boxes offer a selection of four gear choices. Third or fourth gear is typically used for open blow while second gear is used for cavity fill applications. First gear produces the slowest machine component RPMs and fourth gear the fastest.

### RPM

The engine or PTO RPM should be operated within the guidelines provided by the machine manufacturer. Operating at the higher range of RPMs for attic open blow applications should ensure proper material output and conditioning, assuming other machine settings are adjusted properly. Lower range RPMs may be necessary to reduce air pressure for cavity fill applications.

### Hose

Use internally corrugated plastic blowing hose of a minimum length of 150 feet. Hose for attic open blow applications can be 3, 3½ or 4 inches inside diameter. The entire length can be the same diameter or the diameter can be stepped down, generally in 50-foot increments, starting at the machine airlock outlet. Cavity fill applications require additional length of hose to step down the hose diameter further to 2½ or 2 inches to accommodate the application nozzle.

### Air

Machine air pressure should be adjusted by either RPM changes or air relief valve setting (cap and weights or ball valve opening) to achieve a certain material arc length for attic open blow or safe, proper density cavity fill. When installing attic open blow and holding the hose waist high and horizontal, the conditioned material typically should land at least 12 feet from the end of the hose. In cavity fill applications, air pressure should be adjusted so as to avoid damage to the wall or fabric but still achieve product design density.

## BLOWING MACHINE AND HOSE EQUIPMENT SETTINGS:

MANUFACTURER MODEL	UNISUL <sup>®</sup> VOLU-MATIC	GENERAL MACHINE SETTINGS
<b>RPM</b>	Set in accordance with manufacturers' recommendations	
<b>Gear</b>	3rd	3rd (if applicable)
<b>Gate Opening</b>	14 in. with stator bars	Half to full open
<b>Air Pressure</b>	To achieve 10-14 ft. arc	Maximum or sufficient to achieve 12-15 ft. arc
<b>Blowing Hose Diameter x Length</b>	3-½ in. x 150 ft.	150 ft. of uniform diameter hose from outlet

## INSTALLING ATTIC OPEN BLOW

Open blow applications refer to those installations in residential or commercial buildings where the loose-fill insulation is installed pneumatically into attic and ceiling/roof plenum spaces onto flat, horizontal surfaces or sloped surfaces up to 6:12 pitch.

InsulSafe SP can be installed to any incremental R-value thickness up to a R-60 level. For R-values greater than R-60, contact your local CertainTeed representative.

1. Hold the blowing hose parallel to the floor and apply the insulation parallel to the floor rafters to prevent void areas and product compaction against framing members. The material arc length should typically be at least 12 feet when the blowing hose is held horizontal at waist height. Minimize hand cupping of the material to avoid densification and loss of coverage.
2. Do not overload the blowing machine hopper with material. Too long a material dwell time combined with agitation of the hopper components can overprocess the InsulSafe SP, creating smaller, denser particles that may install too quickly and not provide satisfactory coverage or clog the machine shredder or airlock components.
3. To ensure adequate material conditioning and velocity, tailor your material feed rate to the smaller diameter blowing hose in use; i.e., slower feed rate for 3-inch versus 3½-inch-diameter blowing hoses. Set up the blowing hose such that the smallest diameter hose is the longest in length.

## INSTALLING ATTIC OPEN BLOW (CONTINUED)

To ensure that the right amount of insulation is installed on each job, follow these steps:

1. Calculate the net area to be insulated by deducting batted areas, framing, access openings, ductwork and other obstructions from the gross area square footage.
2. Using the InsulSafe SP coverage chart, calculate the number of bags required to cover the net square foot area for the required R-value.
3. Install attic rulers, at least one for every 250 square feet. They should be positioned to be visible from the access opening.
4. Set up or verify the proper blowing machine settings and blowing hose. Load fresh material in the hopper, but do not overload.
5. Mentally divide the area into four sections and start blowing, using one-quarter of the bags for each section.
6. When you are finished, you should have installed the total number of bags required for the job at or above the initial installed thickness required to achieve the R-value. The hopper should either be empty or have only a minimum amount of insulation remaining to allow an accurate count of the number of bags used.

## GENERAL EQUIPMENT SETTINGS GUIDELINES

COMPONENT	COMMENT	ATTIC OPEN BLOW	
		SETTINGS	NOTE
<b>RPM</b>	Power source RPM (engine, PTO or motor) controls speed of all machine rotating components.	Per machine manufacturer (range 1050 to 1350 rpm)	When an operating RPM range is offered, the higher RPM may increase material feed rate and arc length.
<b>Gear</b>	Transmissions are 4-speed gear boxes. 1st gear (handle in and right) is slowest speed and 4th gear (handle out and left) is fastest speed. Speeds of hopper agitators, auger and airlock are controlled by gear setting.	3rd or 4th gear	Adjust slide gate as needed to control material flow.
<b>Gate</b>	Adjustable plate(s), with locking mechanism, located above or below the shredder section. Controls material feed through and conditioning within the shredder.	½ to ¾ open	Start with less open position, then open further if increased feed rate is desired.
<b>Air</b>	Air produced by the blower and controlled by air relief/bypass valve adjustment and/or engine RPM.	Sufficient for waist high, 10-14 ft. material arc length (may be shorter for smaller machines)	Start with higher air pressure setting to prevent hose blockage, then reduce to attain proper material arc length.
<b>Hose</b>	Internally corrugated plastic hose generally supplied in 50 ft. lengths connected using metal sleeves and hose clamps.	150 ft. length, minimum of 3-, 3½- or 4-in. inside diameter	Entire length can be same diameter or stepping down starting at machine airlock outlet. Maximize length of smaller diameter hose to ensure adequate material velocity and conditioning through the hose.



## COVERAGE CHART—OPEN ATTIC APPLICATION

The following thermal performances are achieved at the thicknesses, weights and coverages specified when insulation is properly installed with pneumatic equipment in a horizontal open blow application. Based on nominal 31-lb. bag.

R-VALUE	NO. BAGS PER 1,000 SQ.FT. NET AREA	MAXIMUM NET COVERAGE	MINIMUM WEIGHT	INITIAL INSTALLED THICKNESS	MINIMUM SETTLED THICKNESS
<b>To obtain a thermal resistance (R) of:</b>	<b>No. of Bags</b>	<b>Content of bag should not cover more than: (sq.ft.)</b>	<b>Weight per sq. ft. of installed insulation should not be less than: (lbs./sq.ft.)</b>	<b>Installed insulation should not be less than: (in.)</b>	<b>Installed insulation should not be less than: (in.)</b>
60	28.9	34.5	0.897	21.75	21.75
49	23.5	42.6	0.727	18.25	18.25
44	20.8	48.0	0.646	16.50	16.50
38	17.9	55.7	0.556	14.50	14.50
30	13.8	72.5	0.427	11.50	11.50
26	11.8	84.8	0.366	10.00	10.00
22	9.9	101.4	0.306	8.50	8.50
19	8.6	116.2	0.267	7.50	7.50
13	5.9	170.4	0.182	5.25	5.25
11	5.0	200.5	0.155	4.50	4.50

## TROUBLESHOOTING

This section is intended to help correct the most common problems associated with the installation of InsulSafe SP loose-fill insulation. These recommendations assume that the blowing machine and hose are in proper working condition.

### OPEN BLOW APPLICATIONS

PROBLEMS	CAUSES	RECOMMENDATIONS
<b>Low Coverage</b>	High material to air ratio not allowing proper material conditioning	<ul style="list-style-type: none"> <li>Decrease material feed or increase air pressure to achieve minimum 12-ft. arc length.</li> <li>Use larger diameter blowing hose; change 3-in. to 3½-in. or 3½-in. to 4-in.</li> </ul>
	Over-conditioning, breakdown of material in the blowing hopper	<ul style="list-style-type: none"> <li>Do not overfill the machine hopper.</li> <li>Reduce gear or power train RPM setting and open slide gate.</li> </ul>
	Compaction of the condition material	<ul style="list-style-type: none"> <li>Minimize hand-cupping or impact against roof, framing or other obstruction.</li> </ul>
	Compacted insulation material	<ul style="list-style-type: none"> <li>Observe material expansion out of package and break apart loaf of material as required.</li> </ul> <p><b>CAUTION — Do not reach into the machine hopper while operating.</b></p>
<b>Slow Productivity</b>	Low material feed rate	<ul style="list-style-type: none"> <li>Increase power train RPM, gear setting, gate opening and air pressure.</li> </ul>
	Air blow back past airlock seals	<ul style="list-style-type: none"> <li>If blow back seen, replace worn or damaged airlock seals.</li> </ul>
<b>Excessive Dust</b>	Low material-to-air ratio	<ul style="list-style-type: none"> <li>Reduce air pressure or increase material feed rate.</li> </ul>
<b>Excessive Static Electricity</b>	Low relative humidity ambient conditions; especially winter time cold climates	<ul style="list-style-type: none"> <li>Add moisture to the material in the hopper in the form of water or diluted antistatic solution; fabric softener.</li> </ul>
<b>Machine or Hose Plugged</b>	Excessive material flow into the shredder section	<ul style="list-style-type: none"> <li>Reduce hopper components agitation (lower gear or RPM), which causes over-processing of the material.</li> </ul>
	Low velocity flow through the blowing hose	<ul style="list-style-type: none"> <li>Eliminate dramatic step-downs in blowing hose; i.e., 4-in. to 3-in.</li> </ul>
<b>High Coverage</b>	Low material-to-air ratio	<ul style="list-style-type: none"> <li>Reduce air pressure or increase material feed rate.</li> </ul>

## INSTALLING BLOW-IN BLANKET® SYSTEM (BIBS®)

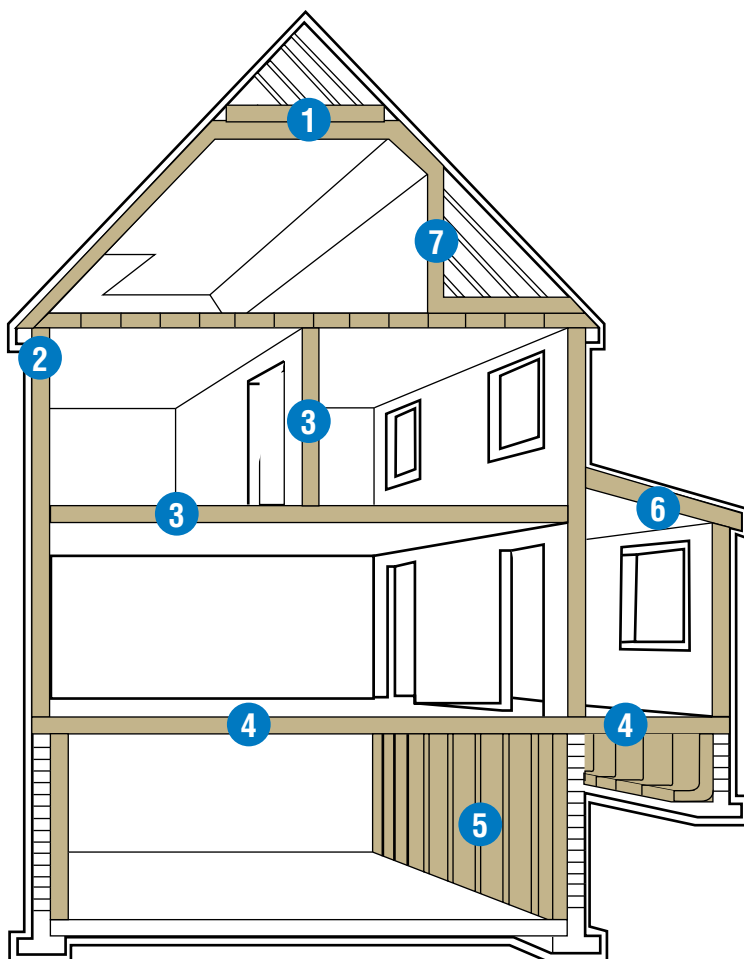
Blow-In Blanket applications refer to those installations in residential or commercial buildings where the InsulSafe SP is installed pneumatically into newly constructed building assemblies that have been covered, at least on one surface by a netting or non-woven fabric. The assemblies can be sidewall, cathedral or floor/ceiling.

For installed density information, review the InsulSafe SP sidewall chart.

### To properly install InsulSafe SP into BIBS, follow these steps:

1. Install mesh or fabric over the areas to be covered. Start at the top plate and staple every 1½ to 2 inches. Keep the mesh tight. Gluing with drywall adhesive is also acceptable.
2. Staple around the perimeter of windows and doors.
3. Staple across the bottom plate.

4. Cut holes in the mesh or fabric big enough to fit the hose end. Either one or two holes will be required depending on the cavity size. Usually one hole is sufficient for standard 93-inch cavities.
5. Insert the hose downward about 2 to 3 feet and start blowing, continuously moving the hose back and forth and gradually raising the hose as the cavity fills. When the bottom is filled, turn the hose and fill the upper portion.
6. If obvious light-density areas are observed, cut additional holes in the mesh or fabric and install additional insulation.
7. When starting to blow using InsulSafe SP with netting and adhesive, switch on the InsulSafe SP feed first and then the adhesive feed. When stopping, reverse the procedure.
8. Finally, cut mesh or fabric out around window and door openings and around utility boxes.



## AREAS IN YOUR HOME TO INSULATE WITH INSULSAFE

1. Attics and Ceilings
2. Exterior Walls
3. Interior Ceilings, Floors and Walls
4. Floors Over Unheated Spaces
5. Basement Walls
6. Cathedral Ceilings
7. Kneewalls

Please refer to local building codes for proper vapor barrier requirements.

## GENERAL EQUIPMENT SETTINGS GUIDELINES

COMPONENT	COMMENT	BLOW-IN BLANKET®	
		SETTINGS	NOTE
<b>RPM</b>	Power source RPM (engine, PTO or motor) controls speed of all machine rotating components.	Per machine manufacturer (range 1050 to 1350 rpm)	Do not exceed manufacturer recommendation since engine RPM drives the blower.
<b>Gear</b>	Transmissions are 4-speed gear boxes. 1st gear (handle in and right) is slowest speed and 4th gear (handle out and left) is fastest speed. Speeds of hopper agitators, auger and airlock are controlled by gear setting.	1st or 2nd gear	Adjust slide gate as needed to control material flow.
<b>Gate</b>	Adjustable plate(s), with locking mechanism, located above or below the shredder section. Controls material feed through and conditioning within the shredder.	1/3 to 2/3 open	Start with less open position, then open further if increased feed rate is desired.
<b>Air</b>	Air produced by the blower and controlled by air relief/bypass valve adjustment and/or engine RPM.	Sufficient to avoid hose plugging and disperse fiber behind the fabric	Start with low air pressure, then adjust depending on material fill density.
<b>Hose</b>	Internally corrugated plastic hose generally supplied in 50-ft. lengths connected using metal sleeves and hose clamps.	200-ft. length, with minimum of 25 ft. reduced to diameter of tube or hose nozzle	

## COVERAGE CHART—BLOW-IN BLANKET® APPLICATION

When properly installed with pneumatic equipment, the following thermal performance is achieved at the thicknesses, weights and coverages specified. Based on a nominal 31-lb. bag.

THICKNESS (in)	R-VALUE (hr·ft <sup>2</sup> ·°F/btu)	DENSITY (lbs./ft <sup>3</sup> )	MAXIMUM COVERAGE PER BAG (ft <sup>2</sup> )	MINIMUM NUMBER OF BAGS FOR 1,000 FT <sup>2</sup>	MINIMUM WEIGHT (lbs./ft <sup>2</sup> )
3.5 (2x4)	14	1.2	88.6	11.3	0.350
3.5 (2x4)	15	1.6	66.4	15.1	0.467
5.5 (2x6)	22	1.2	56.4	17.7	0.550
5.5 (2x6)	23	1.4	48.3	20.7	0.642
5.5 (2x6)	24	1.8	37.6	26.6	0.825
7.25 (2x8)	29	1.2	42.8	23.4	0.725
7.25 (2x8)	31	1.6	32.1	31.2	0.967
9.25 (2x10)	38	1.4	28.7	34.8	1.079
9.25 (2x10)	40	1.8	22.3	44.8	1.388
11.25 (2x12)	45	1.2	27.6	36.3	1.125
11.25 (2x12)	48	1.6	20.7	48.4	1.500
13.25 (2x14)	55	1.4	20.1	49.9	1.546
13.25 (2x14)	56	1.5	18.7	53.4	1.656
13.25 (2x14)	56	1.5	18.7	53.4	1.656

## INSTALLING CAVITY RETROFIT

Cavity retrofit applications refer to those installations in residential or commercial buildings where the loose-fill insulation is installed pneumatically into existing, enclosed construction assemblies (either sidewall or floor/ceiling).

For installed density information, review the InsulSafe SP sidewall chart.

1. Check structural soundness of wall facings. Facings can be damaged by blowing pressure if they are weak or loosely attached. Do not begin insulating until suspect facings are corrected. Since InsulSafe SP can be installed from either the outside or inside, this applies to both wall surfaces.
2. Check for symptoms of moisture problems such as blistering paint, mildew, staining and odor on interior or exterior wall surfaces. Any such problem should be brought to the owner's attention.
3. Check for fire stops. If present, they will be at mid-height and holes must be drilled above and below these obstructions.
4. Note and mark all areas that must not be drilled (location of wall ducts, vents, recessed cabinets and service panels).
5. Make certain all wall openings through which insulation could enter the living space are sealed.
6. Determine whether the exterior will permit an exterior installation (siding and stucco exteriors) or if interior installation is best (brick and stone exteriors).

The recommended method for insulating sidewalls with InsulSafe SP is the directional nozzle method.

In this method, air pressure must be reduced substantially compared to open blow technique to ensure that no damage is done to the sidewall.

The blowing machine should be equipped with an air relief valve. The actual setting of the equipment will vary depending on the type of hose, equipment limitations and job conditions. When properly filled, wall cavities should have a minimum density of 1.6 lbs. per cubic foot. Your CertainTeed representative can instruct you on how this can be tested.

### **After the above procedures have been completed, follow these steps:**

1. Drill two 2-inch to 2½-inch-diameter holes (depending on the size of the plugs you will be using) into each stud cavity, one hole 3 feet up from the base of the wall and one hole 2 feet down from the top plates. Don't blow more than 3 feet down or 2 feet up from any hole.
2. Drill holes into cavities below windows and into cavities above windows when there is no solid header.
3. Use internally corrugated plastic blowing hose of a minimum length of 150 feet. Hose for attic open blow applications can be 3-, 3½- or 4-inch inside diameter. The entire length can be the same diameter or the diameter can be stepped down, generally in 50-foot increments starting at the machine airlock outlet. Cavity fill applications require additional length of hose to step down the hose diameter further to 2½ or 2 inches to accommodate the application nozzle.
4. Insert the nozzle into the lower hole first and blow downward and then upward until the material flow stops. Remove the nozzle and place it into the top hole. Blow upward and then downward until the material flow stops, indicating the cavity is completely filled.

## GENERAL EQUIPMENT SETTINGS GUIDELINES

COMPONENT	COMMENT	CAVITY RETROFIT	
		SETTINGS	NOTE
<b>RPM</b>	Power source RPM (engine, PTO or motor) controls speed of all machine rotating components.	Per machine manufacturer (range 1050 to 1350 rpm)	Do not exceed manufacturer recommendation since engine RPM drives the blower.
<b>Gear</b>	Transmissions are 4-speed gear boxes. 1st gear (handle in and right) is slowest speed and 4th gear (handle out and left) is fastest speed. Speeds of hopper agitators, auger and airlock are controlled by gear setting.	1st or 2nd gear	Adjust slide gate as needed to control material flow.
<b>Gate</b>	Adjustable plate(s), with locking mechanism, located above or below the shredder section. Controls material feed through and conditioning within the shredder.	One third to two thirds open	Start with less open position, then open further if increased feed rate is desired.
<b>Air</b>	Air produced by the blower and controlled by air relief/bypass valve adjustment and/or engine RPM.	Sufficient to avoid hose plugging with some back pressure	Start with low air pressure, then increase if wall integrity allows and higher material density is needed.
<b>Hose</b>	Internally corrugated plastic hose generally supplied in 50-ft. lengths connected using metal sleeves and hose clamps.	200-ft. length, with minimum of 25 ft. reduced to diameter of nozzle	

## COVERAGE CHART—CAVITY RETROFIT APPLICATION

When properly installed with pneumatic equipment in wall cavities, the following thermal performance is achieved at the thicknesses, weights and coverages specified. Based on a nominal 31-lb. bag.

CAVITY FRAMING INSTALLED THICKNESS	INSTALLED R-VALUE	INSTALLED DESIGN DENSITY	MAXIMUM COVERAGE PER PACKAGE	MINIMUM PACKAGES PER AREA	MINIMUM WEIGHT PER UNIT AREA
in.	(hr·ft <sup>2</sup> ·°f)/btu	lbs/ft <sup>3</sup>	ft <sup>2</sup>	bags per 1,000 ft <sup>2</sup>	lbs/ft <sup>2</sup>
3-1/2 (2x4)	14	1.2	88.6	11.3	0.350
3-1/2 (2x4)	15	1.6	66.4	15.1	0.467
5-1/2 (2x6)	22	1.2	56.4	17.7	0.550
5-1/2 (2x6)	24	1.8	37.6	26.6	0.825
7-1/4 (2x8)	29	1.2	42.8	23.4	0.725
7-1/4 (2x8)	31	1.6	32.1	31.2	0.967

## TROUBLESHOOTING

This section is intended to help correct the most common problems associated with the installation of InsulSafe SP loose-fill insulation. These recommendations assume that the blowing machine and hose are in proper working condition.

## CAVITY RETROFIT APPLICATIONS

PROBLEMS	CAUSES	RECOMMENDATIONS
<b>Surface Bowing or Cracking</b>	Excessive air pressure built up in cavity	<ul style="list-style-type: none"> <li>Reduce air pressure and withdraw nozzle sooner.</li> </ul>
<b>Low Coverage</b>	Installation density too high	<ul style="list-style-type: none"> <li>Reduce air pressure and/or withdraw nozzle sooner.</li> </ul>

## **JOB CHECKLIST:**

### **Personal Safety Equipment**

- \_\_\_ Hard hat (as required)
- \_\_\_ Eye protection
- \_\_\_ Disposable respirator (dust mask)
- \_\_\_ Hearing protection
- \_\_\_ Safety shoes or work boots
- \_\_\_ Work gloves
- \_\_\_ Appropriate clothing

### **Materials**

- \_\_\_ Attic/installation cards
- \_\_\_ Attic rulers
- \_\_\_ Attic baffles
- \_\_\_ Blowing hose  
(minimum 150 feet total + hose clamps and screw or nut-driver)  
Diameters: \_\_\_ 4-inch; \_\_\_ 3½-inch;  
\_\_\_ 3-inch; \_\_\_ 2½-inch; \_\_\_ 2-inch
- \_\_\_ Installation nozzle or tube
- \_\_\_ Duct tape
- \_\_\_ InsulSafe SP packages
- \_\_\_ Job ticket  
(listing job net area, R-value, min. bags required, installation thickness)
- \_\_\_ Ladder – stepladder
- \_\_\_ Light – flashlight or droplight + extension cord
- \_\_\_ Map and directions to job site or GPS
- \_\_\_ Remote control and cord
- \_\_\_ Staple gun (tack hammer or pneumatic gun) and staples
- \_\_\_ Tape measure
- \_\_\_ Utility knife
- \_\_\_ BIBS fabric

### **Pre-Installation**

- \_\_\_ Site inspection to:
  - \_\_\_ confirm job ticket details
  - \_\_\_ determine building readiness for installation
  - \_\_\_ determine point(s) of access
  - \_\_\_ decide where to park blow truck
  - \_\_\_ decide where and how to lay out blowing hose
- \_\_\_ Park blow truck
- \_\_\_ Place ladder at access point
- \_\_\_ Open attic access (open blow)
- \_\_\_ Visually inspect the attic (open blow)
- \_\_\_ Install attic baffles (open blow)
- \_\_\_ Install attic rulers (open blow)
- \_\_\_ Set up lighting (open blow)
- \_\_\_ Lay out blowing hose and remote control—  
from truck into the starting point in the attic
- \_\_\_ Set up the blowing machine (attach blow hose  
and set gear, gate and air relief valve)
- \_\_\_ Load material into the blowing machine hopper
- \_\_\_ Start the blowing machine and set engine/PTO RPM

### **Post Installation**

- \_\_\_ Attach or provide completed application card
- \_\_\_ Replace access hatch or cover (open blow)
- \_\_\_ Plug and patch holes (retrofit cavity fill)
- \_\_\_ Replace siding (retrofit cavity fill)
- \_\_\_ Remove blow hose and remote control
- \_\_\_ Clean up any scraps of insulation
- \_\_\_ Replace anything moved prior to the installation
- \_\_\_ Place all equipment, insulation or other materials  
used into the blow truck
- \_\_\_ Close and secure the blow truck box doors

## CONTRACTOR EQUIPMENT AND SET-UPS

Contractor \_\_\_\_\_

Location \_\_\_\_\_

Truck/Rig # \_\_\_\_\_

Crew \_\_\_\_\_

### Blowing Machine

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial # \_\_\_\_\_

Year of mfg. \_\_\_\_\_

Modifications \_\_\_\_\_

### Blowing Hose

Supplier \_\_\_\_\_

Manufacturer \_\_\_\_\_

Type \_\_\_\_\_

### Equipment Set-Ups (initial & date settings)

Open Blow					
RPM	Gear	Gate	Air	Hose	Technique

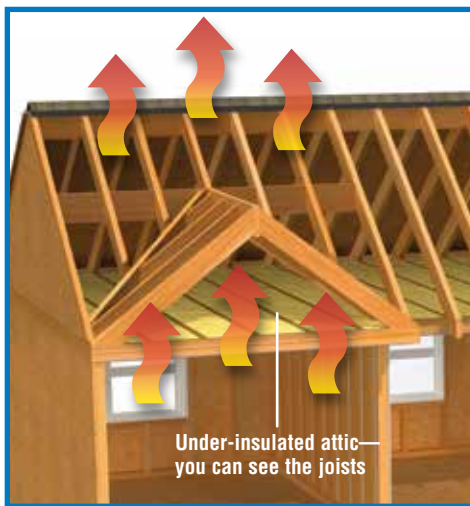
Blow-In-Blanket®					
RPM	Gear	Gate	Air	Hose	Technique

Retro-Fit Cavity					
RPM	Gear	Gate	Air	Hose	Technique

## GREAT POTENTIAL IN THE INSULATION RETROFIT MARKET

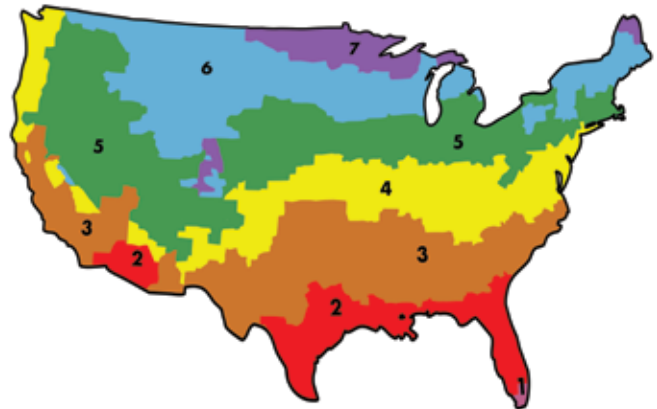
- 46 million U.S. homes either have no insulation at all in the attic or are woefully under-insulated.
- Adding attic insulation is the most effective way to improve home energy efficiency.

### 25% of energy is lost through the roof\*



\*Energy Information Administration

## ATTIC INSULATION LEVELS



Zone	Department of Energy Recommendations	CertainTeed's Recommendations	2012 IECC Requirement**
1	R-30 to R-49	R-49	R-30
2	R-30 to R-60	R-60	R-38
3	R-30 to R-60	R-60	R-38
4	R-38 to R-60	R-60	R-49
5	R-49 to R-60	R-60	R-49
6-8	R-49 to R-60	R-60	R-49

\*\*Minimum requirement for federal tax credit eligibility

R-values reflect the ability of insulation to resist the flow of heat, out of a home in the winter and into a home in the summer.

The higher the R-value, the greater the insulating power and the greater the potential energy savings.

A higher R-value also ensures a more comfortable home by maintaining an optimal temperature range in the home.



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