TIMBERFILL

Dense Pack & Attic Blanket Insulation

Installation Guide

General guidelines for TimberFill attic, wall, ceiling, and floor installations

You can find additional instruction and guidance in our technical videos available on our website: www.timberhp.com

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TimberHP has received confirmation from ICC Evaluation Service, LLC (ICC-ES), that its TimberFill™ complies with the provisions of the 2021, 2018 and 2015 International Building Code ® (IBC) and the 2021, 2018, and 2015 International Residential Code ® (IRC).

This confirmation, as evidence in ICC-ES evaluation report ESR-5203, provides guidance to code officials faced with approving the use of TimberFill™ under these codes. The evaluation report is available online at www.icc-es.org.

Wood Fiber Insulation, Made in America

For over two decades, European manufacturers have been producing a new generation of wood fiber insulation to meet the increasing performance and sustainability demands of the construction industry. TimberFill is the first of our high-performing product lines manufactured in North America at our Madison, Maine facility. TimberHP offers comprehensive insulation solutions that are affordable, easy and safe to install, and deliver performance attributes distinct from all other traditional insulating options.

TimberHP Elevates Performance

TimberHP's line of blown-in, batt, and board insulations originate from softwood chips left over from lumber production and forestry practices. TimberFill, TimberBatt, and TimberBoard can stand alone as drop-in replacements for other above-grade insulation products, or they can work together for a complete thermal and acoustic solution. Wood fiber insulation allows the creation of resilient designs to achieve industry-leading building envelope and sound performance while supporting healthy indoor air quality and addressing our impact on the environment. TimberHP products are renewable and recyclable, free of toxins and abrasive fibers, and arrive at the jobsite carbon negative.

Insulate Better. Live Better.

TIMBER + HP =

High Performance
Healthy Planet
Healthy People

High Performance

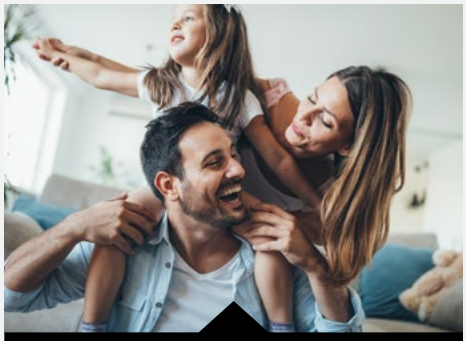
Building envelope, thermal, and acoustic solutions

A comprehensive, above-grade product line to create wind-tight, vapor-open assemblies offering stable, long-term R-values, improved temperature stability, and premium sound protection

Healthy Planet

Recyclable, renewable, non-toxic, and carbon negative

Made from residual wood chips to maximize the use of our renewable forest resource. As a high-value insulator with a negative carbon footprint, reduces a building's global warming potential on day one and everyday it operates



Healthy People

Moisture managing, safe, and sound absorbing

Installers benefit from the absence of dangerous fibers that harm skin and negatively impact air quality. Leads to the creation of safe, quiet indoor habitats, free of airborne toxins and trapped humidity

PRODUCT FACT SHEET

TimberFill by TimberHP

TECHNICAL DATA

Description	Wood Fiber Blown-In Insulation
Fire Protection	ASTM E84 Class A Flame / Smoke (Borate)

LOOSE-FILL ATTIC BLANKET APPLICATION 25lbs (11.3kg) - TimberFill

R-Value at 75ºF Mean Temp	Minimum Thickness (inches)		Net Coverage (no adjustment for framing)			Net Coverage (adjusted for 2x6" framing on 16" centers)	
	Inital Installed Thickness	Settled Thickness	Maximum Sq. Ft. per Bag	Minimum Bags per 1,000 Sq. Ft.	Minimum Weight per Sq. Ft.	Maximum Sq. Ft. per Bag	Minimum Bags per 1,000 Sq. Ft.
11	3.8	3.4	67.8	14.8	0.37	74.8	13.4
13	4.4	4.0	56.5	17.7	0.44	62.4	16.0
19	6.3	5.7	37.7	26.6	0.66	41.4	24.2
22	7.3	6.6	32.3	31.0	0.77	35.0	28.6
24	8.0	7.2	29.4	34.0	0.85	31.7	31.5
26	8.6	7.8	27.1	36.9	0.92	29.0	34.5
30	9.9	8.9	23.3	42.9	1.07	24.7	40.4
32	10.6	9.5	21.8	45.9	1.15	23.1	43.4
38	12.5	11.3	18.3	54.8	1.37	19.1	52.3
40	13.2	11.9	17.3	57.8	1.44	18.1	55.3
45	14.8	13.4	15.3	65.2	1.63	16.0	62.7
48	15.8	14.2	14.4	69.7	1.74	14.9	67.1
49	16.1	14.5	14.1	71.2	1.78	14.6	68.6
50	16.5	14.8	13.8	72.6	1.82	14.3	70.1
55	18.1	16.3	12.5	80.1	2.00	12.9	77.6
60	19.7	17.8	11.4	87.5	2.19	11.8	85.0
70	23.0	20.7	9.8	102.4	2.56	10.0	99.9

Installed attic thicknesses for this chart were determined according to ASTM C1374. Please use for estimating purposes only. Jobsite conditions, application method, equipment, settings, and hose length can influence coverage.

DRY DENSE-PACK SIDEWALL & FLOOR APPLICATION
25lbs (11.3kg) - TimberFill (3.0 pcf minimum installed density)

Framing	Thermal Resistance (R-Value)	Installed Thickness (Inches)	Minimum Wt Per Sq. Ft. lb/ft²	Maximum Coverage per Bag (Adjusted for Framing)	
				16" o.c. ft²/Bag	24" o.c. ft²/Bag
2x4	13	3.5	0.88	32.9	31.4
2x6	21	5.5	1.38	20.9	20.0
2x8	28	7.25	1.81	15.9	15.2
2x10	35	9.25	2.31	12.4	11.9

Environmental conditions, application and technique will influence coverage and as actual results may vary, coverage is not guaranteed by the manufacturer. R means resistance to heat flow. The higher the R-value, the greater the insulating power. Per our SDS, keep a clean jobsite and use mechanical ventilation to minimize dust levels during application. Use safety eyewear and a NIOSH-approved N95 particulate respirator. This product does not contain asbestos, fiberglass or formaldehyde in its manufacturing process. This coverage chart was produced using a Volumatic III blowing machine at Air = 2.0 PSI (end of hose), Gate = 8, 3rd Gear. Additional safety information and installation instructions can be found at www.timberhp.com/TimberFill

To get the marked R-value, it is essential that this insulation be installed properly.

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1 How To Use This Guide

The effectiveness of the thermal, acoustic and fire performance of this product is dependent on proper installation. Recommendations in this guide suggest best practices for TimberFill installation in many common applications. It is intended to assist veteran installers new to wood fiber, as well as those who may be unfamiliar with blowing fiber. We encourage installers to seek additional training to ensure safe and proper application. Exact requirements for each job will vary. Use professional judgment to address specific design and installation needs to achieve the desired performance.

Please familiarize yourself with machine maintenance and operation according to the blowing machine manufacturer's specifications before attempting to install TimberFill. While concepts are the same for each machine, individual manufacturer's documentation should be followed for best performance and to ensure operator safety. Guaranteeing your blowing equipment is in good working order allows for quality installations that maximize coverage in attics and ensure self-supporting densities in enclosed cavities.

Accompanying videos to this guide can be found at www.timberhp.com/install

2 Health & Safety

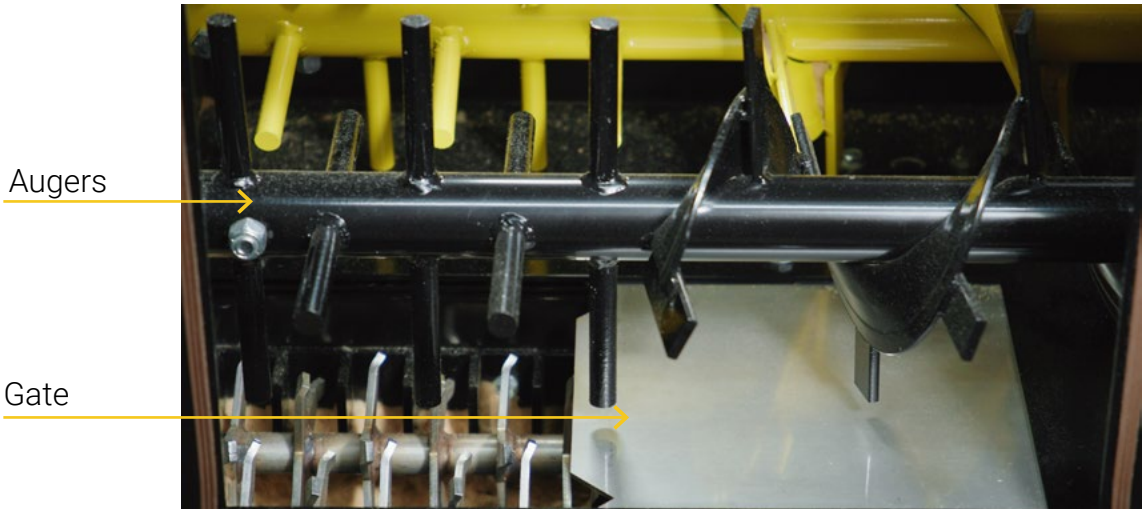
As with all blowing fibers, particulates may become airborne. Protect yourself with a nuisance dust mask. Unlike other fibers made of minerals or glass, skin contact with TimberFill is not a concern unless you have a sensitivity to softwood fiber. More information can be found in our Safety Data Sheet.

Safety Data Sheet can be found at on our website.

3 Machine Calibration & Use

Environmental conditions, particularly humidity, can affect installation and coverage. Distance or elevation from the machine also influences settings. For all installs, proper settings will balance speed of installation and quality and performance of the insulating fiber. As with all blow-in insulation products, TimberFill is compressed for shipping and storage. The blowing machine has the job of loosening and conditioning the fiber for installation from the augers, as well as the proper length hose which is an important part of the conditioning process. We recommend always using at least 100 feet of hose for all installs.

The augers break up cubes and move material into the airlock regulated by an adjustable plate called a gate. The more open the gate, the more material flows through it. The airlock can be thought of as a revolving door in a commercial building. The gate allows a measured amount of material in, and the airlock moves that material around until it reaches the high-pressure from the blower. The amount of air provided by the blower is also adjustable. This air creates the pressure needed to move the fiber through the hose to its destination. Gate and air speed settings vary depending on the type of install.



In a loose blown attic, the installer wants an open gate combined with considerable airflow to move fiber quickly through the hose projecting the fiber out away from the installer covering a broad area.

For attic or open-blow installations, the fiber needs to be conditioned properly to ensure good coverage. In balancing air and feed, you can optimize install time and minimize unnecessary airborne particulates. TimberFill's longer fiber structure reduces nuisance dust concerns as it settles faster than other fibers. For enclosed cavity applications installers want to ensure the correct density is achieved to reduce rush of fiber settling. By dialing in machine settings according to environmental conditions, installers can easily achieve self-supporting installs with TimberFill.

3.1 Measuring Machine Back Pressure

Using a pressure gauge (see tools) to check the hose run and machine airlock serves to improve quality of installations. Understanding hose/machine pressure helps to calibrate the machine for dense packing (discussed later), reducing the potential for cavity damage from excess pressures on drywall and other finished surfaces. Using back pressure as a metric can also help you monitor the condition of airlock seals. As seals wear, air escapes into the hopper instead of pushing material out of the machine which limits blowing distance or impedes achieving

desired density for the application. It can also reduce the amount of conditioning taking place in the hose due to low pressure, reducing yield and increasing the possibility of clogs. Back-pressure should range from a minimum of 3.0 to 3.5 psi.

◄ Machine adjustments help optimize yield

4 Attic Installation

4.1 Preparation

Before installing TimberFill in an attic, please take time to ensure that air sealing of the area has been completed, and proper clearances to heat sources such as recessed lighting or combustion vents and chimneys are set. Recessed lights need to be protected unless they are rated for insulation contact (IC). Place attic rulers every 300 sqft, to meet code requirements and help guide consistent installation levels. Refer to the attic card and count TimberFill cubes as you install to ensure proper converage.

◄ Creating a dense attic blanket in a ventilated roof assembly

4.2 Casting Method or Open Blow Install

With open-blow installations, the installer uses the power of the blowing machine to transport and broadcast TimberFill throughout the attic space. This method allows for application when maneuvering in an attic is difficult or access is restricted.

Set the machine air and feed as appropriate for the distance and elevation of the space from the machine. Machine settings should also be adjusted to cast the material away from the installer at least 3-4 feet while minimizing the amount of airborne fines produced from over blowing. Over blowing the material can make it more difficult for the installer to see what is happening, leading to inconsistent and less tidy installations.

Installation in an open attic ▶

4.3 Direct Placement

With the direct placement method fiber is installed at a target settled density instead of installed density meaning little if any settling will occur. By allowing the material to build up in the area directly under the hose, the installer has greater control of the material, and the work area will remain clean with accurate installation levels. This method is useful in tighter spaces allowing more control by the installer.

Direct placement method providing better control ▶

5 Dense Packing

5.1 Objective and Tools

TimberFill delivers unmatched performance when used to dense pack walls and closed cavities in new construction and retrofit applications. The robust, interlocking fibers create tight assemblies to minimize airflow while addressing thermal and acoustic needs. Gradual hose reduction from the machine minimizes the chance for clogging and maximizes conditioning. Depending on application a wall tube or lance can be used.

5.2 New Construction Open Cavity

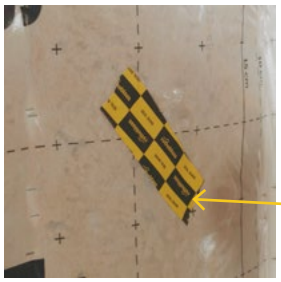
Dense packing in an open cavity is achieved by covering the framing with a thin breathable webbing that allows air pressure to escape while installing TimberFill. Webbing is best installed tightly with a pneumatic staple gun, so the final interior finish material, typically gypsum wallboard, can be easily applied.

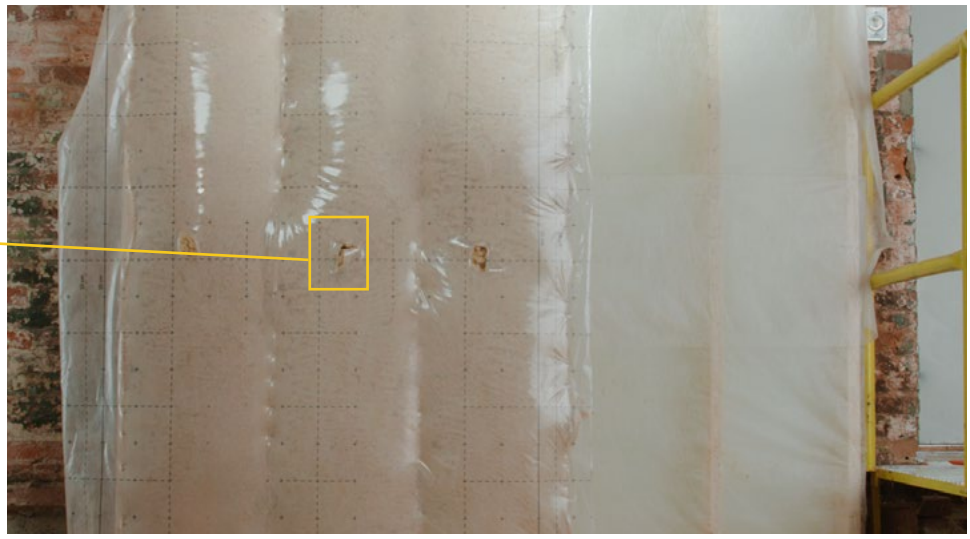
◄ Air permeable webbing being installed on the face of wall framing

Specialty interior air seal and vapor management smart membranes can also be used instead of webbing. These membranes limit airflow from the cavity during application which can slow installation and inhibit adequate fiber coverage.

Providing 2-3" pressure relief cuts at the corners of the cavity helps accelerate the installation but does require the installer to spend additional time taping these penetrations after dense packing.

Given the amount of taping needed to restore the integrity of the air membrane, and to speed up application it is often best to install TimberFill behind a breathable webbing and then apply the smart membrane afterwards.





▲
Pressure relief cuts in a smart membrane require taping after dense-pakck install.

Alternatively, installers can opt to install behind a breathable membrane and add the smart membrane layer afterwards.

Whether behind webbing or behind a membrane, the cavity can be tubed with a hose or lance to ensure insulation makes it into all corners. When tubing a wall, it is best to get within 18" of the ends of the cavity to achieve appropriate density.

Starting mid way at a comfortable working level, insert tube or lance to the bottom of the cavity and work upwards as the machine backs up indicating proper density. Switch directions and work from the top backing down until at the insertion point. Turning off the feed but leaving air can help to finish this area and reducing spill over. Walls over 10' may need multiple insertion points to get proper density. If there is excessive bulging of the webbing, a wall roller can level out the surface.

Using a "lance" or "needle" to fill cavities ►

5.3 Retrofit - Enclosed/Blind Cavity

TimberHP wood fiber assemblies remain vapor open but windtight, never trapping moisture which is ideal in retrofit work. Wood fiber insulation can also help prevent moisture damage and limit heat gain and heat loss like no other thermal solution on the market.

Retrofit work with TimberFill can be done successfully even when the installer cannot see what is inside the cavity. By working from the outside, living spaces are left undisturbed. Plumbing, wiring, blocking, and other impediments, as well as the length and depth of cavities, can be determined or approximated with a little detective work.

Fully-filled cavities installed at the correct density produce self-supporting fiber assemblies that reduce airflow and eliminate any chance for settling over time. The concepts are the same as a new construction wall. Work from the bottom up to the installation hole and then top down until full fill and proper density is achieved.

To learn more about wood fibers ability to resist heat gain visit our watch our Summer Heat Protection demonstration video here.

5.4 Floor and Ceilings

The process is the same for new or existing installations with floors, ceilings, and other enclosed cavities. Behind webbing or hard finished surfaces, TimberFill can be installed in any size cavity. Often floor and ceiling cavities are deeper and longer than most wall cavities. Increased pressures and slightly higher target densities will help achieve an overall average density that is acceptable and self-supporting. Higher densities will also reduce unwanted air flow.

In long runs, such as a roof slope or floor spanning the building, even when a hose can be run at distance within the cavity, it is recommended to touch up areas in intervals where the installer gets better feedback from the machine and material closer to the installation. This means multiple access points along an enclosed cavity exceeding 8 feet.

5.5 Cathedral Ceilings

Some buildings have little or no attic space where ceiling and roof framing create assemblies that are at least partially, if not fully, unventilated. These assemblies are often found in homes where the roof area is second floor living space or in buildings with vaulted or cathedral ceilings.

Achieving adequate R-values in vaulted or cathedral ceilings can be difficult. The International Residential Code (IRC) allows for **500 square feet or 20% of the total insulated ceiling area, whichever is less, to be insulated at R-30**. With TimberFill, the cavity must be roughly 8” deep to achieve R-30. Refer to code specifics for your area.

For applications where the whole ceiling or large sections are the thermal barrier, ensure that the proper R value can be met. This can be achieved by a filled cavity or by splitting the insulation above and below the roof deck depending on code requirements. TimberBoard can be installed above the deck to add R-value and reduce thermal bridging, which also helps to control condensation within cavities. Refer to code requirements.

6 Density Test

Before approaching a project, we recommend performing a density test using a cavity/box of known volume that can be weighed. This approach not only calibrates the machine settings but is a useful tool for installers to familiarize themselves with the reaction of the fiber during installation. Most small to mid-size machines can be set to a preferred density by adjusting air and feed so the fiber flow backs up as density is reached. By experimenting with a test box, you can arrive at a range of settings yielding installations at different densities.

1. Box of known volume.
2. Weigh before.
3. Install Fiber.
4. Weigh afterwards.
5. Subtract the difference.
6. Divide by the volume of the box equals pounds per cubic foot density installed.

As a quality assurance test, core sampling can be done in attics and walls as needed to monitor fiber density. Using a cylinder of a known volume can be used to core the installation and that sample is weighed. Due to a greater margin of error in a small sampling, it is ideal to take several core samples in a wall. This is more common in new construction where the installed fiber is readily accessible.

7 Tools and Accessories

Pressure Gauge

The pressure gauge is to check your pressure at the machine or at the end of the hose. This gauge is compatible on any insulation blowing equipment.

Wall Tubing

This wall tubing comes in summer (green) and winter (blue) grades. Summer grade is just right for warm days while the all-weather can be used anytime. W inter grade is best when temperatures fall below 40 degrees as it remains flexible in sub-zero temperatures.

Steel Hose Reducer

These insulation hose reducers can be used for connecting different sized blowing or vacuum hoses together. Two hose clamps are recommended for each connector.

Pocket Roller

This is used to pack the insulation behind the fabric after it's been blown in to pack it just below the studs. Fits between 16" centered studs.

Heavy-Gauge Pneumatic Stapler

These are used for applying netting and fabrics. This stapler will take a heavier gauge 1/2" crown staple. Shooting up to 1700 staples per minute, it is much quicker and will save you time on all jobs over hand tackers.

Webbing/Netting

Made from point-bonded spun-bonded polypropylene, insulation netting is resistant to water, moisture, and mold growth. The insulation roll is easy to install and can be used in various applications, including walls, attics, and floors.

Attic Card

This insulation has been installed in conformance with the above recommendations, to provide a value of R- _____ using _____ bags of this insulation to cover _____ square feet of area.

Builder/Client Signature:
Company Name:
Date:
Applicator's Signature:
Company Name:
Date:

Building Project
Project Name:
Address:
Town:
Zip:

Component	Component Thickness	Net Insulation Area	Injected Quantity	Injected Bulk Density	Target Bulk Density

Notes:

Manufactured by:

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Introducing TimberFill by TimberHP Wood fiber insulation made in America.

Building our Legacy through Performance.

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