
General Installation Guidelines for



Eighth Edition – Revised March 2015



Contains 100% recycled paper
M – an official mark of Environment Canada

MANUFACTURED BY:

CCI Manufacturing Inc.

Office: 16355-130 Avenue, Edmonton, Alberta T5V 1K5
Phone (780) 453-3610 Fax (780) 447-2443

www.weathershield.ca

1-888-269-6977



APPLICATION CHARTS

Weathershield™ Loose-fill CFI

REVISED – Issued NOVEMBER 2008



WS11*

11.5 kg (25.4 lb.) Package – Available Attic Installation Volume = 16.35 ft³ (0.463 m³) per Bag

COVERAGE CHART FOR HORIZONTAL PNEUMATIC (BLOWN ATTIC) APPLICATION									
IMPERIAL SYSTEM					METRIC SYSTEM				
Thermal Resistance R-VALUE	Minimum Thickness		Minimum Weight per unit area (lbs./ft²)	COVERAGE PER 25.35 lb BAG (square feet)	Thermal Resistance RSI-Value	Minimum Thickness		Minimum Weight per unit area (kg/m²)	COVERAGE PER 11.5 kg BAG (sq. metres)
	APPLIED (inches)	SETTLED (inches)				APPLIED (mm)	SETTLED (mm)		
R- 12	3.6	3.25	0.42	60.4	RSI- 2.1	92	82	2.04	5.65
R- 20	6.1	5.42	0.70	36.2	RSI- 3.5	153	137	3.40	3.38
R- 28	8.5	7.59	0.98	25.9	RSI- 4.9	215	192	4.77	2.41
R- 30	9.1	8.13	1.05	24.1	RSI- 5.3	232	207	5.14	2.24
R- 32	9.7	8.67	1.12	22.6	RSI- 5.6	245	219	5.44	2.11
R- 34	10.3	9.21	1.19	21.3	RSI- 6.0	263	235	5.84	1.97
R- 40	12.1	10.84	1.40	18.1	RSI- 7.0	306	274	6.80	1.69
R- 44*	13.3	11.86	1.58	16.0	RSI- 7.7*	337	301	7.71	1.49
R- 50*	15.0	13.41	1.84	13.8	RSI- 8.8*	385	344	9.09	1.27
R- 60*	17.9	16.00	2.27	11.2	RSI-10.6*	464	414	11.27	1.02

DESIGN COVERAGE DENSITY – 1.55 lb/ft³ (24.83 kg/m³) for R-40 (RSI 7) and less.

The above coverage values compensate for potential settling and are for estimating purposes only.

Actual coverage will be influenced by specific job conditions and installation technique. (* adjusted coverage for higher thicknesses)

MINIMUM THICKNESS NOTE: The "Settled Thickness" values shown above are those with which the desired thermal resistance (R/RSI) values are achieved when Weathershield™ is installed at its proper design coverage density. Because this insulation product is pneumatically dispersed at the time of application, the "Applied Thickness" values above consider potential settling and have been included as a GUIDELINE only to assist the installer in achieving the proper final thickness. The actual degree of settlement (which is most often less than the 12% indicated above) will be influenced by specific job conditions (including factors like adequacy of ventilation and degree of installation difficulty) as well as application technique.

It is the minimum settled thickness that counts in providing the desired R/RSI value, regardless of what the applied thickness was initially.

COVERAGE CHART FOR VERTICAL CAVITY INJECTION (WALL FILL)			
Based on Installation Density of 3.0 lb/ft³ (48 kg/m³)			
Cavity Thickness Applied	Nominal " 2 x 4 " Cavity Actual thickness = 3½" (89 mm)	Nominal " 2 x 6 " Cavity Actual thickness = 5½" (140 mm)	Nominal " 2 x 8 " Cavity Actual thickness = 7¼" (184 mm)
Thermal Resistance	R-13.3 (RSI 2.34)	R-20.9 (RSI 3.68)	R-27.6 (RSI 4.85)
Maximum Coverage per Bag (uncorrected for framing considerations)	29.0 ft² (2.69 m²)	18.4 ft² (1.71 m²)	14.0 ft² (1.30 m²)

COVERAGE CHART FOR HAND-POUR (MANUAL) APPLICATION IN ATTIC SPACES			
Weathershield™ can be installed by breaking up the product mechanically (by rake) and/or manually (by hand) in order to provide a reasonable dispersion of fibres. Hand-pour coverage is at least 30% less than machine-blown application, depending on the effort given to breaking up the fibres. Please contact Can-Cell for recommended installation methods.			
R-10 = 2.70 inches 56.3 sq.ft. / bag RSI 1.76 = 69 mm 5.23 sq. metres	R-20 = 5.41 inches 28.1 sq.ft. / bag RSI 3.52 = 137 mm 2.61 sq. metres	R-30 = 8.11 inches 18.8 sq.ft. / bag RSI 5.28 = 206 mm 1.74 sq. metres	
R-15 = 4.05 inches 37.6 sq.ft. / bag RSI 2.64 = 103 mm 3.49 sq. metres	R-25 = 6.76 inches 22.5 sq.ft. / bag RSI 4.40 = 172 mm 2.09 sq. metres	R-35 = 9.46 inches 16.1 sq.ft. / bag RSI 6.16 = 240 mm 1.49 sq. metres	



Can-Cell Industries Inc.

Head Office: 14735-124 Avenue, Edmonton, Alberta Phone (780) 447-1255 Fax (780) 447-1034

1-800-661-5031





Quick-View Reference Chart:

Bags Needed for Known Attic Areas

Revised January 2009



WS11

WS11 = 11.5 kg (25.4 lb) Package, Available Attic Installation Volume (per bag, pneumatically applied): 16.35 ft³ (0.463 m³)

This chart is intended as a guide for estimating the number of bags necessary to insulate known attic areas in order to achieve a specified thickness and thermal resistance or R-value (pneumatically applied) – not corrected for applicable joist volume/spacing

R-Value (Imperial)	R-12	R-20	R-28	R-30	R-32	R-34	R-40	R-44	R-50	R-60
Final Thickness (in.)	3.25	5.42	7.59	8.13	8.67	9.21	10.84	11.86	13.41	16
Coverage/Bag (sq.ft.)	60.4	36.2	25.9	24.1	22.6	21.3	18.1	16.0	13.8	11.2
ATTIC AREA TO BE INSULATED (square feet)	NUMBER OF BAGS FOR COVERAGE ESTIMATE									
	R-12	R-20	R-28	R-30	R-32	R-34	R-40	R-44	R-50	R-60
500	8.3	13.8	19.3	20.7	22.1	23.5	27.6	31.3	36.2	44.6
550	9.1	15.2	21.2	22.8	24.3	25.8	30.4	34.4	39.9	49.1
600	9.9	16.6	23.2	24.9	26.5	28.2	33.1	37.5	43.5	53.6
650	10.8	18.0	25.1	27.0	28.8	30.5	35.9	40.6	47.1	58.0
700	11.6	19.3	27.0	29.0	31.0	32.9	38.7	43.8	50.7	62.5
750	12.4	20.7	29.0	31.1	33.2	35.2	41.4	46.9	54.3	67.0
800	13.2	22.1	30.9	33.2	35.4	37.6	44.2	50.0	58.0	71.4
850	14.1	23.5	32.8	35.3	37.6	39.9	47.0	53.1	61.6	75.9
900	14.9	24.9	34.7	37.3	39.8	42.3	49.7	56.3	65.2	80.4
950	15.7	26.2	36.7	39.4	42.0	44.6	52.5	59.4	68.8	84.8
1000	16.6	27.6	38.6	41.5	44.2	46.9	55.2	62.5	72.5	89.3
1050	17.4	29.0	40.5	43.6	46.5	49.3	58.0	65.6	76.1	93.8
1100	18.2	30.4	42.5	45.6	48.7	51.6	60.8	68.8	79.7	98.2
1150	19.0	31.8	44.4	47.7	50.9	54.0	63.5	71.9	83.3	102.7
1200	19.9	33.1	46.3	49.8	53.1	56.3	66.3	75.0	87.0	107.1
1250	20.7	34.5	48.3	51.9	55.3	58.7	69.1	78.1	90.6	111.6
1300	21.5	35.9	50.2	53.9	57.5	61.0	71.8	81.3	94.2	116.1
1350	22.4	37.3	52.1	56.0	59.7	63.4	74.6	84.4	97.8	120.5
1400	23.2	38.7	54.1	58.1	61.9	65.7	77.3	87.5	101.4	125.0
1450	24.0	40.1	56.0	60.2	64.2	68.1	80.1	90.6	105.1	129.5
1500	24.8	41.4	57.9	62.2	66.4	70.4	82.9	93.8	108.7	133.9
1550	25.7	42.8	59.8	64.3	68.6	72.8	85.6	96.9	112.3	138.4
1600	26.5	44.2	61.8	66.4	70.8	75.1	88.4	100.0	115.9	142.9
1650	27.3	45.6	63.7	68.5	73.0	77.5	91.2	103.1	119.6	147.3
1700	28.1	47.0	65.6	70.5	75.2	79.8	93.9	106.3	123.2	151.8
1750	29.0	48.3	67.6	72.6	77.4	82.2	96.7	109.4	126.8	156.3
1800	29.8	49.7	69.5	74.7	79.6	84.5	99.4	112.5	130.4	160.7
1850	30.6	51.1	71.4	76.8	81.9	86.9	102.2	115.6	134.1	165.2
1900	31.5	52.5	73.4	78.8	84.1	89.2	105.0	118.8	137.7	169.6
1950	32.3	53.9	75.3	80.9	86.3	91.5	107.7	121.9	141.3	174.1
2000	33.1	55.2	77.2	83.0	88.5	93.9	110.5	125.0	144.9	178.6
2050	33.9	56.6	79.2	85.1	90.7	96.2	113.3	128.1	148.6	183.0
2100	34.8	58.0	81.1	87.1	92.9	98.6	116.0	131.3	152.2	187.5
2150	35.6	59.4	83.0	89.2	95.1	100.9	118.8	134.4	155.8	192.0
2200	36.4	60.8	84.9	91.3	97.3	103.3	121.5	137.5	159.4	196.4
2250	37.3	62.2	86.9	93.4	99.6	105.6	124.3	140.6	163.0	200.9
2300	38.1	63.5	88.8	95.4	101.8	108.0	127.1	143.8	166.7	205.4
2350	38.9	64.9	90.7	97.5	104.0	110.3	129.8	146.9	170.3	209.8
2400	39.7	66.3	92.7	99.6	106.2	112.7	132.6	150.0	173.9	214.3
2450	40.6	67.7	94.6	101.7	108.4	115.0	135.4	153.1	177.5	218.8
2500	41.4	69.1	96.5	103.7	110.6	117.4	138.1	156.3	181.2	223.2

Can-Cell Industries Inc.

Head Office: 14735 – 124th Avenue, Edmonton, Alberta, Canada T5L 3B2 Phone (780) 447-1255 Fax (780) 447-1034
1-800-661-5031





APPENDIX "B"

Guidelines for Hand-Pour (Manual) Application

Pneumatic (machine-blown) installations of Weathershield™ provide the most effective and economical full-size attic application of the product. However, for small jobs or retrofit/repair applications in attics, it is as practical and/or convenient to manually apply Weathershield™, as it is to install batt insulation – consider that:

- *It is difficult to install batts without leaving voids or gaps, especially around obstructions. Such poor fitting leads to significantly reduced thermal performance. Weathershield™ is a loose-fill that will eliminate voids and gaps by filling in and around obstructions – no measuring or cutting is needed to provide an effective fit.*
- *Weathershield™ provides a higher R-value per unit thickness.*
- *Installing glass fibre products is irritating to the skin and inhalation of their fibres is considered a possible cancer risk. Weathershield™ is non-irritating and is not considered a health hazard.*

Compared to machine-blown applications, hand-pour coverage is at least 30% less, depending on the effort given by the installer to break up the material. The more effort given to dispersing the fibres, the better the coverage will be. In larger applications, providing an effective installation would be more time consuming as well, but for small retrofitting jobs this may be considered insignificant.

Well-dispersed material will provide an R-value of about 3.6 per inch. Poorly dispersed material can be significantly less.

Manually applied Weathershield™ is not known to settle. In a properly ventilated attic, the thickness applied is the final thickness that provides the R-value.

CCI Manufacturing Inc. recommends the following method for hand-pour applications:

- 1) *Set up a 60W trouble light over the area to be insulated. You will also need a fan-type leaf rake (with many open tines), a sharp knife, a tape measure and a good particle mask (e.g. 3M 8210).*
- 2) *Transfer a few of the bags of Weathershield™ to be installed to the attic area where they will be applied. Since attics tend to have limited space to work in, allow yourself enough room. Stack the bags so that their weight is distributed across joist members and not directly on the ceiling.*
- 3) *Cut open a bag lengthways and empty the contents near the area to be insulated. Break up any large lumps with your hands and use the rake to work the insulation to break up any remaining lumps. Turn the rake over (so that the ends of the tines point upward) and scoop up portions of the worked material to visually check that no lumps remain.*
- 4) *Use the rake once more to scoop up some of the worked material and transfer it to the area to be insulated. Gently shake the scooped material back and forth, sifting it through the tines of the rake onto the space to be insulated. Continue with this process until the desired thickness is achieved, checking the depth with the tape measure.*
- 5) *Repeat steps 3) and 4) until the installation is complete.*



APPENDIX "C"

Application Summary for WallBAR™ Insulation (Applicable to Licensed Applicators)

As the name implies, WallBAR™ is a product designed primarily for wall applications. It is also ideal for sloped/cathedral ceilings, rim joists and stabilized attics. WallBAR™ contains an internal adhesive that is activated by ambient or applied moisture to provide additional resistance to settlement when properly installed in wall assemblies. WallBAR™ may be used in new construction, employing retaining membranes in application to open cavities regardless of slope. WallBAR™ is also suitable for dry-injection to any enclosed cavity (for retrofit applications).

WallBAR™ may be installed only under a licensing agreement with CCI Manufacturing Inc.

WALL ASSEMBLIES

In new construction, WallBAR™ can be applied to open sidewall cavities in two ways. The first and most common method involves applying a retaining membrane to the interior stud faces and dry-injecting WallBAR™ into the cavity formed. The retaining membrane may be permeable, such as WallNET fabric netting, or non-permeable, such as polyethylene. The second method is spray-applying WallBAR™ (with water only) directly into and filling the open cavity and screeding the surface flush with the stud faces – once partially dry, the cavity can be enclosed. Interior walls (partywalls) can be partially wet-sprayed to provide acoustical control.

In retrofit applications, any enclosed cavity may be dry-injected with WallBAR™, provided the cavities are empty or existing insulation is first removed (the same as for Weathershield™ - see Appendix "D").

SLOPED/CATHEDRAL CEILINGS

In new construction (conforming to the NBC), using insulation stops, air chutes or a netted space provides a continuous airspace above the insulation. The cavity is formed with netting across the interior joist face and WallBAR™ is dry-injected in stages (from lower wall to higher wall or peak) with entry holes no further than 10' (3 m) apart to ensure even density distribution. Cavities must not be overfilled in order to allow easy installation of gypsum board after. One method to help prevent overfilling problems is to install polyethylene and 1x2 or 1x3 strapping every 2' (0.6 m) across joist facing to compensate for bulging.

In retrofit applications, existing batt insulation in sloped ceiling cavities must be removed prior to insulating unless they occupy two-thirds or less of the cavity space. WallBAR™ can be injected over top of the batts. Methods are described in Appendix D. The cavities are dense-packed (filled completely, allowing no airspace) with WallBAR™.

Retrofitting flat roofs with WallBAR™ is much the same as for Weathershield™ (see Appendix D).

PERIMETER RIM JOISTS

Cavities are created with netting and dry-injected with WallBAR™.

STABILIZED ATTICS

WallBAR™ may also be applied with moisture (misted water) in horizontal/blown applications at a final dry density of 22-23 kg/m³ (about 1.4 lb/ft³). The internal binder is immediately activated to provide maximum resistance to settlement. This application is also suitable for sloped areas exceeding 4.5:12.

Details regarding specific installation procedures are found in the WallBAR™ Installation Manual (available only to licensed dealers).



APPENDIX "D"

Alternatives for Retrofitting Sidewalls and Ceiling Cavities

In many retrofit cases, the cavities to be re-insulated contain some form of insulation, often batt-type insulation. CCI Manufacturing Inc. does not recommend the installation of *Weathershield™* in wall cavities unless existing batts can first be removed. Some exceptions can be made in retrofitting ceiling cavities. The following methods are suggested as guidelines in alternative retrofitting where existing batt insulation is encountered and is to be replaced with *Weathershield™* (or *WallBAR™*).

SIDEWALLS

When exterior renovations are to be done (such as re-siding or installing some other new exterior finish) and the old finish is removed, a strip of sheathing can be temporarily taken out of the centre of the wall and the existing batt insulation can be removed. The opened space is netted, the exposed cavities filled with *Weathershield™* or *WallBAR™*, and the strip is put back and sealed. The new exterior finish is then applied. Recommendations are as follows:

1. Once the old exterior finish is removed, cut a horizontal strip in the sheathing 12" wide (depending on the framing and exterior finish) in the centre of the wall cavity and remove it.
 - *A circular saw is most often used. Set the saw blade depth to the thickness of the sheathing (if known) or a maximum of ½". Most plywood sheathing is not likely to exceed ½" thickness in homes built in the 1960's or later. Older homes may have other types and thicknesses of sheathing (such as ¾" shiplap) and may not require cutting to remove it.*
 - *Whenever possible, a wider strip (14"-16") can be cut for greater ease of batt removal and inspection. This also improves the manoeuvrability of the hose to allow for a more effective installation.*
2. Remove the existing batt insulation.
3. Visually inspect each cavity to ensure all pieces of the batts are removed and that any isolated cavities are detected.
 - *Depending on the requirements of the customer, the small cavities above window frames may be left with existing batt insulation – otherwise an additional short strip must be cut to fill such cavities. It is often more practical to leave these cavities alone unless they are known to be empty.*
 - *Verify the length, width and thickness of the cavity to ensure coverage calculations will be correct.*
4. Cut a strip of netting about 2" wider than the width of the sheathing strip. Fold about 1" over on top edge of netting strip and staple to the exposed stud faces with the folded edge tight up against the upper edge of the sheathing opening. Ensure netting is pulled tight as you go. Fold the bottom edge of the netting strip so it is tight against the bottom edge of the sheathing opening and secure with staples.
5. Cut an entry slit in the netting for each cavity for the delivery hose. In addition to the recommended 150' minimum length of hose, a 3' to 3.5' section of rigid or semi-rigid hose should be attached to the delivery end.

6. Insert rigid hose to the bottom of the cavity and inject *Weathershield™* or *WallBAR™* until it fills the cavity up to the netting, retracting the nozzle about 12" at a time.
7. Remove enough hose to turn it upwards and re-insert to the top corners of the upper half of cavity. Proper attention must be given to pack each of the top corners of the cavity to ensure against settlement. Once corners are packed, retract nozzle about 12" at a time.
 - *It is important that proper installation density be achieved (i.e. 3.0-3.5 lb/ft³, 48-56 kg/m³) to properly resist settlement, but not too much so that the interior finish is compromised. Ensure the proper air setting and material volume is used to avoid dislocating gypsum board on the interior.*
8. Remove enough hose to pack by "jabbing" the central area behind the netting and stop the installation.
9. Repeat steps 6-8 for the remaining cavities.
10. Roll the netting of each filled cavity to eliminate bulging.
11. Put the strip of sheathing back into place and fasten, including the strip of building paper or house wrap that may have been there. Apply exterior caulking to the cut lines and finish with sheathing tape to seal the job.
12. The new exterior finish can then be installed.

When the exterior finish is siding and is not to be replaced with new siding, the existing siding can be partially removed so that the sheathing strip can be cut. When removal is not possible, cut through the siding (at an edge or shadow line) and sheathing all at once. Once *Weathershield™* or *WallBAR™* has been installed, the netting is rolled to eliminate bulges and the sheathing is replaced, fastened and sealed and the siding replaced and sealed.

When the interior finish is to be renovated, it is possible to retrofit the sidewall cavities from the interior side in a similar manner to the above. A 12" strip of gypsum board is cut from the centre of the wall and the existing batt insulation is removed. Once the cavities are inspected for completeness of the removal and isolated cavities are located, the space opened is netted and filled with *Weathershield™* or *WallBAR™*, and the strip is replaced, sealed and patched with drywall compound in the normal manner. The interior is then repainted, wallpapered or otherwise refinished.

SLOPED ROOFS (CATHEDRAL CEILINGS)

When enclosed sloped roof cavities containing existing batt insulation are to be retrofitted, the best method involves cutting a strip out of the roof sheathing and removing the batts first. Alternatively, if the existing batts fill only two-thirds or less of the cavity, they may be left in place and *Weathershield™* (or *WallBAR™*) injected over top of them. It is recommended that this only be done when completely replacing the roofing materials. Due to blocking between some joists creating isolated cavities, more than one strip may need to be cut to ensure that all cavities in the roof space are considered.

Once the old roofing finish is removed, a 12" strip can be cut out of the sheathing across all joist cavities. Once the existing batt insulation is removed, the cavities must be visually inspected to determine where blocking (and isolated cavities) exist. Additional strips are cut to expose any isolated cavities. The strip opening is netted and the cavities are injected full with *Weathershield™* or *WallBAR™* – *once again it is important to install the proper density (3.0-3.5 lb/ft³, 48-56 kg/m³) so that overfilling does not compromise the interior finish.* The netting is rolled to eliminate bulges and the sheathing strip put back, fastened, caulked and sealed. The new roofing materials can then be installed.

When the roof finish is not to be repaired or replaced, it is still possible to retrofit roofs that have existing batt insulation, provided that a 2-3" continuous airspace is available above the batts in the cavities (that is, no blocking exists to create isolated cavities). In such cases, a 2½" hole may be drilled at the end of each joist space from the outside. A 2"-diameter extension tube, the full length of the joist space, is inserted along the top of the interior (above the batts) to the end of the cavity. *Weathershield™* or *WallBAR™* is then pneumatically injected, compressing the batt and filling the space as the fill tube is retracted 12" at a time. It is important to ensure that installation density not exceed 3.5 lb/ft³ (56 kg/m³) so that the interior ceiling/finish is not compromised. Once all cavities are filled, holes can then be sealed with suitable plugs and caulked.

CCI Manufacturing Inc. warrants that the practice of completely filling (dense-packing) sloped roof cavities with *Weathershield™* or *WallBAR™* – that is, leaving no ventilated airspace, even in cavities without a vapour barrier – will not contribute to moisture problems in the areas so insulated, provided that the roof membrane remains intact. Should the roof membrane lose its integrity and leak, soaking the insulation material, this warranty shall be void.

FLAT ROOF CAVITIES

Enclosed flat roof cavities with existing batt insulation can be retrofitted much the same way as sloped roofs. Prior to replacing the tar-and-gravel roof finish, the roof cavities are partially exposed by cutting a strip in the roof sheathing and removing the batt insulation. Additional strips may be necessary when inspection detects blocking (isolated cavities). The exposed parts of the cavities are netted and injected with *Weathershield™* or *WallBAR™*, and the sheathing strip put back, fastened and sealed. The roof can then be refinished.

When the roof finish is not to be repaired or replaced, it is still possible to retrofit roofs that have existing batt insulation, provided that a 2-3" continuous airspace is available above the batts in the cavities (that is, no blocking exists to create isolated cavities). In such cases, a 2½" hole may be drilled at the end of each joist space from the outside. A 2"-diameter extension tube, the full length of the joist space, is inserted along the top of the interior (above the batts) to the end of the cavity. *Weathershield™* or *WallBAR™* is then pneumatically injected, compressing the batt and filling the space as the fill tube is retracted 12" at a time. It is important to ensure that installation density not exceed 3.5 lb/ft³ (56 kg/m³) so that the interior ceiling/finish is not compromised. Once all cavities are filled, holes can then be sealed with suitable plugs and caulked.

CCI Manufacturing Inc. warrants that the practice of completely filling (dense-packing) sloped roof cavities with *Weathershield™* or *WallBAR™* – that is, leaving no ventilated airspace, even in cavities without a vapour barrier – will not contribute to moisture problems in the areas so insulated, provided that the roof membrane remains intact. Should the roof membrane lose its integrity and leak, soaking the insulation material, this warranty shall be void.