CANADIAN RAINBARRIER® INSULATION GUIDE

STANDARDS AND CODE COMPLIANCE
INSTALLATION | ATTACHMENT

This publication was prepared by

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DISCLAIMER

This publication provides data for building enclosure assemblies using Owens Corning® insulation products. The greatest care has been taken to confirm the accuracy of the information contained herein and provide authoritative information. However, the authors assume no liability for any damage, injury, loss or expense that may be incurred or suffered as result of the use of this publication.

In addition to using this publication, readers are encouraged to consult applicable up-to-date technical publications on building enclosure science, practices and materials. Retain consultants with appropriate architectural and/or engineering qualifications and speak with appropriate municipal and other authorities with respect to issues of enclosure design, assembly fabrication and construction practices. Always review and comply with the specific requirements of the applicable building codes for any construction project.

TABLE OF CONTENTS

Cover:
MUSEUM OF THE MOVING IMAGE
New York City, NY

WHY EXTERIOR INSULATION?

Meeting Demanding Standards and Changing Codes

Reduces Thermal Bridging and Increases Overall R-Value
Thermal bridging is a type of heat loss which occurs when heat flows through the building envelope via a continuous path, such as through wood or, more commonly, highly conductive steel framing members. Thermal bridging dramatically affects whole wall R-value. For instance, a steel stud wall assembly with batt insulation could lose up to 50% of its R-value through thermal bridging.[1]

Reduces Moisture Concerns
Exterior insulation reduces the possibility of condensation by keeping interior surfaces warm.

Going Beyond Codes
Many owners, designers, and contractors feel that the insulation requirements set out in building codes are not robust enough to truly save energy and reduce greenhouse gas emissions. These owners, designers, and contractors look beyond code initiatives to USGBC's LEED® rating system[2], ASHRAE Standard 189.1[3], Architecture 2030[4], CAGBC's Zero Carbon Building Program[5], or Passive House[6].

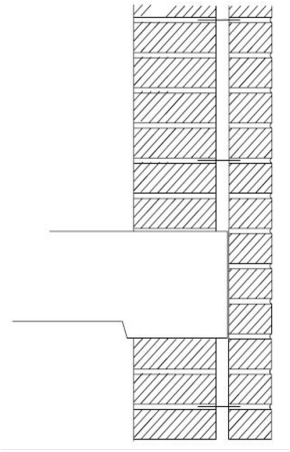
Including increased insulation levels in the building envelope can help reach these advanced efficiency goals with a negative marginal cost, generating a positive economic return over the building's lifecycle.

ENERGY EFFICIENCY

Contributing to Sustainable Buildings

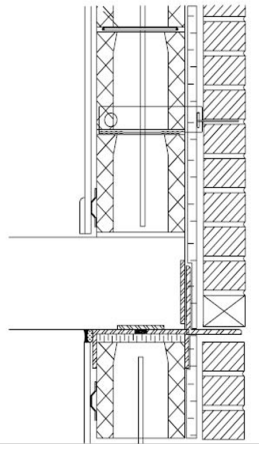
The Evolution of Energy Efficiency

We have come a long way with the development of energy efficient buildings.



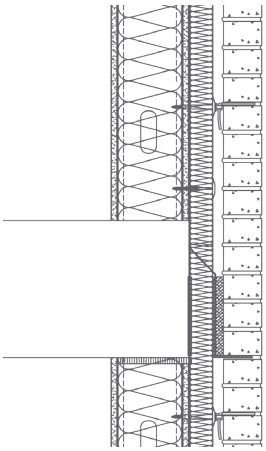
1900s
No Insulation

In the 1900s an exterior wall would look pretty much like this - no insulation.



1940s–1970s
Limited Insulation

As we move into the 1940s and especially during the energy crisis of the 70s, designers and building owners start to recognize the need for more insulation, but it's still used in a limited amount.



Today's Integrated
Air/Water/Thermal Assembly

In today's designed assemblies with the emphasis on energy reduction and sustainable construction we now see systems that incorporate air, water and thermal efficiency all in one assembly.

[1] https://sustainabilityworkshop.autodesk.com/buildings/total-r-values-and-thermal-bridging
[2] U.S. Green Building Council. https://new.usgbc.org/leed.
[3] ANSI/ASHRAE/IES/USGBC Standard 189.1-2014, Standard for the Design of High-Performance Green Buildings. American Society of Heating, Refrigerating and Air-Conditioning Engineers. https://www.ashrae.org/resources--publications/bookstore/standard-189-1.
[4] Architecture 2030. http://architecture2030.org/.
[5] Canada Green Building Council. https://www.cagbc.org/CAGBC/Zero_Carbon/The_CaGBC_Zero_Carbon_Building_Program.aspx.
[6] PHI or PHIUS. https://passivehouse.com/ or https://www.phius.org/home-page.6

ENERGY CODES IN CANADA

Building energy requirements in most jurisdictions in Canada typically reference at least one of the following national or international standards:

- ASHRAE 90.1 "Energy Standard for Buildings Except Low-Rise Residential Buildings" (2010, 2016)
- National Energy Code for Buildings (NECB) (2011, 2015, 2017)

Both of these codes include several paths to demonstrate code compliance:

- **Prescriptive path** which defines absolute performance requirements for many building components (e.g., each envelope assembly used must meet prescriptive requirements).
- **Trade-off path** which allows select components to fall short of prescriptive requirements if they are balanced by other components that exceed requirements (e.g., higher performance envelope assemblies can balance lower performance envelope assemblies in different areas of the building). ASHRAE allows trade-off between all envelope assemblies. NECB considers horizontal assemblies separately from vertical assemblies.
- **Performance path** which involves a whole building energy model demonstrating that the proposed design overall has the same or better performance than the same building where all components just meet the prescriptive requirements.

Some jurisdictions, such as the cities of Vancouver (VBBL) and Toronto (TGS v3) or the province of British Columbia (Energy Step Code), have chosen to adopt absolute energy use intensity (EUI) and thermal energy demand intensity (TEDI) targets, which apply to certain types of buildings (typically residential, commercial and retail buildings), and are performance-based metrics requiring whole building energy modelling. Building envelope performance is a key component affecting TEDI, though typically there is no defined envelope performance value that must be met.

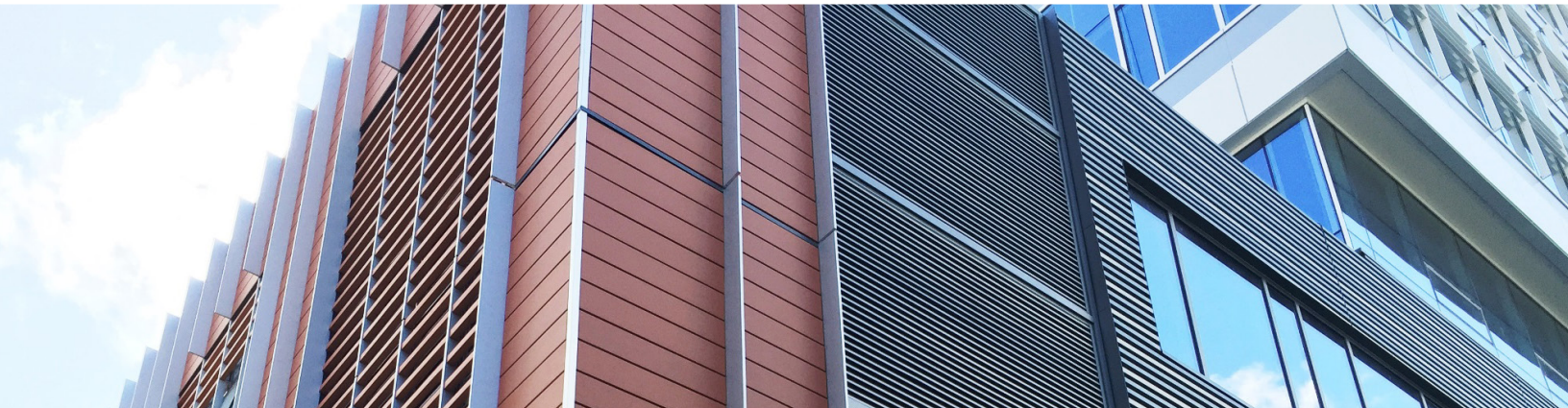
ACCOUNTING FOR THERMAL BRIDGING

When assessing building envelope performance, all codes require accounting for some levels of thermal bridging. When looking at wall assemblies, these thermal bridges generally include but are not limited to:

- ASHRAE 90.1 2010 to 2016
    - › Regular thermal bridges, including framing such as studs, girts, and cladding attachment systems
    - › Separate envelope assemblies that cover over 5% of the wall area, typically leading to accounting for the slab edge conditions and intersecting walls

- NECB 2011 and 2015
    - › Regular thermal bridges, including framing such as studs, girts, and cladding attachment systems
    - › Structural penetrations that cover over 2% of the wall area, or that double the assembly thermal transmittance, typically leading to accounting for the slab edge conditions and intersecting walls

- NECB 2017 and new Energy Codes such as VBBL, TGS, BC Energy Step Code, and proposed changes to Quebec's B-1.1
    - › Regular thermal bridges, including framing such as studs, girts, and cladding attachment systems
    - › Major and secondary structural penetrations (includes intersecting assemblies, balconies, joists, beams, girders, columns, curbs, and shelf angles)
    - › Junctions at glazing assemblies, spandrels, parapets, roof-to-wall, corners, and edges of walls or floors
    - › These codes require accounting for thermal bridging when calculating building envelope performance according to the methodology described in the "Building Envelope Thermal Bridging Guide"



NON-COMBUSTIBILITY – CANADIAN STANDARDS

Non-combustible and Fire Resistant

Standards and Testing

A non-combustible material is defined as a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion or release flammable vapours when subjected to fire or heat. Materials that pass the CAN/ULC-S114, "Test for Determination of Non-Combustibility in Building Materials", are considered non-combustible materials in Canadian jurisdictions.[1]

CAN/ULC-S114[1]

- Test for Determination of Non-Combustibility in Building Materials

While it does not duplicate actual building fire exposure conditions, this test method assists in indicating those materials which do not act to aid combustion or add appreciable heat to an ambient fire.

Mineral Wool: Non-combustible Exterior Insulation

Mineral wool products are non-combustible per CAN/ULC-S114. Mineral wool will resist flame propagation over the surface of the product.

As a non-combustible material, mineral wool insulation is ideal for assemblies with combustible claddings and/or water-resistant barriers (WRB). When used with other combustible products, mineral wool contributes to meeting criteria of CAN/ULC-S134 since the mineral wool does not ignite or combust. It also reduces fire spread through cavities, and it protects materials over which it is installed.

CAN/ULC-S134[2]

- Fire Test of Exterior Wall Assemblies

CAN/ULC-S134 measures fire spread over and within an exterior wall assembly and heat flow from the fire on the exterior surface of the wall.

References to CAN/ULC-S134

CAN/ULC-S134 is referenced in the National Building Code of Canada (NBCC), and other provincial codes, when combustible materials are proposed as part of the exterior wall assembly, including cladding, in a building required to be constructed of non-combustible materials.

References to CAN/ULC-S134 are found in Division B of the following provincial codes:

- Articles 3.1.5.5, 9.10.14.5, 9.10.15.5 in these codes:
  - 2015 National Building Code of Canada,
  - 2018 British Columbia Building Code,
  - National Building Code, 2019 Alberta Edition
- Articles 3.1.5.5, 3.2.3.7 in the 2012 Ontario Building Code, and
- Articles 3.1.5.5, 3.2.3.7, 9.10.14.5, 9.10.15.5 in the 2010 Quebec Construction Code

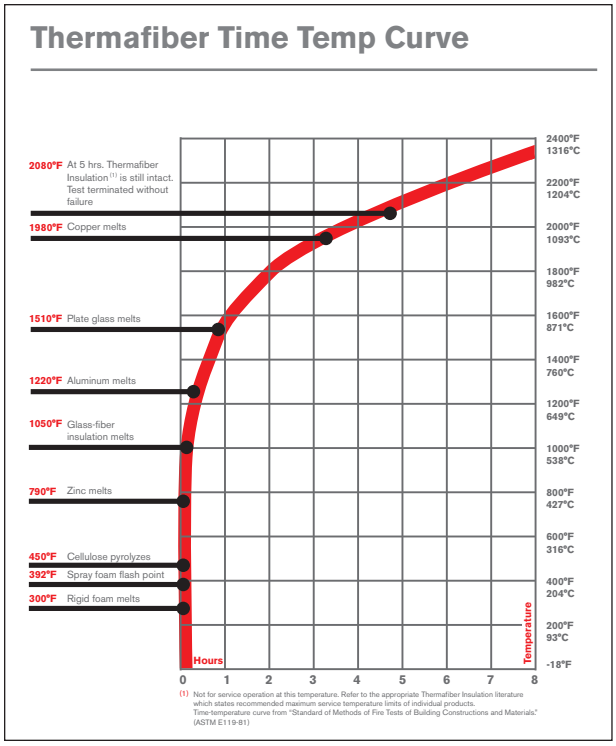
The applicable edition of CAN/ULC-S114 and CAN/ULC-S134 will be referenced within each jurisdiction's building code.

Evaluating Fire Performance of Common Building Materials

Fire-resistive properties of building materials are evaluated by exposing materials and assemblies to controlled fire conditions for a specified period of time. Materials and assemblies are evaluated for their ability to contain a fire, retain their structural integrity and resist the increase in temperature on the unexposed side of the material or assembly.

CAN/ULC-S101[3] and ASTM E119[4], which are standard test methods used to evaluate fire-resistance of common wall, column and floor assemblies, both use the same standard time-temperature curve.

Thermafiber® compared the performance of mineral wool to other materials using the common time-temperature curve from CAN/ULC-S101 and ASTM E119 and subjecting the mineral wool to these temperatures for 5 hours.



[1] Standards Council of Canada. CAN/ULC-S114. Standard Method of Test for Determination of Non-combustibility in Building Materials https://www.scc.ca/en/standardsdb/standards/29521
[2] Standards Council of Canada. CAN/ULC-S134. Standard Method of Fire Test of Exterior Wall Assemblies. https://www.scc.ca/en/standardsdb/standards/27081.
[3] Standards Council of Canada. CAN/ULC-S101. Standard Methods of Fire Endurance Tests of Building Construction and Materials. https://www.scc.ca/en/standardsdb/standards/23507
[4] Standards Council of Canada. ASTM E119. Standard Test Methods for Fire Tests of Building Construction and Materials. https://www.astm.org/Standards/E119.htm

NON-COMBUSTIBILITY – OTHER JURISDICTIONS

Non-combustible and Fire Resistant

Standards and Testing
A non-combustible material is defined as a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion or release flammable vapours when subjected to fire or heat. Materials that are reported as passing ASTM E136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, shall be considered non-combustible materials.[1]

ASTM E136[1]

- Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C

While it does not duplicate actual building fire exposure conditions, this test method assists in indicating those materials which do not act to aid combustion or add appreciable heat to an ambient fire.

Mineral Wool: Non-combustible Exterior Insulation
Mineral wool products are non-combustible per ASTM E136. Mineral wool will resist flame propagation over the surface of the products.

As a non-combustible material, mineral wool insulation is ideal for assemblies with combustible claddings and/or water-resistant barriers (WRB). When used with other combustible products, mineral wool acts as an aid in passing NFPA 285.

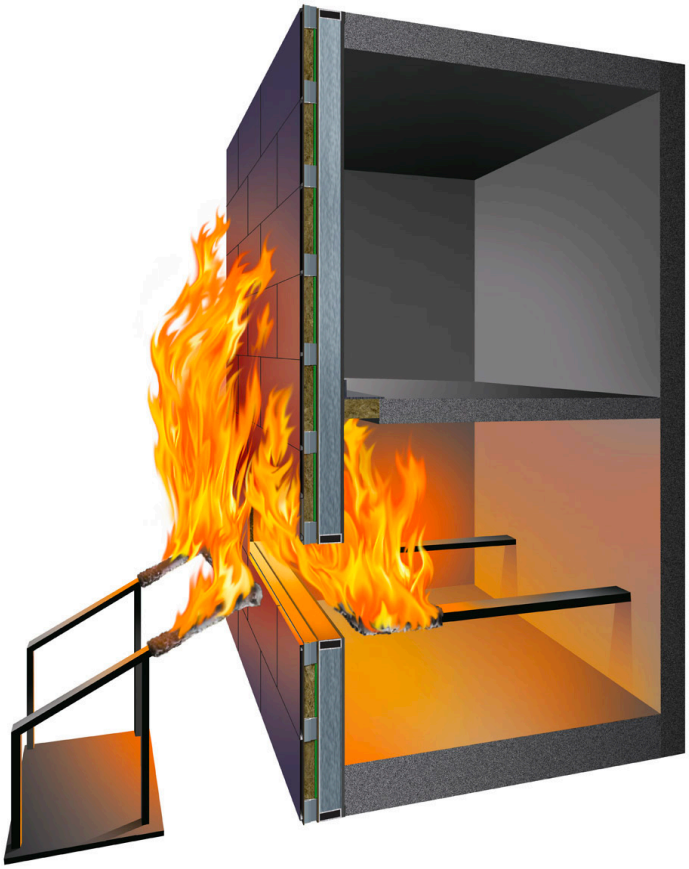
NFPA 285[2]

- Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

NFPA 285 measures what happens during a fire when a non-combustible building is wrapped in combustible materials.

The Purpose of NFPA 285
NFPA 285 is required in the International Building Code (IBC) in multiple situations. For example, it is required in many situations when combustible air barriers are used or when foam plastic insulation is used in the exterior walls of construction types I, II, III or IV. These construction types, by code definition, have exterior walls constructed of non-combustible materials. The NFPA 285 test is to determine that combustibles, when exposed to fire on the exterior face of the wall, do not spread flame over the surface or through the core of the otherwise non-combustible wall assembly.

The test standard NFPA 285 is referenced in many sections of the IBC including 1403.5 for water resistive barriers, and Section 2603.5.5 for foam plastic insulation. NFPA 285, or a variation of it, has been referenced in each edition of the IBC since its first edition in 2000, and since the 1980s in the three model codes that preceded it. The now defunct ICBO Uniform Building Code first included the concept in the 1988 edition, requiring testing in accordance with the UBC Standard 17-6, a predecessor of NFPA 285.



[1] ASTM International. ASTM 136-16a. Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C. https://www.astm.org/Standards/E136.htm.
[2] National Fire Protection Association. Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components. http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=285.

INTRODUCTION TO OWENS CORNING® THERMAFIBER® RAINBARRIER® EXTERIOR INSULATION

Comfort, Safety and Sustainability

Thermafiber® RainBarrier® exterior insulation is designed to work with a diverse range of cavity wall or open-joint façade systems. Whatever the specifications of your next project, RainBarrier® mineral wool exterior insulation delivers benefits for:

- **Fire and Smoke Protection:** RainBarrier® insulation can withstand temperatures over 1,000°C for more than five hours.
- **Sound Control:** RainBarrier® insulation cuts down on noise through walls from outdoors.
- **Thermal Comfort:** RainBarrier® insulation R-values contribute to the energy efficiency and won't decrease as the insulation ages.
- **Installation:** RainBarrier® insulation uses no CFCs or HCFCs and installers need minimal PPE during installation.
- **Sustainability:** Using RainBarrier® exterior insulation contributes to credits in several green building programs such as LEED® and Green Globes®.

Standards, Codes Compliance — Thermafiber® RainBarrier® 45 and RainBarrier® HD exterior insulation

STANDARD	RAINBARRIER® 45	RAINBARRIER® HD
CCMC	Evaluation Listing No. 14060-L	Evaluation Listing No. 14060-L
CAN/ULC-S702	Type I	Type I
ASTM C612	Type IA, IB, IVA	Type IA, IB, II, III, IVA, IVB
ASTM C665	Non-corrosive	Non-corrosive
ASTM C795	Pass	Pass
ASTM E136	Non-combustible as defined per NFPA Standard 220	Non-combustible as defined per NFPA Standard 220
CAN/ULC-S114	Non-combustible	Non-combustible
ASTM E96	2,850 ng/Pa•s•m^2 (50 Perms) as tested	2,850 ng/Pa•s•m^2 (50 Perms) as tested
ASTM E84	Flame Spread 0, Smoke Developed 0	Flame Spread 0, Smoke Developed 0
CAN/ULC-S102	Flame Spread 0, Smoke Developed 5	Flame Spread 0, Smoke Developed 5
CAN/ULC-S129	Mean Mass Loss ≤ 0.02%	Mean Mass Loss ≤ 0.02%
ASTM C1104	Absorbs 0.03% by volume	Absorbs 0.03% by volume
ASTM C356	Linear Shrinkage <2% 650° C (1200° F)	Linear Shrinkage <2% 650° C (1200° F)

Recycled content*
Standard Fiber..... Minimum 70%

*Recycled content verified by ICC-ES.
*Recycled content meets the definition of ISO-14021-1999, as required by LEED.

For additional information on green building programs, visit www.owenscorning.com/corporate/sustainability/product-sustainability

PRODUCT OPTIONS

Owens Corning® Thermafiber® RainBarrier® 45 and RainBarrier® HD Insulation

Technical Data

		TESTED TO ASTM C518		TESTED TO CAN/ULC-S102	
	ACTUAL DENSITY KG/M³ (LB/FT³)	"RSI"/25.4 MM @ 24°C M²·K/W	"R" VALUE/INCH @ 75°F HR·FT²·°F/BTU	FLAME SPREAD	SMOKE DEVELOPED
Thermafiber® RainBarrier® 45	72 (4.5)	0.74	4.2	0	5
Thermafiber® RainBarrier® HD	96 (6.0)	0.74	4.2	0	5

Acoustical Performance

Thermafiber® RainBarrier® 45

	COEFFICIENCIES AT FREQUENCIES PER ASTM C423						
THICKNESS	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	NRC
1 1/2"	0.22	0.44	0.96	1.06	1.05	1.05	0.90
2"	0.30	0.69	1.08	1.01	1.00	1.03	0.95
3"	0.70	1.07	1.24	1.13	1.07	1.08	1.15
4"	1.03	1.25	1.20	1.05	1.05	1.08	1.15

Thermafiber® RainBarrier® HD

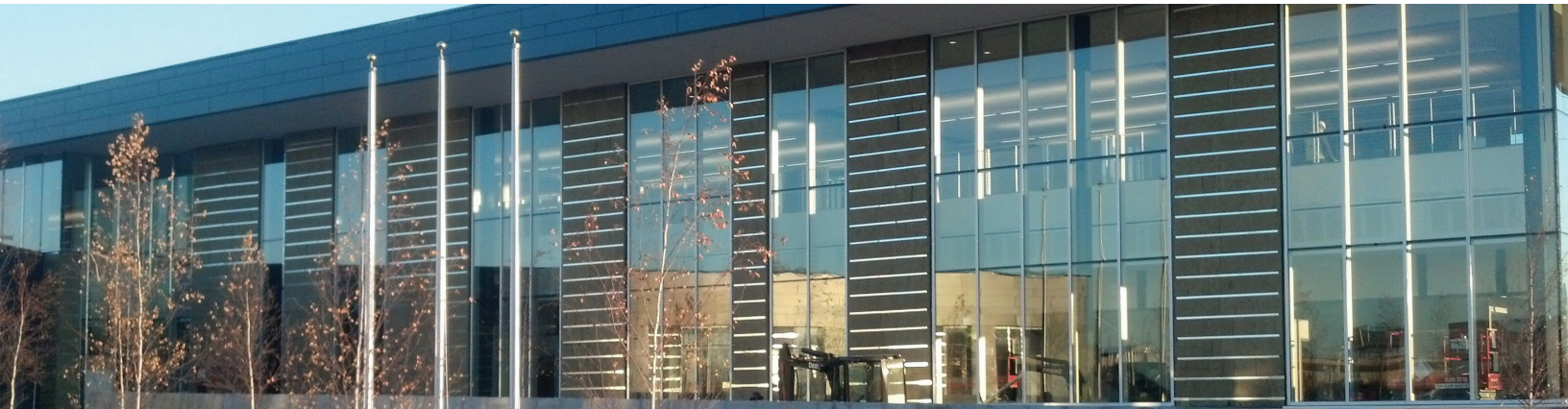
	COEFFICIENCIES AT FREQUENCIES PER ASTM C423						
THICKNESS	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	NRC
2"	0.36	0.79	1.15	1.04	1.01	1.04	1.00
4"	1.15	1.17	1.18	1.03	1.06	1.08	1.10
6"	1.18	1.01	1.11	1.03	1.06	1.10	1.05

Availability

Both Thermafiber® RainBarrier® 45 and RainBarrier® HD are available in:

THICKNESS*	WIDTHS**	LENGTHS**
25.4 mm - 178 mm (1"-7")	406 mm, 610 mm & 914 mm (16", 24" & 36")	1219 mm & 1524 mm (48" & 60")

*Thicknesses are available in 1/2" increments. **Custom sizes are available upon request.



RAINBARRIER® INSTALLATION

CLADDING TYPES LEGEND

Brick

Stone

Terra Cotta

Architectural Panels

- ACM: Aluminum Composite Materials
- MCM: Metal Composite Materials
- Phenolic Panels
- HPL: High Pressure Laminate Panels

Metal

Metal Panels
- ACM: Aluminum Composite Material
- MCM: Metal Composite Material

Masonry

Concrete

Concrete Panel

Impaling Pins

Standard Impaling Pins

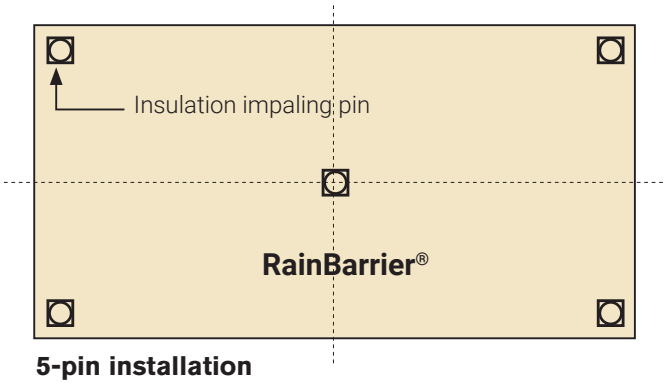
Install RainBarrier® Insulation without Z-furring using inexpensive impaling pins.

RainBarrier® HD and RainBarrier® 45 can be installed without Z-furring using impaling pins. The following diagrams depict standard positioning of impaling pins, showing different numbers of pins used per panel.

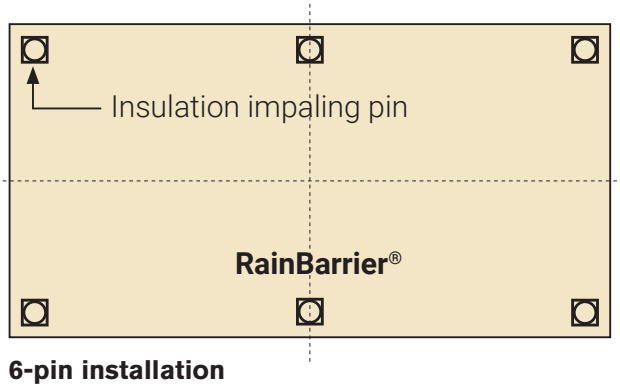
Impaling pins may be installed prior to the air and water barrier (AWB), adhered to the air and water barrier (AWB), or screwed through the air and water barrier (AWB).

Contact the air and water barrier manufacturer for acceptable installation methods.

4-pin installation



5-pin installation



6-pin installation

IMPALING PINS/INSULATION PANEL	THICKNESS	PANEL WIDTH	PANEL LENGTH
4	25.4 to 102 mm (1" to 4")	406 mm (16")	1219 mm (48")
4	25.4 to 76 mm (1" to 3")	610 mm (24")	1219 mm (48")
5	102 mm (4")	610 mm (24")	1219 mm (48")
6	25.4 to 102 mm (1" to 4")	914 mm (36")	1219 or 1524 mm (48" or 60")

Minimum distance from impaling pin to board edge to be 50.8 mm (2").

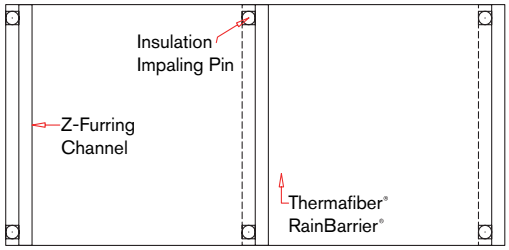
Z-FURRING WITH IMPALING PINS

RainBarrier® can be secured into Z-furring channels with inexpensive and easy-to-use impaling pins on insulation panels of all sizes.

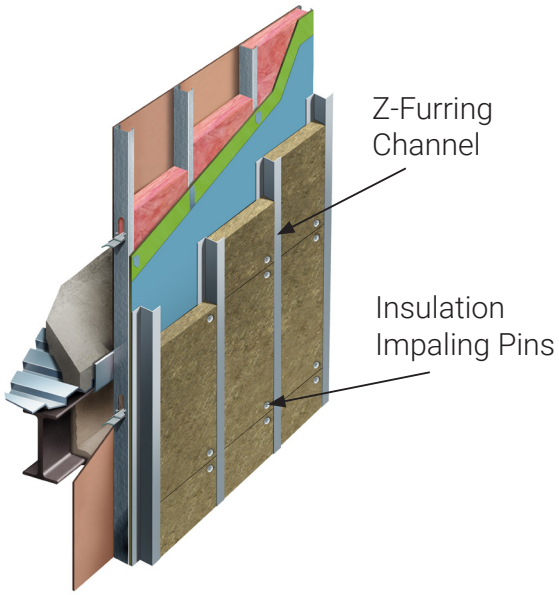
Impaling pins may be installed prior to the air and water barrier (AWB), adhered to the air and water barrier (AWB), or screwed through the air and water barrier (AWB). Contact the air and water barrier manufacturer for acceptable installation methods.

THICKNESS	PANEL WIDTH	PANEL LENGTH
25.4 to 76 mm (1" to 3")	406 mm (16")	1219 mm (48")
25.4 to 51 mm (1" to 2")	610 mm (24")	1219 mm (48")
25.4 mm (1")	914 mm (36")	1219 or 1524 mm (48" or 60")

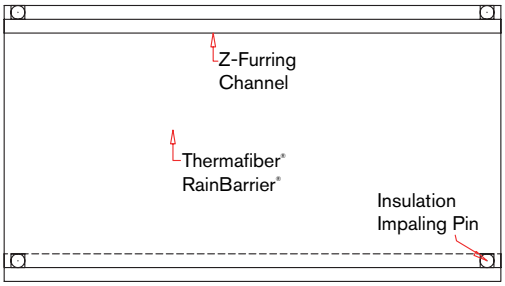
2 Pins per Insulation Panel – Vertical Installation



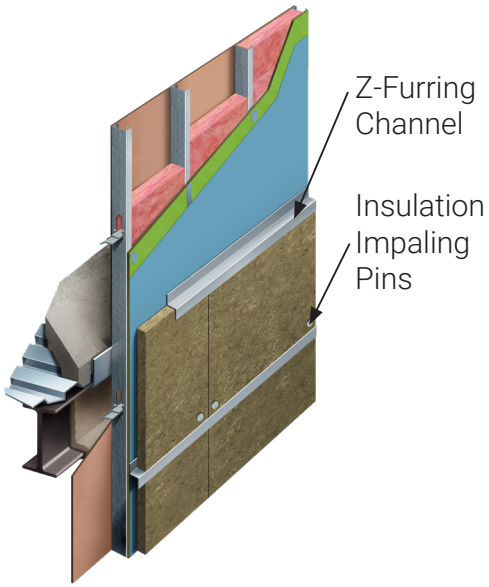
Vertical Z-Furring (2 pin)



2 Pins per Insulation Panel – Horizontal Installation

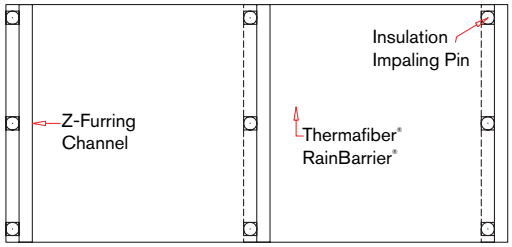


Horizontal Z-Furring (2 pin)

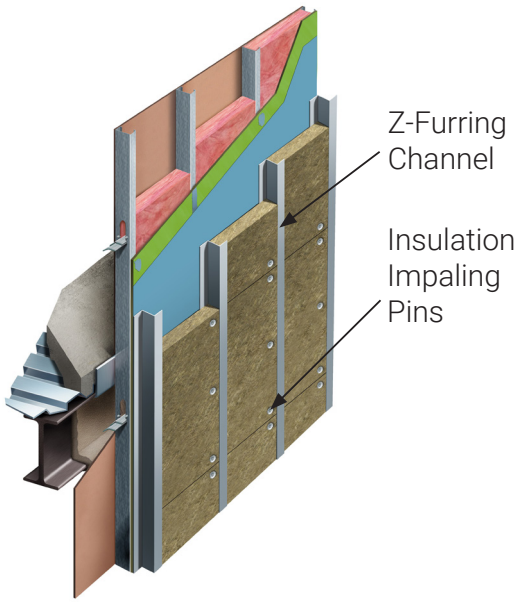


THICKNESS	PANEL WIDTH	PANEL LENGTH
89 to 102 mm (3½" to 4")	406 mm (16")	1219 mm (48")
76 to 102 mm (3" to 4")	610 mm (24")	1219 mm (48")
38 to 102 mm (1½" to 4")	914 mm (36")	1219 or 1524 mm (48" or 60")

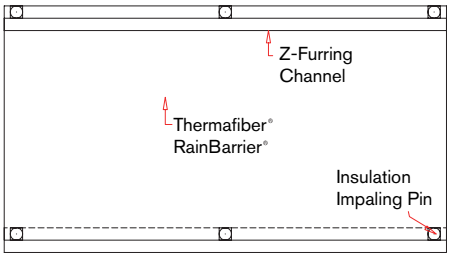
3 Pins per Insulation Panel – Vertical Installation



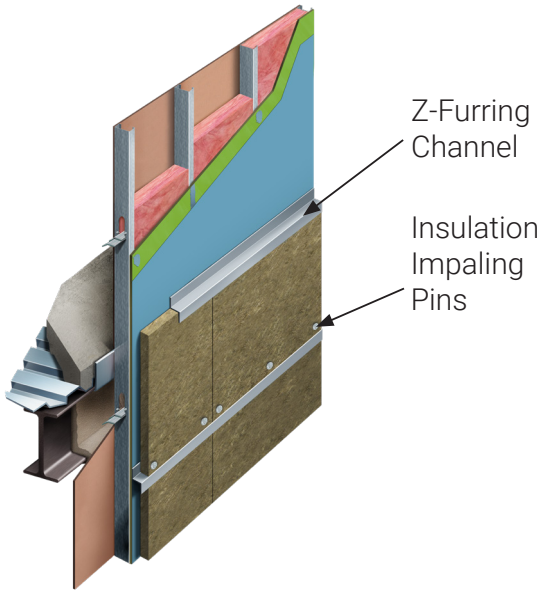
Vertical Z-Furring (3 pin)



3 Pins per Insulation Panel – Horizontal Installation

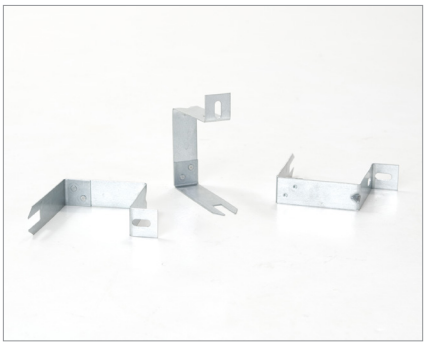


Horizontal Z-Furring (3 pin)



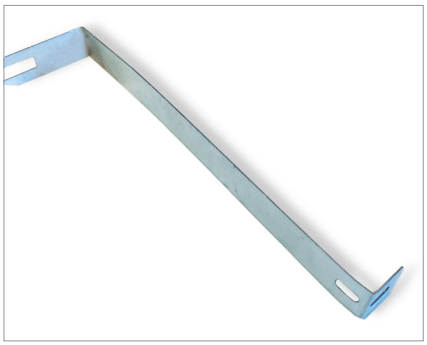
IMPASSE® HANGERS

Impasse® Hangers provide a precise, faster and safer installation of RainBarrier® insulation without the need to penetrate the air and water barrier (AWB). Impasse® Hangers facilitate a logical order of installation, installation efficiency, and allow for positive mechanical attachment directly to the steel stud.

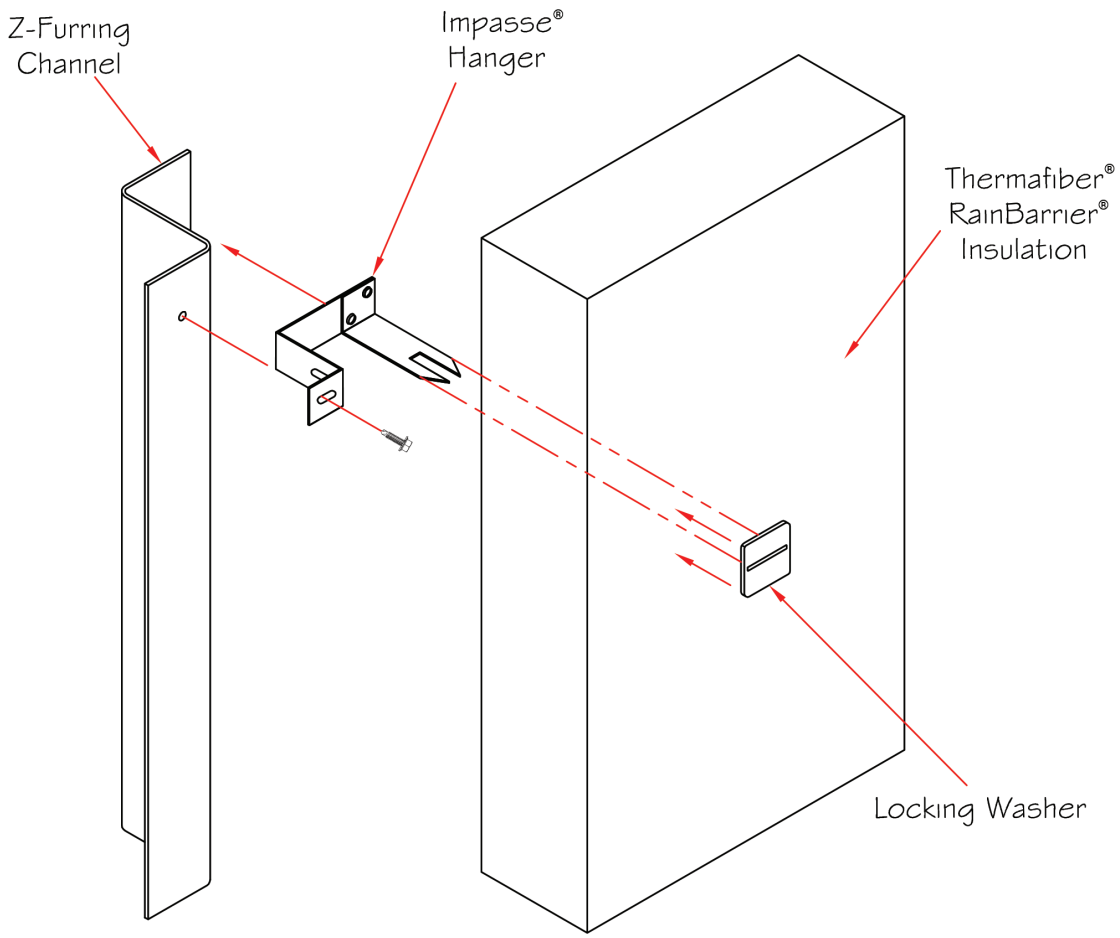


Impasse® Hanger

Locking Washer



Custom Impasse® ci Hanger



The Impasse® hangers can be installed in a similar fashion with horizontal z-furring.

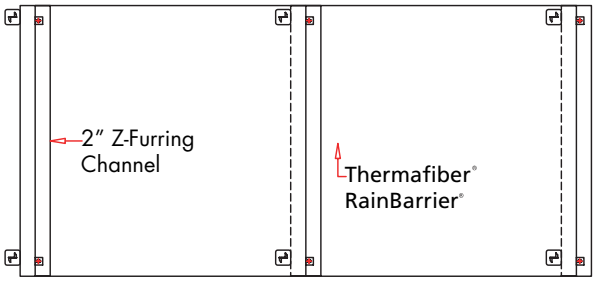
Z-Furring with Impasse® Hangers

The Impasse® insulation system overlaps components to lock in the fire barrier, virtually eliminating the possibility of insulation materials becoming dislodged by fire's turbulent forces. Installation of RainBarrier® HD and RainBarrier® 45 insulation using Impasse® Hangers with Z-furring typically requires only two hangers per insulation panel.

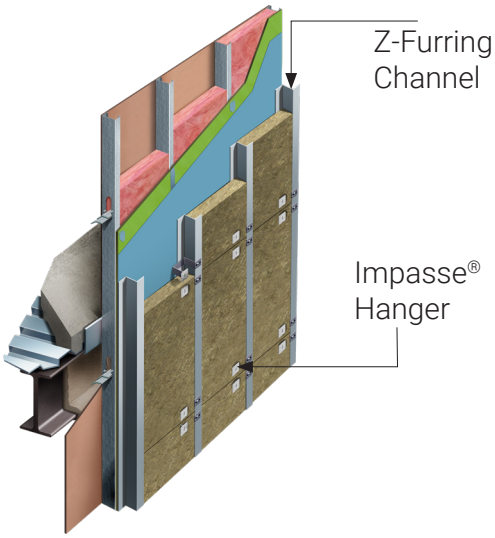
THICKNESS	PANEL WIDTH*	PANEL LENGTH*
25.4 to 102 mm (1" to 4")	406.4, 609.6 and 914.4 mm (16", 24" and 36")	914.4, 1219.2 and 1524 mm (36", 48" and 60")

*Standard measurements. Custom sizes are available.

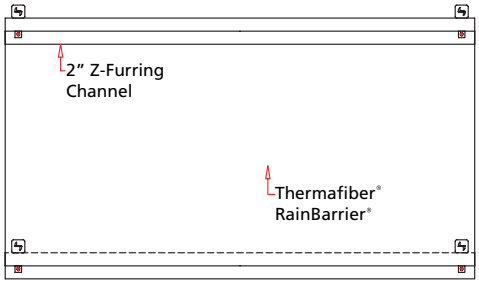
Vertical Installation



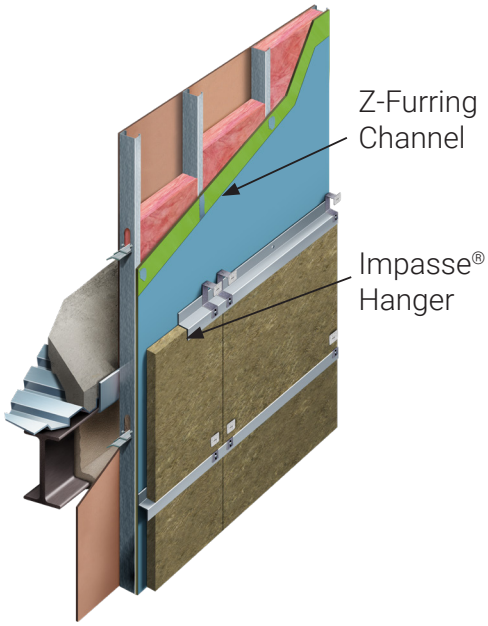
Vertical Z-Furring



Horizontal Installation



Horizontal Z-Furring

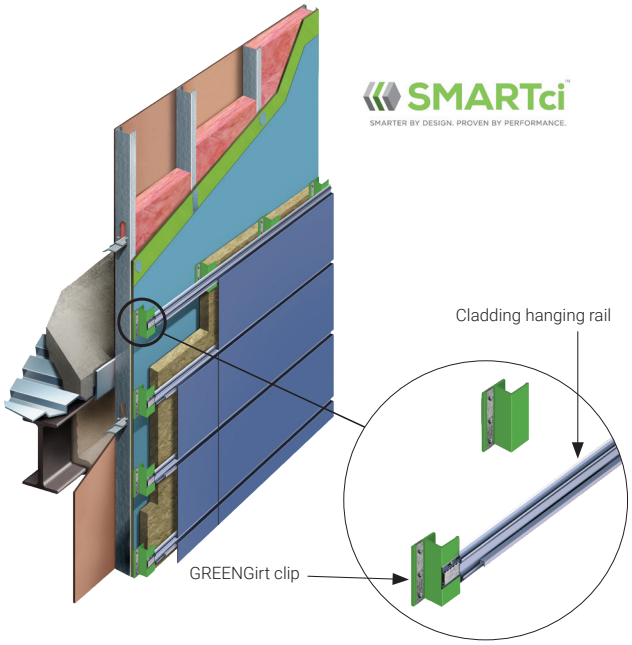


CLIP & RAIL SYSTEMS

Thermafiber, Inc. is a leader in exterior insulation design by providing installation compatibility with a wide range of RainBarrier® hanging options designed to work with virtually any cladding system in the industry, and accommodate both imaginative designs and demanding specifications.

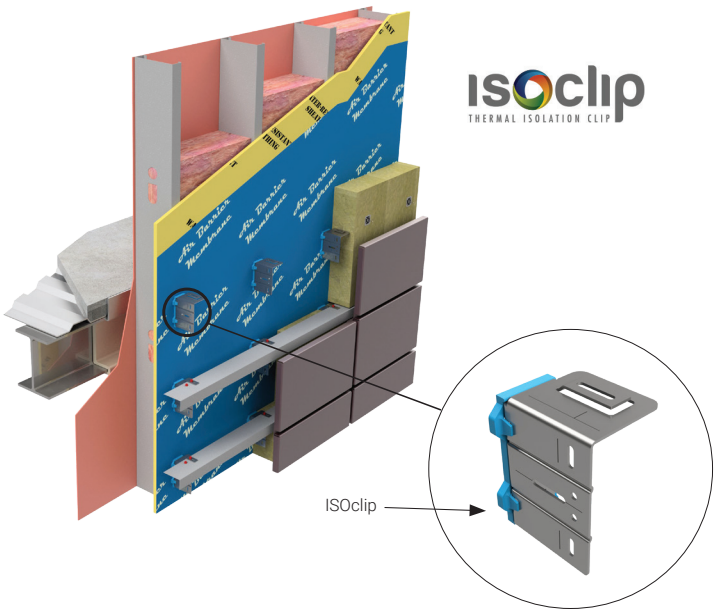
Glass Fiber Reinforced Clips

This insulated composite clip and rail system is composed of bioresin and recycled fiberglass.



Thermally Isolated Clips

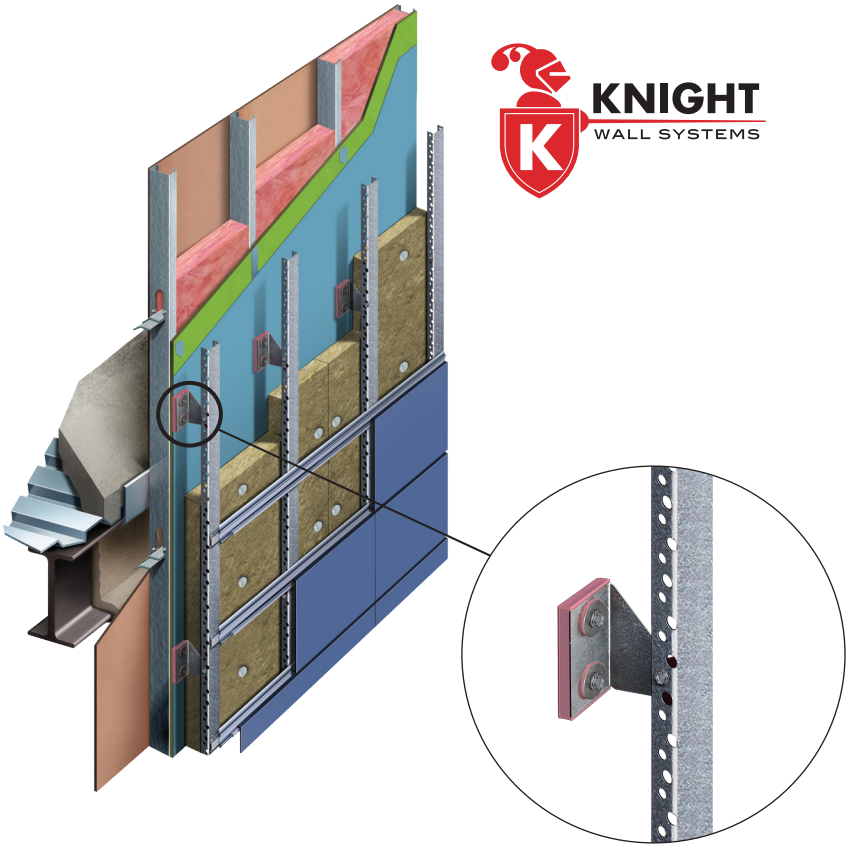
This galvanized steel clip and rail system is composed of a one component clip with glass fibre reinforced polyamide thermal isolator pad.



NORTHERN FACADES

Thermally Isolated Clips

These clips minimize contact between the wall and the rainscreen bracket and help reduce thermal bridging at the point of contact for insulation efficiency.

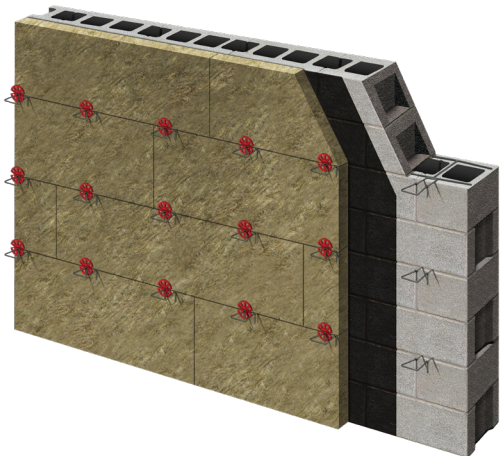


REINFORCEMENT AND ATTACHMENT METHODS

Wire Ties or Flat Anchors

RainBarrier® HD and RainBarrier® 45 insulation can either be impaled onto plate type wall ties or installed so wall ties occur at insulation seams. Insulation is then secured to the wall tie with Thermafiber® RainBarrier® clips.

See recommended pin installation pattern on page 10.



Typical wall ties

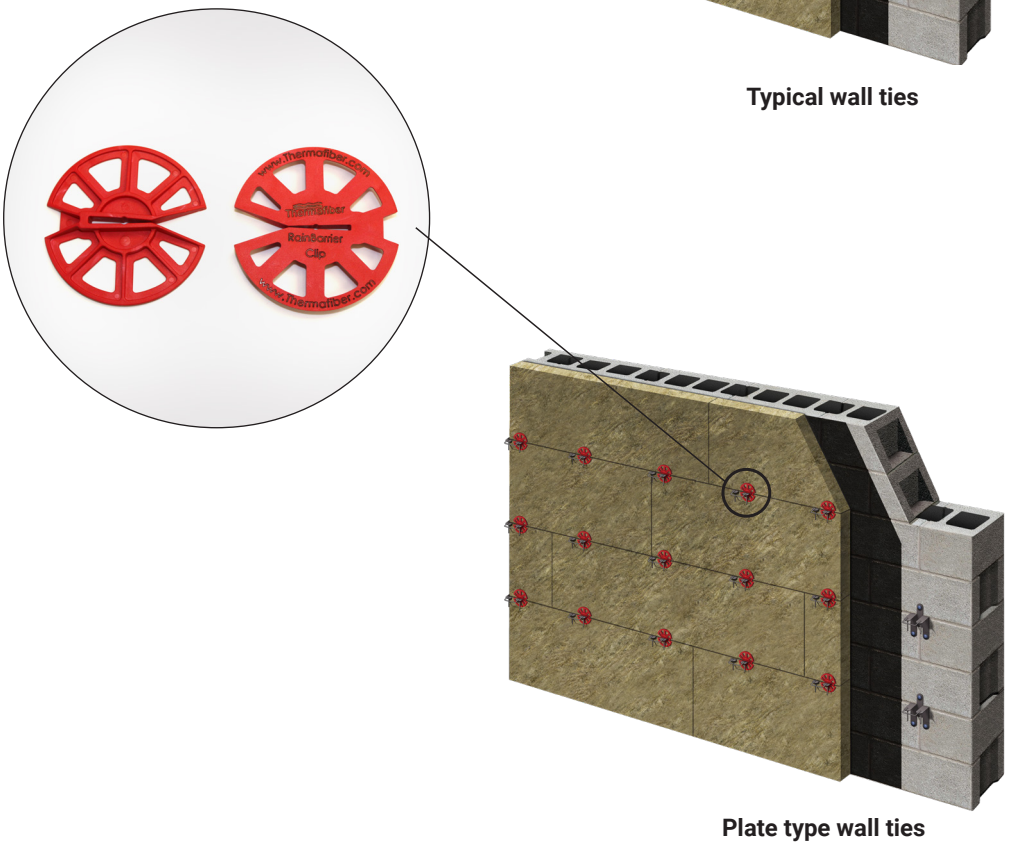


Plate type wall ties

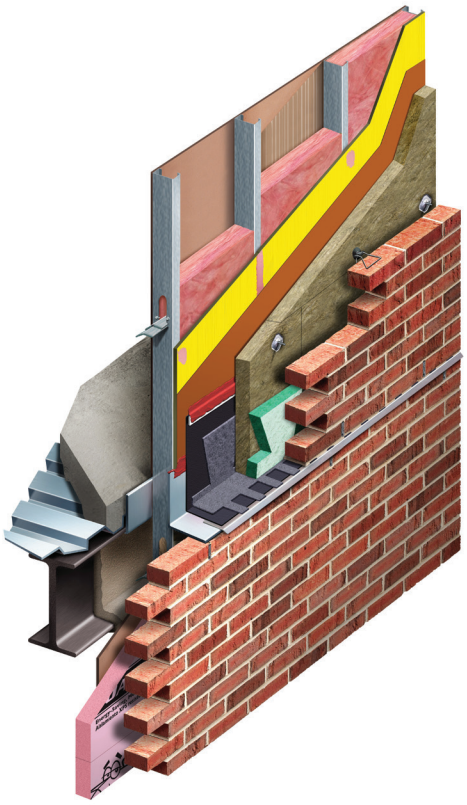
Note that galvanized steel retaining clips are recommended for systems requiring fire performance characteristics.

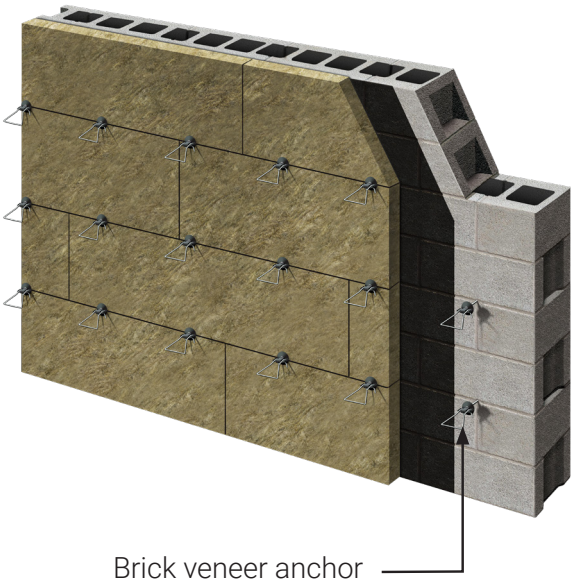
Barrel-Style Anchors

Owens Corning® RainBarrier® HD and RainBarrier® 45 insulation can be attached to CMU walls with brick tie wall anchors. Secure insulation by screwing anchor screw with minimum 1½" diameter head to the CMU anchor.

Brick Veneer Anchor Wall

Brick and Mortar with Barrel Ties





APPENDIX - ENERGY CODES REFERENCE TABLES

JURISDICTION	AVAILABLE ENERGY CODE PATHS
Alberta	NECB 2017
British Columbia	ASHRAE 90.1-2016 or NECB 2015 • Optionally for MURBs, Commercial Office and Retail Buildings: BC Energy Step Code TEUI, and TEDI Target
Vancouver	Vancouver Building Bylaw • For MURBs, Commercial Office and Retail Buildings: TEUI, TEDI and GHGI Targets • Other buildings: ASHRAE 90.1-2016 or NECB 2015
Manitoba	NECB 2011
Nova Scotia	NECB 2015; NECB 2017[1]
Ontario	SB-10: ASHRAE 90.1-2013 or NECB 2015 with custom envelope requirements
Toronto	Toronto Green Standard: • For MURBs, Commercial Office and Retail Buildings: TEUI, TEDI and GHGI Targets • Other buildings: percent better than SB-10
Quebec	B-1.1 and E-1.1, or B-1.1, Chapter I.1 (pending adoption)
Saskatchewan	NECB 2017
Yukon	Whitehorse Building Bylaw: NECB 2017 with custom envelope requirements

[1]Effective January 1, 2020

ASHRAE 90.1-2013 AND 2016 PRESCRIPTIVE STEEL STUD EFFECTIVE WALL
PERFORMANCE R-VALUE, FT²·HR·F/BTU (RSI, M²·K/W)*

	2013 AND 2016	
Zone	**Non-residential**	**Residential**
4	15.6 (2.74)	15.6 (2.74)
5	18.2 (3.17)	18.2 (3.17)
6	20.4 (3.61)	20.4 (3.61)
7	20.4 (3.61)	23.8 (4.17)
8	27.0 (4.72)	27.0 (4.72)

*Effective Wall Performance must be met after accounting for code required thermal bridging

OBC SB-10 PRESCRIPTIVE EFFECTIVE WALL
PERFORMANCE R-VALUE, FT²·HR·F/BTU (RSI, M²·K/W)*

	90.1-2013 PATH, STEEL STUD WALLS		NECB 2015 PATH
Zone	**Non-residential**	**Residential**	
5	20.2 (3.56)	20.2 (3.56)	20.4 (3.60)
6	22.7 (4.00)	22.7 (4.00)	23.0 (4.05)
7+	22.7 (4.00)	26.4 (4.65)	27.0 (4.76)

*Effective Wall Performance must be met after accounting for code required thermal bridging
+Zone 7 requirements apply for all buildings using electric space heating

NECB PRESCRIPTIVE EFFECTIVE WALL
PERFORMANCE R-VALUE, FT²·HR·F/BTU (RSI, M²·K/W)*

	2011, 2015, AND 2017
Zone	
4	18.0 (3.17)
5	20.4 (3.60)
6	23.0 (4.05)
7A and 7B	27.0 (4.76)
8	31.0 (5.46)

*Effective Wall Performance must be met after accounting for code required thermal bridging

OWENS CORNING® THERMAFIBER®

The Name In Mineral Wool®

Owens Corning® Thermafiber® mineral wool insulation has brought fire protection, safety and thermal comfort since 1934. Thermafiber, Inc. was acquired by Owens Corning, a leading supplier of building products you can trust.

THERMAFIBER #1 Specified Commercial Mineral Wool Insulation *

10 reasons to choose Thermafiber® mineral wool

1. Made from inorganic, non-combustible material per CAN/ULC S114 and ASTM E136
2. Minimum 70% recycled content[2]
3. Resists temperatures of over 1,093º C (2,000º F)
4. Does not require a thermal barrier
5. Flame Spread and Smoke Developed ratings of 0/5 per CAN/ULC S102 and 0/0 per ASTM E84
6. Allows vapour transmission providing flexibility in vapour barrier placement
7. Consistent R-values per any thickness regardless of installation temperatures
8. Can be installed at any temperature or weather condition
9. Requires minimal Personal Protective Equipment (PPE) to install
10. Provides excellent thermal, acoustical and fire-resistive properties in one product

[1] Recycled content verified by ICC-ES.
* Source: Dodge Data & Analytics - Construction.com Spec Rate Report - September 2017.

To learn more about Owens Corning® Thermafiber® RainBarrier® Exterior Insulation, visit www.owenscorning.ca.

OWENS CORNING® Thermafiber®

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