

# Welcome

---



ccSPF

Closed Cell Spray Polyurethane Foam

*Much more than an Insulation!*

April 23, 2025

# Introductions

---

## **Michael Pace**

- Building Resource Inc.
  - President
  - BSS Building Science Specialist, 2008
  - Member CSC, OBEC, OACETT

## **Steven Cole**

- BASF Canada
  - Key Account Manager Spray - Central & Western Canada

# Resources

---

## **Gary Chu**

- BASF Canada Inc.
  - Senior Construction and Standards Regulations Specialist
  - Participates in Codes and Standards Development

## **Ibrahim Huseen, M.Eng.**

- BASF Canada Inc
  - Construction and Standards Regulations Specialist

# Learning Objectives

---

- 1. Define what Closed Cell Spray Polyurethane Foam (ccSPF) is and how it compares to Open Cell Spray Polyurethane (ocSPF) and other insulation types**
- 2. Describe the product standard for ccSPF and the required and optional testing manufactures can undertake**
- 3. Review the many applications for ccSPF within the building envelope including Fire Rated assemblies**



---

Closed Cell Spray Polyurethane Foam

**ccSPF**

# Foam Types

CLOSED cell ccSPF (WALLTITE)	Property	OPEN cell ocSPF (ENERTITE)
CAN/ULC S705.1:2018-REV1 Included in NBC since 1990's	<b>Standard</b>	CAN/ULC S712.1 Not in the NBC
Medium	<b>Density</b>	low
HFO	<b>Blowing Agent</b>	Water (CO2)
30psi Rigid	<b>Strength</b>	<4psi Soft
25-40X	<b>Expansion (liquid)</b>	100-120X
Low	Acoustic STC	High
Minimal	Water Absorption	High
Standard: High R insulation, air and vapour barrier  <b>Optional:</b> Radon barrier, Air Barrier System, Fire Rated Systems	<b>Functions</b>	Insulation Air Barrier

# Foam Types

---



ccSPF applied as ci  
Self Supporting



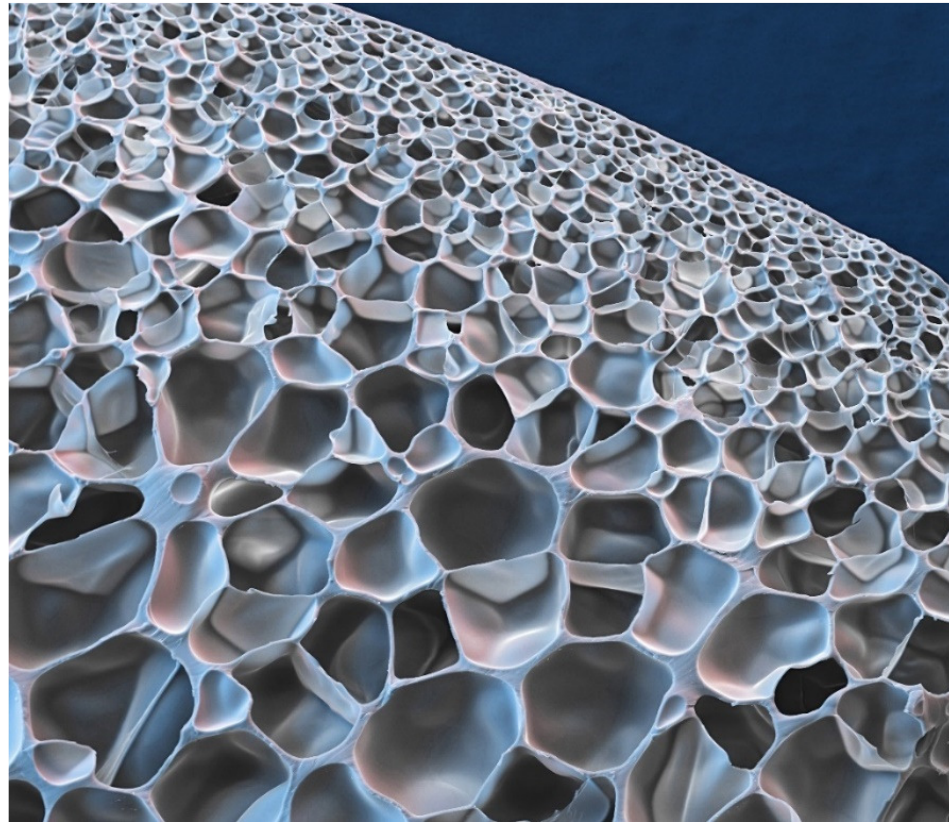
ocSPF  
must be scarfed and supported



# ccSPF Composition

---

- Blowing Agents occupy 95% of the volume of foams
- **Most of the GWP of foam is from the Blowing Agent**



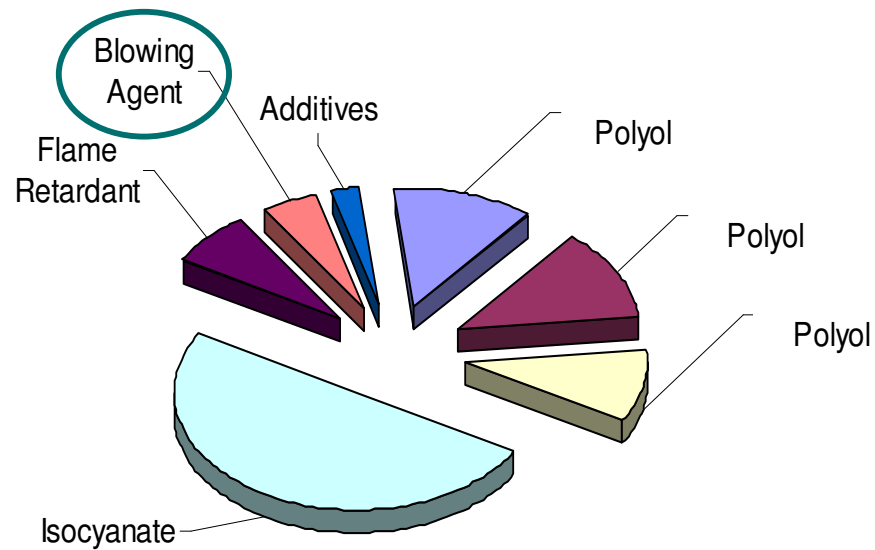
ccSPF



# ccSPF Composition

---

## Isocyanate



## Resin





# Codes, Standards, Compliances

---

## **BASIC Requirements for ALL ccSPF sold in Canada**

- Complies with CAN/ULC S705.1 as verified by a third party report
- Accurate Reporting of the Long Term Thermal Resistance (LTTR)



# ccSPF Standards

## CAN/ULC-S705.1-15 STANDARD FOR THERMAL INSULATION - SPRAY APPLIED RIGID POLYURETHANE FOAM, MEDIUM DENSITY - MATERIAL THIRD EDITION

Third Party Report  
Confirmation of  
Compliance  
ULC or CCMC



The image shows the front cover of a UL Solutions Evaluation Report. The cover is white with a large red circular graphic on the right side. The UL Solutions logo is in the top left, and the tagline 'Safety. Science. Transformation.' is in the top right. The title 'UL Solutions Evaluation Report' is prominently displayed. Below the title, the report number 'ULC ER41037' and the issue date 'May 25, 2023' are listed. A note directs the reader to the UL Solutions Product IQ database for the current status. The category code 'ULEX7 - Thermal Protection for Canada' is provided. The product being evaluated is 'CSI MasterFormat®', with details on its division and sub-level. The company name 'BASF Canada Inc.' and its address in Toronto are listed, along with the website 'www.basf.com'. The subject of the report is 'WALLTITE® v.5'. The scope of evaluation is defined by the 2015 and 2020 National Building Codes of Canada. Contact information for Underwriters Laboratories of Canada Inc. is at the bottom left, and the copyright notice is at the bottom right.

**UL Solutions**  
Safety. Science. Transformation.™

**UL Solutions  
Evaluation Report**

**ULC ER41037**  
Issued: May 25, 2023  
Visit the UL Solutions [Product IQ® database](#) for current status of report.  
Category Code: ULEX7 - Thermal Protection for Canada  
CSI MasterFormat®  
Division: 07 21 00 Thermal Insulation  
Sub Level: 07 21 19 Foamed-In-Place Insulation

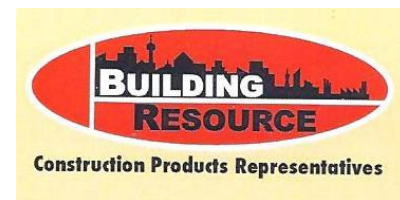
**COMPANY:**  
BASF Canada Inc.  
10 Constellation Court  
Toronto, Ontario  
Canada M9W 1K1  
[www.basf.com](http://www.basf.com)

**1. SUBJECT:**  
WALLTITE® v.5

**2. SCOPE OF EVALUATION**  
2015 National Building Code of Canada, NBCC (Sept. 28, 2018)  
2020 National Building Code of Canada, NBCC (July 15, 2019)

Underwriters Laboratories of Canada Inc.  
7 Underwriters Road  
Toronto, ON M1R 3A9  
Canada  
T +1.800.463.6852  
[UL.com/Solutions](http://UL.com/Solutions)

© 2023 Underwriters Laboratories of Canada Inc.





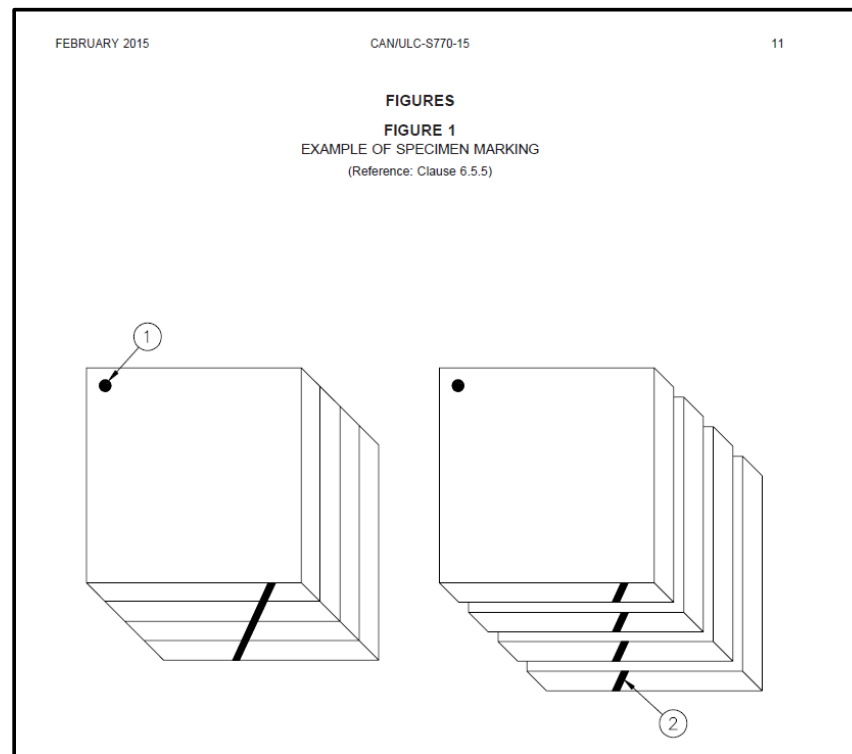
# ccSPF Standards

Properties	Requirements	Results
Density (minimum site specified density)	$\geq 28 \text{ kg/m}^3$	$32.5 \text{ kg/m}^3$
Air Permeance	$\leq 0.02 \text{ L/(s} \cdot \text{m}^2) @ 75 \text{ Pa}$	Compliant
Compression Strength	$\geq 170 \text{ kPa}$	203 kPa
Dimensional Stability		
28 d at $-20 \pm 3^\circ\text{C}$ , ambient humidity	-2 to +5%	-0.5%
28 d at $80 \pm 2^\circ\text{C}$ , ambient humidity	-2 to +8%	+1.0%
28 d at $70 \pm 2^\circ\text{C}$ , $97 \pm 3\%$ R.H	-2 to +14%	+8.0%
Fungi Resistance	No Growth	Compliant
Long Term Thermal Resistance		
@ 50mm thickness	$\geq 1.80 \text{ m}^2 \cdot \text{K/W}$	$1.95 \text{ m}^2 \cdot \text{K/W}$
@ 75mm thickness	Declare	$3.00 \text{ m}^2 \cdot \text{K/W}$
Open-Cell Content	$\leq 10\%$	7 %
Surface Burning Characteristics		
Flame Spread Rating (CAN/ULC-S102)	$\leq 500$	Compliant
Flame Spread Rating (CAN/ULC-S127)	$\leq 500$	Compliant
Tensile Strength	$\geq 200 \text{ kPa}$	267 kPa
Time to Occupancy	< 30 Days	25 hrs.
Water Absorption by Volume	$\leq 4.0 \%$	1.9 %
Water Vapour Permeance @ 50mm thickness	$\leq 80 \text{ ng/(Pa} \cdot \text{s} \cdot \text{m}^2)$	$56 \text{ ng/(Pa} \cdot \text{s} \cdot \text{m}^2)$

# ccSPF Thermal Performance

## What is Long Term Thermal Resistance (LTTR)?

- Test method to estimate the future thermal resistance for insulation products, with captive blowing agents; ccSPF, XPS, Polyiso...
- Required for ALL ccSPF products sold in Canada



# ccSPF Thermal Performance

---

## Why is this important?

- Used for energy modelling
- To prove compliance with codes; Step Code, Passive House...

EXAMPLE OF R Value Variation Same product		
Method	Result R/inch (RSI/25mm)	Variance (%)
Initial R value	7.1 (1.25)	
ASTM C518 Aging (USA)	6.5 (1.14)	9
<b>CAN/ULC S770 (LTTR)</b>	<b>5.2 (0.92)</b>	<b>27</b>

# ccSPF Thermal Performance

---

## CAN/ULC-S770 STANDARD TEST METHOD FOR DETERMINATION OF LONG-TERM THERMAL RESISTANCE OF CLOSED-CELL THERMAL INSULATING FOAMS

**CAN/ULC S770 updated in 2025**

### **Notes to Table A-9.36.2.4 (1)**

(6) All types of cellular foam plastic insulation manufactured to be able to retain a blowing agent, other than air, for a period longer than 180 days shall be tested for long-term thermal resistance (LTTR) in accordance with CAN/ULC-S770, “Standard Test Method for Determination of Long-Term Thermal Resistance of Closed-Cell Thermal Insulating Foams.” This LTTR value shall be input as the design thermal resistance value for the purpose of energy calculations in Section 9.36. Product standards contain a baseline LTTR for a thickness of 50 mm, from which the LTTR for other thicknesses can be calculated.

# Codes, Standards, Compliances

---

## Optional Testing

- Air Barrier System or Assembly
- Radon Barrier
- Environmental Product Declaration (EPD)
- Part of a Fire Rated Assembly

# Codes, Standards, Compliances

---

## Air Barrier System or Assembly

### CAN/ULC S742

- Allows for use without the need for a separate, full coverage, AVB
- Variables
  - Transition membrane requirements
  - Treatment at board joints, penetrations...
- Substrates; GMGB and/or CMU

**CONFIRM by reading ULC or CCMC Report**





# Codes, Standards, Compliances

---





# Codes, Standards, Compliances

---





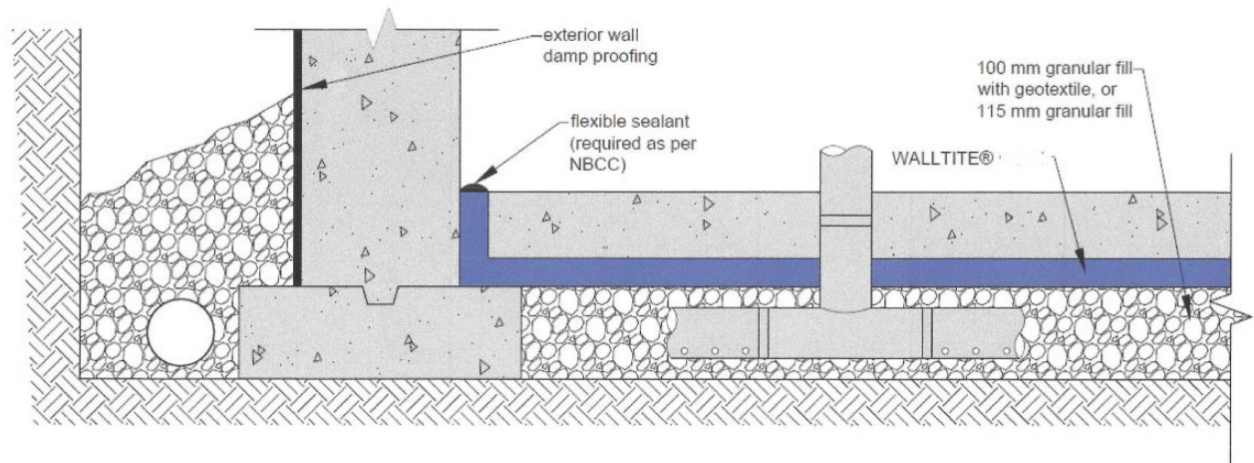
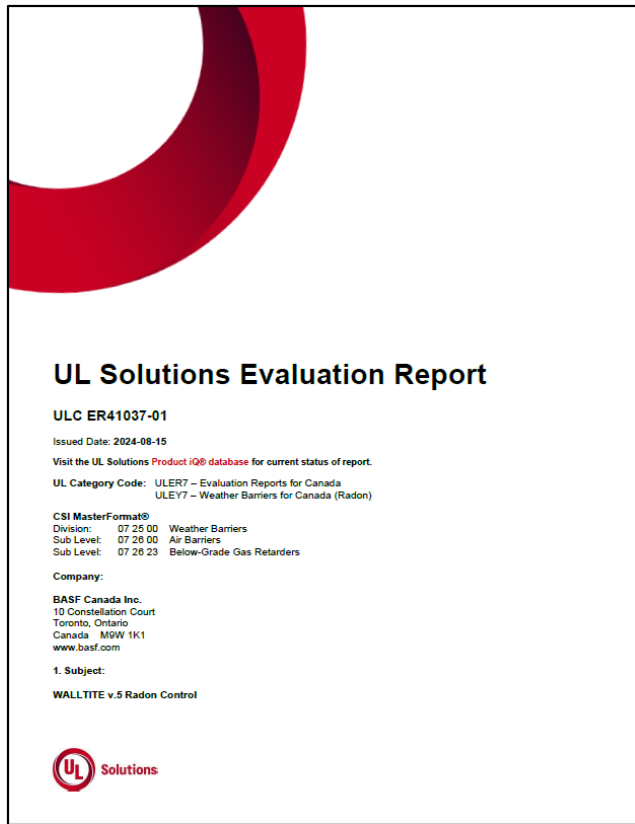
# Codes, Standards, Compliances

---

## **Radon Barrier: ISO 11665 Measurement of Radioactivity in the Environment – Air**

- Confirmed by a third party report
- Allows for use without the need for a separate under slab vapour barrier (poly)
- Eliminates almost all sealants and tapes
- Typically applied at 50mm or greater

# Codes, Standards, Compliances



ULC ER41037-01 WALLTITE v.5 Radon Control  
Testing indicated that (WALLTITE v5) exceeded the performance of 6 mil poly for any thickness above **15 mm**

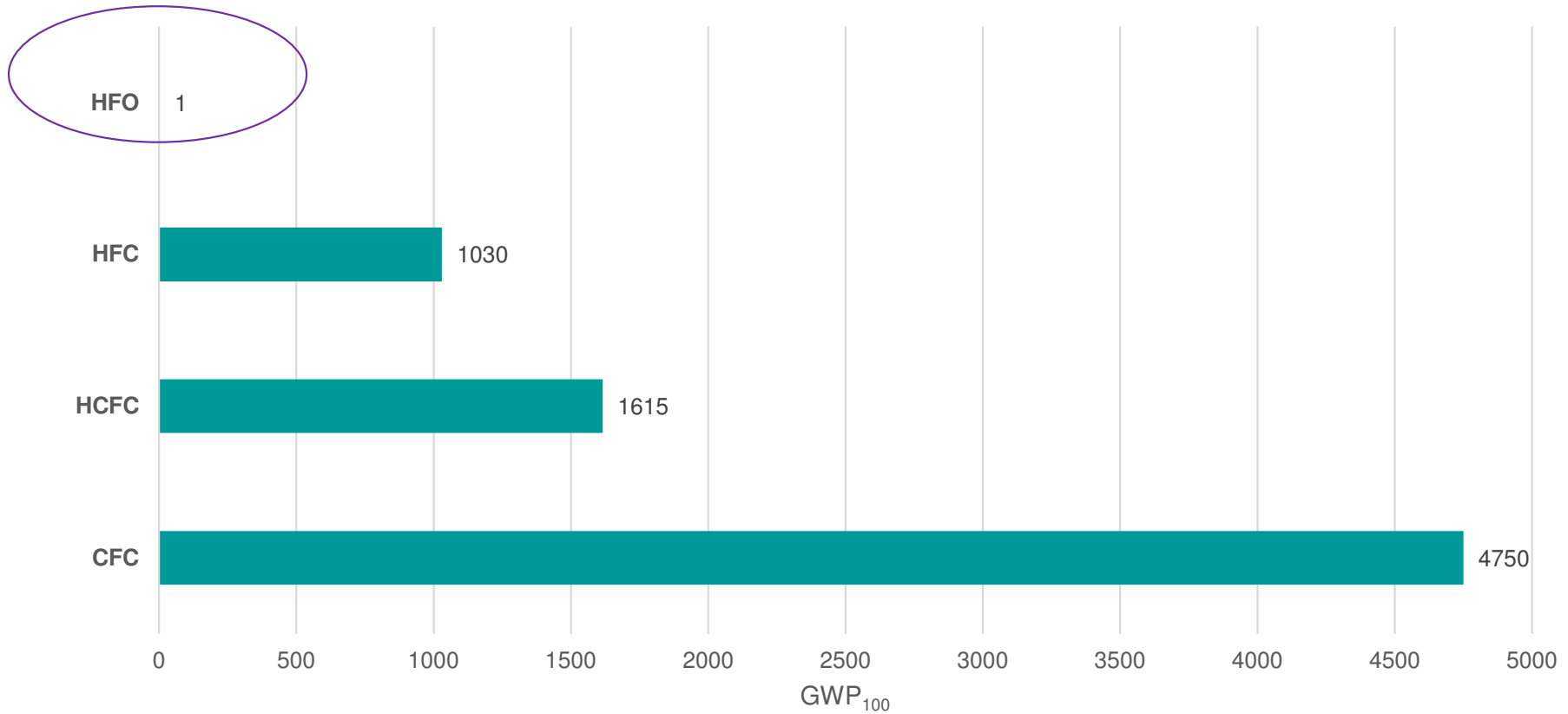
# Sustainability

---



# Sustainability

Carbon Footprint (CO<sub>2</sub>)  
GWP<sub>100</sub> Of Foam Plastic **Blowing Agents**



# Sustainability

## Environmental Product Declaration (EPD)

- Sustainability of the finished product
- Global Warming Potential (GWP)
- Allows for comparisons with other brands and types of insulation

ENVIRONMENTAL PRODUCT DECLARATION

### SPRAY POLYURETHANE FOAM INSULATION

CLOSED CELL USING HYDROFLUOROOLEFINS (CCSPF, HFO)



SPF products are commonly used in residential, light commercial, commercial, institutional, and certain industrial applications. Closed cell SPF (ccSPF) is applied to the interior or exterior side of the building envelope.



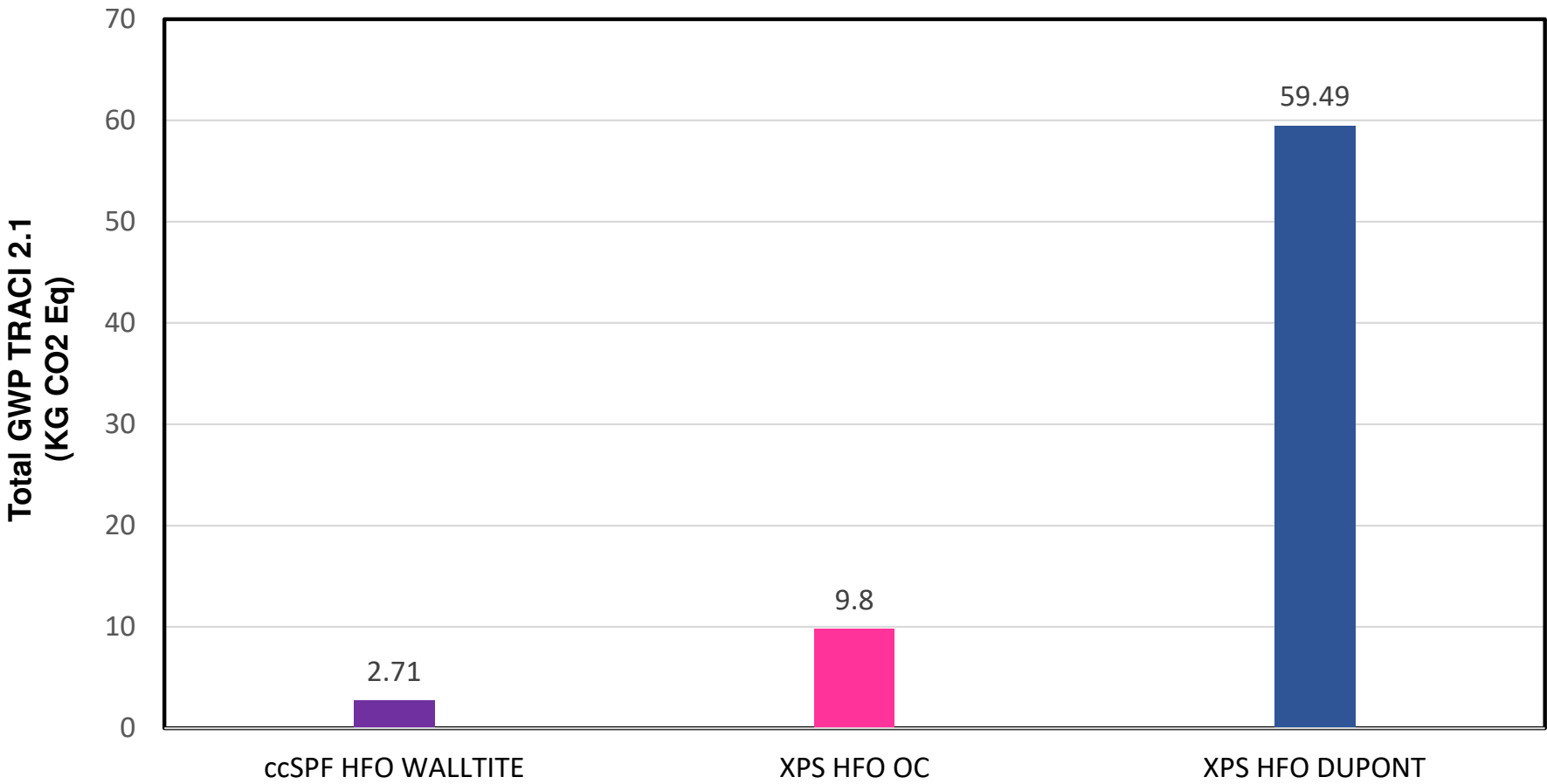
Founded in 1987, originally as the Polyurethane Foam Contractors Division, the Spray Polyurethane Foam Alliance (SPFA) is the collective voice, along with the educational and technical resource, for the spray polyurethane foam industry. Our experienced staff and member-comprised committees provide a wide variety of services to the industry.

SPFA develops tools designed to educate and influence the construction industry with the positive benefits of spray polyurethane foam roofing, insulation, coatings, and specialty installations.



# GWP - ccSPF vs XPS

Functional Unit: 1m²@Rsi 1.0

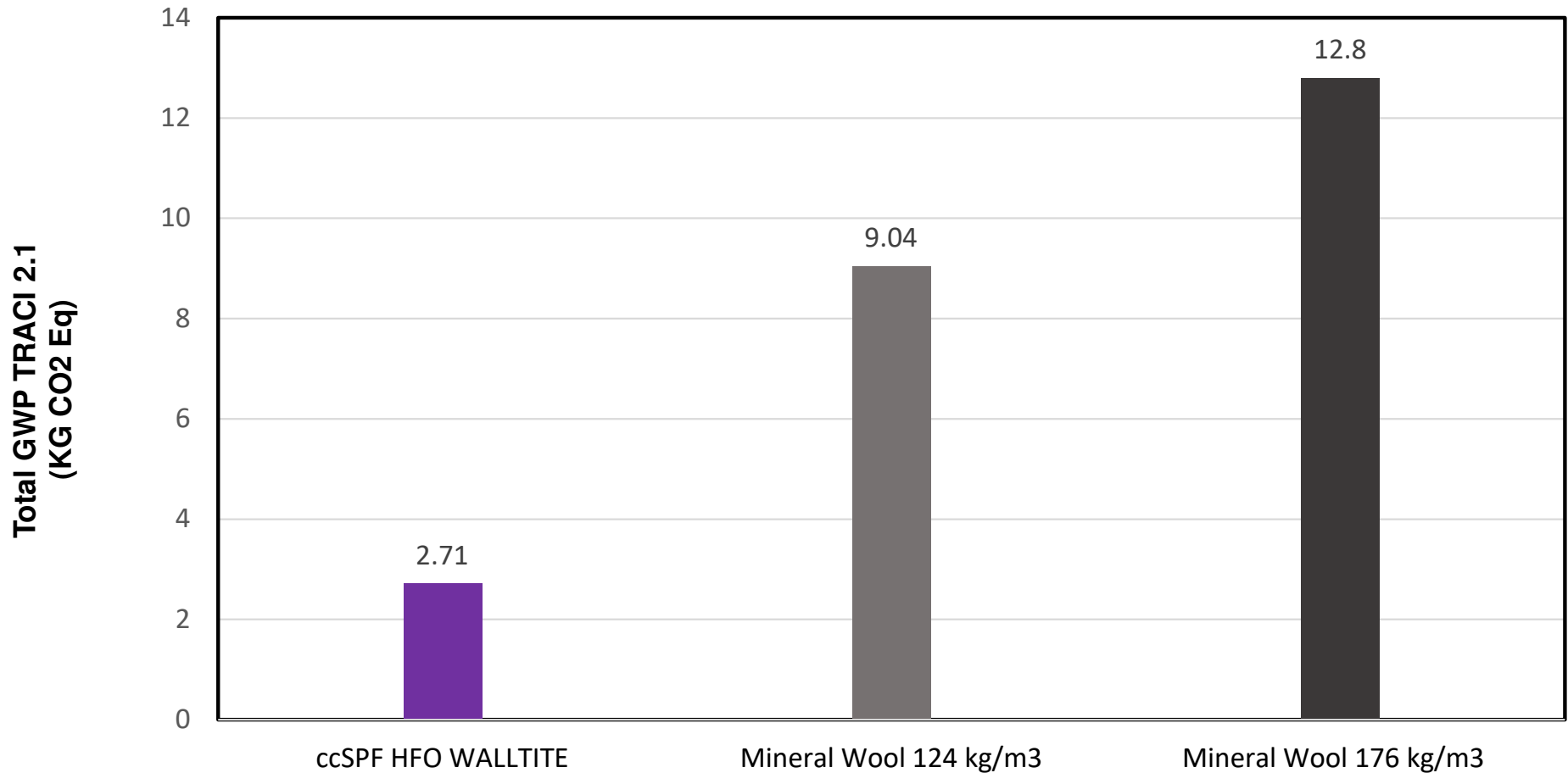


Source: Values are based on data sourced from publicly available environmental product declarations (EPDs) as of 2021 05 20

ccSPF:	SPFA	EPD-085	ASTM
XPS HFO	Owens Corning	4789639125.101.1	ULE
XPS HFO	Dupont	4786548101.101.1	ULE
XPS HFO:	Dupont	4789559274.102.1	ULE

# GWP – ccSPF vs Mineral Wool

Functional Unit: 1m<sup>2</sup>@Rsi 1.0



Source: Values are based on data sourced from publicly available environmental product declarations (EPDs) as of 2021 05 20

ccSPF: SPFA EPD-085 ASTM

Mineral Fibre NAIMA Assoc. 4788703029.101.1 ULE

NOTE: Published in the Rockwool website.

Comfort Board 80 has a density of 128 kg/m3 which is comparable to the 124kg/m3 in the EPD

Comfort Board 110 has a density of 176 kg/m3. The GWP value is prorated to account for the increased GWP for this higher density.



# QAP

---



- Third party QAP provider for most Manufacturers
- Certifies installers meet the CAN/ULC S705.2 standard
- Must carry photo ID
- <https://qap.caliberqa.com/en/>
- Also CUFCA and UFC



# SQAP Cards

## Registered Contractor

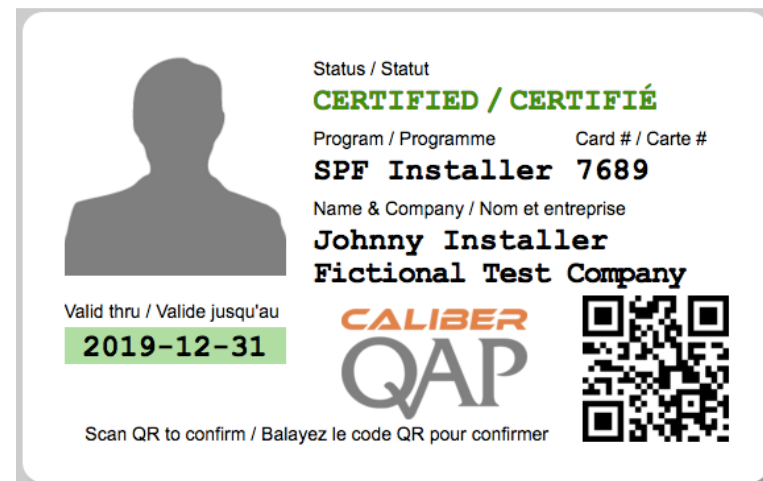
Need to be registered and in good standing with Certification Organization to buy product



## Certified Installer

Certified by certification organization to spray foam

Trained on spray foam and building science



# QAP

## INSULATION SYSTEM DAILY WORK RECORD

EMAIL TO DWR@CALIBERQA.COM WITHIN 1 MONTH



Contractor:		Date:	Y	Y	Y	Y	M	M	D	D
Installer:		Card #:								
Apprentice:		Appr. Card #								

### PROJECT INFORMATION

Customer Name:		Construction:	Unoccupied <input type="checkbox"/>	Occupied <input type="checkbox"/>
Project Name:		Ventilation 0.3 ACH:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Project Address:		Spray Area Isolated:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
City:		Warning Sign Posted:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Prov.: AB BC MB NB NL NS NU ON PE QC SK OTHER		Type: Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Other <input type="checkbox"/>		
Project Description:		Building Permit Posted:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Total Project Wall Area:	sq. m <input type="checkbox"/> sq. ft. <input type="checkbox"/>	Building Permit #:		
Person/Company responsible for thermal barrier:				

### MATERIAL INFORMATION

Soprema <input type="checkbox"/> BASF <input type="checkbox"/> Carlisle <input type="checkbox"/> Huntsman (HBS) <input type="checkbox"/> JM <input type="checkbox"/> Shunda SPF <input type="checkbox"/> SWD <input type="checkbox"/> Other: Product	
Isocyanate	Resin
Lot number:	Formulation
Expiry Date:	<input type="checkbox"/> CCMC #, or <input type="checkbox"/> ULC #
Manufacturing Date:	Density: <input type="checkbox"/> Light <input type="checkbox"/> Medium <input type="checkbox"/> Other
Drum Temperature:	Color:
Quantity of Cycles Used:	Quantity of Foam Used: Kg <input type="checkbox"/> Pounds (lb.) <input type="checkbox"/>

### EQUIPMENT

Manufacturer of Machine:	Model:
Mixing Chamber Size:	Hose Length: m <input type="checkbox"/> ft <input type="checkbox"/>
Isocyanate psi:	Resin psi:
Primary Heater Temperature:	Hose Temperature: °F <input type="checkbox"/> °C <input type="checkbox"/>

### ENVIRONMENTAL CONDITIONS

Time (hhmm) 24h format	Ambient Temperature °F <input type="checkbox"/> °C <input type="checkbox"/>	Relative Humidity (%)	Wind Velocity Mph <input type="checkbox"/> Km/h <input type="checkbox"/>	Substrate Temperature °F <input type="checkbox"/> °C <input type="checkbox"/>

### SUBSTRATE CONDITIONS

Type:	SPECIAL CONDITIONS				Details:
CONDITIONS					
Clean:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Primer Required:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Dry:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Protection Required:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Properly Fastened:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Exterior Coating:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Proper Adhesion:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Interior Thermal Barrier:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
					Moisture Content (MC):

### TEST RESULTS

Density Calc: Open cell:  $g + cm^3 \times 1000 = Kg/m^3 + 16 = pcf$  Closed cell:  $g + mL \times 1000 = Kg/m^3 + 16 = pcf$

Mass	Volume <input type="checkbox"/> cm <sup>3</sup> (open cell) <input type="checkbox"/> ml (closed cell)	Calculated Density
Weight of Sample #1(g):	Volume of Sample #1:	
Weight of Sample #2 (g):	Volume of Sample #2:	
Weight of Sample #3 (g):	Volume of Sample #3:	
Thickness Pass #1:	mm	inches
Thickness Pass #2:	mm	inches
Thickness Pass #3:	mm	inches
Number of Passes: 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	Total Thickness mm	inches
Adhesion Test #1: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Cohesion Test #1: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	
Adhesion Test #2: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Cohesion Test #2: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	
Adhesion Test #3: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Cohesion Test #3: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	

CORRECTIVE ACTIONS (List corrective action taken as a result of test failures)

Signature

Updated: 2021-07-12



# QAP

## INSULATION SYSTEM DAILY WORK RECORD

EMAIL TO DWR@CALIBERQA.COM WITHIN 1 MONTH



Contractor:																		Date:	Y	Y	Y	Y	M	M	D	D
Installer:																		Card #:								
Apprentice:																		Appr. Card #								

### PROJECT INFORMATION

Customer Name:																		Construction:	Unoccupied <input type="checkbox"/>	Occupied <input type="checkbox"/>
Project Name:																		Ventilation 0.3 ACH:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Project Address:																		Spray Area Isolated:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
City:																		Warning Sign Posted:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Prov.:	AB	BC	MB	NB	NL	NS	NU	ON	PE	QC	SK	OTHER	Type:	Residential <input type="checkbox"/>	Commercial <input type="checkbox"/>	Other <input type="checkbox"/>				
Project Description:													Building Permit Posted:	Yes <input type="checkbox"/>	No <input type="checkbox"/>					
Total Project Wall Area:							sq. m <input type="checkbox"/>					sq. ft. <input type="checkbox"/>	Building Permit #:							
Person/Company responsible for thermal barrier:																				



# QAP

## MATERIAL INFORMATION

Soprema <input type="checkbox"/> BASF <input type="checkbox"/> Carlisle <input type="checkbox"/> Huntsman (HBS) <input type="checkbox"/> JM <input type="checkbox"/> Shunda SPF <input type="checkbox"/> SWD <input type="checkbox"/> Other: <input type="checkbox"/>																Product							
				Isocyanate				Resin															
Lot number:												Formulation											
Expiry Date:				Y	Y	Y	Y	M	M	D	D	Y	Y	Y	Y	M	M	D	D	<input type="checkbox"/> CCMC #, or <input type="checkbox"/> ULC #			
Manufacturing Date:				Y	Y	Y	Y	M	M	D	D	Y	Y	Y	Y	M	M	D	D	Density: <input type="checkbox"/> Light <input type="checkbox"/> Medium <input type="checkbox"/> Other			
Drum Temperature:								%F <input type="checkbox"/>				%C <input type="checkbox"/>				Color:							
Quantity of Cycles Used:								Quantity of Foam Used:								Kg <input type="checkbox"/> Pounds (lb.) <input type="checkbox"/>							

## EQUIPMENT

Manufacturer of Machine:				Model:			
Mixing Chamber Size:				Hose Length:		m <input type="checkbox"/> ft <input type="checkbox"/>	
Isocyanate psi:				Resin psi:			
Primary Heater Temperature:				Hose Temperature:		%F <input type="checkbox"/> %C <input type="checkbox"/>	

## ENVIRONMENTAL CONDITIONS

Time (hhmm) 24h format	Ambient Temperature °F <input type="checkbox"/> °C <input type="checkbox"/>	Relative Humidity (%)	Wind Velocity Mph <input type="checkbox"/> Km/h <input type="checkbox"/>	Substrate Temperature °F <input type="checkbox"/> °C <input type="checkbox"/>

# QAP

---

## SUBSTRATE CONDITIONS

Type:						Details:
CONDITIONS			SPECIAL CONDITIONS			
Clean:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Primer Required:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Dry:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Protection Required:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Properly Fastened:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Exterior Coating:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Moisture Content (MC):
Proper Adhesion:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Interior Thermal Barrier:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

# QAP

## TEST RESULTS

**Density Calc:** Open cell:  $g + cm^3 \times 1000 = Kg/m^3$  + 16 = pcf Closed cell:  $g + mL \times 1000 = Kg/m^3$  + 16 = pcf

Mass					Volume <input type="checkbox"/> cm <sup>3</sup> (open cell) <input type="checkbox"/> ml (dosed cell)					Calculated Density				
Weight of Sample #1(g):					Volume of Sample #1:									
Weight of Sample #2 (g):					Volume of Sample #2:									
Weight of Sample #3 (g):					Volume of Sample #3:									
Thickness Pass #1:					mm		-		/			inches		
Thickness Pass #2:					mm		-		/			inches		
Thickness Pass #3:					mm		-		/			inches		
Number of Passes:	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	Total Thickness				mm		-		/		inches
Adhesion Test #1:	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Cohesion Test #1:			Pass <input type="checkbox"/>	Fail <input type="checkbox"/>							
Adhesion Test #2:	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Cohesion Test #2:			Pass <input type="checkbox"/>	Fail <input type="checkbox"/>							
Adhesion Test #3:	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Cohesion Test #3:			Pass <input type="checkbox"/>	Fail <input type="checkbox"/>							

**CORRECTIVE ACTIONS** (List corrective action taken as a result of test failures)

Signature

Updated: 2021-07-12

# Limitations

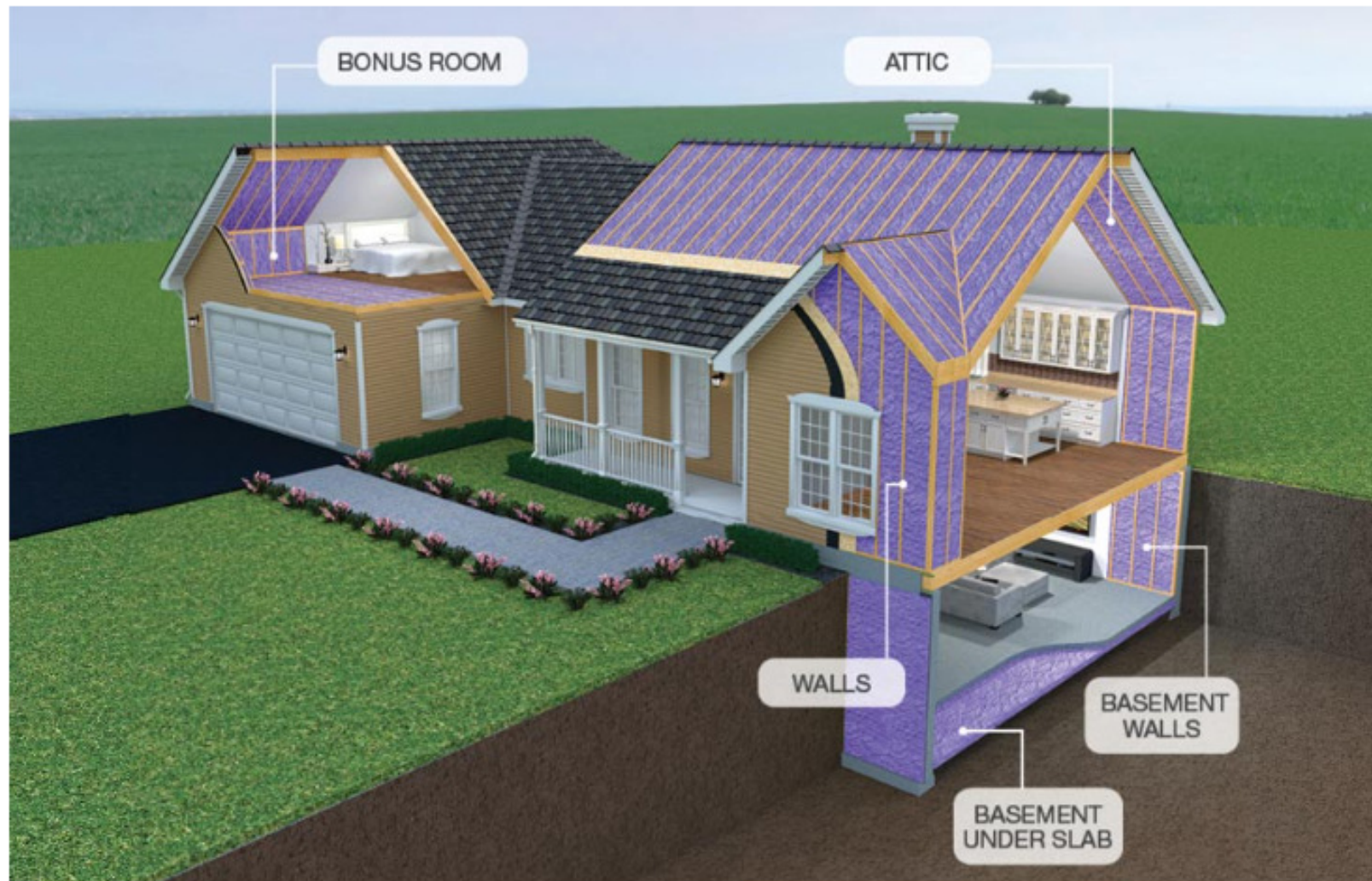
---

## Installation

- Apply in lifts of 50mm max and allow cooling
  - Low Exotherm products allow 125mm per lift
- Apply at -10 C to +40 C
- Max RH is 85%
- Substrate; Compatible, DRY, clean, free from oils
- Do not apply over batt or other soft substrates
- Keep 75mm from heat sources



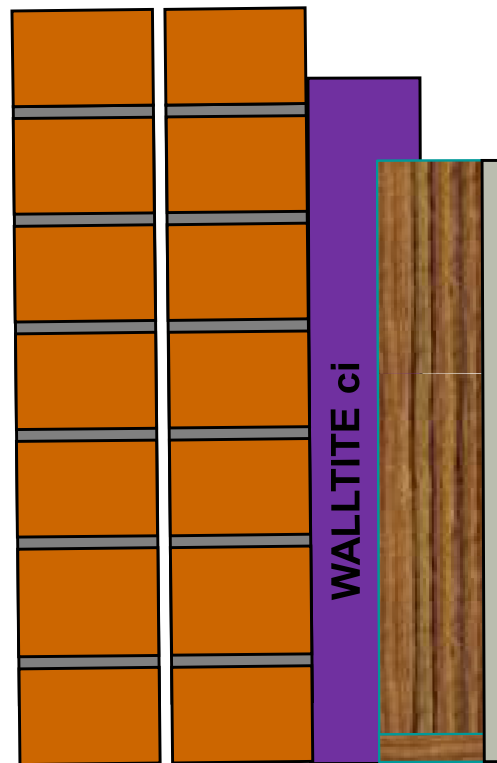
# Applications- Residential





# Applications- Residential

---



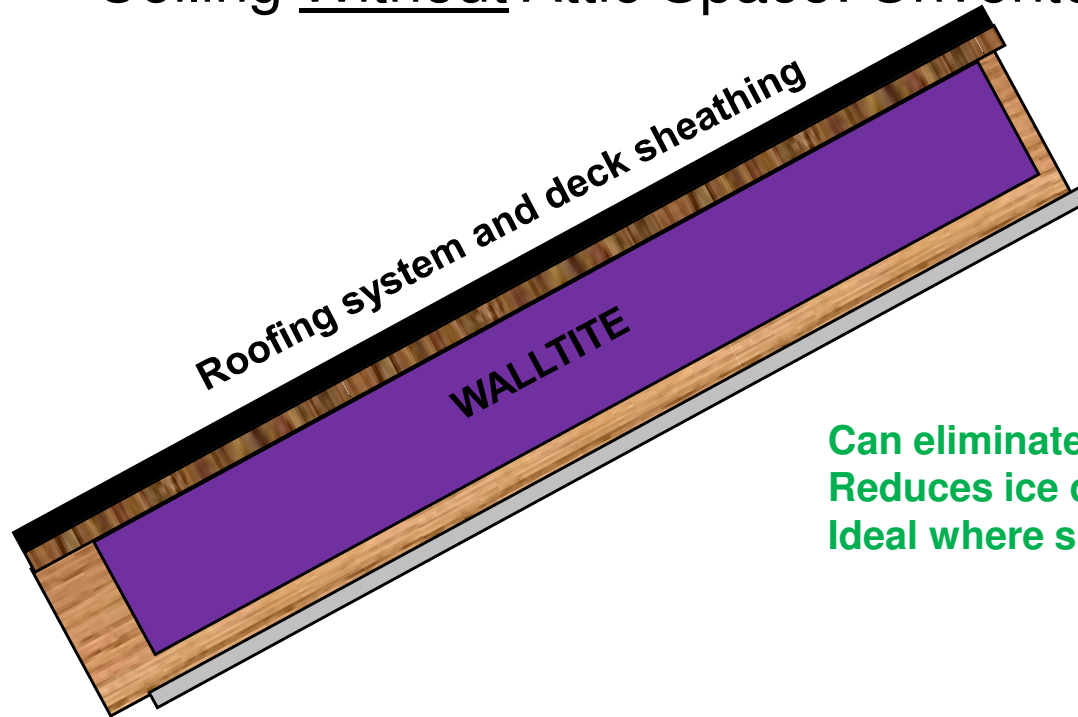
Exterior Solid Masonry  
High EFFECTIVE R Value  
Functions as

Air Barrier  
Vapour Barrier  
Compact  
All ccSPF applied from interior

# Applications- Residential

---

## Ceiling Without Attic Space: Unvented



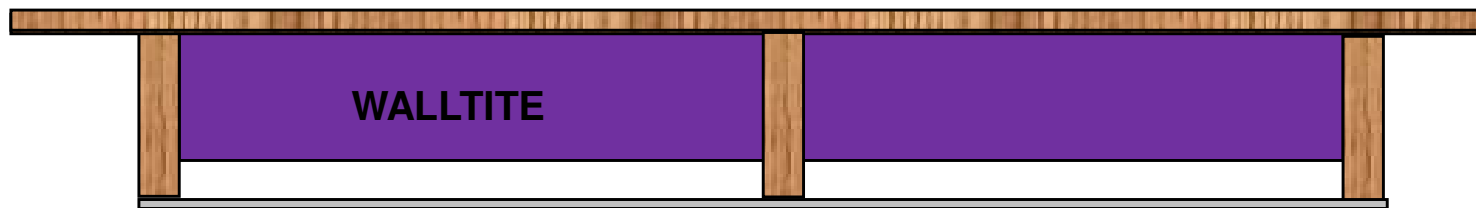
Can eliminate the need for venting  
Reduces ice damming  
Ideal where space is limited

# Applications- Residential

---

## Exposed Floor

INTERIOR conditioned space



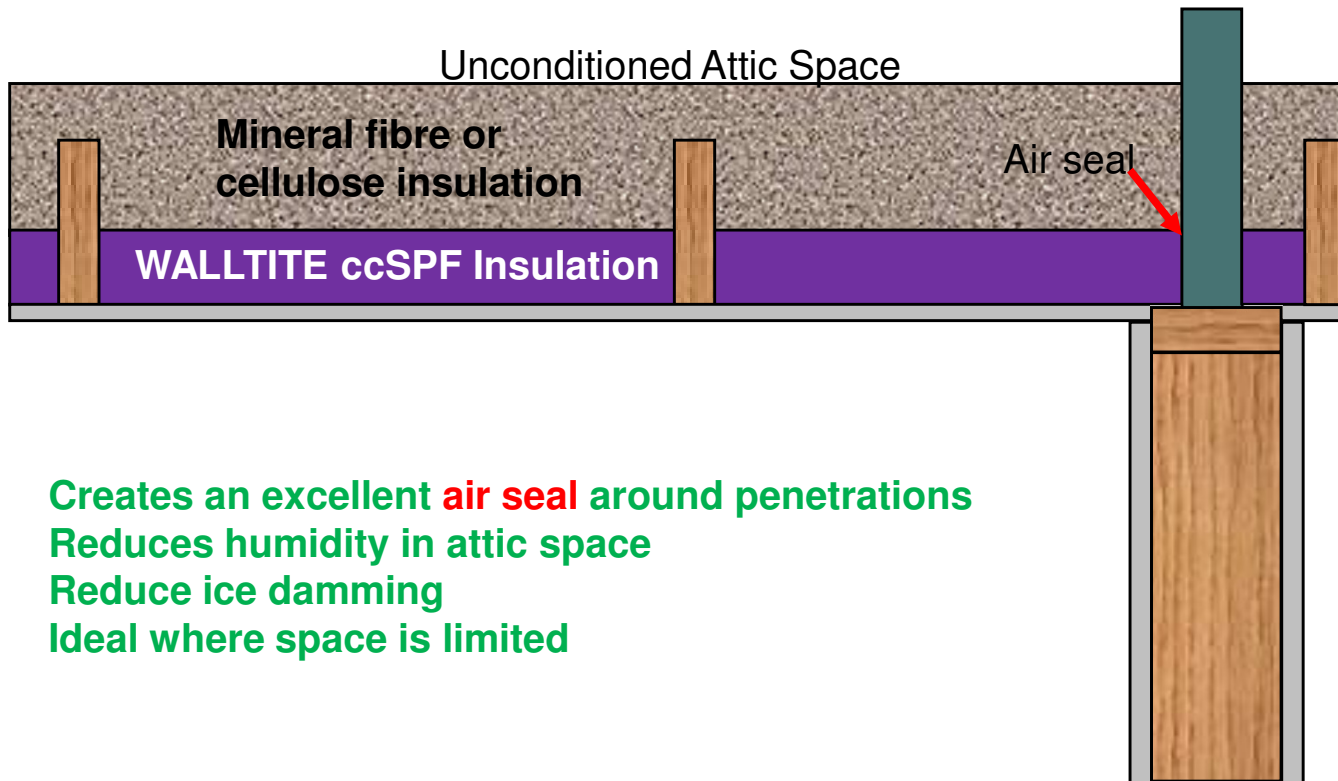
EXTERIOR unconditioned space  
Garage, Cantilever...

**Ideal for Garage ceiling, overhangs**

# Applications- Residential

---

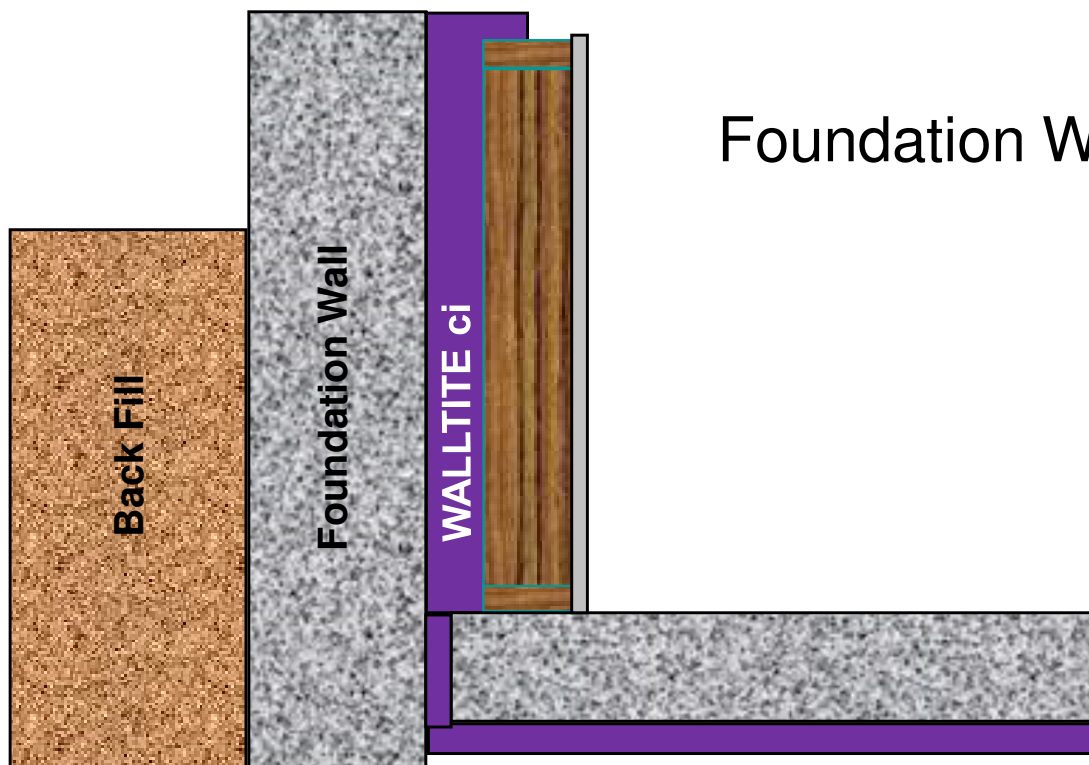
## Ceiling With Attic Space



Creates an excellent **air seal** around penetrations  
Reduces humidity in attic space  
Reduce ice damming  
Ideal where space is limited

# Applications- Residential

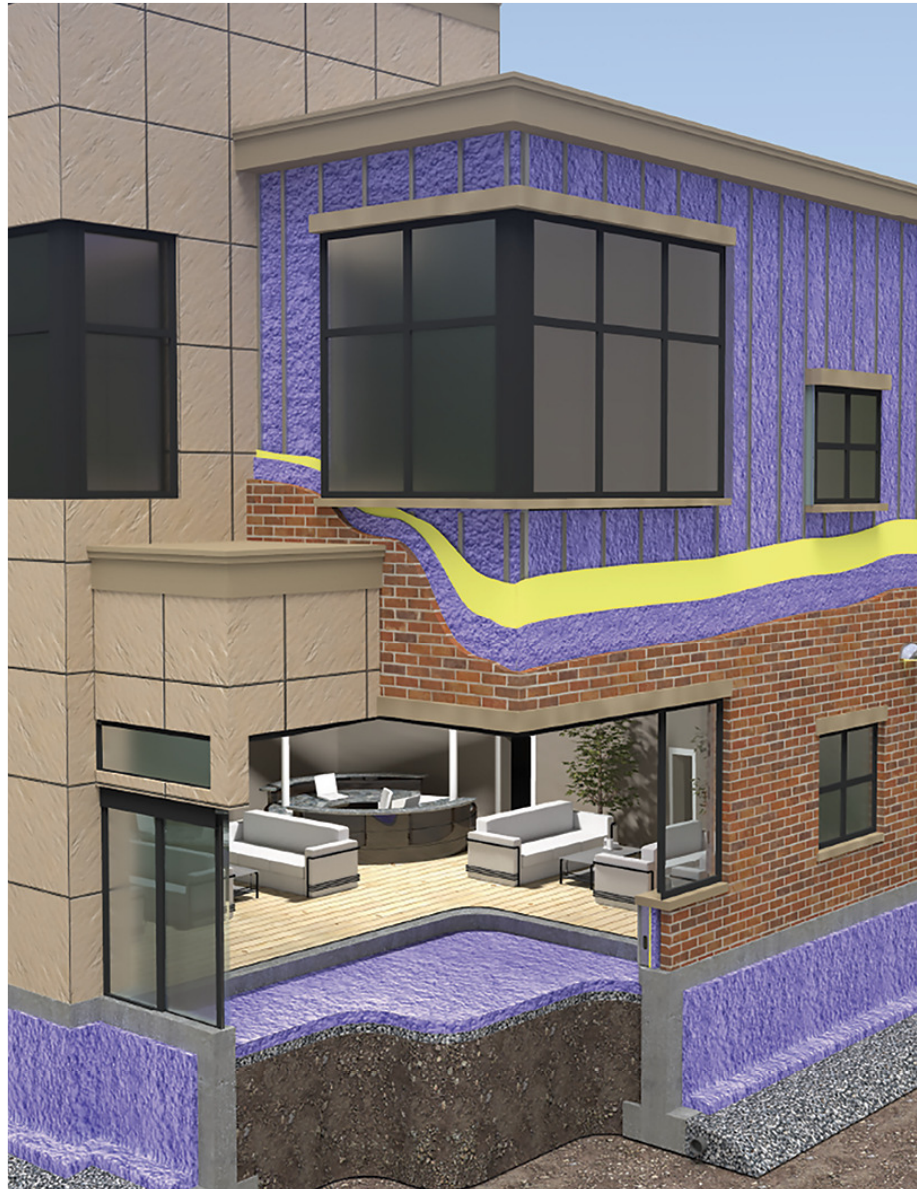
---



Foundation Walls: Interior

# Applications- ICI

---





# Insulation and ReClad

---

University of Toronto Thomas Fisher Rare Book Library  
WALLTITE applied from the exterior, precast cladding panels installed 2017





# Roof Re Clad

---

WALLTITE installed at 100mm thick followed by metal roof installation.





# Air Sealing

---



# Interior of Precast



Existing solid masonry or precast  
Steel studs- set back

**WALLTITE ccSPF Insulation**

Interior Gypsum Board

ci improves performance  
Minimal condensation potential  
Minimal thermal bridging



# Macdonald Block Reconstruction Project, Toronto

Owner: Infrastructure Ontario

Contract Value: \$1.536 billion

1 Million ft<sup>2</sup> WALLTITE installed on the interior of exterior precast and stone

Architect: WZMH

Building Envelope Consultant: Engineering Link and Synergy Consultants

GC: Fengate PCL Progress Partners (FP3)





## West Memorial Building Reconstruction Project, Ottawa

WALLTITE installed on the interior of exterior precast and stone

Architect: Moriyama & Teshima Architects and Kasian Architecture

Building Envelope Consultant: Morrison Hershfield, David Kayll

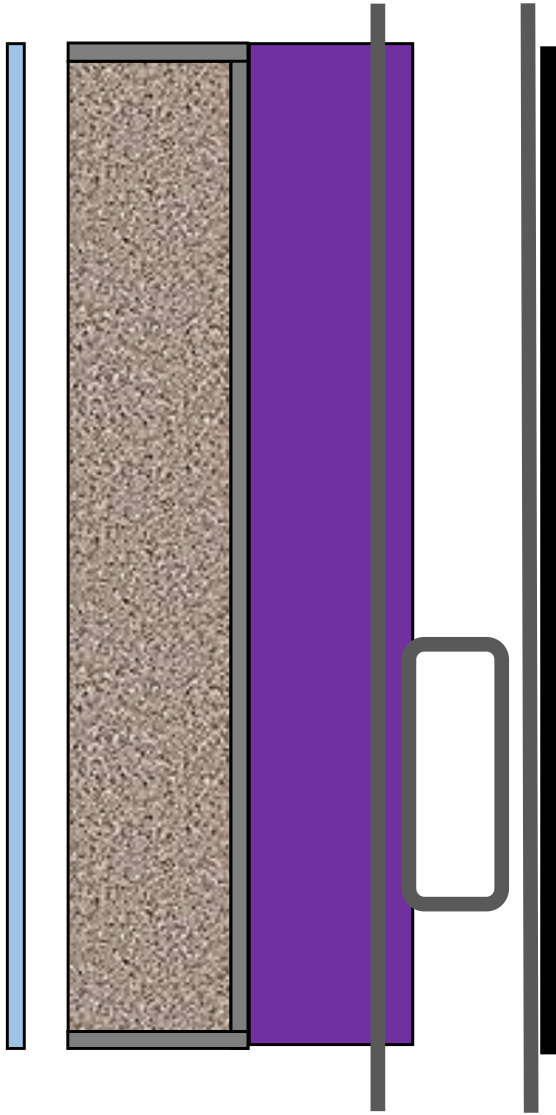
Owner: PSPC

GC: Ellis Don





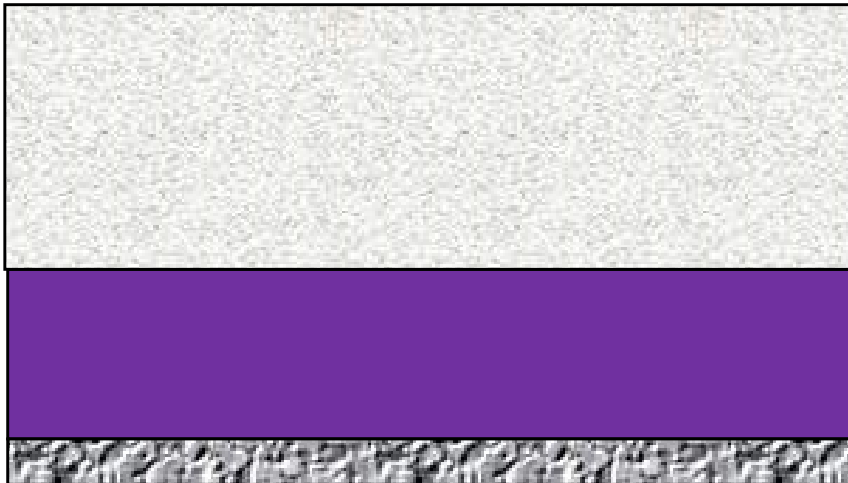
# Interior of Spandrel Panels



Curtain Wall Spandrel Panel w/ Metal  
Backpan + Rockwool  
Steel studs- set back 25mm min.  
**ccSPF Insulation**  
Interior Gypsum Board

ci improves performance  
Minimal condensation potential  
Minimal thermal bridging  
Passed CAN/ULC S101 (State)

# Overhead Cantilevered or Soffits



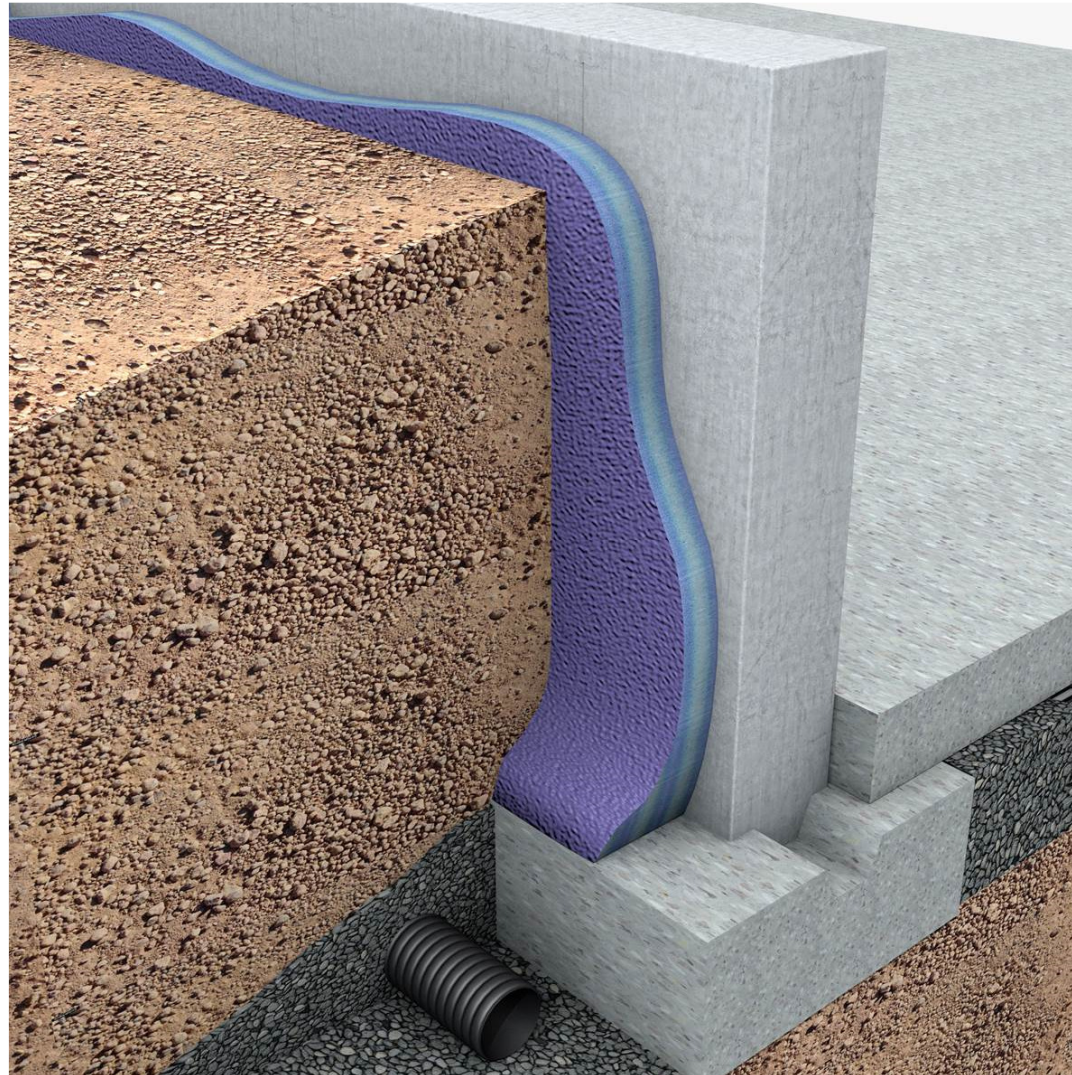
Suspended, reinforced slab

**ccSPF Insulation**

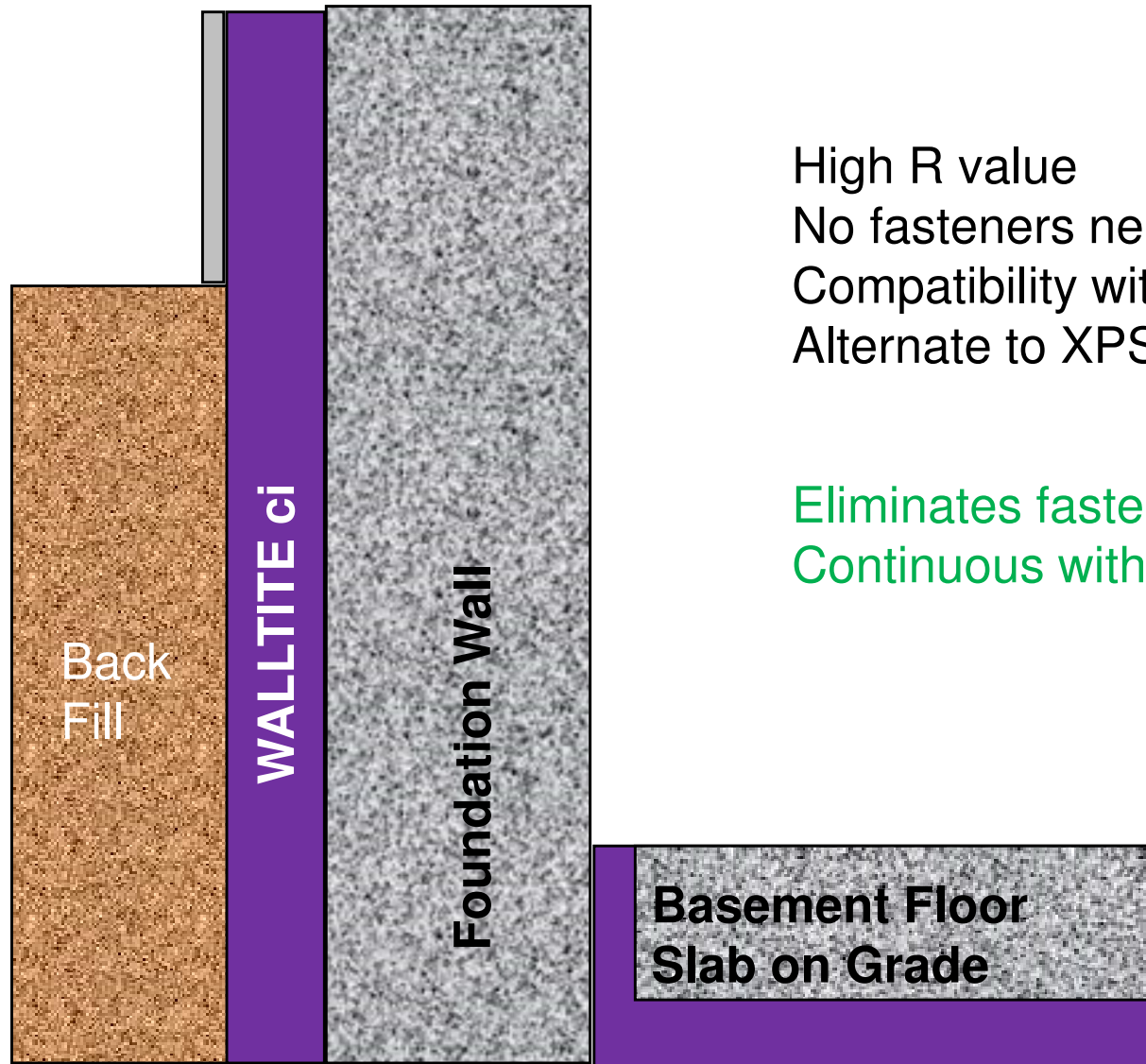
Protection- Gypsum Board or a  
Thermal Barrier meeting CAN/ULC  
S124 (Flameseal TBC)

Thinner than other systems, preserving  
headroom

# Foundation Walls: Interior/Exterior



# Foundation Walls: Interior/Exterior

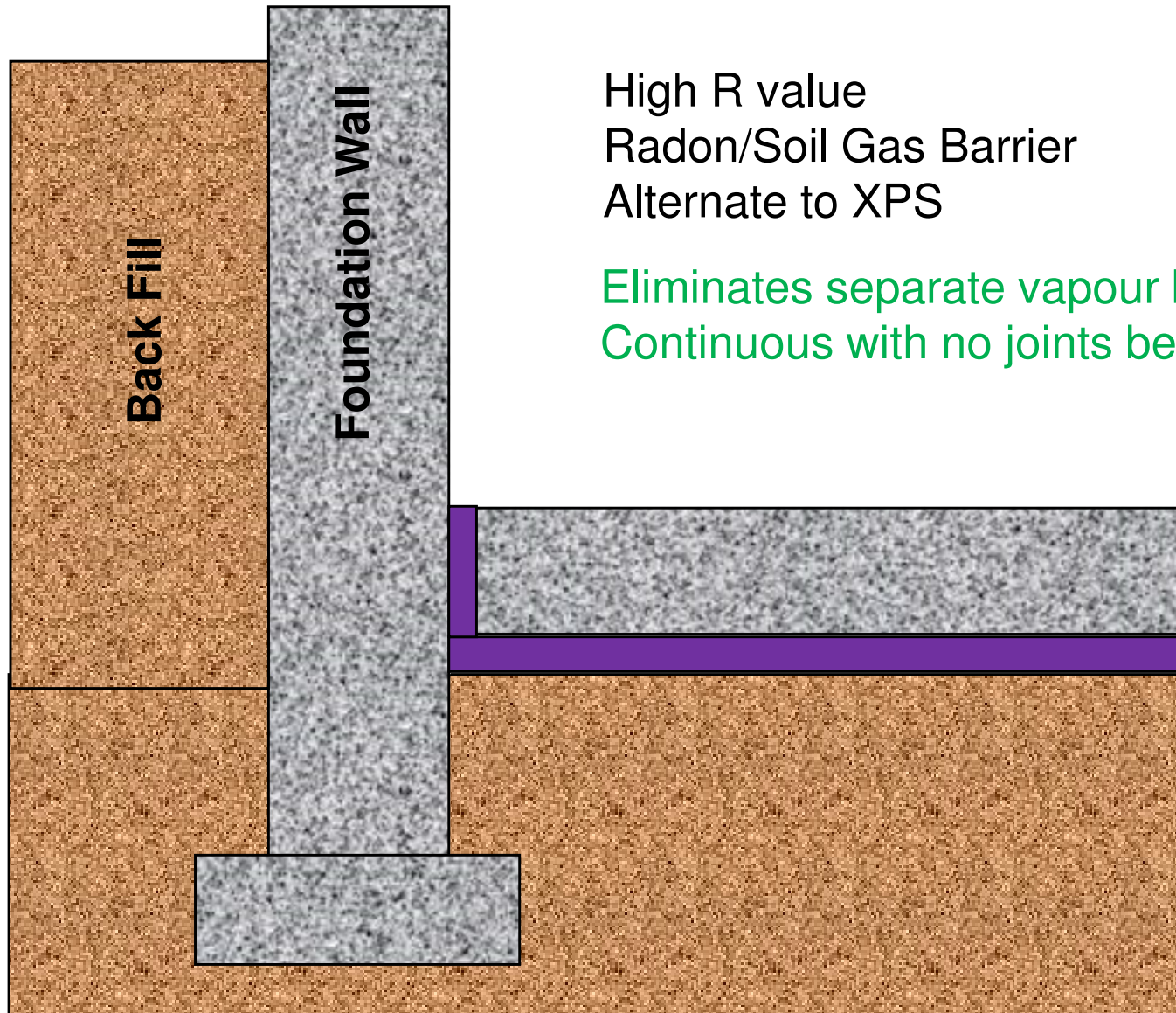


High R value  
No fasteners needed  
Compatibility with waterproofing membranes  
Alternate to XPS

Eliminates fasteners needed with XPS  
Continuous with no joints between panels



# Under Slab On Ground



High R value  
Radon/Soil Gas Barrier  
Alternate to XPS

Eliminates separate vapour barrier needed with XPS  
Continuous with no joints between panels

# Under Slab On Ground

---





# Under Slab On Ground

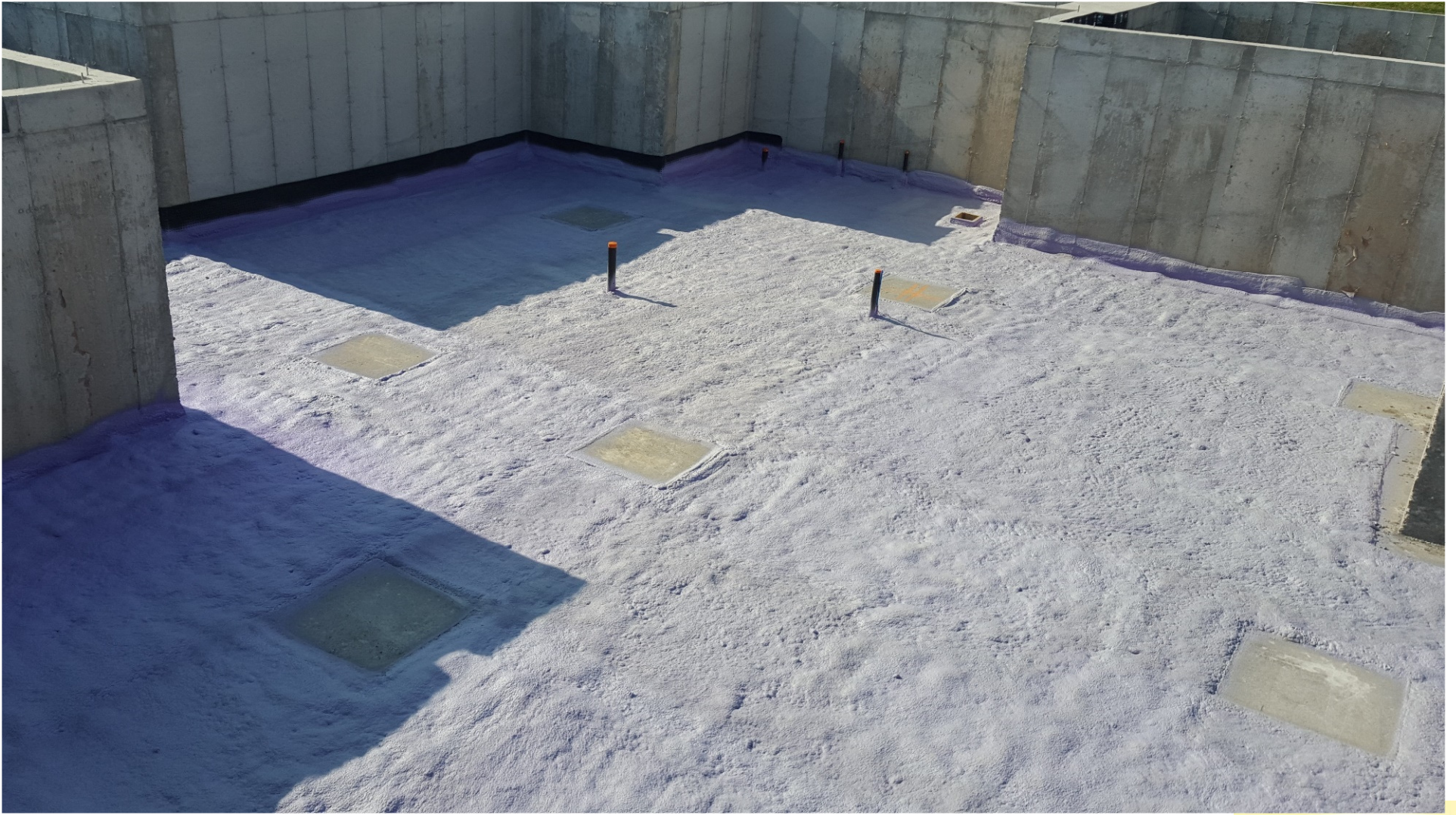
---





# Under Slab On Ground

---



# Under Slab On Ground

---

## WALLTITE

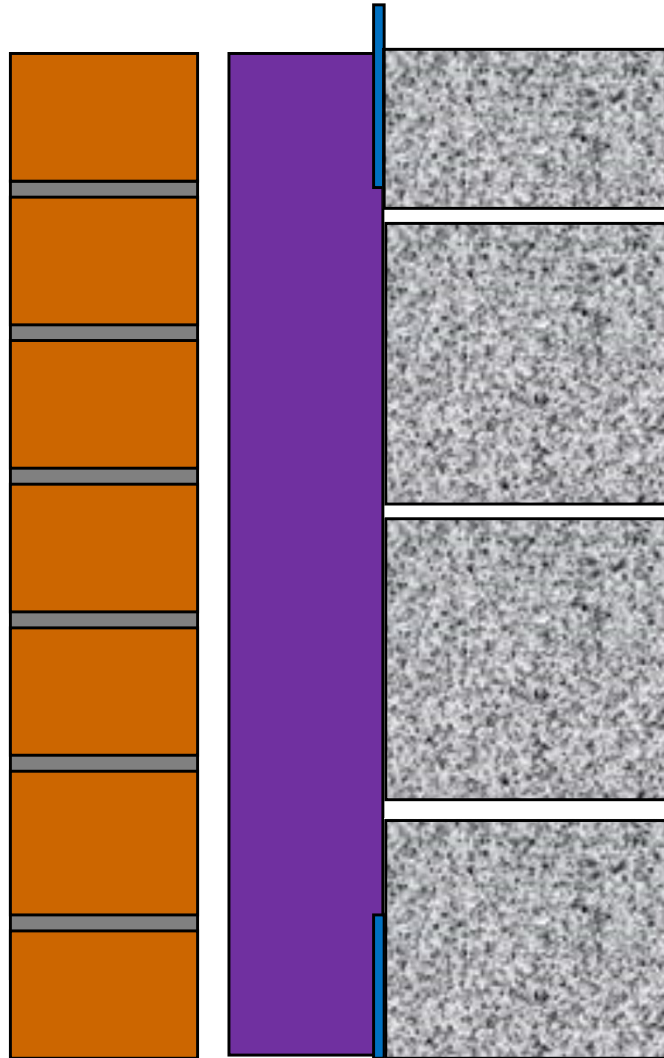
Compressive Strength D1621

ccSPF	XPS (type 4)
29 psi	30 psi
205 kPa	210 kPa





# Cavity Wall: CMU Backup

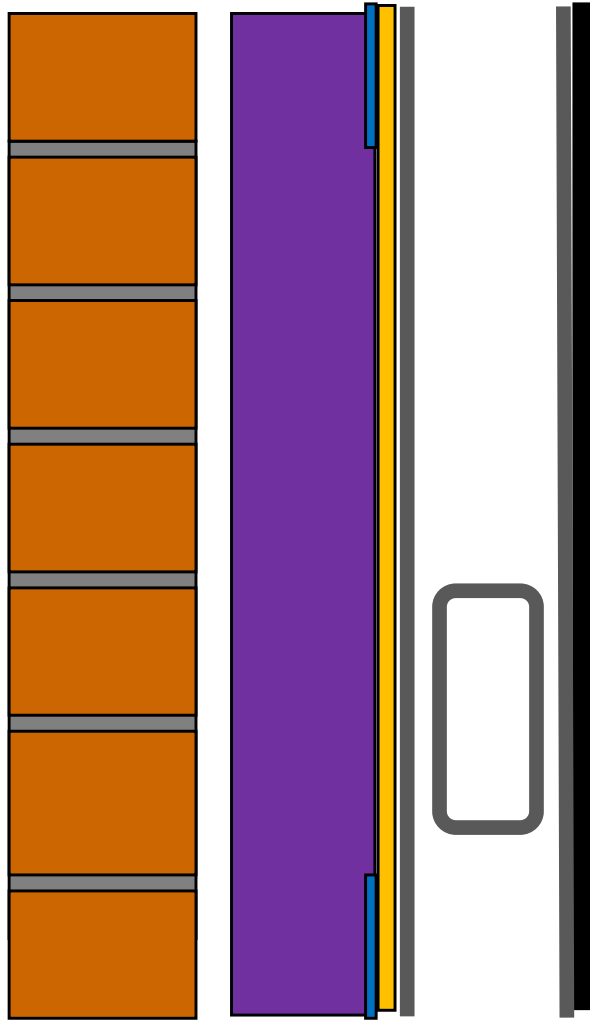


CMU Block Backup  
Transition membranes

ccSPF ci

**MASONRY Cladding**

# Cavity Wall: Stud/Sheathing



Steel Stud and Gypsum Sheathing  
Transition membranes

ccSPF ci

**MASONRY Cladding**

# Project- Woodstock Hospital





# Limitations

## Project- Woodstock Hospital



# Limitations

---

- ALL plastic foams are combustible
- Allowed in Combustible and Non-Combustible Construction

## **PAST Limitations**

- **Hourly Rated Walls**
  - CAN/ULC S101 Assembly testing required
- **Installed with cladding other than Masonry (NC)**
  - **CAN/ULC S134 Testing Required**


# **Fire Rated Applications**

- **CAN/ULC S101 Assembly Hourly Rated Walls**
- **CAN/ULC S134 Compliant Systems**

# Fire Rated Applications

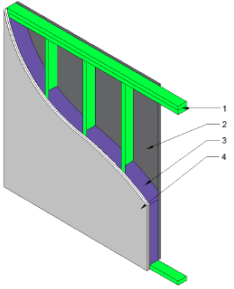
- Where is an Hourly Rated wall needed?
  - ▶ Walls near property lines
  - ▶ Walls bearing the load of a fire rated floor
  - ▶ Fire Rated Floors

# Fire Rated Applications Sources



Division 07 – Thermal and Moisture Protection  
07 21 00 Thermal Insulation  
07 21 29 Spray Insulation

BASF Canada Inc.  
Design No. BASF/ST 60-01  
Spray Foam Insulation  
BASF WALLTITE® V3, XL and CM01 Spray Foam Insulation, HP+ E Series  
Non-symmetrical, Load-bearing Wall Assembly  
CAN/ULC-S101  
Rating: 1 Hour; Rated from Gypsum Board Side



1

2

3

4

1. WALL FRAMING: Min. 38 x 89 mm wood studs spaced at 406 mm on center (oc) fastened to two units of min. 38 x 89 mm top plates and to one unit of min. 38 x 89 mm bottom plate. Apply a 10 mm bead of BASF MasterSeal® NP1™ sealant along the joints between the studs to top and bottom plates and joint between the two top plates, on the exterior side.

2. EXTERIOR INSULATION: Listed EPS insulation board molded using BASF Neopor EPS resin, in compliance to Type 2 requirement of CAN/ULC-S701.1, by approved EPS molders, at the min. density of 22 kg/m³ and thickness of 25.4 mm, attached to wall frame using min. 63.5 mm long

× 3.3 mm spiral nails at 152 mm oc along perimeter and 203 mm oc in the field.

3. CERTIFIED MANUFACTURER: BASF Canada Inc.  
  
CERTIFIED PRODUCT: WALLTITE® Spray Foam V3, XL, and CM01 Insulation  
  
BASF WALLTITE® V3, XL, or CM01, two-part polyurethane foam spray-applied to stud cavities for up to a max. thickness of 76.2 mm as per manufacturer's specifications.

4. GYPSUM WALLBOARD: Two layers of 15.9 mm thick Type X gypsum wallboard fastened to wall framing using min. 41 mm long self-tapping

Date Revised: September 29, 2020  
Version: 02 August 2017

Page 1 of 2

Project No.: G103319675  
SFT-BC-OP-130

UL Product iQ®

SEARCH MY SEARCHES MY TAGS MICHAEL  Solutions

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States  
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

[See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States Design Criteria and Allowable Variances](#)  
[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada Design Criteria and Allowable Variances](#)

Design No. **W307**

June 14, 2024

Bearing Wall Rating — 1 or 2 Hr (see Item 3).  
Finish Rating — See Items 3, 3A, and 3B

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide [BXUV](#) or [BXUV7](#)

\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Feedback



# Fire Rated Applications

## CAN/ULC-S101 Assembly

### BASF HP+ CFR Systems that Comply- Wood frame

Test Standard	Fire Resistance Rating	Design Number	BASF System Designation	Framing
CAN/ULC-S101	1 h	BASF/SI 60-01	HP+ E	Wood
CAN/ULC-S101	1 h	BASF/SI 60-02	HP+ X	Wood
CAN/ULC-S101	1 h	BASF/SI 60-03	HP+ Modified X	Wood
CAN/ULC-S101	1 h	BASF/SI 60-04	HP+ XR, HP+ XR-S	Wood
CAN/ULC-S101	1 h	BASF/SI 60-06	-	Wood

**Note** 1: CAN/ULC-S101 design listing BASF/SI 90-01 requires two gypsum boards on the interior side of the assembly for the HP+ CFR system; refer to individual design listings for differences.

# Fire Rated Applications

## CAN/ULC-S101 Assembly

### BASF HP+ CFR Systems that Comply- Steel frame

Test Standard	Fire Resistance Rating	Design Number	BASF System Designation	Framing
CAN/ULC-S101	1 h	BASF/SI 60-05	-	Steel
CAN/ULC-S101	90	BASF/SI 90-01	HP+ CFR <sup>1</sup>	Steel

**Note** 1: CAN/ULC-S101 design listing BASF/SI 90-01 requires two gypsum boards on the interior side of the assembly for the HP+ CFR system; refer to individual design listings for differences.

# Fire Rated Applications



## TECH TIP # 22

### Fire-Resistant Rated Construction Assemblies

Fire-resistance rated construction designs are required in some residential single-family home, multi-family structures (aka MDU or Multi-dwelling units), and most commercial building applications to separate adjacent spaces, safeguarding against the spread of fire to, within, or from other buildings. The use of foam plastics including spray polyurethane foam (SPF) in these designs requires specific testing and compliance to be utilized in a code-compliant manner. This is specifically called out in Chapter 26 of the International Building Code (IBC), and Section R316 of the International Residential Code (IRC).

The fire resistance rating is the amount of time an assembly or component maintains the ability to withstand fire exposure. BASF holds a variety of fire-resistance rated assemblies with times ranging from **45-min to 4-hours** in the Underwriters Laboratories (UL) Directory – **there are a total of 25 UL-rated wall assemblies and 16 floor-ceiling assemblies** listed for BASF, as outlined on the following tables.

# Fire Rated Applications

Updated: 22/04/2025

UL Directory - ANSI / UL263 / CAN/ULC-101 (ASTM E119)

Steel Studs with Brick Veneer Assembly #	Currently Available BASF Systems Approved	Load Bearing or Non-Load Bearing	Fire Rating	Fire Exposure	SPF Location
<a href="#">U425</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Bearing	3/4 hr to 2 hr	Both Options	Exterior
<a href="#">V454</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Bearing or Non-Bearing	1 hr	Asymmetrical	Stud Cavity
<a href="#">V495</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Non-Bearing	3 hr	Asymmetrical	Stud Cavity or Masonry Cavity
<a href="#">W417</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Non-Bearing	1 hr	Asymmetrical	Stud Cavity
<a href="#">W421</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Non-Bearing	1 hr	Asymmetrical	Stud Cavity
<a href="#">W444</a>	Enertite® G, Enertite® Max Walltite® Max, Walltite® LWP, Walltite® V.5	Non-Bearing	1 hr	Asymmetrical	Stud Cavity

# **Fire Rated Applications**

## **CAN/ULC S134 Compliant Systems**



### 3.2.3.8. – Protection of Exterior Building Face

### 3.1.5.5. – Combustible Components in Exterior Walls

GOAL: To reduce the risks of a vertical fire spreading on the facade of a building (fire originating from outside or from inside spreading through an opening)

- ▶ OBC Allows the use of ccSPF with Concrete or Masonry (min 25mm) Cladding  
Or
- ▶ Assembly passing CAN/ULC-S134

# Fire Requirements Overview

## CAN/ULC S134

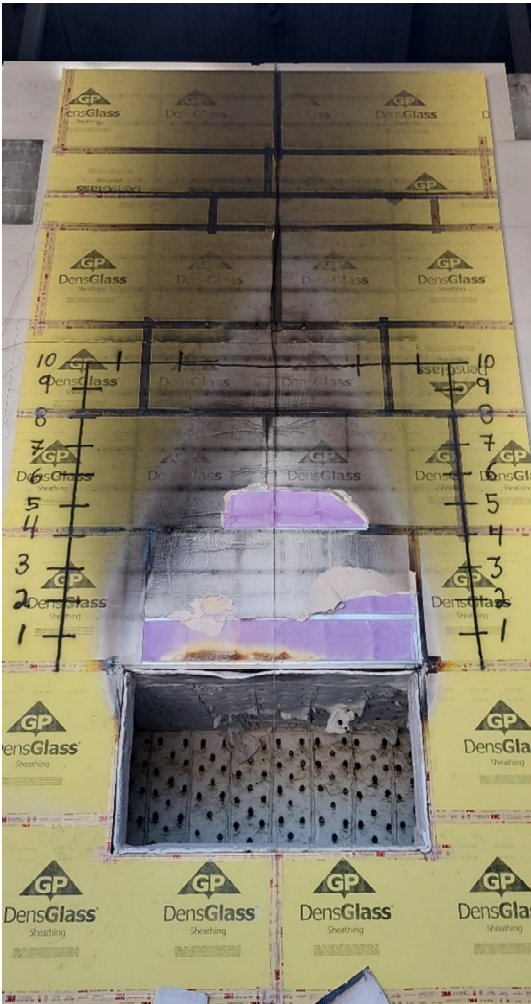


# Fire Requirements Overview

## CAN/ULC S134

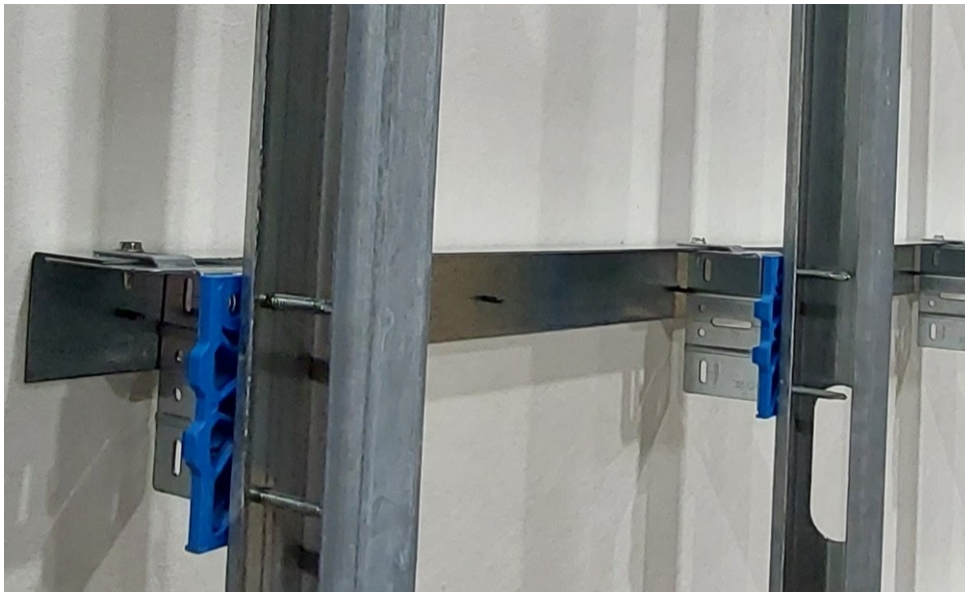
**HP+ CFR PASSES!**

CAN/ULC-S134	
Acceptance Criteria	Results
Flame Spread Above Opening ( metres max)	
5	2
Maximum Average Heat Flux kW/m2	
35.00	16.43



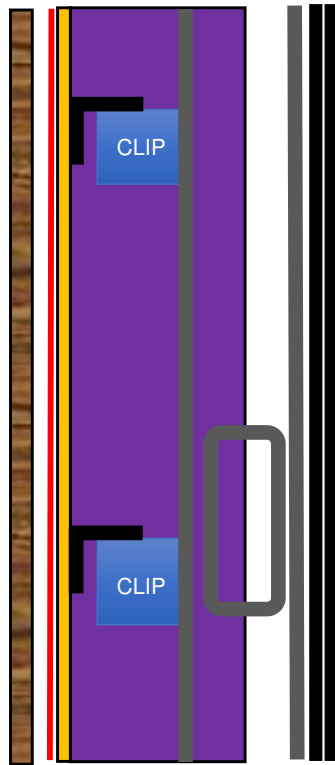


# HP+ CFR Wall Assembly





# HP+ CFR Systems



## Compliant with CAN/ULC S134

Listing: Design No. BASF/SI 25-01

and

## S101 Fire Rated for 90 Minutes

Listing: Design No. BASF/SI 90-01

### Components

**Interior Gypsum Wallboard: 2 layers, 15mm type X**

Wall Framing: Min. 63mm, 16 GA steel studs and tracks @ 406mm

Thermal Clips: 82mm ISO Clips fastened using (2) 50mm screws.

Space @406mm oc vertically and horizontally

Metal Angle: 50mm X 50mm, 16 GA steel angle

Exterior Sheathing: 15mm GMGB (Densglass)

**Sheathing Seam Tape (3M Fire and Water tape)**

**Membrane- Vapour Permeable**

Insulation: WALLTITE CM01 or XL01,

Total Thickness: 152mm max.

In Stud Cavity: 63mm

In the plane of the Thermal Clips: 89mm

Air Space

**Cladding: Non-combustible as per CAN/ULC S114**

# HP+ CFR Systems

## Effective R Value

ccSPF (mm)	Effective (R)
127	21
140	21.9
152	23.1

# BASF HP+ CFR Systems

## **Benefits** vs Non Combustible Insulation (Mineral Fibre)

### PERFORMANCE

- ✓ High effective R value
- ✓ Low Embodied Energy; GWP/Carbon Footprint
- ✓ Reduced thickness of wall; greater usable floor space
- ✓ Light Weight
- ✓ Code Compliant; Fire Rated and S134 Compliant
- ✓ Cost Competitive

# Take Aways

- ccSPF provides high R value insulation and is supported by third party QAP Provider.
- Versatile; Above grade, below grade, overhead, buried
- Sustainable; Low GWP vs XPS and Mineral Fibre
- **Some** ccSPF provide Air Barrier system, Radon Barrier, Fire Rated Systems
- Write clear concise specs and confirm products that are included have the needed credentials (UL Reports..) and do not state “or equal”.
- Prequalify ccSPF Installers and hold a prebid meeting to communicate expectations (DWR..).



walltite.com

buildingresource.ca

michael@buildingresource.ca