

Canadian
Home Builders'
Association



Home Building Week in Canada Event

Product Innovation Showcase

 **Thursday, May 6th @ 11:00 AM ET**

**An advanced look at some of the most
exciting Products and Innovations coming
to the Canadian Market!**



*Hosted by
former CHBA President Stefanie Coleman*



Host of the Product Innovation Showcase



Stefanie Coleman
CHBA Immediate Past President



Gentek Building Products

Featuring ALIGN Composite Cladding



Pierre Lefebvre

Product Manager, Gentek

Pierre_Lefebvre@gentek.ca





DISCOVER HOW
CLADDING CAN
ELEVATE YOUR
BUSINESS.

Industry Challenges

- Shortage of skilled laborers
- Increased cost of materials
- Staying on schedule/productivity
- Pressures of doing more with less
- Profitability
- Growing the business

The Opportunity

ENGINEERED TO OUTPERFORM AT EVERY LEVEL.

- Deliver the look and performance of fiber cement and engineered wood with an easy-to-install, maintenance-free, non-moisture absorbing solution

The Opportunity

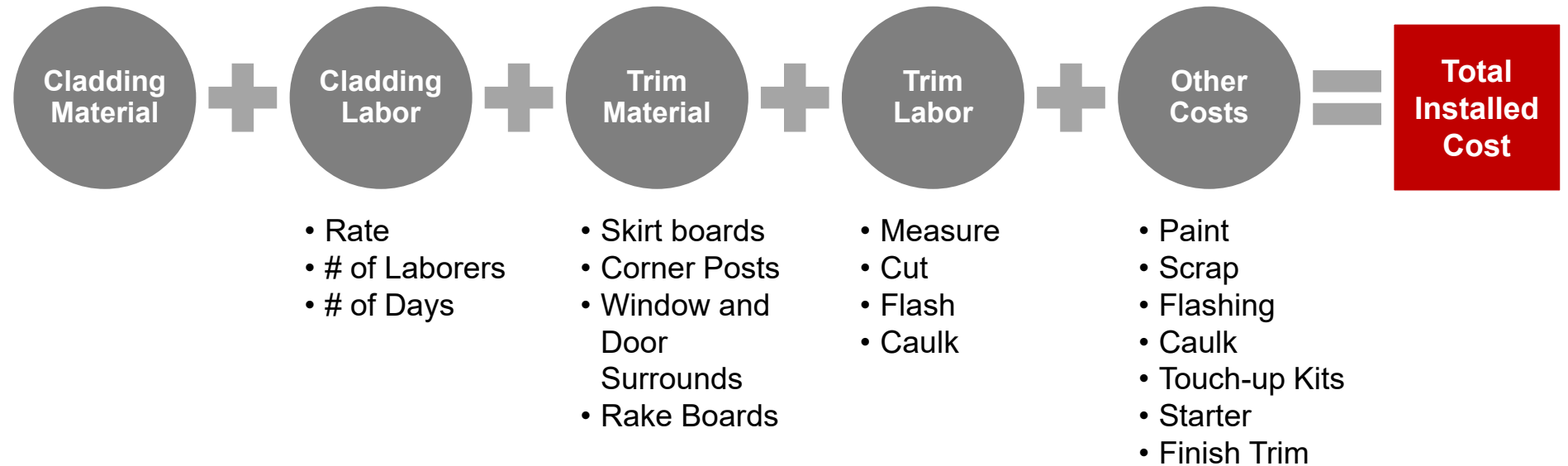
ENGINEERED TO OUTPERFORM AT EVERY LEVEL.

- Deliver the look and performance of fiber cement and engineered wood with an easy-to-install, maintenance-free, non-moisture absorbing solution
- Create a value proposition that can't be ignored: minimum 10% lower **total installed cost** vs. fiber cement and engineered wood

10% LOWER TOTAL
INSTALLED COST

Total Installed Cost

HARD COSTS (on Material List / Takeoff)



SOFT COSTS (not on Material List / Takeoff)

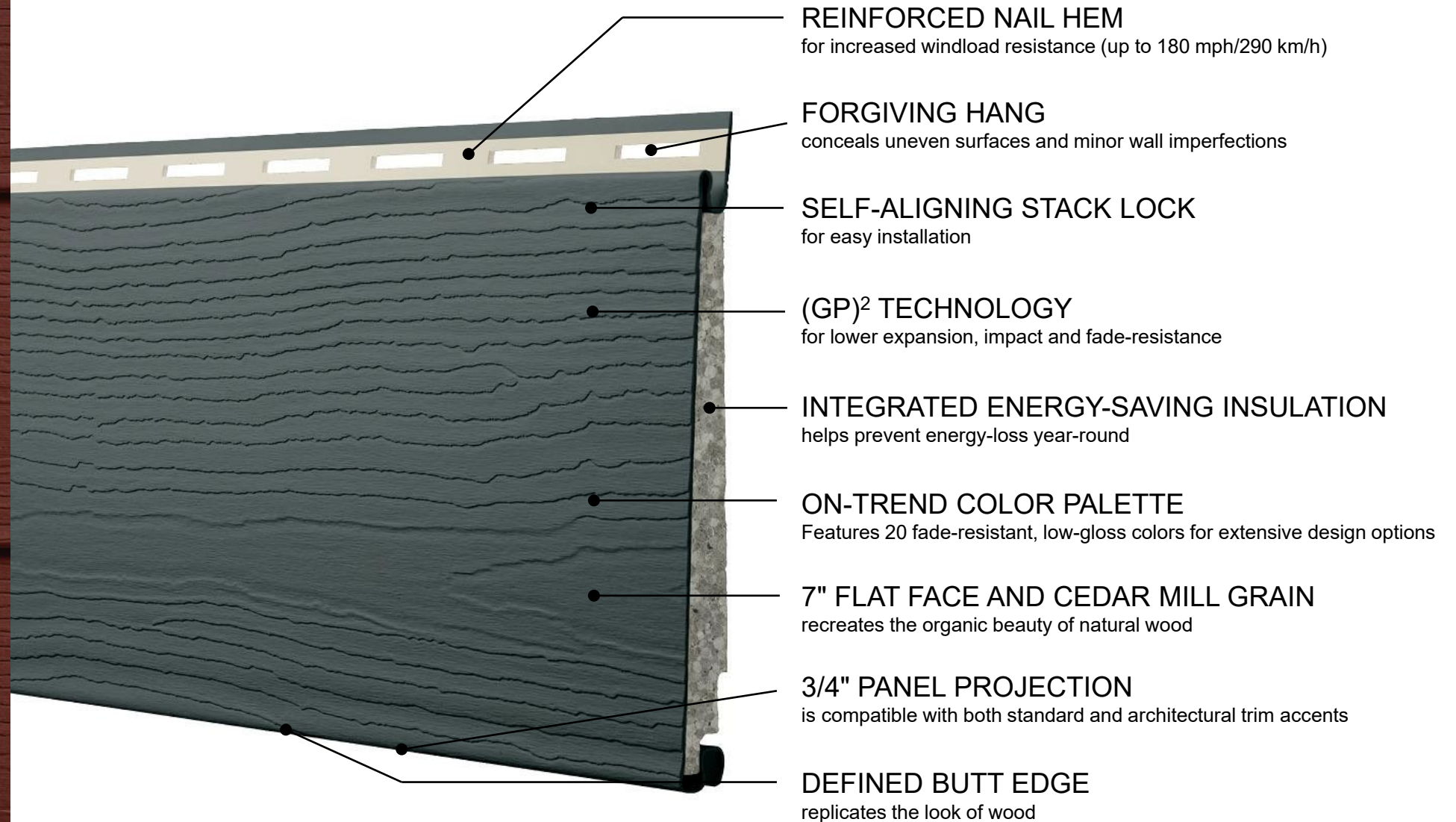
- Touch-up callbacks/punch lists
- PPE (Respirators?)
- Saws (Vacuum?)
- Blades (Diamond?)
- Others

The Best of Both Worlds

THE REMARKABLY REALISTIC LOOK OF WOOD – WITHOUT THE UPKEEP.

| | | FIBER CEMENT/ ENGINEERED WOOD | VINYL SIDING | ALIGN™ | |
|-------------------------------|---|----------------------------------|-----------------|--------|--|
| ARCHITECTURAL APPEAL | Authentic woodgrain beauty | ● | | ● | Aesthetic and Feel |
| | Tall profile/exposure | ● | | ● | |
| | Flat face | ● | | ● | |
| QUALITY AND PERFORMANCE | Structural strength and solid feel against the wall | ● | | ● | Installation, Handling and Maintenance |
| | Compatible with high-end trim options | ● | | ● | |
| | Moisture-resistant (won't swell) | | ● | ● | |
| | Resists high winds with unexposed fasteners | | ● | ● | |
| | Carefree upkeep | | ● | ● | |
| | Lifetime limited warranty* | | ● | ● | |
| USER-FRIENDLY INSTALLATION | Easy to handle | | ● | ● | |
| | Simple installation (self-aligning, one-person hang) | | ● | ● | |
| | No sealing, touching up, joint flashing or caulking | | ● | ● | |
| | No specialized skills required (less risk of installation errors) | | ● | ● | |
| | Enhanced safety (no respirators or special tools needed) | | ● | ● | |

ALIGN Features and Benefits



20 On-Trend, Low-Gloss Colors



Snow
White



Almond



Monterey
Sand



Pebble



Dark Drift



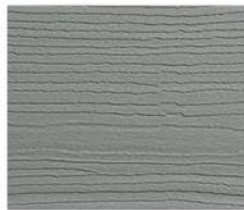
Rockport
Brown



Smoked
Timber



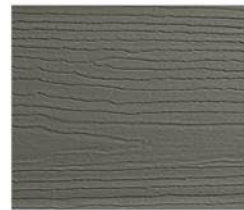
Dover Gray



Chesapeake
Gray



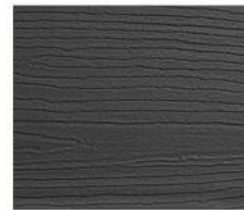
Storm



Hudson
Slate



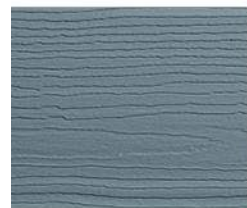
Windswept
Smoke



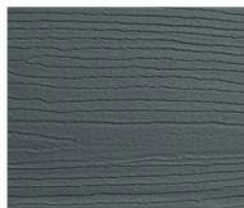
Iron Ore



Coastal
Blue



Rockwell
Blue



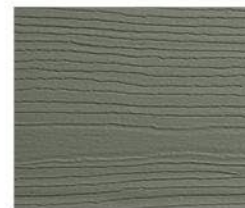
Midnight
Surf



Marine Dusk



Meadow
Fern



Moonlit
Moss



Majestic
Brick

BEFORE



AMAZING
TRANSFORMATIONS

AFTER



AMAZING
TRANSFORMATIONS

House shown in Marine Dusk.

Simple Installation

LIGHTER



LIGHTWEIGHT

Weighs 75% less than fiber cement



EASY HANDLING

Can be carried, handed up and installed by one person



JOBSITE DURABILITY

Won't easily break; designed to stand up to jobsite conditions

EASIER



FEWER STEPS

No sealing, touch-up, painting, joint flashing or caulking required



A SIMPLE PROCESS

Fewer precise cuts and less training needed to install



CLEAN AND RELIABLE

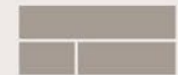
Less mess and waste, with fewer water liability concerns

FASTER



LESS TRIM WORK

Works with integral J-channel windows and other channeled accessories



SELF-ALIGNING STACK LOCK

Provides consistent exposure with no gauge required



ENHANCED SAFETY

No special tools or respirators required, and fewer OSHA concerns



The website is a resource hub:

- Product highlights, technical information, installation guides
- Tools for homeowners: ALIGN visualizer, brochure, video
- All documents are available for download including accessory catalog, color options, etc.

THANK YOU!



Gentek Building Products

Featuring ALIGN Composite Cladding



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Product Manager, Gentek

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Lubrizol

Featuring FlowGuard Gold, Corzon and BlazeMaster



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Lubrizol

CHBA Product Innovation Showcase

May 2021

MOVE CLEANER
CREATE SMARTER
LIVE BETTER

History





MOVE CLEANER

Enable a >50% reduction in vehicle emissions by 2040.



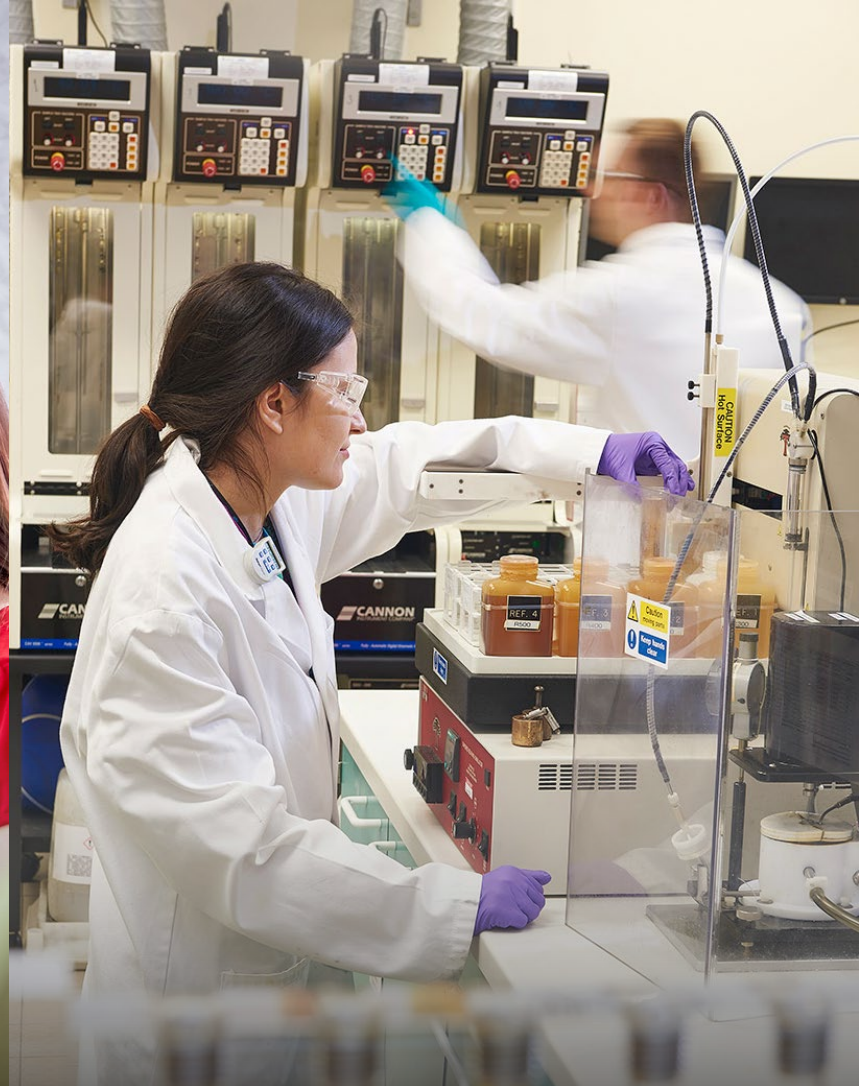
CREATE SMARTER

Improve the circularity of our products by 25% by 2028.



LIVE BETTER

Improve at least 2 billion lives through our solutions by 2028.



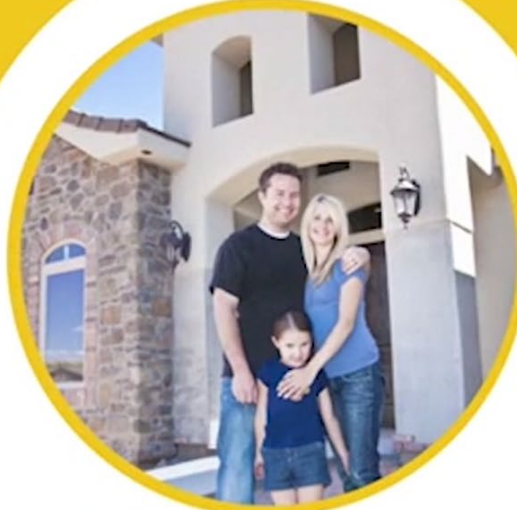
OUR PEOPLE

Our 8,800 employees are the driving force in our culture across the globe.

CPVC Piping



FlowGuard Gold



FLOWGUARD GOLD[®]
PIPE & FITTINGS

A graphic for FlowGuard Gold Pipe & Fittings. It features a yellow background with a white pipe and fitting on the left. The text "50+ years of proven excellence" is in the center. At the bottom, the brand name "FLOWGUARD GOLD" is in large, bold, black letters, with "PIPE & FITTINGS" in smaller, bold, black letters below it.

50+
years of
proven
excellence

FLOWGUARD GOLD[®]
PIPE & FITTINGS

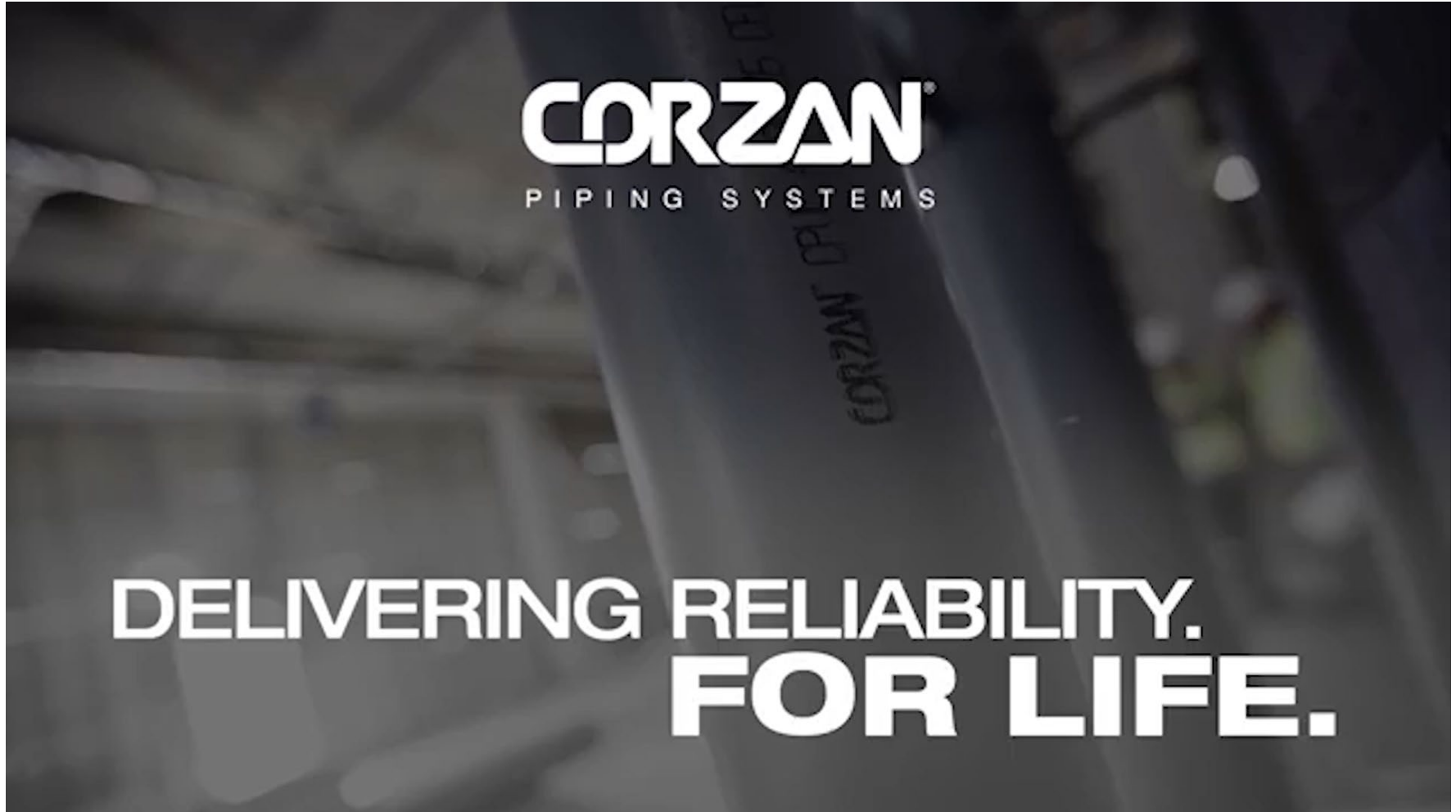


IT'S TIME TO

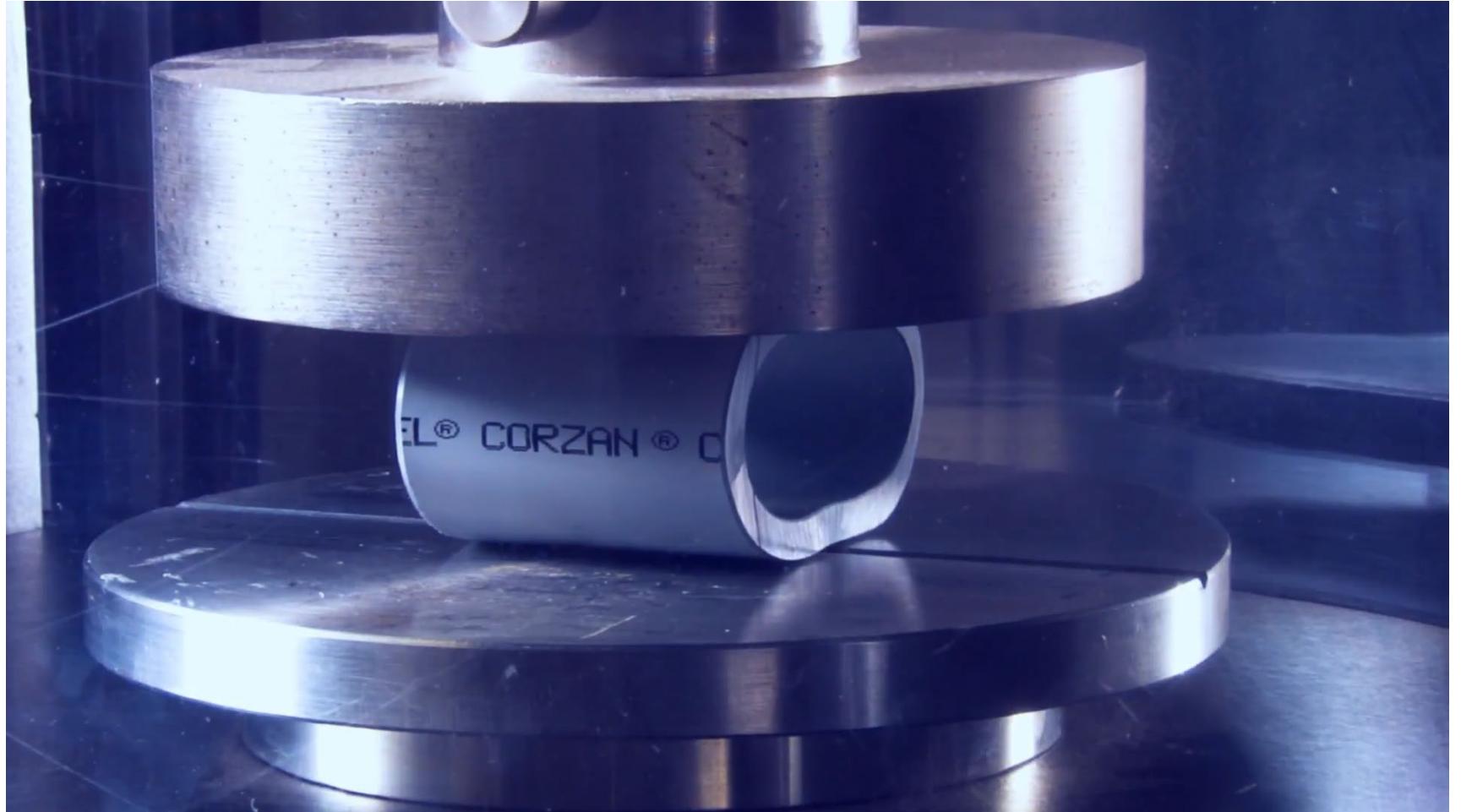


FLOWGUARD GOLD®
PIPE & FITTINGS

COZAN



MOVE CLEANER
CREATE SMARTER
LIVE BETTER



**DELIVERING RELIABILITY.
FOR LIFE.**

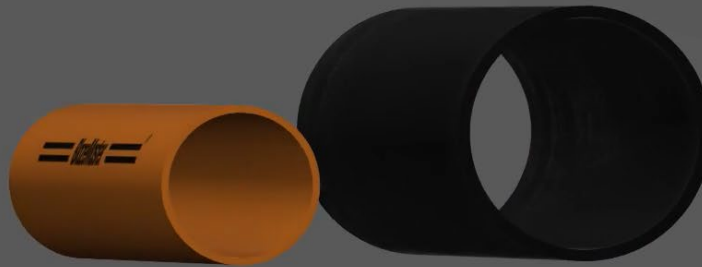
CONTACT US
WWW.CORZANPLUMBING.COM

MOVE CLEANER
CREATE SMARTER
LIVE BETTER



BlazeMaster® Pipe
with Hydraulic Calculation

Project Savings of
28%*



BlazeMaster[®]

FIRE PROTECTION SYSTEMS

— DELIVERING RELIABILITY. FOR LIFE —







OUR COMMUNITY

By 2028, Lubrizol will assist 2,028,000 individuals globally where we live and work.

A close-up photograph of two hands, one from an adult and one from a child, forming a heart shape with their index and thumb fingers. The hands are positioned against a bright, hazy sunset or sunrise background, with the sun's glow creating a warm, golden light. The hands are wearing dark, textured sleeves.

ENVIRONMENTAL

Lubrizol is committed to maximizing our handprint and minimizing our carbon footprint.



MOVE CLEANER



CREATE SMARTER



LIVE BETTER



Lubrizol

Featuring FlowGuard Gold, Corzon and BlazeMaster



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Canadian Wood Council (CWC)

*Featuring Online Tools and Resources for
Advancement in Wood Frame Construction*

Canadian
Wood
Council

Conseil
canadien
du bois



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CodeCHEK



Canadian Wood Council
America Lopez-Molina, M.A.Sc., E.I.T.
Technical Services Specialist
Codes and Standards— Structural Engineering

CHBA Product Innovation Showcase

May 6, 2021



Canadian Wood Council
Conseil canadien du bois

The Canadian Wood Council (CWC) represents the Canadian wood products industry through a national federation of associations



Wood Preservation Canada
Préservation du bois Canada



Interior Lumber
Manufacturers' Association



Agenda

1. Span Book 2020
2. Design Tools

CWC Technical Publications

Free and Paid



[Technical Books >](#)



NEW Span Book 2020

Canadian Wood Council Members

Alberta Forest Products
Association (AFPA)
www.albertaforestproducts.ca

APA – The Engineered Wood
Association
www.apawood.org

Canadian Mill Services
Association (CMSA)
www.canserve.org

Canadian Wood Truss
Association (CWTA)
www.cwta.net

Central Forest Products
Association (CFPA)
www.cfsab.ca

Conseil de l'industrie forestière
du Québec (CIFQ)
www.cifq.com

Council of Forest Industries
(COFI)
www.cofi.org

Canadian
Wood
Council

Conseil
canadien
du bois

The Span Book 2020 Edition



Specified Strengths and Modulus of Elasticity for Sawn Lumber* (MPa)

| Species Group | Grade | <i>Bending at extreme fibre</i> | <i>Longitudinal shear</i> | <i>Tension parallel to grain</i> | <i>Compression</i> | | | |
|---------------|-----------|---------------------------------|---------------------------|----------------------------------|--------------------------|-------------------------------|------------------------------|----------|
| | | f_b | f_v | f_t | <i>Parallel to grain</i> | <i>Perpendicular to grain</i> | <i>Modulus of elasticity</i> | |
| | | | | | f_c | f_{cp} | E | E_{05} |
| D.Fir-L | SS | 16.5 | 1.9 | 10.6 | 19.0 | 7.0 | 12 500 | 8 500 |
| | No.1/No.2 | 10.0 | | 5.8 | 14.0 | | 11 000 | 7 000 |
| | No.3/Stud | 4.6 | | 2.1 | 7.3 | | 10 000 | 5 500 |
| Hem-Fir | SS | 16.0 | 1.6 | 9.7 | 17.6 | 4.6 | 12 000 | 8 500 |
| | No.1/No.2 | 11.0 | | 6.2 | 14.8 | | 11 000 | 7 500 |
| | No.3/Stud | 7.0 | | 3.2 | 9.2 | | 10 000 | 6 000 |
| S-P-F | SS | 16.5 | 1.5 | 8.6 | 14.5 | 5.3 | 10 500 | 7 500 |
| | No.1/No.2 | 11.8 | | 5.5 | 11.5 | | 9 500 | 6 500 |
| | No.3/Stud | 7.0 | | 3.2 | 9.0 | | 9 000 | 5 500 |
| Northern | SS | 10.6 | 1.3 | 6.2 | 13.0 | 3.5 | 7 500 | 5 500 |
| | No.1/No.2 | 7.6 | | 4.0 | 10.4 | | 7 000 | 5 000 |
| | No.3/Stud | 4.5 | | 2.0 | 5.2 | | 6 500 | 4 000 |

Updated Spans

NEW Span Book 2020

| | |
|--|--|
| 1. Scope..... | |
| 2. Energy and the Environment – Canadian Wood Frame Construction | |
| 3. Specification | |
| 4. Minimum Code Requirements | |
| 5. Spans..... | |
| 6. Supported Length..... | |
| 7. Design Considerations..... | |
| 8. Other Loads | |
| 9. Grade Stamps | |

| Criterion | Joists and Rafters (Roof and Floor Loads) | | Floor /Deck Beams (Live or Snow) | |
|---|--|------------------|-------------------------------------|------------------|
| 1. Roof snow load and Floor live load (7.3) | Floors | – 1.9 kPa | One floor | – 1.9 kPa |
| | Attics | – 0.5 kPa | Two floors | – 3.3 kPa |
| | Roof joists and rafters | – 1.0 to 4.0 kPa | Three floors | – 4.7 kPa |
| | Exterior Deck | – 1.9 to 4.0 kPa | Exterior Deck | – 1.9 to 4.0 kPa |
| 2. Live load reduction factor (7.3) | n.a. | | n.a. | |
| 3. Dead load (7.4) | Floors (concrete) | – 1.3 kPa | Each floor | – 0.5 kPa |
| | (others) | – 0.5 kPa | Exterior Deck | – 0.5 kPa |
| | Ceiling joists | – 0.3 kPa | | |
| | Rafters | – 0.3 kPa | | |
| | Roof joists | – 0.5 kPa | | |
| | Exterior deck | – 0.5 kPa | | |
| 4. Deflection limit (7.5) | Rafters | span/180 | Floor: span/360 up to 15mm | |
| | All other | span/360 | Exterior Deck: span/360 | |
| 5. Vibration (7.6) | Floors | yes | n.a. | |
| | All other | n.a. | | |
| 6. System factor (7.7) | 1.4 (lumber) | | Built-up Floor: | |
| | 1.2 (MSR) | | 1.2 (bending) 1.1 (shear) | |
| | 1.1 (exterior deck) | | Built-up Exterior Deck: | |
| | | | 1.1 (bending) 1.1 (shear) | |
| | | | Glulam: 1.0 | |
| 7. Service condition factor (7.8) | Exterior Deck (wet) | | Exterior Deck (wet) | |
| | 0.84 (bending) | | 0.84 (bending) | |
| | 0.96 (shear) | | 0.96 (shear) | |
| | 0.94 (deflection) | | 0.94 (deflection) | |
| | 1.0 Interior (dry) | | 1.0 Interior (dry) | |
| 8. Treatment factor (7.9) | Exterior Deck Incised | | Exterior Deck Incised | |
| | 0.85 (bending) | | 0.85 (bending) | |
| | 0.85 (shear) | | 0.85 (shear) | |
| | 0.95 (deflection) | | 0.95 (deflection) | |
| | 1.0 (not incised) | | 1.0 (not incised) | |
| 9. Load duration factor (7.10) | 1.0 | | 1.0 | |
| 10. Construction factor (7.7) | n.a. | | 1.1 (lumber) 1.0 (glulam) | |
| | | | 1.0 (exterior deck) | |
| 11. Resistance factor (7.11) | 0.9 | | 0.9 | |

| Lintels and Ridge Beams (Roof Loads Only) | Lintels (Roof and Floor Loads) | |
|--|--|---------------------------|
| 1.0 to 3.0 kPa | Roof Loads: Tables 9.1-9.20 Table 9.6-9.25 | 1.0 to 3.0 kPa 2.5 kPa |
| | Floor Loads: Attic | 1.0 kPa |
| | One floor | 1.9 kPa |
| | Two floors | 3.3 kPa |
| | Three floors | 4.7 kPa |
| n.a. | Roof + One floor | 0.9 |
| | Roof + Two floors | 0.8 |
| | Roof + Three floors | 0.7 |
| 0.5 kPa | Attic | 0.5 kPa |
| | Roof | 0.5 kPa |
| | Each floor | 0.5 kPa |
| Built-up: span/360 up to 15 mm Glulam: 15 mm | span/360 up to 15 mm | |
| n.a. | n.a. | |
| Built-up: 1.2 (bending) 1.1 (shear) Glulam: 1.0 | 1.2 (bending) 1.1 (shear) 1.0 (1-ply) | |
| 1.0 Interior (dry) | 1.0 Interior (dry) | |
| 1.0 (not incised) | 1.0 (not incised) | |
| 1.0 | 1.0 | |
| 1.1 (lumber) 1.0 (glulam) | 1.0 (1-ply) 1.1 (Built-up) | |
| 0.9 | 0.9 | |

Revised Design Assumptions

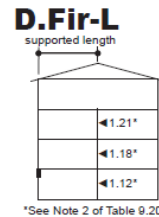
NEW Span Book 2020

| Species | Grade | Supported length (ft.) | 2x6 | | | 2x8 | | |
|-----------------|-----------|------------------------|-------|-------|-------|-------|-------|-------|
| | | | 1-Ply | 2-PLY | 3-PLY | 1-PLY | 2-PLY | 3-PLY |
| S-P-F | No.1/No.2 | 8 | 2-7 | 4-1 | 4-12 | | | |
| | | 10 | 2-4 | 3-8 | 4-5 | | | |
| | | 12 | 2-1 | 3-4 | 4-1 | | | |
| | | 14 | 1-11 | 3-1 | 3-9 | | | |
| | | 16 | 1-9 | 2-10 | 3-6 | | | |
| | | 18 | 1-8 | 2-7 | 3-4 | | | |
| | | 20 | 1-7 | 2-5 | 3-2 | | | |
| Northern | No.1/No.2 | 8 | 2-1 | 3-3 | 3-12 | | | |
| | | 10 | 1-11 | 2-11 | 3-7 | | | |
| | | 12 | 1-9 | 2-8 | 3-3 | | | |
| | | 14 | 1-7 | 2-6 | 3-0 | | | |
| | | 16 | 1-6 | 2-4 | 2-10 | | | |
| | | 18 | 1-5 | 2-2 | 2-8 | | | |
| | | 20 | 1-4 | 2-1 | 2-6 | | | |

Notes: See notes of Table 9.20b.

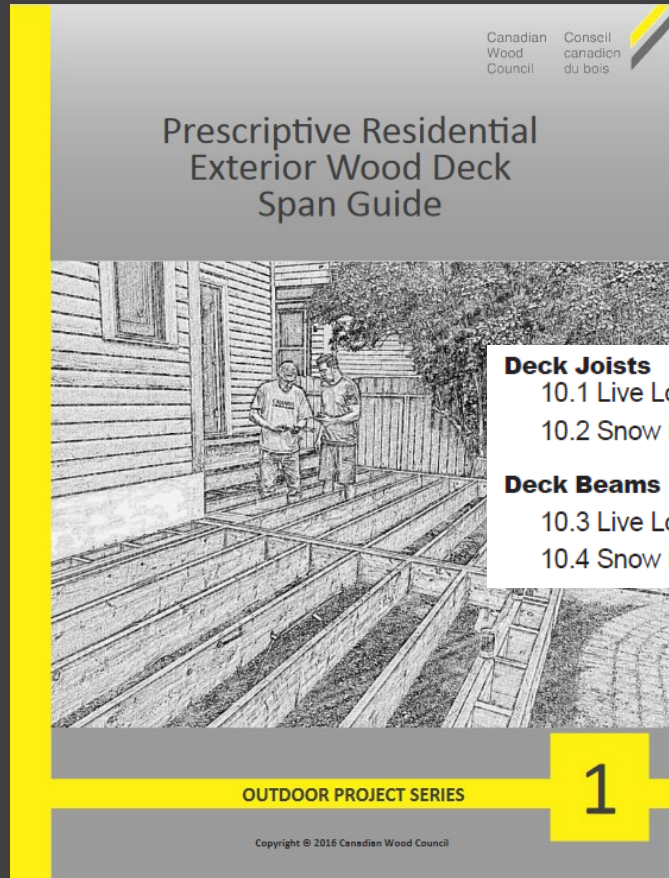
Table 9.20a **Maximum Spans (ft.-in.)**
Lintels With Non-Structural Sheathing
Supporting 3 Storeys & Roof **Snow Load = 62.7 psf**

| Species | Grade | Supported length (ft.) | 2x6 | | | 2x8 | | |
|----------------|-----------|------------------------|-------|-------|-------|-------|-------|-------|
| | | | 1-Ply | 2-PLY | 3-PLY | 1-PLY | 2-PLY | 3-PLY |
| D.Fir-L | No.1/No.2 | 8 | 2-5 | 3-9 | 4-7 | 2-11 | 4-7 | 5-7 |
| | | 10 | 2-2 | 3-4 | 4-1 | 2-8 | 4-1 | 4-12 |
| | | 12 | 1-12 | 3-1 | 3-9 | 2-5 | 3-9 | 4-7 |
| | | 14 | 1-10 | 2-10 | 3-6 | 2-3 | 3-5 | 4-3 |
| | | 16 | 1-8 | 2-8 | 3-3 | 2-1 | 3-3 | 3-11 |
| | | 18 | 1-7 | 2-6 | 3-1 | 1-12 | 3-0 | 3-9 |
| | | 20 | 1-6 | 2-4 | 2-11 | 1-10 | 2-11 | 3-6 |
| Hem-Fir | No.1/No.2 | 8 | 2-6 | 3-11 | 4-10 | 3-1 | 4-9 | 5-10 |
| | | 10 | 2-3 | 3-6 | 4-4 | 2-9 | 4-3 | 5-3 |
| | | 12 | 2-1 | 3-2 | 3-11 | 2-6 | 3-11 | 4-9 |
| | | 14 | 1-11 | 2-12 | 3-8 | 2-4 | 3-7 | 4-5 |
| | | 16 | 1-9 | 2-9 | 3-5 | 2-2 | 3-5 | 4-2 |
| | | 18 | 1-8 | 2-7 | 3-2 | 2-1 | 3-2 | 3-11 |
| | | 20 | 1-7 | 2-6 | 3-0 | 1-11 | 3-0 | 3-8 |



Addition of 1- and 3-Ply Lintels

NEW Span Book 2020



Deck Joists

10.1 Live Load – 1.9 kPa

10.2 Snow Load – 4.0 kPa

Deck Beams

10.3 Live Load – 1.9 kPa

10.4 Snow Load – 4.0 kPa

Table 10.1a Maximum Spans, Not Incised (m)

Deck Joists

Live Load = 1.9 kPa

| Species | Grade | 38x89 | | | | 38x140 | | | | 38x184 | | | |
|----------|-------------|--------------------|------|------|------|--------|------|------|------|--------|------|------|------|
| | | Joist spacing (mm) | | | | | | | | | | | |
| | | 200 | 300 | 400 | 600 | 200 | 300 | 400 | 600 | 200 | 300 | 400 | 600 |
| D.Fir-L | No. 1/No. 2 | 2.34 | 2.04 | 1.85 | 1.62 | 3.68 | 3.21 | 2.86 | 2.34 | 4.83 | 4.02 | 3.48 | 2.84 |
| Hem-Fir | No. 1/No. 2 | 2.34 | 2.04 | 1.85 | 1.62 | 3.68 | 3.21 | 2.92 | 2.45 | 4.83 | 4.22 | 3.65 | 2.98 |
| S-P-F | No. 1/No. 2 | 2.23 | 1.94 | 1.77 | 1.54 | 3.50 | 3.06 | 2.78 | 2.43 | 4.60 | 4.02 | 3.65 | 3.09 |
| Northern | No. 1/No. 2 | 2.01 | 1.76 | 1.60 | 1.39 | 3.16 | 2.76 | 2.49 | 2.04 | 4.15 | 3.50 | 3.04 | 2.48 |

| Species | Grade | 38x235 | | | | 38x286 | | | |
|----------|-------------|--------------------|------|------|------|--------|------|------|------|
| | | Joist spacing (mm) | | | | | | | |
| | | 200 | 300 | 400 | 600 | 200 | 300 | 400 | 600 |
| D.Fir-L | No. 1/No. 2 | 6.02 | 4.92 | 4.26 | 3.48 | 6.99 | 5.70 | 4.94 | 4.03 |
| Hem-Fir | No. 1/No. 2 | 6.17 | 5.16 | 4.47 | 3.65 | 7.33 | 5.98 | 5.18 | 4.23 |
| S-P-F | No. 1/No. 2 | 5.88 | 5.13 | 4.62 | 3.78 | 7.15 | 6.20 | 5.37 | 4.38 |
| Northern | No. 1/No. 2 | 5.25 | 4.29 | 3.71 | 3.03 | 6.09 | 4.97 | 4.31 | 3.52 |

Note: See note of Table 10.2b.

Table 10.3b Maximum Spans, Incised (ft.-in.)

Built-Up Decks

Live Load = 39.7 psf

| Species | Grade | Supported length (ft.) | 2x6 | | | | 2x8 | | | |
|---------|-------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 2-Ply | 3-PLY | 4-PLY | 5-Ply | 2-PLY | 3-PLY | 4-PLY | 5-Ply |
| D.Fir-L | No. 1/No. 2 | 8 | 5-0 | 6-2 | 7-1 | 7-11 | 6-1 | 7-6 | 8-8 | 9-8 |
| | | 10 | 4-6 | 5-6 | 6-4 | 7-1 | 5-5 | 6-8 | 7-9 | 8-8 |
| | | 12 | 4-1 | 5-0 | 5-9 | 6-6 | 5-0 | 6-1 | 7-0 | 7-10 |
| | | 14 | 3-9 | 4-7 | 5-4 | 6-0 | 4-7 | 5-8 | 6-6 | 7-3 |
| | | 16 | 3-6 | 4-4 | 5-0 | 5-7 | 4-4 | 5-3 | 6-1 | 6-10 |
| | | 18 | 3-4 | 4-1 | 4-8 | 5-3 | 4-1 | 5-0 | 5-9 | 6-5 |
| | | 20 | 3-2 | 3-10 | 4-6 | 5-0 | 3-10 | 4-8 | 5-5 | 6-1 |
| Hem-Fir | No. 1/No. 2 | 8 | 5-3 | 6-5 | 7-5 | 8-4 | 6-5 | 7-10 | 9-1 | 10-1 |
| | | 10 | 4-8 | 5-9 | 6-8 | 7-5 | 5-8 | 7-0 | 8-1 | 9-1 |
| | | 12 | 4-3 | 5-3 | 6-1 | 6-9 | 5-2 | 6-5 | 7-5 | 8-3 |
| | | 14 | 3-11 | 4-10 | 5-7 | 6-3 | 4-10 | 5-11 | 6-10 | 7-8 |
| | | 16 | 3-8 | 4-6 | 5-3 | 5-10 | 4-6 | 5-6 | 6-5 | 7-2 |
| | | 18 | 3-6 | 4-3 | 4-11 | 5-6 | 4-3 | 5-2 | 6-0 | 6-9 |
| | | 20 | 3-4 | 4-1 | 4-8 | 5-3 | 4-0 | 4-11 | 5-8 | 6-5 |

Deck Joists and Built-Up Deck Beams

NEW Span Book 2020



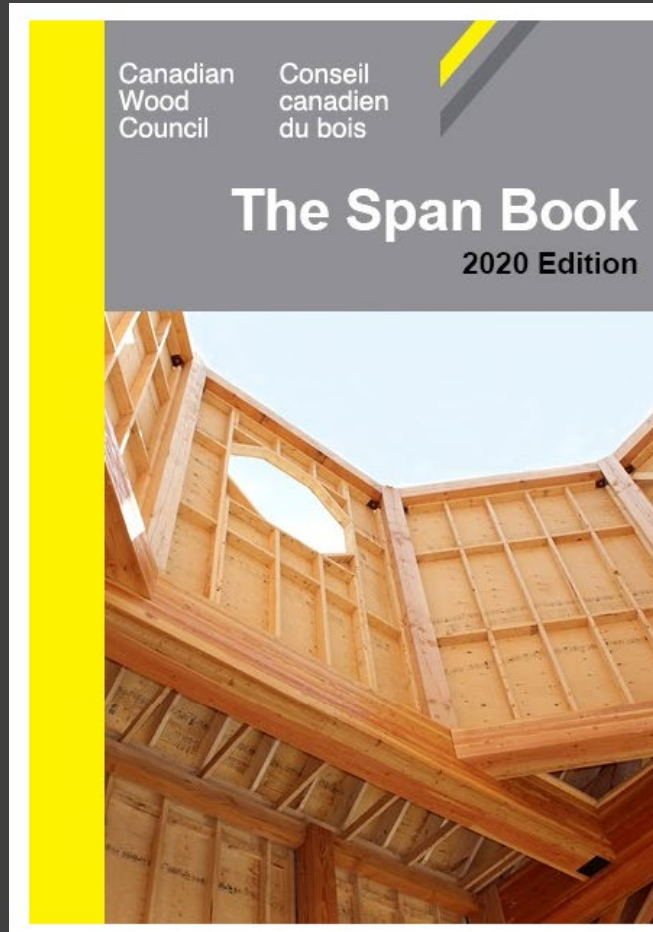
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NEW Span Book 2020



Canadian Span Book 2020

(CAD) \$25.00

1

ADD TO CART

SKU: SB00-20-E

Category: [Technical Books](#)

ISBN: 978-1-989039-06-9

Features: Spiral bound, 594 pages, 17 x 15 x 4.5 cm, 848g



CWC Design Tools

- Effective R Calculator
- Canadian Beam Calculator
- Dimensions Calculator
- Board Foot Calculator
- Carbon Calculator
- CodeCHEK
- FRR & STC Tool

Effective R Calculator

What is the Effective R Calculator?

The purpose of this R Value online tool is to provide designers with climate zone-appropriate insulated wall assembly solutions that are easily comparable with national and provincial energy efficiency prescriptive provisions.

Banff Recreation Centre

SEARCH FOR WALLS NOW
CLICK HERE TO GO TO CALCULATOR



List of Available Wall Assemblies



How to Use the Effective R Calculator



Canadian Code Requirements for Above Grade Wall Thermal Design



Understanding the Builder Notes



Wall Thermal Design Performance Literature: Excerpts from the CHBA Manual



Understanding the Building Science Durability Notes

Vapour retarder options:

- 6 mil poly, smart, and vapour retarder paint

Framing:

- 2x4, 1-2x6, 2-2x6, 2x8, Double 2x4 studs at 8", 12", 16", 19.2", 24" o.c and CLT

Cavity insulation:

- None, batts (R14-28), and spray foam (1/2, 3/4, and 2lb)

Sheathing:

- 3/8 and 7/16 OSB, and 3/8 and 1/2 plywood

Exterior insulation:

- Foil faced polyiso, EPS, XPS, mineral wool (up to 7.5" thick)

Weather barrier:

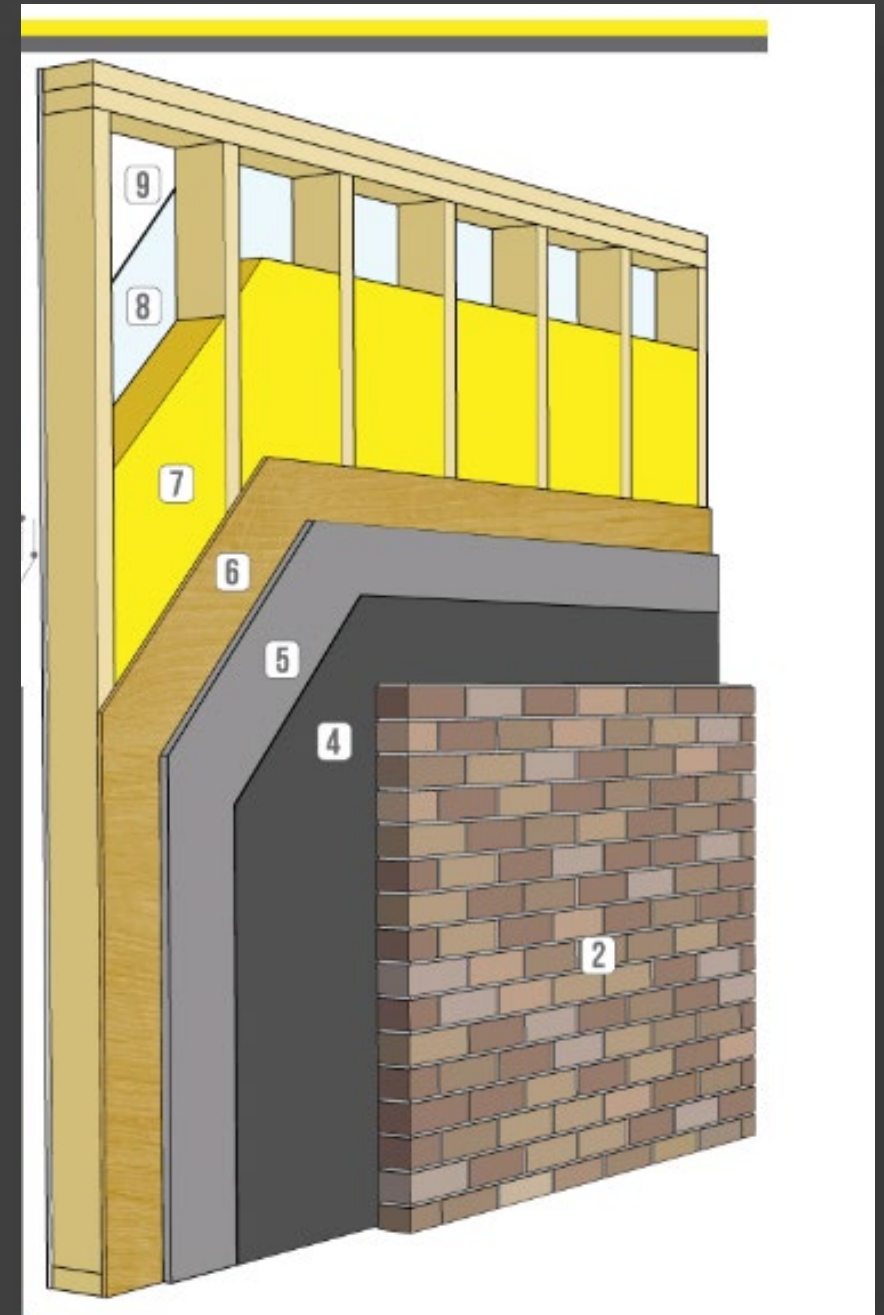
- Building paper, spun bonded polyolefin, and liquid applied

Cladding:

- Brick, vinyl, EIFS, fibre cement, wood, steel

Available Components

Effective R Calculator



Double stud

| WALL ASSEMBLY COMPONENTS ¹ | | RSI | R |
|--|---|------|-------|
| 1 | exterior air film | 0.03 | 0.17 |
| 2 | single-faced cellulose fibre reinforced cement 5/16" (8mm) ² | 0.03 | 0.15 |
| 3 | spun bonded polyolefin (house wrap) | 0.00 | 0.00 |
| 4 | 1/2" (12.7mm) Plywood sheathing | 0.11 | 0.62 |
| 5 | 2x4 double stud framing filled with R51 blown fibre glass @ 16" o.c. | 7.26 | 41.22 |
| 6 | smart vapour retarder ⁴ | 0.00 | 0.00 |
| 7 | 1/2" (12.7mm) gypsum board | 0.08 | 0.45 |
| 8 | finish: 1 coat latex primer and latex paint | 0.00 | 0.00 |
| 9 | interior air film | 0.12 | 0.68 |
| Effective RSI / R Value of Entire Assembly | | 7.63 | 43.29 |
| Centre of Cavity RSI / R Value | | 9.40 | 53.34 |
| Installed Insulation RSI / R Value(nominal) | | 9.03 | 51.27 |
| Effective RSI / R Value of Assembly with Advanced Framing (advanced framing as defined by NBC9.36.2.4.(1)) | | 7.84 | 44.48 |

Note: ¹Values are for generic insulation products. Where a specific insulation product is used in the assembly, the thermal resistance value, or long term thermal resistance value, where applicable, of that product is permitted to be used as reported by the Canadian Construction Materials Centre (CCMC) in the evaluation of such a product. ²The building code does not require furring behind fibre-cement, however please refer to the specific fibre-cement manufacturer instructions for drainage space requirements.

That's high!

LEGEND High Pass Pass Conditional Pass Conditional Fail Fail

SIMULATED DURABILITY ANALYSIS

DURABILITY RATING BASED ON SIMULATIONS AND FIELD EXPERIENCE

| LOCATION: | Vancouver | Edmonton | Toronto | Montreal | St. John's |
|-----------|-----------|----------|---------|----------|------------|
| | | | | | |

Note: See WUFI Assumptions. Non-wood based exterior sheathing material that has a water vapour permeance less than 0.01 ng/(Pa·s·m²).

43.3

| WALL ASSEMBLY COMPONENTS ¹ | | RSI | R |
|--|---|------|-------|
| 1 | exterior air film | 0.03 | 0.17 |
| 2 | vinyl siding (no air space) | 0.11 | 0.62 |
| 3 | asphalt impregnated paper ³ | 0.00 | 0.00 |
| 4 | 1" (25.4mm) extruded polystyrene type 3/4 | 0.89 | 5.05 |
| 5 | 7/16" (11.1mm) OSB sheathing | 0.11 | 0.62 |
| 6 | 2x6 framing filled with R22 batt @ 16" o.c. | 2.55 | 14.48 |
| 7 | polyethylene | 0.00 | 0.00 |
| 8 | 1/2" (12.7mm) gypsum board | 0.08 | 0.45 |
| 9 | finish: 1 coat latex primer and latex paint | 0.00 | 0.00 |
| 10 | interior air film | 0.12 | 0.68 |
| Effective RSI / R Value of Entire Assembly | | 3.89 | 22.07 |
| Centre of Cavity RSI / R Value | | 5.21 | 29.59 |
| Installed Insulation RSI / R Value(nominal) | | 4.76 | 27.05 |
| Effective RSI / R Value of Assembly with Advanced Framing (advanced framing as defined by NBC9.36.2.4.(1)) | | 4.05 | 22.98 |

Note: ¹Values are for generic insulation products. Where a specific insulation product is used in the assembly, the thermal resistance value, or long term thermal resistance value, where applicable, of that product is permitted to be used as reported by the Canadian Construction Materials Centre (CCMC) in the evaluation of such a product. ³Sheathing membrane material must comply with CAN/CGSB-51.32, "Sheathing Membrane Breather Type".

Includes typical construction

LEGEND High Pass Pass Conditional Pass Conditional Fail Fail

SIMULATED DURABILITY ANALYSIS

DURABILITY RATING BASED ON SIMULATIONS AND FIELD EXPERIENCE

| LOCATION: | Vancouver | Edmonton | Toronto | Montreal | St. John's |
|-----------|-----------|----------|---------|----------|------------|
| | | | | | |

Note: See WUFI Assumptions. Non-wood based exterior sheathing material that has a water vapour permeance less than 0.01 ng/(Pa·s·m²) must comply to NBC9.25.5.2.

OUTBOARD TO INBOARD RATIO COMPLIANCE

| | | | | |
|-----|-----|-----|-----|-----|
| 0.2 | 0.3 | 0.2 | 0.2 | 0.2 |
|-----|-----|-----|-----|-----|

Summary

OUTBOARD TO INBOARD RATIO 0.25

22.1
R_{eff}

Effective R Calculator

Best, most resilient



Watch out: read the notes

Wall Durability

Effective R Calculator

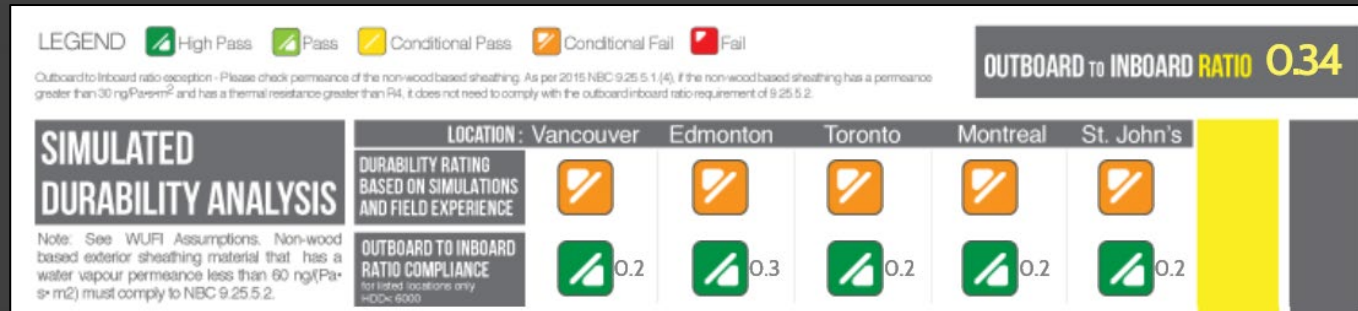
This example compares two equally insulated walls with brick cladding and 1" foil-faced polyiso, changing only the vapour retarder



Smart vapour retarder

ID of this Wall: 2150

Saved



Poly vapour barrier

ID of this Wall: 436

Saved

CodeCHEK

What is CodeCHEK?

CodeCHEK was developed under the *Wood Works!* Program by the Canadian Wood Council, to assist designers to determine if and when lightweight wood-frame, heavy timber, mass timber and/or encapsulated mass timber construction can be used, and to determine what are the applicable construction requirements related to fire safety.

CodeCHEK



[CLICK HERE TO GO TO CODECHEK](#)

Building Code Evaluator

CodeCHEK

1. Select the applicable building code.
2. Select the major occupancy (e.g., A3 – Arena, D - Offices).
3. Is the building sprinklered?
4. Number of streets facing (click on the additional notes)?
5. Enter the building area.
6. Specify the number of storeys.
7. Enter the maximum area of unprotected openings (spatial separation).

[Previous Step](#) | [Back to Start](#) [Definitions](#) [Print](#)

Your Inputs

Building Code: Ontario Building Code Compendium 2012

Building Sprinklered? No

Building Area: 3000 m²

Spatial separation: 1) 20% 2) 10% 3) 10% 4) 10%

Major Occupancy: D – Offices

Number of streets facing: 2

Number of storeys: 2

Based on the inputs provided, Article 3.2.2.53. is applicable.

3.2.2.53.

1) Outputs

- The maximum building area permitted for 2 storeys facing 2 streets: 3000m²
- (3.2.2.10.(4)) A building is considered to face 2 streets provided not less than 50% of the building perimeter is located within 15 m of the street or streets.
- The floor assemblies must be fire separations with a fire-resistance rating of at least 45 min.
- Mezzanines must have a fire-resistance rating of at least 45 min.
- Roofs must have a fire-resistance rating of at least 45 min.
- Loadbearing walls, columns, and arches must have a fire-resistance rating that is not less than that required for the supported assembly.

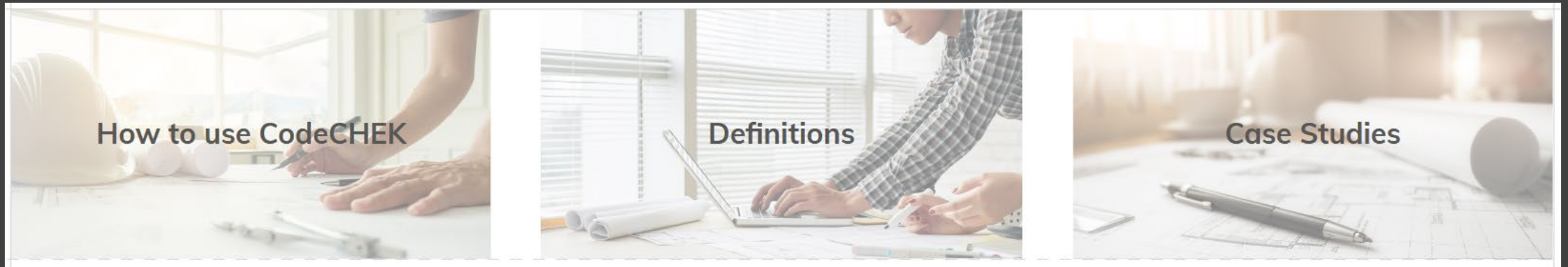
2) Spatial Separation – Maximum Area of Unprotected Openings Permitted (% of Exposing Building Face Area)

- Exposing Building Face 1 :
 - The exterior wall or exposing building face is required to have a fire-resistance rating of 1 h.
 - The exterior wall or exposing building face is permitted to be of combustible or noncombustible construction.
 - The cladding on the exterior wall or exposing building face is required to be of noncombustible construction.
- Exposing Building Face 2 :
 - The exterior wall or exposing building face is required to have a fire-resistance rating of 1 h.
 - The exterior wall or exposing building face is required to be of noncombustible construction.
 - The cladding on the exterior wall or exposing building face is required to be of noncombustible construction.
- Exposing Building Face 3 :
 - The exterior wall or exposing building face is required to have a fire-resistance rating of 1 h.
 - The exterior wall or exposing building face is required to be of noncombustible construction.
 - The cladding on the exterior wall or exposing building face is required to be of noncombustible construction.
- Exposing Building Face 4 :
 - The exterior wall or exposing building face is required to have a fire-resistance rating of 1 h.
 - The exterior wall or exposing building face is required to be of noncombustible construction.
 - The cladding on the exterior wall or exposing building face is required to be of noncombustible construction.

[Related Case Studies](#)

For more information or guidance please refer to:

- How to use CodeCHEK
- Definitions
- Case Studies



Building Code Evaluator

CodeCHEK

FRR & STC Tool

Fire Resistance Rating & Sound Transmission Class

This tool was developed by the Canadian Wood Council (CWC) to assist designers in the development of generic FRR designs of lightweight wood-frame wall, floor, and roof assemblies using the Component Additive Method (CAM), which is referenced as an acceptable solution in Canadian building codes for all buildings permitted to be of combustible construction. In addition, the tool provides the STC value that is associated with each assembly for which STC information is available.

Surrey Memorial Hospital Critical Care Tower



Canadian
Wood
Council

Conseil
canadien
du bois

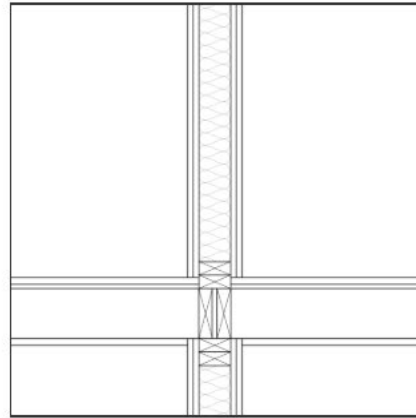


FRR & STC Tool

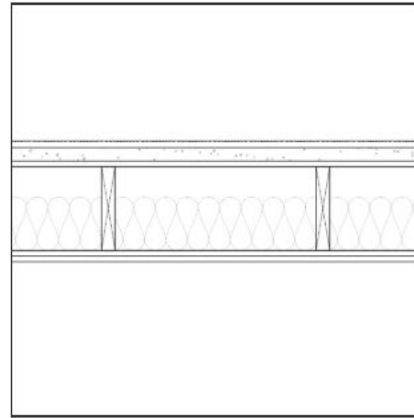
FIRE RESISTANCE & SOUND TRANSMISSION CLASS

[HOME](#)

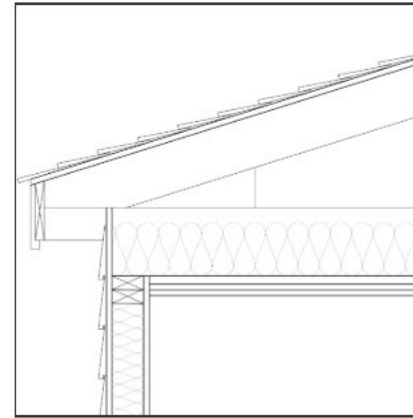
I'm looking for...



WALLS



FLOORS



ROOFS

FRR & STC Tool

For more information or questions contact us at:

helpdesk@cw.ca



Contact Us!

Design Tools

Questions?

America Lopez-Molina, M.A.Sc., E.I.T.
Technical Services Specialist
Codes and Standards – Structural Engineering

helpdesk@cwcc.ca
www.cwcc.ca
Canadian Wood Council

CHBA Product Innovation Showcase

May 6, 2021



Canadian Wood Council
Conseil canadien du bois



Canadian Wood Council (CWC)

*Featuring Online Tools and Resources for
Advancement in Wood Frame Construction*

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America Lopez-Molina
Technical Service Specialist
Alopez-molina@cwcc.ca

CodeCHEK





DuPont Performance Building Solutions

Featuring GWP Styrofoam Products



Fabiani Pereira

Residential Segment Manager

Fabiani.pereira@dupont.com



Innovations from DuPont

Reduced GWP Styrofoam™ Brand XPS Insulation

April x, 2021

Presenter Name Here



Performance Building Solutions



Beyond Blue

Summary

- DuPont™ Styrofoam™ Brand XPS products are being reformulated with next-generation, sustainable technology featuring reduced GWP and lower embodied carbon.
- As of January 1, 2021, blue Styrofoam™ Brand XPS is transitioning to a new grey formulation in Canada



More Sustainable

- Already manufactured with **100% renewable electricity** and a **zero-ozone depletion formula**, the sustainability benefits of Styrofoam™ Brand XPS include:
- **Reusable** in many applications
- Certified by UL Environment Inc. to contain an average of **20% post-consumer recycled content**
- Produced with **BLUEDGE™ Polymeric Flame Retardant Technology**, a stable polymer with an enhanced environment, health and safety profile
- Can help builders achieve green building certifications, including **Canada Green Building Council's Leadership in Energy and Environmental Design (LEED®)** certification

Third party verified **Environmental Product Declaration (EPD)** through **ULSpot®** is available:

[Reduced GWP Grey Styrofoam™ Brand products \(Canada\)](#)



Styrofoam™ Brand XPS

History of innovation continues

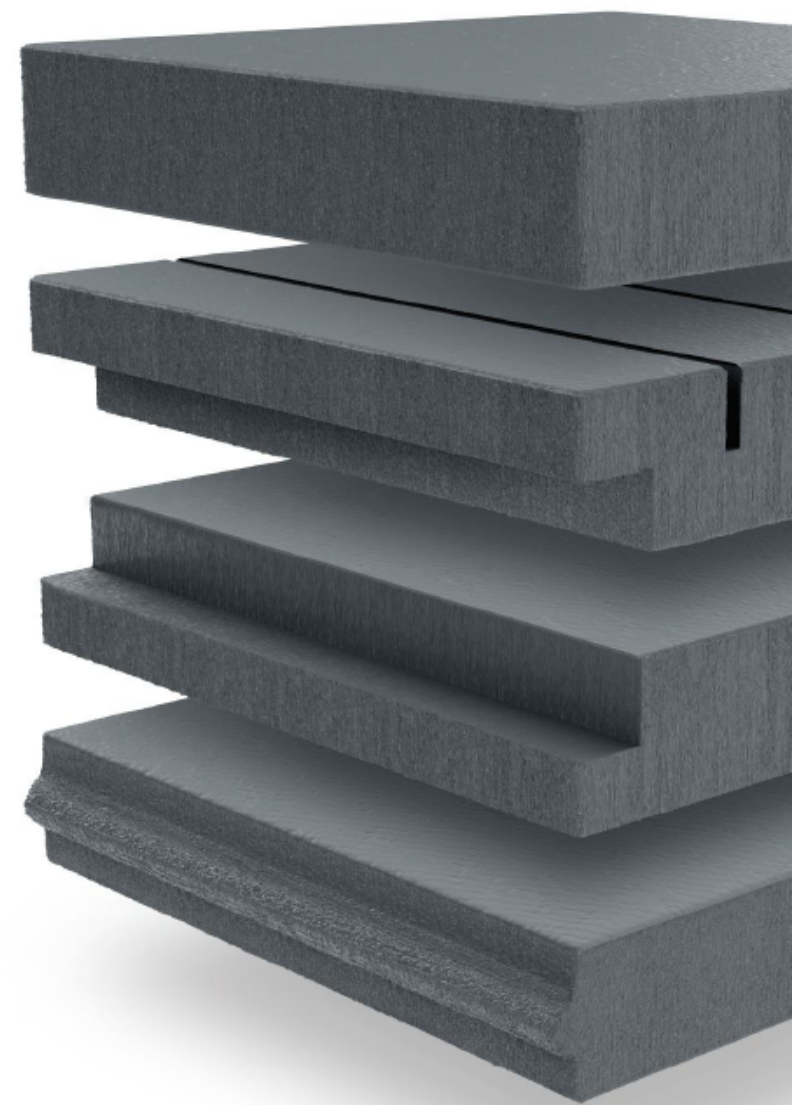


The Same High Performance You Trust

It's only getting better

Reduced GWP Styrofoam™ Brand XPS offers the same thermal performance, moisture resistance, durability and ease-of-use you expect.

- A unique closed-cell structure gives Styrofoam™ Brand XPS its exceptional moisture resistance and enables it to retain a high thermal resistance retention in all applications.
- Meets CAN/ULC S-701.1 requirements for Types 2, 3 and 4
- Compliant with requirements of NBCC and Provincial and Territorial Building Codes
- All Styrofoam™ Brand products when tested to CAN/ULC S-102.2 have Flame Spread Indices < 300 and Smoke Developed Ratings of < 700
- Provides a weather-resistant barrier to enhance the building's resistance to air and moisture penetration
- Will not corrode, rot or support mold growth
- Available in wide range of compressive strengths from 16 to 100 psi, and minimum flexural strength of 40 psi
- Easy to fabricate into various sizes, thicknesses and edge treatments to meet specific design needs, while ensuring energy efficiency and minimizing on-site cutting and waste
- Canadian Styrofoam™ products are listed under the same CCMC Listings as previous: [CCMC 11420-L](#), [12085-L](#) and [04888-L](#).



Build better. Build beyond. Build for sure.

DuPont Performance Building Solutions offers a portfolio of solutions for thermal, air and moisture management to optimize the building envelope. Check out how our products work together to create resilient homes:

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- **Styrofoam™ Brand Insulation** – uniquely engineered to moderate the temperature in the wall cavity and boost effective R-value in exterior walls by 20% for the ultimate in thermal protection
- **Great Stuff Pro™ Multi-Purpose Foam Sealants** – a variety of easy-to-use spray foam products for air sealing, insulating, and reducing energy costs in high-loss areas around the home

DuPont Building Products offer:



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Moisture barrier



Complete protection



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M.R. Walls Designed with Corian® Solid Surface
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Our Corian® Quartz plant is in Canada

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DuPont Performance Building Solutions

Featuring GWP Styrofoam Products



Fabiani Pereira

Residential Segment Manager

Fabiani.pereira@dupont.com





Home Depot

Featuring Hilti and Home Depot Rental



Jason Cunningham

Merchant, Home Depot Pro and Rental

Jason_r_Cunningham@homedepot.com





HD Rental

Hilti Partnership

Jason Cunningham



HD Rental – Value Prop



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- ✓ 650 Load N Go Vehicles
- ✓ Flexible Rental rates
- ✓ Daily/Weekly/Monthly Rates
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- ✓ Open Monday - Sunday



HD Rental - Partnership

To help drive safety and productivity, a full assortment of Pro level tools & services are available through The Home Depot Rental & MRO from Hilti Canada.

Tool Rental Services

- Over Hilti **5,000** assets in core categories ready to rent!
- Ultimate “mix & match” flexibility for your projects

Hilti Training

- In Person* trainings on core Health & Safety topics
- 8+ Safety modules available, including Silica Dust safety



MRO/PRO Catalog

- Full catalog of core Hilti tools and products at w/ wholesale prices
- Rent or Buy through MRO/PRO – w/ whatever you need!

HD.ca Portfolio

- Over 500 items currently online, 450+ coming soon
- Customer Convenience to shop 24/7 via HD.ca

- By leveraging more of Hilti's partnered services, you can capture the most of your customers' share of wallet while filling their needs with “one stop shop” approach
- Bringing new services (ie. Health/ & Safety Trainings) makes HD relevant to *more* departments allowing you to engage deeper into the organization you are targeting
- Bonding with your VIP creates Customer Engagement – harder to leave HD in future

Hilti Partnership Examples:

1

Hilti Rental Program:

- Full assortment of PRO tools in HDTR
- CHBA relevant applications for Rent (ie. electric saw with Vacuum for interior cutting applications)
- Need a specific – please ask us! We can probably support through Hilti or another vendor.



2

MRO/PRO Catalog:

- Access to all of Hilti's portfolio through PRO/MRO Warehouse at HD Pro/Supply
- Benefits of HD Terms & Promotions available through the Pro Desk & Special Order MRO
- 2 Day delivery in most areas for Hilti Products



3

Customer PRO Solutions:

- PRO Support through Hilti Partners (in-store)
- Training available for select tools/applications with purchase of a Hilti solution through HD Pro
- On-site support via Hilti Partnership – consultative selling and support where you need it



HD Rental – PRO Assortment (Rent or Buy)

PRO Rental Assortment



+5,000 Assets

- Full portfolio of med. & heavy duty tools for PROs
- Application driven solutions for PROs (full systems) & MRO/PRO availability of full Hilti Catalog
- Safe, productive PRO quality tools that help you get the job done safely, and on-time

Many PRO Categories Available to Rent:

Concrete Breaking

Rotary Drills (SDS Plus)

Combihammers (SDS Max)

Diamond Cutting

Diamond Coring

Concrete Breaking

Diamond Grinding

Direct Fastening

Vacuums

Dustless Solutions

MRO/PRO Catalog



Home Depot & Hilti have partnered to make a full assortment of PRO tools available for both Rent & Purchase through MRO/PRO Purchase Program



HE Rental – CHBA Application Example

Diamond Concrete Cutting



Indoor



DCH 300X 12\"/>



VC 150-X 10



Outdoor



DSH 600X 12\"/>



DSH 700X 14\"/>



DSH 900X 16\"/>



Adding Door or Window, Expansion Joints

Adding Dryer Vent & Concrete Wall Clean-Up



Indoor



DD 150-U Diamond
Coring Rig



DG 150 Grinder



Outdoor



VC 150-X 10



Adding 4\"/>

HD Rental – Long Term Rental & Solutions

Long-Term Rentals

- Need tools 8 Months of the year? Working with a fixed budget? Need to “tool up” for a job or new team? Long-Term Rentals gives you access to over 16 tools from Hilti for Long-Term crib rentals for worry-free PRO tools
- Ultimate “mix & match” flexibility for your projects, custom cabinets for your crews, & the flexibility to Rent or Buy the assortment of products you need, when you need it, worry-free. HDTR partners with PRO brands to deliver results.

Custom Tool Solutions

- PRO/MRO can provide tailored solutions for your Tool Crib or Jobsite Team – with an assortment of PRO quality tools at a fixed month price to make you & your crew safe, productive and equipped.
- Consult with our PRO/MRO sales team

Consumable Management Programs

- Setup regular re-stocking, replenishment, and updated orders as needed for your projects/tool cribs
- Get the assortment of what you use most, automatically re-ordered for you based on agreed contracts & cycles
- Combine all your purchases for tools, inserts, building materials, and other items on your Home Depot Credit Card





Home Depot

Featuring Hilti and Home Depot Rental



Jason Cunningham

Merchant, Home Depot Pro and Rental

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Aid Ratings Canada

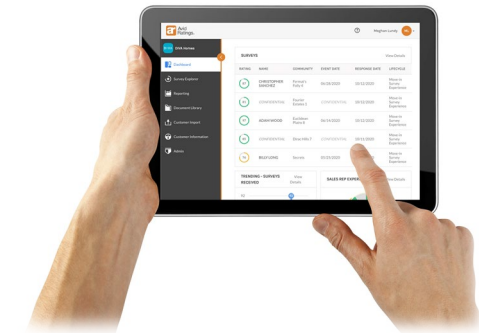
Featuring AvidCX



Todd Allenson

Sales Director

Todd.Allenson@avidratings.ca





CHBA Product Innovation Showcase

THANK YOU AND STAY SAFE!

