

Roof Testing Laboratory



Roof System Dynamic Wind Uplift Resistance Results

File Number:	SOPI-DRS-00231265-14
Test Date:	2016-11-28
Publication Date:	2017-05-29
Reappraisal Date:	2020-05-29



4 PLY BUILT-UP TYPE IV

(PARS) PARTIALLY ATTACHED (HYBRIDE) ROOFING SYSTEM

Roofing System Summary

Cap sheet membrane:	4 ply of type IV felt / Adhered with type III oxidized bitumen
Base sheet membrane:	N/A
Cover board:	Wood fiber board 1220 x 2440 x 12,7 mm (4' x 8' x 1/2") / Adhered
Insulation:	Polyisocyanurate foam insulation board 1220 x 1220 x 38 mm (4' x 4' x 1 1/2") / Adhered
Vapor barrier:	Saturated felt membrane / Adhered
Thermal barrier:	Fiberglass matfaced, noncombustible, nonstructural, gypsum core board 1220 x 2440 x 12,7 mm (4' x 8' x 1/2") / Mechanically fastened
Decking:	Steel deck

Dynamic Uplift Resistance (DUR) as per CSA A123.21

System Designation	Measured Value	Computed Value (To Include 1.5 Safety Factor)
A	-7,2 kPa (-150 psf)	-4,8 kPa (-100 psf)

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Products

CAP SHEET MEMBRANE				
TESTED PRODUCT : Bitumen-coated membrane reinforced with glass fiber mat and surfaced on both sides with fine mineral aggregate				
System	Application Method			
A	4 ply fully adhered with oxidized bitumen			
ELIGIBLE PRODUCT(S)				
Soprema	Sopra IV			
Note : Adding aggregate or reflective coating on top of membrane will not impact negatively the wind resistance performance of the system				

BASE SHEET MEMBRANE				
TESTED PRODUCT : N/A				

COVER BOARD				
TESTED PRODUCT : Wood fiber board asphalt-coated on one side Or One side asphalt-coated wood fiber board				
System	Application Method	Fastening Rate		
A	Fully adhered with oxidized bitumen	N/A		
ELIGIBLE THICKNESS(ES)				
12,7 mm (1/2 in)				
ELIGIBLE PRODUCT(S)				
MSL	ISOLtop Enduit 1C			
Soprema	Soprafibre 1C			

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INSULATION (Top Row)				
TESTED PRODUCT : Polyisocyanurate foam insulation board laminated on both sides with fiber reinforced felt				
System	Application Method		Fastening Rate	
A	Fully adhered with oxidized bitumen		N/A	
ELIGIBLE THICKNESS(ES)				
38 to 102 mm (1½ to 4 in)				
ELIGIBLE PRODUCT(S)				
Soprema	Sopra-ISO			

INSULATION (Bottom Row)				
TESTED PRODUCT : N/A				

FASTENERS PULL OUT RESISTANCE				
TESTED PRODUCT(S) : #12 DP roofing fasteners				
System	Screws		Plates	
A	#12 DP x 41,3 mm (1⅝ in)		Round plates of 76,0 mm (3 in)	
FASTENERS MEASURED PULL OUT RESISTANCE				
178 kgf (392 lbf)				
ELIGIBLE PRODUCT(S)				
Dekfast (screws)	#12 DP x 41,3 mm (1⅝ in)			
Dekfast (plates)	Round metal insulation plates			

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ADHESIVE			
TESTED PRODUCT : Oxidized bitumen designed to adhere SEBS modified bitumen base sheet membranes as well as support and insulation boards			
System	Ribbon's spacing		Primer
A	Fully applied		N/A
ELIGIBLE PRODUCT(S)			
Soprema	Soprasphalte OX type III		
Generic	Type III bitumen ⁽¹⁾		
(1) Meeting ASTM D-312 and CSA-A123.4 standard			

VAPOR BARRIER			
TESTED PRODUCT : Flexible felt membrane composed of asphalt-saturated organic fibers			
System	Fastening Method		Primer
A	Adhered with bitumen		N/A
ELIGIBLE PRODUCT(S)			
BP Canada	#15 CSA Classic		
ELIGIBLE PRODUCT(S) over thermal barrier			
BP Canada	#15 CSA Classic		
Generic	#15 felt ⁽²⁾		
(2) Meeting CSA-A123.3 M standard			

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THERMAL BARRIER				
TESTED PRODUCT : High-density gypsum board coated with non-combustible fiberglass felt and non-asphaltic coating				
System	Application Method		Fastening Rate	
A	Mechanically fastened		16 fasteners / board 1220 x 2440 mm (4' x 8')	
ALLOWABLE THICKNESS(ES)				
Between 12,7 to 15,9 mm (1/2" to 5/8")				
FASTENING METHOD				
Screws and plates				
FASTENING PATTERN(S)				
<p>System A</p>				
ELIGIBLE PRODUCT(S)				
Georgia-Pacific	DensDeck Prime			

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General Notes

1. **Decking:**

The tests performed by **exp** services inc. («**exp**») were performed over a standard roll formed steel deck profile, with a galvanized or aluminum / zinc alloy coating finished, as per ASTM A653, A792, A1008 or CSSBI 10M standards, bearing a thickness of 0.76 mm (0.03 inch) minimum (commonly defined as 22 gauge), corresponding to the ASTM A653M grade SS 230, having a yield point of 230 MPa (33 ksi) and a tensile strength of 310 MPa (45 Ksi).

Equivalency; tests have demonstrated that the hot bitumen vapour barrier in the system herein described is suitable for application with hot bitumen over concrete deck.

Tests could be conducted on 4 'x 8' x 5/8 "standard plywood deck to assess eligibility for possible equivalencies.

The deck's fastening to the supporting structure must be strong enough to resist wind uplift loads (as defined per NBC requirements).

2. **Deck equivalency products:**

18 to 22 gage steel deck. Wood or concrete deck which testing gave equivalent or superior uplift resistance than the value specified in the "Fasteners Pull Out Resistance" section.

3. **Fasteners Pull Out Resistance:**

Testing were conducted in laboratory according to ANSI/SPRI FX-1 2011 standard, over a minimum of 10 test samples on a **Com-Ten** apparatus over steel deck (unless stated otherwise).

4. **Adhesive Pull Resistance:**

Testing were conducted in laboratory over 3 test samples, according to ANSI/SPRI IA-1 2010 standard on a **Com-Ten** apparatus over steel deck (unless stated otherwise) or, according to ASTM D1623 standard over a universal press testing bench, for in-between materials.

5. **Note on adhesive:**

Follow all guide lines or supplementary instructions from the manufacturer regarding adhesive application.

6. **Equivalent products:**

Only the products listed in this report under eligible products are deemed acceptable as substitute to the tested products. Any other modifications must be requested in written, on **exp** application form, to be studied for approval.

7. **Optional components:**

Any components of this roofing system listed as optional, may be removed from the roof design. Inclusion or exclusion of the said component having no effect on the published dynamic uplift resistance results. (DUR).

8. **Safety factor:**

In accordance with CSA A123.21 standard, the published dynamic uplift resistance (DUR) include a computed safety factor of 1,5.

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9. Building Wind Load Calculation:

An online calculator is available at <http://www.exp.com/fr/rooftesting>.

The calculator will compute, the Wind Load of any given building, for field, perimeter and corners, as per 2015 CNB requirement, without safety factor. It will also compute perimeter's and corner's zone dimensions.

10. Technical Advisories:

This roof system assessment reports must be read in conjunction with any issued technical advisories from **exp**.

11. Notice :

Exp reserves the right to withdraw, without prior notice, any Bulletin of Roof System Dynamic Wind Uplift Resistance Results published and/or make any necessary corrections.

12. Version tracking table:

2016-12-23	First edition
2017-05-29	Concrete deck equivalency added

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May 29th 2017

Date