

## Roof Testing Laboratory



## Roof System Dynamic Wind Uplift Resistance Results

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### MOD-BIT MEMBRANE WITH ADHERED INSULATION AND FASTEN THERMAL BARRIER

### (PARS) PARTIALLY ATTACHED (HYBRIDE) ROOFING SYSTEM

#### Roofing System Summary

Cap sheet membrane:	Modified bitumen membrane / Torch applied
Base sheet membrane:	Modified bitumen membrane / Torch applied
Cover board:	Moisture and fire resistant gypsum board 1220 x 1220 x 6.4 mm (4' x 4' x 1/4") / Adhered
Insulation (top):	Polyisocyanurate foam insulation board 1220 x 1220 x 38 mm (4' x 4' x 1 1/2") / Adhered
Insulation (bottom):	Polyisocyanurate foam insulation board 1220 x 1220 x 38 mm (4' x 4' x 1 1/2") / Adhered
Vapour barrier:	Modified bitumen membrane / Torch applied
Thermal barrier:	Moisture and fire resistant gypsum 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 Experimental Factor)
A	-8,6 kPa (-180 psf)	-5,7 kPa (-120 psf)

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### Products

CAP SHEET MEMBRANE			
<b>TESTED PRODUCT:</b> Membrane composed of SBS modified bitumen and a non-woven polyester mat.			
System	Application Method	Row spacing	Fasteners spacing
A	Torch applied	N/A	N/A
ELIGIBLE PRODUCT(S)			
Soprema	Sopralene Flam 250 Gr		

BASE SHEET MEMBRANE			
<b>TESTED PRODUCT:</b> Membrane composed of SBS modified bitumen and a non-woven polyester mat.			
System	Application Method	Row spacing	Fasteners spacing
A	Torch applied over Elastocol 500 primed substrate	N/A	N/A
ELIGIBLE PRODUCT(S)			
Soprema	Sopralene Flam 180		

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COVER BOARD				
<b>TESTED PRODUCT:</b> Moisture and fire resistant gypsum board with non-combustible fiberglass facers and non-asphaltic coating.				
System	Application Method		Fastening Rate	
A	Duotack adhered		Beads at 152 mm (6 in) c.c.	
ELIGIBLE THICKNESS(ES)				
6 mm (¼ in) minimum				
FASTENING METHOD				
Duotack adhesive				
FASTENING PATTERN				
ELIGIBLE PRODUCT(S)				
Georgia-Pacific	DensDeck Prime			

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INSULATION (Top Row)				
<b>TESTED PRODUCT:</b> Polyisocyanurate foam insulation board laminated on both sides with fibre reinforced organic felt.				
System	Application Method		Fastening Rate	
A	Duotack adhered		Beads at 152 mm (6 in) c.c.	
ELIGIBLE THICKNESS(ES)				
38 à 102 mm (1½ à 4 in)				
FASTENING METHOD				
Duotack adhesive				
FASTENING PATTERN				
ELIGIBLE PRODUCT(S)				
Soprema	Sopra-ISO			

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INSULATION (Bottom Row)				
<b>TESTED PRODUCT:</b> Polyisocyanurate foam insulation board laminated on both sides with fibre reinforced organic felt.				
System	Application Method	Fastening Rate		
A	Duotack adhered	Beads at 152 mm (6 in) c.c.		
ELIGIBLE THICKNESS(ES)				
38 à 102 mm (1½ à 4 in)				
FASTENING METHOD				
Duotack adhesive				
FASTENING PATTERN				
ELIGIBLE PRODUCT(S)				
Soprema	Sopra-ISO			

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VAPOUR BARRIER			
TESTED PRODUCT: Membrane composed of SBS modified bitumen and a fiber glass mat.			
System	Fastening Method		Primer
A	Torch applied		Elastocol 500
ELIGIBLE PRODUCT(S)			
Soprema	Elastophene SP 2.2		

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THERMAL BARRIER				
<b>TESTED PRODUCT:</b> Moisture and fire resistant gypsum board with non-combustible fiberglass facers and non-asphaltic coating.				
System	Application Method		Fastening Rate	
A	Mechanically fasten		24 fasteners / board 1220 x 2440 mm (4' x 8')	
ELIGIBLE THICKNESS(ES)				
12,7 mm (½ in) minimum				
FASTENING METHOD				
Fasteners and plates				
FASTENING PATTERN(S)				
<p>The diagram shows a rectangular fastening pattern on a 1,220m x 2,440m board. The fasteners are arranged in a 4x6 grid. The horizontal spacing between fasteners is 0,153m, 0,457m, 0,457m, 0,306m, 0,457m, 0,457m, and 0,153m. The vertical spacing between fasteners is 0,152m, 0,305m, 0,305m, 0,305m, and 0,153m.</p>				
ELIGIBLE PRODUCT(S)				
Georgia-Pacific	DensDeck Prime			

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FASTENERS		
TESTED PRODUCT(S): #12 roof fasteners.		
System	Screws	Plates
A	#12 DF x 41 mm (1 5/8 in)	76 mm (3 in) metal round plates
FASTENERS MEASURED PULL OUT RESISTANCE		
235 kgf (519 lbf)		
ELIGIBLE PRODUCT(S)		
Dekfast	Screws #12 Dekfast x 41 mm (1 5/8 in)	
Trufast	76 mm (3 in) metal round plates	

ADHESIVE		
TESTED PRODUCT: Low rise two components polyurethane adhesive.		
System	Ribbon's spacing	Primer
A	152 mm (6 in) c.c.	S/O
ELIGIBLE PRODUCT(S)		
Soprema	Duotack	



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### General Notes

#### **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 heat welded vapour barrier in the system herein described is suitable for application on concrete deck properly primed with Elastocol 500.

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).

#### **1. 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.

#### **2. 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).

#### **3. 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.

#### **4. Note on adhesive:**

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

#### **5. 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.

#### **6. 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).

#### **7. Experimental factor:**

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

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### 8. 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 experimental factor. It will also compute perimeter's and corner's zone dimensions.

### 9. Technical Advisories:

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

### 10. 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.

### 11. Version tracking table:

2017-09-22	First publication

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Date