Product Data Sheet

HT Premium Scaffmesh FlameX Lining

SCAFFMESH - STRUCTURAL MESH LAYER	
AS2423-2002 WIRE DIAMETER	2.24mm High Tensile Galvanized Steel
AS2423-2002 MESH PITCH	50mm x 50mm Diamond
AS1391-1991 TENSILE TEST	Mean Force: 2.28Kn Mean Stress: 600mpa 19-005565*
AS1576.7 STRENGTH TEST OF STRUCTURAL ENCAPSULATION	Pass when installed with J Hooks in the specified maximum fixing intervals. C216024-SM-0013*
STATIC PULL TEST	469.3kg
50% FLAMEX SITECLAD – LINING LAYER	
LINING MATERIAL	UV Stabilised High-density Polyethylene (HDPE)
LINING GSM	120gsm
AS2001.2.4-1990 Method B LINING BURSTING PRESSURE	Mean: 1500kPa Variation: 7.6% 20-005051*
AS4174 Appendex B-1994 LINING LIGHT & UV	57.6% Transmission 42.4% Shade Factor 51.8% UV Block 7-590438-MQ*
LINING COLOUR	Black, Blue, Green, Red, Yellow, Orange or White. Custom colours & printing options available

Product Data Sheet

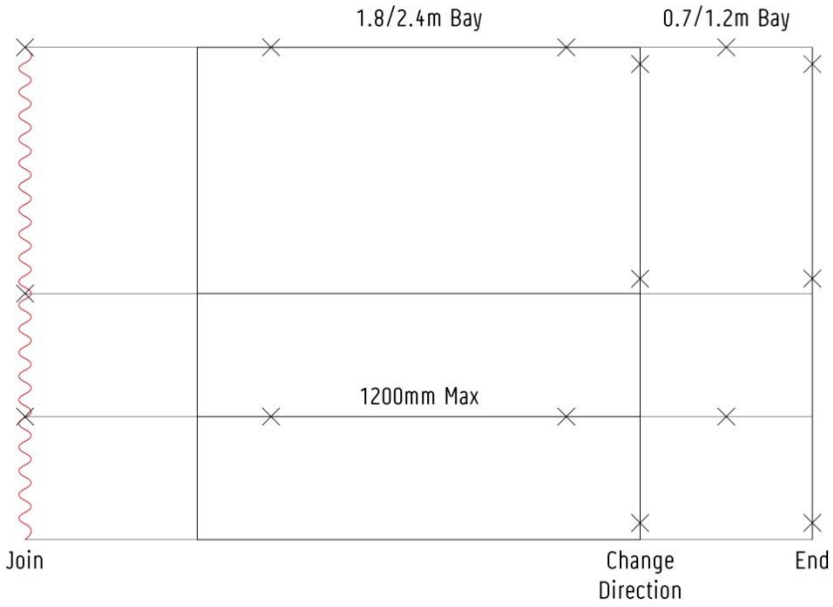
HT Premium Scaffmesh FlameX Lining

AS1576.7 FLAMABILITY TEST SMALL SCALE / AS1530.2	Flammability Index=1 20-004202*
AS1576.7 FLAMABILITY TEST MID- SCALE / BS7955 Annex C.3.1.3	Pass C216024-SM-0001*

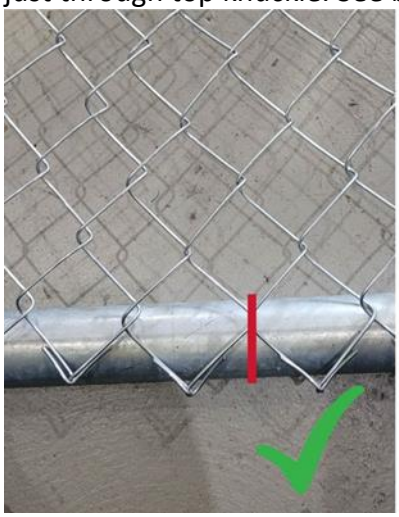
COMBINED PRODUCT	
ROLL WIDTH AND WEIGHT ESTIMATIONS	0.9m=13kg, 1.3m=18.5kg, 1.8m=26kg, 1.9m=27kg, 2.6m=37kg 2.7m=38.5kg
ROLL LENGTH	10m (Custom lengths on request)
PALLET QTY	20 rolls
AS/NZS1170.2 SOLIDITY	55.5%
CONSOLIDATED WIND LOAD	0˚=0.62Cf ±30˚=0.76Cf 610.18290-R02 S50sh*
ULTIMATE DESIGN WIND	To meet requirements of AS1576.7 3.1e and Section 4, the Ultimate Design Wind (Wu) pressure for linings in combination with chain wire and fixing details as nominated are as follows: Standard Scaffmesh FlameX lining (45.9%) = 2.086kPa Premium Scaffmesh FlameX lining (55.5%) = 1.839kPa Premium Scaffmesh FlameX Quad Net lining (31.9%) = 2.751kPa Premium Scaffmesh FlameX Maxflow Mesh lining (65.2%) = 1.679kPa Premium Scaffmesh Scafclad lining (100%) = 1.476kPa C216024-SM-0018*
INSTRUCTIONS	
STORAGE INSTRUCTIONS	Sitemax recommend storing rolls on pallets or in large stillages protected from UV where possible to ensure maximum lining life. Scaffmesh must not be dropped or dragged along ground when moving rolls
INSTALLATION INSTRUCTIONS	Scaffold must be engineered before installing Scaffmesh Option 1 – Mesh with integrated lining install Step 1 Fix mesh at the start of roll – top and bottom

	Step 2 Unroll mesh in as long as runs as possible fixing with minimal ties – focus can be on handling roll not ensuring every fixing location is tied Note: In Queensland structural mesh layer must be installed facing out, with the lining layer installed on working area side of the structural mesh. Step 3 Follow below recommended fixing spacing and fix all required locations Removal Step 1 Cut ties and clips installed in step 3 and recycle the ties Step 2 Cut remaining ties rerolling roll as you go for reuse or recycle
	<u>Option 2 – Mesh with separate lining install</u> Step 1 Fix the structural mesh at the start of roll – top and bottom Step 2 Unroll mesh in as long as runs as possible fixing with minimal ties – focus can be on handling roll not ensuring every fixing location is tied Step 3 Unroll lining C Clipping in minimal locations Step 4 Follow below recommended fixing spacing and fix all required locations Step 5 C Clip any required additional locations to ensure lining does not flap Removal Step 1 Cut ties and clips installed in step 4 and 5 and recycle the ties Step 2 Cut clips installed in step 3 and roll lining for reuse or disposal Step 3 Cut remaining ties rerolling roll as you go for reuse or recycle
REQUIRED FIXINGS & LOCATIONS	Sitemax 2.24mm J Hooks (part number SCF025) in below locations is only fixing method that meets AS1576.7 Appendix B requirements.

J Hooks must be installed around the cross point of wire links - not just through top knuckle. See below image



J Hooks must be installed around the cross point of wire links - not just through top knuckle. See below image



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HT Premium Scaffmesh FlameX Lining

SERVICING & INSPECTION	Scaffmesh should be inspected for damage whilst installing and monitored for damage throughout its time in use. Any section of the structural mesh that has excessive damage with enlarged holes, corrosion, or cut wires should be removed and discarded. The mesh roll can be re-joined together by weaving out 1 link of wire and reweaving back through both sections to join together. The lining can be overlapped by 50mm and c clipped together. Any holes in the lining that are greater than 50x25mm should be patched with section of lining that matches the rest of the roll. Damage that requires repairs may be caused by one or more of the following - Arresting a material fall. - Rough handling of rolls. - Holes that have been cut to fit around scaffold members. - Sparks from welding grinding or cutting. - Hot exhaust. - Chemical spills. - Severe weather.
LIFESPAN	Structural mesh is not affected by UV and is protected by a galvanised coating giving it an unlimited lifespan subject to the above servicing and inspection guidelines. 50% Flamex Siteclad lining is recommended to be replaced after 5 years, or when damaged beyond repair.
COMPLIANCE	Sitemax HT Premium Scaffmesh FlameX Lining is fully compliant with AS1576.7 structural scaffold encapsulation requirements and meets requirements of Section 315D of the QLD Work Health and Safety Regulation 2011 - when installed and inspected in accordance with this document.
MANUFACTURER	Produced by Sitemax Australia
	The above products have been tested in certified laboratory conditions by approved testing companies. *refer test reports for full results

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AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
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1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

Client : Sitemax
25 Dennis Little Dr
Gympie QLD 4570

Test Number : 19-005565
Issue Date : 18/10/2019
Print Date : 18/10/2019
Order Number : P18136

Sample Description 2.24mm diameter wire

AS 1391-1991 **Methods for Tensile Testing of Metals**

Date of Testing		18/10/2019
Specimen	Force(N)	Stress(MPa)
1	2302	605
2	2265	596
3	2278	599
4	2282	600
5	2273	598
Mean	2280	600

Gauge Length	11	mm
Cross Head Spead	5	mm/minute
Diameter of specimen	2.2	mm

183211 39336

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AWTA LIMITED

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

0205/11/06

MECHANICAL TESTING REPORT

Construct Report No: C216024-SM-0013 Date of Test: 4 June 2021

Location of Test:	Sitemax Group, 15 Dennis Little Drive, Glanmire Qld 4570
Client Name/Address:	Sitemax Group 15 Dennis Little Drive Glanmire Qld 4570
Manufacturer's Name:	Sitemax
Project Details:	Compliance to AS1576.7 Appendix B Strength testing of structural encapsulation
Item Details:	Chainwire no lining
Batch Number:	A100
Product type:	Flexible encapsulation

TEST RESULTS AS1576.7 Appendix B

Test	Comments	Location	Result
100	9mm cable tie double wrap	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Fail (tie snaped)
102	9mm cable tie double wrap	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Fail (tie snaped)
104	9mm cable tie double wrap	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Fail (tie snaped)

Test	Comments	Location	Result
107	1.57mm double wrap tiewire	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Fail (tie snaped)
109	1.57mm double wrap tiewire	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Fail (tie snaped)
111	1.57mm double wrap tiewire	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass

		03 <200mm	Fail (tie snaped)
Test	**Comments**	**Location**	**Result**
113	2.24mm J hook	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Pass
115	2.24mm J hook	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Pass
116	2.24mm J hook	01 Ctr middle bay	Pass
		02 Ctr End Bay	Pass
		03 <200mm	Pass

195mm center of ledger to center of impact. Additional fixing added at location x for test 3 only

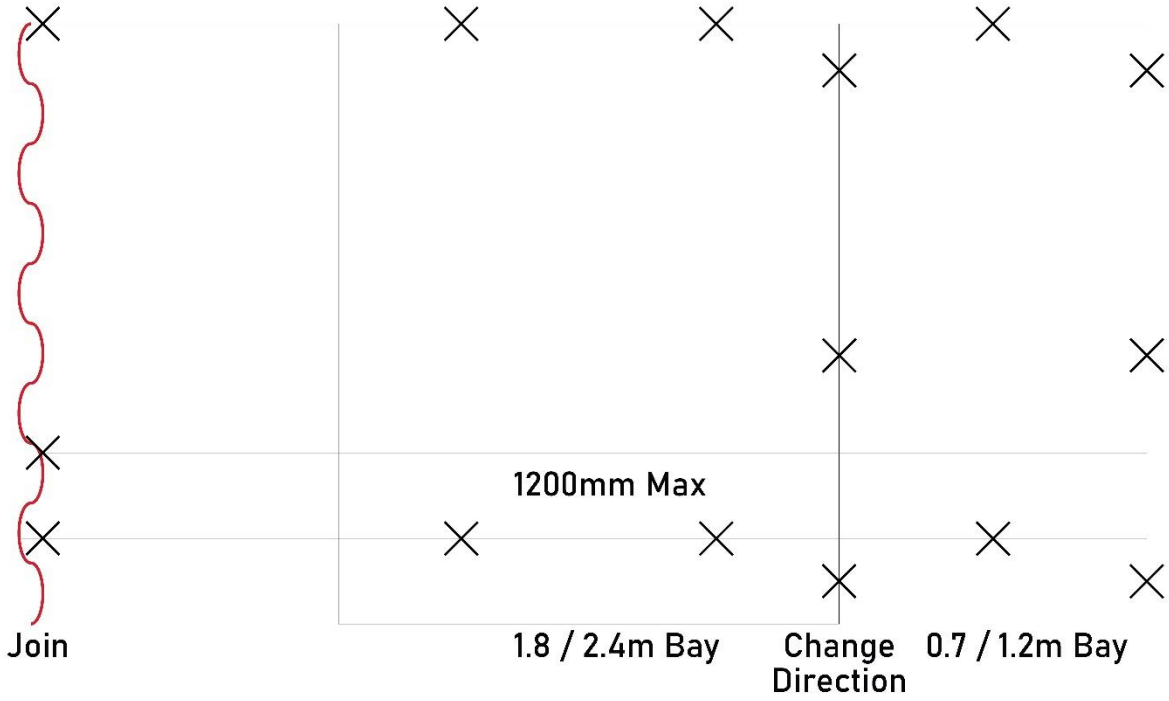
Compliance/Result: AS1576.7 Appendix B Strength testing of structural encapsulation requirements

(a) The flexible encapsulation shall not fail at the point of impact of the pendulum, or tear such that a rod of 50mm diameter can pass through the flexible encapsulation.
(b) The fixings shall not detach from the flexible encapsulation nor from the scaffolding components
(c) The rigid encapsulation shall not fail at the point of impact of the pendulum such that a rod of 50mm diameter can pass through the rigid encapsulation
(d) The fixings of the rigoid encapsulation to the test assembly shall not fail

Result was all 3 samples passed requirements when affixed with 2.24mm j hook in accordance with below diagram. There was no structural failure of the mesh or the J Hook fixing ties.

Outcome = Compliant.

- End of scaffold bays or any change of direction - ties around standard at top, middle and bottom of mesh
- 0.7 or 1.2m bay- tie around middle of each Top Ledger and Mid Rail Ledger.
- 1.8 or 2.4m bay- 2 ties around both Top Ledger and Mid Rail Ledger at max 1.2m spacing along length of scaffold.
- Join in mesh- Minimum 200mm overlap with ties around top ledger, handrail ledger and mid rail ledger.



Technician/s: Rob Thiess
Daniel Eade
Matthew Eade
James Eade

Approved by: Rob Thiess
BEng (Civil), MIEAust, CPEng, NER, APEC Engineer IntPE(Aus), RPEQ 5288

Signature:

Issue Date: 1/7/2021

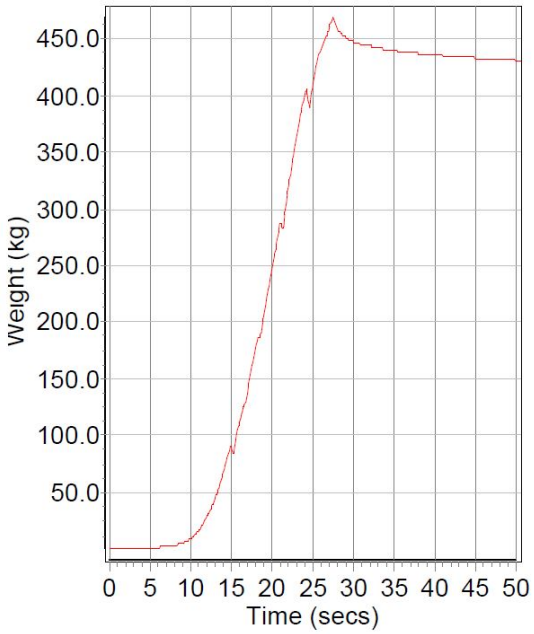
MECHANICAL TESTING REPORT

Construct Report No: C216024-SM-0018 Date of Test: 4 June 2021

Location of Test:	Sitemax Group, 15 Dennis Little Drive, Glanmire Qld 4570
Client Name/Address:	Sitemax Group 15 Dennis Little Drive Glanmire Qld 4570
Manufacturer's Name:	Sitemax
Project Details:	AS1576.7 Wind Pressure Test Data
Item Details:	Chainwire no lining
Batch Number:	A100
Product type:	Flexible encapsulation

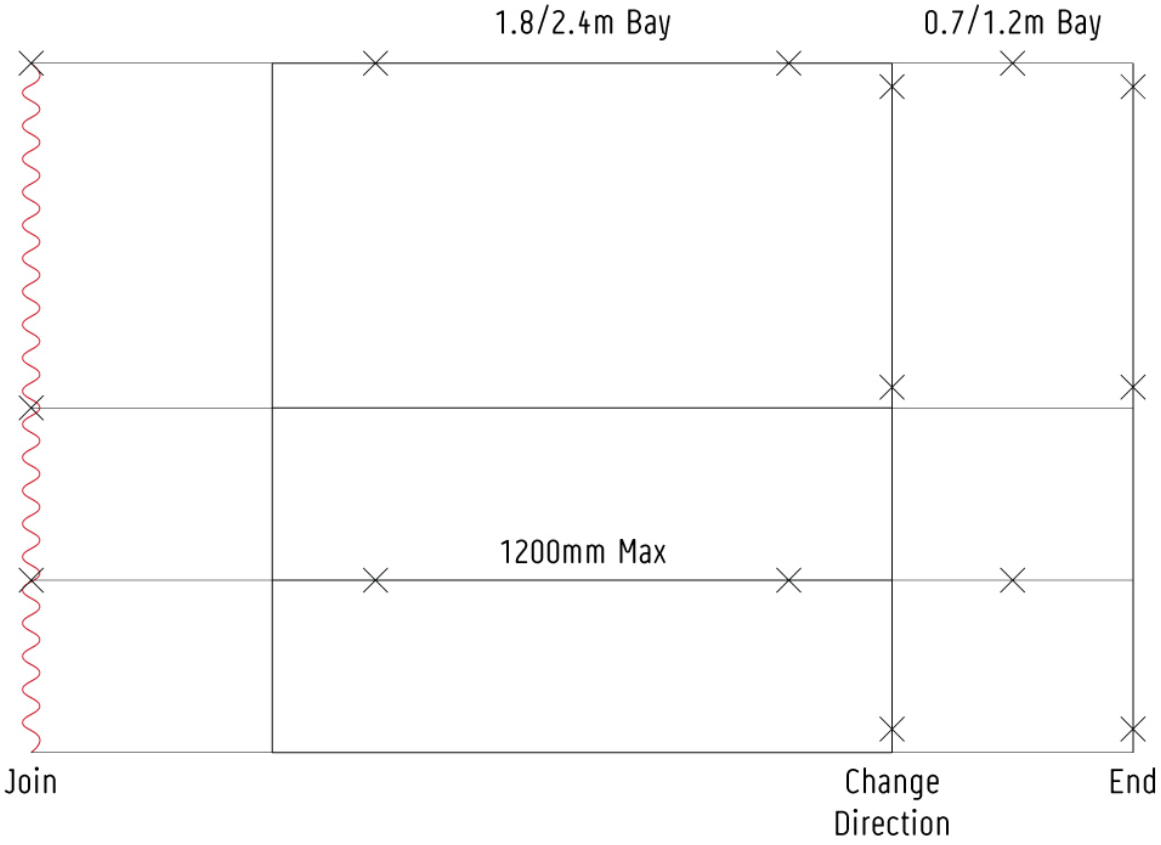
STATIC PULL TEST RESULTS

Test	Comments	Failure
114	2.24mm J hook	469.3



Scaffold ledger bent second and third test not conducted

FIXING LAYOUT



SOLIDITY RATIO

Chainwire no lining

Text 23							
Text	Percentage Open						
Calculator Percent Number	Actual	Nominal	Upper	Lower	Dev/Nom	Out/Tol	✔
	93.338	90.000			3.338		

6.7% Solidity Layer 1

Standard Scaffmesh FlameX lining

Text 23							
Text	Percentage Open						
Calculator Percent Number	Actual 93.338	Nominal 90.000	Upper	Lower	Dev/Nom 3.338	Out/Tol	✔

6.7% Solidity Layer 1

Text Open							
Text	Percentage open						
Calculator Percent Number	Actual 57.967	Nominal 57.967	Upper	Lower	Dev/Nom 0.000	Out/Tol	✔

42.04% Solidity Layer 2

Combined Layer 1 and 2 = 45.9% Solidity

Premium Scaffmesh FlameX lining

Text 23							
Text	Percentage Open						
Calculator Percent Number	Actual 93.338	Nominal 90.000	Upper	Lower	Dev/Nom 3.338	Out/Tol	✔

6.7% Solidity Layer 1

Text Open							
Text	Percentage open						
Calculator Percent Number	Actual 47.702	Nominal 47.702	Upper	Lower	Dev/Nom 0.000	Out/Tol	✔

52.29% Solidity Layer 2

Combined Layer 1 and 2 = 55.5% Solidity

Premium Scaffmesh FlameX Quad Net lining

Text 23							
Text	Percentage Open						
Calculator Percent Number	Actual 93.338	Nominal 90.000	Upper	Lower	Dev/Nom 3.338	Out/Tol	✔

6.7% Solidity Layer 1

Text Per open						
Text	Percentage Open					
Calculator 295	Actual	Nominal	Upper	Lower	Dev/Nom	Out/Tol
Number	73.003	73.003			0.000	

27% Solidity Layer 2

Combined Layer 1 and 2 = 31.9% Solidity

Premium Scaffmesh FlameX Maxflow Mesh lining

Text 23						
Text	Percentage Open					
Calculator Percent	Actual	Nominal	Upper	Lower	Dev/Nom	Out/Tol
Number	93.338	90.000			3.338	

6.7% Solidity Layer 1

Text Percent						
Text	Percentage Open					
Calculator Percent	Actual	Nominal	Upper	Lower	Dev/Nom	Out/Tol
Number	37.272	37.272			0.000	

62.728% Solidity Layer 2

Combined Layer 1 and 2 = 65.2% Solidity

Premium Scaffmesh Scafclad lining

Text 23						
Text	Percentage Open					
Calculator Percent	Actual	Nominal	Upper	Lower	Dev/Nom	Out/Tol
Number	93.338	90.000			3.338	

6.7% Solidity Layer 1

100% Solidity Layer 2

Combined Layer 1 and 2 = 100% Solidity

WIND PRESSURE CALCULATIONS:

To meet requirements of AS1576.7 3.1e and Section 4, the Ultimate Design Wind (Wu) pressure for linings in combination with chain wire and fixing details as nominated are as follows:

Standard Scaffmesh FlameX lining (45.9%) = **2.086kPa**

Premium Scaffmesh FlameX lining (55.5%) = 1.839kPa

Premium Scaffmesh FlameX Quad Net lining (31.9%) = 2.751kPa

Premium Scaffmesh FlameX Maxflow Mesh lining (65.2%) = 1.679kPa

Premium Scaffmesh Scafclad lining (100%) = 1.476kPa

Technician/s: Rob Thiess
Daniel Eade
Matthew Eade
James Eade

Approved by: Rob Thiess
BEng (Civil), MIEAust, CPEng, NER, APEC Engineer IntPE(Aus), RPEQ 5288

Signature:

Issue Date: 1/7/2021

AWTA PRODUCT TESTING

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A.B.N 43 006 014 106

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Phone (03) 9371 2400

TEST REPORT

Client : Sitemax
25 Dennis Little Dr
Gympie QLD 4570

Test Number : 20-005051
Issue Date : 15/10/2020
Print Date : 15/10/2020
Order Number : P19406

Sample Description

Clients Ref : "SCM- F5 Batch P19079"
Flexible knitted shadecloth
Nominal Composition : HDPE
Nominal Mass per Unit Area/Density : 120G/M2

AS 2001.2.4-1990 Method B

Bursting Pressure of Textile Fabrics - Hydraulic Diaphragm Method

Date of Testing	14/10/2020	
Mean Bursting Pressure	1500	kPa
Coefficient of Variation	7.6	%
State of Tested Specimen	Conditioned	

217655 46995

Accredited for compliance with ISO/IEC 17025 - Testing

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APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

0204/11/06

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TEST REPORT

CLIENT : SCAFCLAD
PO BOX 32
GYMPIE QLD 4570

TEST NUMBER : 7-590438-MQ
ISSUE DATE : 23/04/2013
PRINT DATE : 23/04/2013
ORDER NUMBER : 7017

SAMPLE DESCRIPTION Three samples of white warp knit fabric
Sample A 80gsm
Sample B 50 %
Sample C 70 % Tape/Mono

Determination of UV-Visible Transmission of Shade Cloth

Reference to Test Method: AS 4174-Appendix B-1994
Instrument Used: UV-VIS Spectrophotometer
Model: Varian Cary 3E
Wavelength Range: 290-770nm
Number of Scans 10

Sample	A	B	C
Average percentage transmission 290-770nm	65.8%	57.6%	41.4%
Shade factor	34.2	42.4	58.6
Average percentage UVR transmission 290-400nm	57.5%	48.2%	25.4%
Average percentage Par transmission 400-770nm	68.3%	60.5%	46.3%
Percentage UVR block	42.5%	51.8%	74.6%

200031 3 (END OF REPORT) PAGE 1

AWTA LIMITED

0205/11/06

APPROVED SIGNATORY

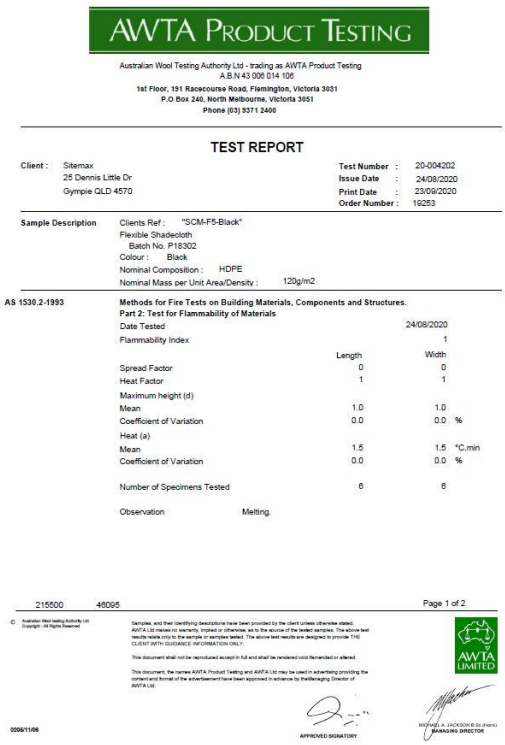
MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

MECHANICAL TESTING REPORT

Construct Report No:	C216024-SM-0001 Date of Test: 4 June 2021
Location of Test:	Sitemax Group, 15 Dennis Little Drive, Glanmire Qld 4570
Client Name/Address:	Sitemax Group 15 Dennis Little Drive Glanmire Qld 4570
Manufacturer's Name:	Sitemax
Project Details:	Compliance to AS1576.7 Appendix A Flammability testing of encapsulation.
Item Details:	SCM-F5- 50% FlameX Siteclad
Batch Number:	P18302
Product type:	Flexible encapsulation

AS1576.7 A.2(a) SMALL-SCALE FIRE TEST REQUIREMENT

Conducted to AS1530.2 by AWTA reference 20-004202



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TEST REPORT

Client : Sitemax
25 Dennis Little Dr
Gympie QLD 4570

Test Number : 20-004202
Issue Date : 24/08/2020
Print Date : 23/09/2020
Order Number : 19253

Sample Description: Clients Ref : "SCM-F5-Black"
Flexible Shadecloth
Batch No. P18302
Colour : Black
Nominal Composition : HDPE
Nominal Mass per Unit Area/Density : 120g/m2

AS 1530.2-1993 — Methods for Fire Tests on Building Materials, Components and Structures. Part 2: Test for Flammability of Materials

	Length	Width	
Date Tested		24/08/2020	
Flammability Index		1	
Spread Factor	0	0	
Heat Factor	1	1	
Maximum height (d)			
Mean	1.0	1.0	
Coefficient of Variation	0.0	0.0	%
Heat (a)			
Mean	1.5	1.5	°C.min
Coefficient of Variation	0.0	0.0	%
Number of Specimens Tested	6	6	

Observation: Melting.

215500 46095 Page 1 of 2

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MICHAEL A. JACKSON B.Sc.(Hons) MANAGING DIRECTOR

0206/11/06

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P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400

TEST REPORT

Client : Sitemax
25 Dennis Little Dr
Gympie QLD 4570

Test Number : 20-004202
Issue Date : 24/08/2020
Print Date : 23/09/2020
Order Number : 19253

215500 46095 Page 2 of 2

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MICHAEL A. JACKSON B.Sc.(Hons) MANAGING DIRECTOR

0206/11/06

Flammability Index =1

Spread Factor=0

Heat Factor=1

Compliance/Result: AS1576.7 Section A.6.1 Small Scale Flammability index requirement of not greater than 25 as calculated in accordance with of AS1530.2

Result was Flammability Index 1 = Compliant

AS1576.7 A.2(b) MID-SCALE FIRE TEST REQUIREMENT

Test results and outcomes for required 3 samples

Test	Comments	Result
162	Sheeting melted no burning after heptane stopped	Pass
163	Sheeting melted no burning after heptane stopped	Pass
164	Sheeting melted no burning after heptane stopped	Pass



Compliance/Result: AS1576.7 Section A.6.2 Mid-scale fire test acceptance requirements

(a) Flaming of the test sample shall cease not greater than 10 s after the heptane stops burning.
(b) No flaming droplets or flaming debris shall fall from the test sample 10 s after the heptane stops burning.
(c) No flame shall reach the edge of the test sample during the ignition of the ignition source or within 10 s after the heptane stops burning.

Result was all 3 samples passed requirement (a), (b) and (c) = Compliant.

Technician/s: Rob Thiess
Daniel Eade
Matthew Eade
James Eade

Approved by: Rob Thiess
BEng (Civil), MIEAust, CPEng, NER, APEC Engineer IntPE(Aus), RPEQ 5288

Signature:

Issue Date: 1/7/2021

SCAFFOLD MESH - WIND RATING

Scaffmesh 1000kPa Lining (S50sh)

Prepared for:

SITEMAX GROUP PTY LTD
Level 6, 10 Herb Elliott Avenue
Sydney Olympic Park NSW 2127

SLR Ref: 610.18290-R02 S50sh
Version No: -v1.0
June 2019

PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
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Lane Cove NSW 2066 Australia
(PO Box 176 Lane Cove NSW 1595 Australia)
T: +61 2 9427 8100
E: sydney@slrconsulting.com www.slrconsulting.com

BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with SITEMAX GROUP PTY LTD (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.18290-R02-v1.0 S50sh	3 June 2019	Joe Sun	Dr Peter Georgiou	Dr Neihad Al-Khalidy

EXECUTIVE SUMMARY

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Sitemax Group Pty Ltd (Sitemax) to carry out Wind Tunnel Testing to determine the wind loading characteristics of the **Scaffmesh 1000kPa Lining (S50sh)** scaffold mesh product.

The testing has been carried out using a purpose-built test rig built in accordance with the following Australian Standard relevant to mesh loading:

- Australian Standard AS 4687-2007 *Temporary Fencing and Hoardings*

The mesh was tested:

- at a reference wind speed of 15 m/s in the wind tunnel;
- at 3 different angles (0^o and $\pm 30^o$); and
- in two conditions: “dry” and “wet” (with the latter simulating the impact of rain on the wind loading performance of the mesh).

In this report, a normalised Coefficient of Wind Force, C_f has been used to represent the wind loading characteristics of the mesh against wind loading, defined as:

$$C_f = \frac{F}{0.5\,\rho\,V_{ref}^2\,.A}$$

Where … F = overall wind force experienced by the mesh
V_{ref} = reference mean wind speed (at the centroid of the mesh area)
ρ = air density (1.2 kg/m^3)
A = frontal area of mesh

A higher value of C_f implies higher wind loading imposed on the mesh.

In general, C_f increases as the “solidity” (ratio of solid area to total area) of the mesh increases.

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DOCUMENT REFERENCES

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FIGURES

1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Sitemax Group Pty Ltd (Sitemax) to carry out Wind Tunnel Testing to determine the wind loading characteristics of the **Scaffmesh 1000kPa Lining (S50sh)** scaffold mesh product.

The testing has been carried out using a purpose-built test rig built in accordance with the following Australian Standard relevant to mesh loading:

- Australian Standard AS 4687-2007 *Temporary Fencing and Hoardings*

1.1 Applicable Standard

The Australian Standard applicable to the relevant products is:

- Australian Standard AS 4687-2007 *"Temporary Fencing and Hoardings"*

In relation to wind loading, the relevant clause is:

- AS 4687-2007 / Clause 4.5 *Wind Force Overturning Test*

Clause 4.5 specifies the following test:

- A single fence panel shall be tested and shown to be capable of withstanding a force applied horizontally to its middle equivalent to the regional design wind speed specified in Table 4.5 of the standard.
- The test configuration is shown below as is the design wind speed table.

Figure 1 AS 4687-2007 Figure 4.5

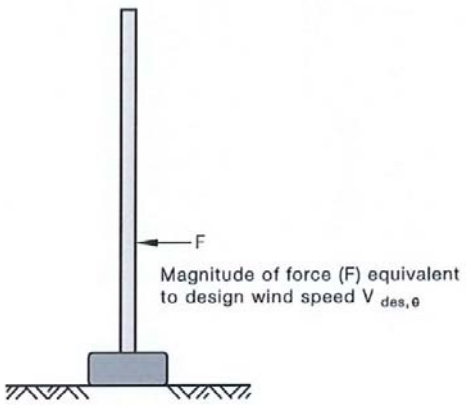


FIGURE 4.5 WIND FORCE OVERTURNING TEST

TABLE 4.5

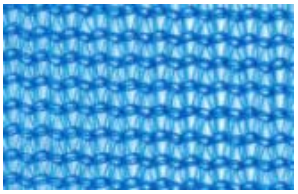
REGIONAL WIND SPEED

Australian wind regions	Design wind speed $V_{des,\theta}$ m/s
A	15
B	18
C	21
D	24

2 PRODUCT DESCRIPTION

The mesh product chosen for testing is described in **Table 1**.

Table 1 Scaffmesh 1000kPa Lining (S50sh) Product Description

ID	Name	Chainwire	Fabric	Solidity [1]	Test Configuration
S50sh	Scaffmesh [2] 1000kPa Lining	50mm x 50mm x 2.5mm 	50% shade 120 gsm 	56.6%	Angles: 0°, ± 30° Condition: Dry / West

Note 1 The solidity value was provided to SLR by Sitemax and is as reported to Sitemax by HiTech Metrology.

Note 2 Scaffmesh is a trademark name of Sitemax Group Pty Ltd.

3 TEST CONFIGURATIONS

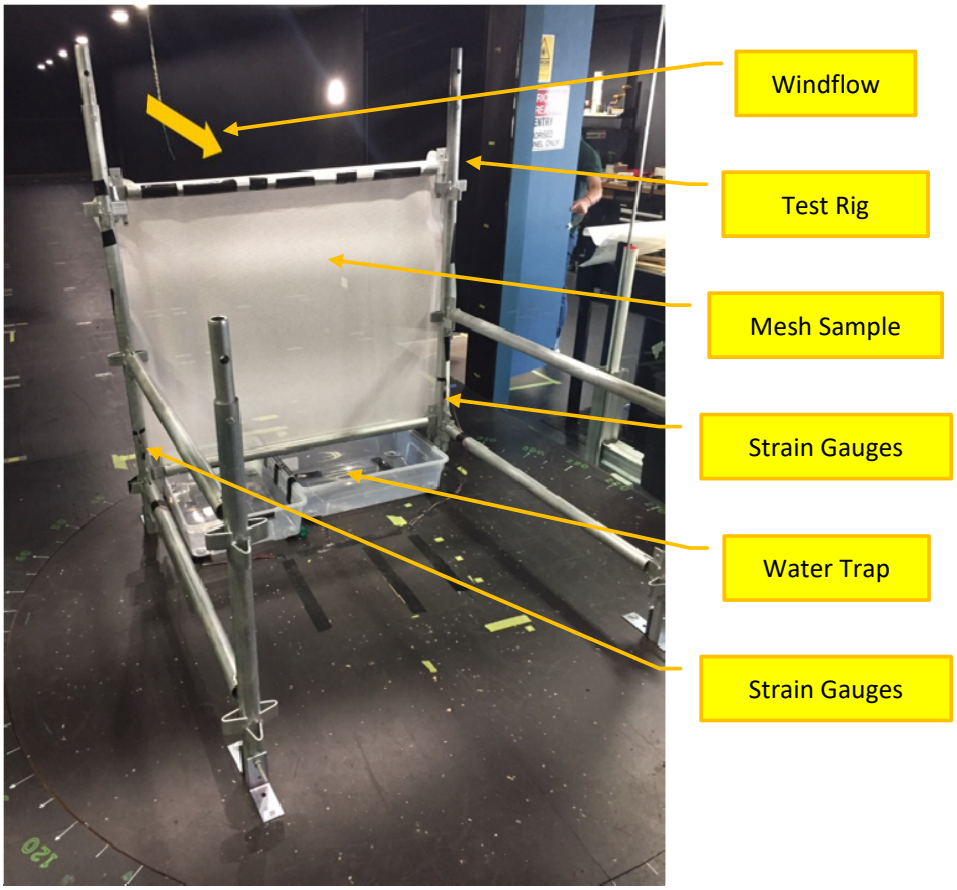
A single frame (see **Figure 2**) measuring approximately 1.13 m wide x 1.0 m high was fabricated to support the mesh sample in the wind tunnel.

Each test sample was subjected to a horizontal wind load with a reference wind speed of 15 m/s.

The resulting drag load was measured at 0° and ±30° respectively.

Two conditions, named “dry” and “wet”, were tested for each specimen. In relation to the “wet” tests, water was applied to the mesh surface with a wet towel, resulting in only a modest amount of water added to the mesh, but also only a modest amount of water dripping from the mesh sample during each test.

Figure 2 Experimental Set-Up



View from "behind" Test Rig looking towards the oncoming windflow

4 TEST METHODOLOGY

4.1 Wind Tunnel Set-Up

SLR's tests were carried out in the University of Sydney's newly commissioned Boundary Layer Wind Tunnel Facility. The wind tunnel itself has been comprehensively tested and is capable of generating boundary layer flows which can be used to simulate the actual wind load on structures, structure elements, etc.

Please refer to USYD's website describing the state-of-the-art facility:

https://sydney.edu.au/engineering/our-research/laboratories-and-facilities/wind-tunnel.html

The metal frame structure (the "Test Rig") used in the testing to support the mesh samples was supplied by Sitemax and is identical to the structural system used in the field for mesh support.

The Test Rig was secured to the wind tunnel turntable using two 100 x 100 x 50 x 4.5mm sturdy angle brackets attached to each leg and screwed down to the turntable. Each side of mesh was also sufficiently attached with numbers of 300 x 4.8 mm ties to prevent any wind leakage through the mesh. Two trays were positioned underneath the Test Rig to collect water when mesh samples were tested in a "wet state". These features are shown in **Figures 3 and 4**.

Figure 3 Metal Support Frame ("Test Rig") Installation

**Test Support Frame
also showing Wind Tunnel Floor Opening
for Strain Gauge Wires**

Support Frame Holding Brackets

4.2 Mesh Sample Attachment

Each mesh sample was attached to the main rectangular, front end of the Test Rig using a combination of tape and 300 x 4.8 mm cable ties to secure the mesh under wind loading. This process is illustrated in **Figure 4**.

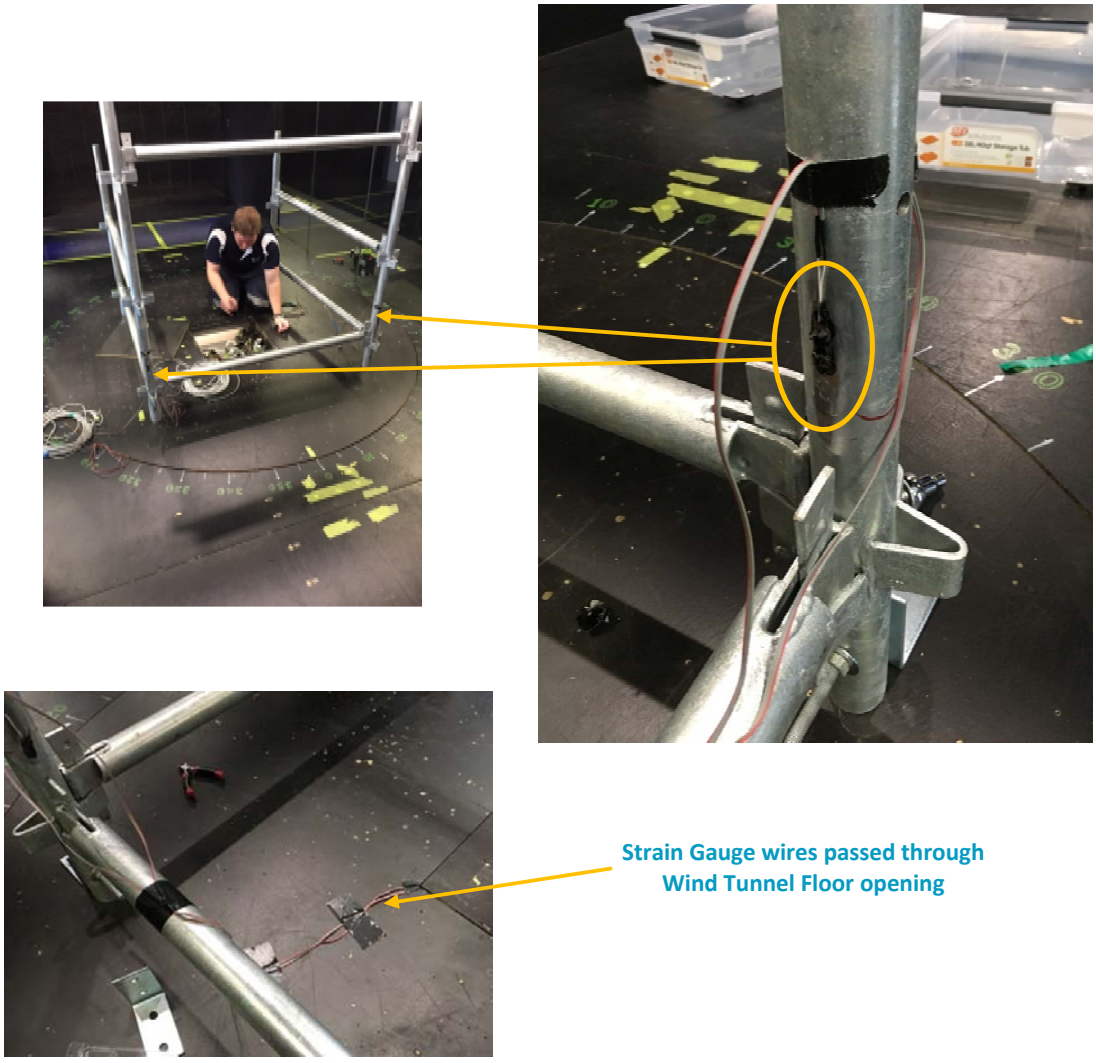
Figure 4 Attaching Mesh Samples

4.3 Measuring Wind Loading via Test Rig Strain

Four 120 ohm, 3-wire uniaxial HBM 6 mm strain gauges were installed on the steel frame used to support the test mesh types, two per main vertical support. These were temperature compensated for steel. The gauges were installed as four quarter bridges, with two gauges installed on diametrically opposing surfaces of the main vertical test rig supports to effectively create two half bridges, at the locations shown in **Figure 5**.

The strain gauges were covered with silicone to protect them during transit and testing. The strain gauge wires connecting to the SLR's Data Acquisition System (DAQ) were passed through an opening located in the wind tunnel floor. This opening was sealed during the testing.

Figure 5 Strain Gauge Pairs Covered with Silicone

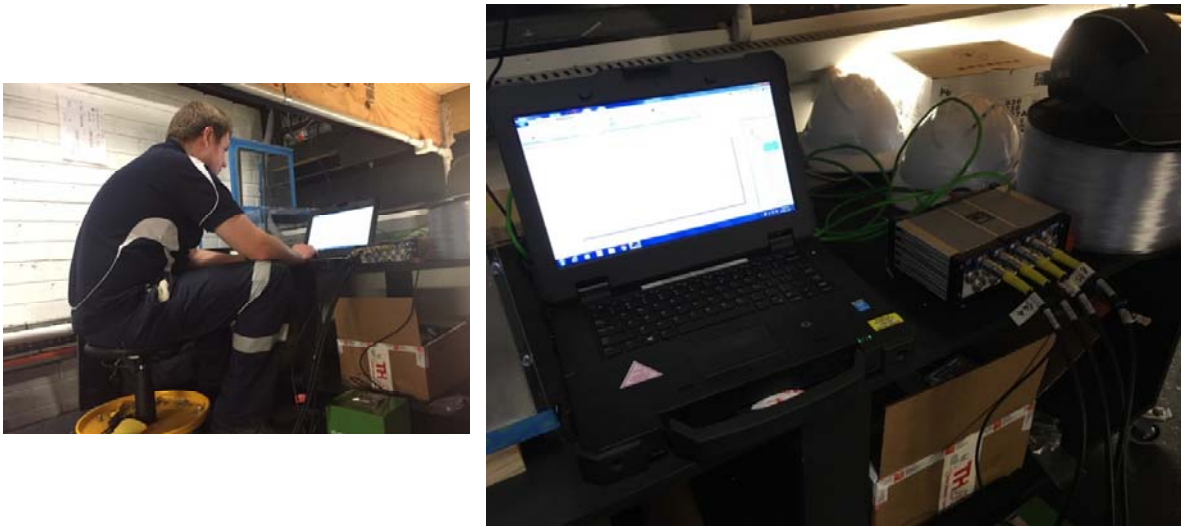


4.4 Data Acquisition

Each gauge was connected to an HBM MX1615-BR Strain Gage Frontend which was then connected to a laptop, controlled using the HBM Catman software.

Strains were sampled at 200 Hz with anti-aliasing filters providing useable data at frequencies up to 20 Hz.

Figure 6 Strain Gauge DAQ Set-up (located outside Wind Tunnel)

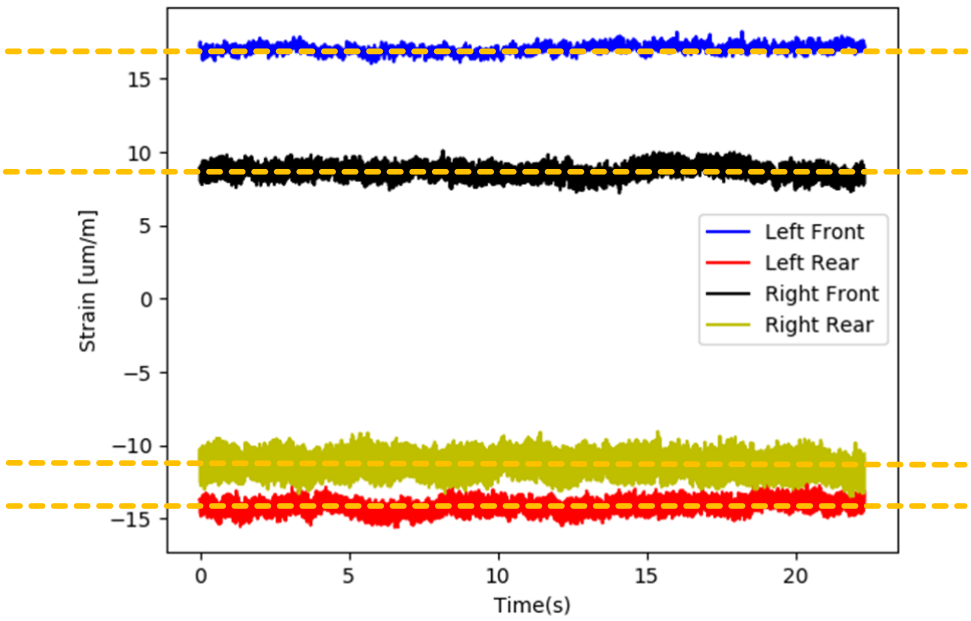


4.5 Drag Force Calculation

Each test was run at a wind tunnel speed of approximately 15 m/s. Once the wind speed was established (ie stable), the strains in the vertical test rig supports were also seen to be stable, via the strain software display on the DAQ laptop.

An example plot of the strains relative to time is shown in **Figure 7**. The average strains over the measurement period were calculated and are shown in yellow, thereby eliminating any potential "signal noise" issues.

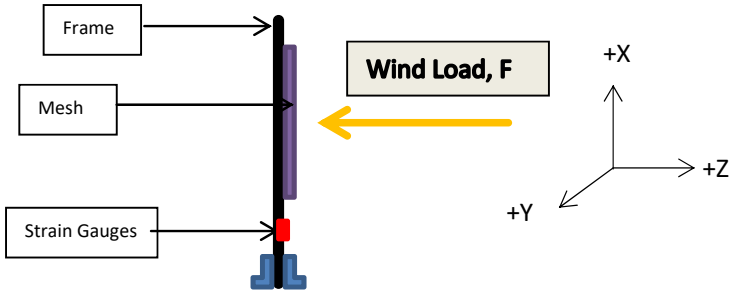
Figure 7 Example Strain Measurement Plot



Test Rig Wind Load Calibration

To calibrate the test rig, SLR applied a bending moment of 50 Nm to the structure in a horizontal perpendicular direction (ie same direction as the wind load) and recorded the corresponding strains. Based on this strain versus horizontal load test, the corresponding wind load applied to the test rig during the wind load tests could be determined from the measured strains.

Figure 8 Test Rig Set-Up and Wind Load Recording Set-Up



Wind Load Expressed via Wind Force Coefficient

The wind loads experienced by each test mesh sample were expressed in normalised form via a Wind Force Coefficient, C_f, defined as follows:

$$C_f = \frac{F}{0.5\,\rho\,V_{ref}^2\,.\,A}$$

where … F = overall wind force measured via the strain gauges

V = reference mean wind speed (15 m/s)

ρ = air density (1.2 kg/m^3)

A = frontal area of test rig mesh sample (= 1.13 m x 1.0 m)

5 TEST RESULTS AND DISCUSSION

5.1 S50sh Test Results

The test results for all Scaffmesh 1000kPa Lining (S50sh) configurations are shown in **Table 2**. These show the individual bending moment and wind force on each test rig support leg and the resulting wind force coefficient, C_f.

- The magnitude of C_f is directly proportional to the horizontal wind force;
- A higher value C_f value implies a larger force experienced by the mesh on the support Test Rig; and
- This would normally occur as the "solidity" of the mesh type increases, thereby allowing less airflow to pass through the mesh and hence attracting greater wind load onto the mesh itself.

Table 2 Test Results for Scaffmesh 1000kPa Lining (S50sh)

Test No	Load on "Left" Leg		Load on "Right" Leg		F(total) (N)	Cf
	Moment (Nm)	Force (N)	Moment (Nm)	Force (N)		
0° - Dry	25.72	34.29	18.31	24.41	58.70	**0.59**
0° - Wet	25.65	34.20	20.95	27.93	62.13	**0.62**
+30° - Dry	27.80	42.80	20.66	31.81	74.62	**0.75**
+30° - Wet	28.13	43.30	25.05	38.57	81.88	**0.82**
-30° - Dry	21.41	32.96	20.179	31.05	64.01	**0.64**
-30° - Wet	19.807	30.495	20.942	32.24	62.74	**0.63**

5.2 Consolidated Wind Load Results

Table 3 shows the C_f values of the test results as a consolidated set of results for the 0° and combined ±30° tests.

- For 0°, the consolidated C_f value has been presented using the maximum value of C_f taken from the "dry" and "wet" tests.
- For the ±30° tests, the consolidated C_f value has been presented by firstly calculating separate "dry" and "wet" 70% percentile values (eg the 70% percentile value between 0.6 and 0.7 is 0.67) and then picking the maximum value between the two.

Table 3 Consolidated Wind Load Test Results - Scaffmesh 1000kPa Lining (S50sh)

ID	Name	Solidity	Cf (worst-case "dry" and "wet", ± angle)	
			0°	± 30°
S50sh	Scaffmesh 1000kPa Lining	56.6%	0.62	0.76

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