

30th November 2023

Planning Secretary

Department of Planning and Environment

**RE: Condition B19 – External Walls and Cladding
Construction Certificate 3 – Building 4 Building Envelope (Façade)**

Dear Planning Secretary,

This letter has been prepared by John Holland Building (JHB) to satisfy Southern Precinct SSD 10437 consent condition B19 External Walls and Cladding. Appended to this letter are reports and details of all materials forming part of the external wall systems for the Planning Secretary's information in accordance with Condition B19.

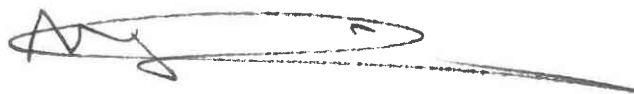
Condition B19: EXTERNAL WALLS AND CLADDING

Prior to the issue of the relevant Construction Certificate, the Applicant must submit to the satisfaction of the Certifier documented evidence that the products and systems proposed for use or used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the BCA. The Applicant must provide a copy of the documentation to the Planning Secretary for information.

The below documents are appended to satisfy the above:

- Appendix A: External Wall System Disclosure Statement by Micos
"Facade MIC - EWDS-001B Southern SSD 10437 BCA2022"
- Appendix B: Material Evidence of Non-Combustibility by Apex
"WMQ-BLD4-APX-FC-RPT-7902 [B]"
- Appendix C: External Wall System Disclosure Statement by Xavier Knight
"XK SS04.1 NSW EWSDS - BCA 2022"

Yours sincerely,



Matthew Davies

Waterloo OSD Design Director
John Holland

Appendix A

External Wall System Disclosure Statement by Micos
Facade MIC - EWDS-001B Southern SSD 10437 BCA2022

AWNING/ROOFING AND EXTERNAL WALL SYSTEM DISCLOSURE STATEMENT (DESIGN)

AWNING/ROOFING AND EXTERNAL WALL COMPONENTS (TYPE A & B CONSTRUCTION)

Project Name	<i>Waterloo Metro Quarter Development - Southern Precinct – SSD 10437</i>
Address	<i>49 Botany Road, Waterloo 2017 (Lot 190 DP 1257150)</i>
Part of Building	<i>External Glazed Façade as per drawing references Level 1 to Level 9</i>
BCA referred to	<i>BCA 2022</i>

- I confirm that the table provided overleaf identifies all the proposed works and external wall elements designed for the subject development, including the component elements of those systems and any attachments thereto.
- I have undertaken reasonable investigations to ascertain and confirm that these systems and components comply with the non-combustibility requirements of Clause C2D10 (prev. C1.9) of the BCA, such as reviewing product technical information, fire test reports, code mark certificates, fire-engineer's reports and external consultant advice.
- Attachments to the building comply with clause C2D14 (prev. C1.14) of the BCA.
- Any ancillary elements are either non-combustible, exempt under Clause C2D10 and/or C2D14 (prev. C1.9 and/or C1.14) or have been addressed through a Performance Solution by an Accredited Fire Safety Engineer.
- We confirm that our design has been coordinated with the requirements of the architectural specification and drawings.
- The wall systems have been designed as nominated in the Section J Assessment Report 1024873-PRT-SY-004 and BCA 2022 and BASIX Certificate WMQ-BLD4-CUN-BN-CER-0002 Certificate number 1131748M_02 issued 20/7/2023.
- The wall system designs are consistent with all Fire Engineering Reports applicable to the building WMQ-SITE-OMN-FE-RPT-001-00
- The wall system designs comply with the Performance Requirements of F3P1 (prev. FP1.4) of the BCA 2022 for Weatherproofing and Performance Solution WMQ-BLD4-MIC-FC-RPT-7902-01 that addresses weatherproofing compliance
- The design complies with the particulars requirements of Part B1 of the BCA 2022, including glass, fixings, dead and live loads, wind loads and earthquake loads per the following standards (AS1170.0:2002; AS1170.1:2002; AS1170.4:2007; AS1288:2021; AS1664.1:1997; AS4100:2020; AS4673:2001; AS5216:2021).
- ~~Where required by C3D7 (prev. C2.6), spandrel separation achieving an FRL of 60/60/60 has been designed and complies with the requirements of C3D7 (prev. C2.6) of BCA 2022. Refer to Performance Solution contained in WMQ-SITE-OMN-FE-RPT-001-00 table 2.1.~~
- The wall system designs are consistent with the DA stamp approved plans as referenced in DA.
- No Aluminium Composite Panels deemed combustible have been proposed as part of the external wall system.
- The proposed paint thickness is not more than 1mm.
- Supporting documents that demonstrate compliance for attachments to walls for the relevant sections of the BCA are provided and attached.
- I am a suitably qualified person and my qualifications and accreditations are listed below.
- The information contained in this statement is true and accurate to the best of my knowledge.

Name: Che Daries
Position Project Manager
Company: Micos Curtain Wall (NSW) Pty Ltd
Address: U16 1801 BOTANY ROAD ABNKSMEADOW NSW 2019
Phone Number: 02 8058 3049



Digitally signed by Che Daries
DN: C=AU, E=che.daries@nicos.com.au,
O=MICOS Cutrain Wall (NSW) Pty Ltd,
OU=Project Manager, CN=Che Daries
Location: BANKSMEADOW NSW
Reason: I am the author of this document
Contact Info: 0406289734
Date: 2023.11.30 08:58:53+11'00'

Signature

Date

EXTERNAL FAÇADE ELEMENTS TABLE

MATERIALS	ELEVATIONS(S)	MATERIAL	MANUFACTURER	ARCHITECTURAL REFERENCE	BCA REFERENCE	TEST REPORT NUMBER
D2525 Interpon Powdercoated 3mm Aluminium Sheet H3003 C100837B2Y2M TO MATCH Dulux Electro 'Dark Bronze Flat' 9068184K	Level 1 to Level 9 North, South, East & West	Aluminium	AKZO Nobel	AM-401; AM-408; AM-410; AM-421; AM-422; AM-423	C2D10 6(e)	16-005953
D2525 Interpon Powdercoated 3mm Aluminium Sheet H3003 C100918B3YT TO MATCH Dulux Duratec 'Natural Bronze' 90E8341Z	Level 1 to Level 9 North, South, East & West	Aluminium	AKZO Nobel	AM-403	C2D10 6(e)	16-005953
D2525 Interpon Powdercoated Aluminium Extrusion C100837B2Y2M TO MATCH Dulux Electro 'Dark Bronze Flat' 9068184K	Level 1 to Level 9 North, South, East & West	Aluminium	AKZO Nobel	AM-403	C2D10 6(e)	16-005953
6mm Clear HS(SJ79#2) + 12 Argon (Blackspacer) + 5mm Clear HS+1.52mm PVB+ 5mm Clear HS	Level 1 to Level 9 North, South, East & West	GLASS	China Southern Glass	GL-401A	C2D10 4(e)	
6mm Clear Toughened Heat Soak (SJ79#2) + 12 Argon (Blackspacer) + 5mm Clear HS+1.52mm PVB+ 5mm Clear HS	Level 1 to Level 9 North, South, East & West	GLASS	China Southern Glass	GL-401As	C2D10 4(e)	
5mm Clear HS+1.52mm PVB+ 5mm Clear HS (SJ79#4) + 12 Argon (Blackspacer) + 5mm Clear HS HS (SJ79#5 + FRIT #6)+1.52mm SGP+ 5mm Clear HS	Level 9	GLASS	China Southern Glass	GL-403	C2D10 4(e)	
6mm Clear Toughened Heat Soak (SJ79#2) + 12 Argon (Blackspacer) + 5mm Clear HS+1.52mm PVB+ 5mm Clear HS (100% Frit #4)	Level 1 to Level 9 North, South, East & West	GLASS	China Southern Glass	GL-404	C2D10 4(e)	
Rockwool Thermalrock S60	Level 1 to Level 9 North, South, East & West	INSULATION	Rockwool	Rockwool	C2D10 1(a)	AJHL1611012644 FB-02
DOWSIL DC791 Weather Sealant	Level 1 to Level 9	SILICONE	DOWSIL	N/A	C2D10 4(c)	

MATERIALS	ELEVATIONS(S)	MATERIAL	MANUFACTURER	ARCHITECTURAL REFERENCE	BCA REFERENCE	TEST REPORT NUMBER
	North, South, East & West					
GRADE A4 (316 or equivalent) for visible or external fasteners	Level 1 to Level 9 North, South, East & West	SCREWS	FUWODE	N/A	C2D10 4(i)	
SILICONE GLAZING SETTING BLOCKS	Level 1 to Level 9 North, South, East & West	SILICONE	FENFA	N/A	C2D10 4(i)	

MICOS DRAWINGS

Drawing Number	Title	Revision	Date	Prepared by
WMQ-BLD4-MIC-FC-SPD-7101	BUILDING 4 - FLOOR PLAN - L01	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7102	BUILDING 4 - FLOOR PLAN - L02	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7103	BUILDING 4 - FLOOR PLAN - L03	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7104	BUILDING 4 - FLOOR PLAN - L04	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7105	BUILDING 4 - FLOOR PLAN - L05	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7106	BUILDING 4 - FLOOR PLAN - L06	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7107	BUILDING 4 - FLOOR PLAN - L07	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7108	BUILDING 4 - FLOOR PLAN - L08	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7109	BUILDING 4 - FLOOR PLAN - L09	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7211	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7212	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7213	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7214	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7216	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7217	BUILDING 4 - WINDOW SCHEDULE - L01	1	01/11/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7222	BUILDING 4 - WINDOW SCHEDULE - L02	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7223	BUILDING 4 - WINDOW SCHEDULE - L02	2	01/11/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7226	BUILDING 4 - WINDOW SCHEDULE - L02	2	01/11/2023	MICOS

WMQ-BLD4-MIC-FC-SPD-7227	BUILDING 4 - WINDOW SCHEDULE - L02	2	01/11/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7228	BUILDING 4 - WINDOW SCHEDULE - L02	2	01/11/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7405	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7409	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7410	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7412	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7413	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7414	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7417	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS

WMQ-BLD4-MIC-FC-SPD-7418	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7419	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7420	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7421	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7422	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7426	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7427	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7428	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7429	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7431	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7432	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
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WMQ-BLD4-MIC-FC-SPD-7436	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7437	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7438	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7439	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7440	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7441	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7442	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS

WMQ-BLD4-MIC-FC-SPD-7443	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7444	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7445	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7446	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7447	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS
WMQ-BLD4-MIC-FC-SPD-7448	BUILDING 4 - HORIZONTAL DETAILS	1	19/10/2023	MICOS

Interpon D2015 Flame Propagation Testing AS/NZS1530.3-1999 Part 3

Spread of Flame

Due to the scope of architectural components on a building that are typically powder coat finished Interpon Powder Coatings Australia has undertaken independent testing assessment accordance with AS/NZS 1530.3 – 1999 Part 3 to determine the suitability of specific architectural grade coating systems for aluminium coated cladding, extrusions, fixings and components.

The test results outlined below are specific to Interpon D2015 ultra durable polyester architectural grade powder coat finishes.

Regulatory Indices

Spread of Flame Index	0	Range 0-10
Heat Evolved Index	0	Range 0-10

Result Analysis

Interpon D2015 test sample achieved a zero result on Spread of Flame. Based on the independent test results Interpon D2015 ultra durable polyester powder coat finishes are suitable for use on internal and external architectural cladding, extrusions, fixings and components.

It should be noted that Interpon D2015 should not be specified in a fire 'control room' environment.

For a copy of the detailed test results, please email marketing@interpon.com.au.

Acknowledgements

AWTA Product Testing – A NATA Accredited Laboratory

Australian Standards

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106

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 : Akzo Nobel Pty Ltd
51 McIntyre Road
Sunshine VIC 3020

Test Number : 16-005953
Issue Date : 02/12/2016
Print Date : 27/01/2017

Sample Description Clients Ref : "D2015"
Powder coating applied to aluminium street
Colour : White
End Use : Architectural Aluminium Coating
Nominal Composition : Polyester resin powder coating
Nominal Mass per Unit Area/Density : 1.2-1.7 g/m²
Nominal Thickness : 60-80um

AS/NZS 1530.3-1999

Methods for Fire Tests on Building Materials, Components and Structures Part 3: Simultaneous Determination of Ignitability, Flame Propagation, Heat Release and Smoke Release

Face tested:	Face		
Date tested:	02/12/2016		
	Standard Error	Mean	
Ignition time	0.10	7.98	min
Flame propagation time	Nil	Nil	sec
Heat release integral	2.0	16.9	kJ/m ²
Smoke release, log d	0.0170	-1.4856	
Optical density, d		0.0328	/ metre

Number of specimens ignited: 6
Number of specimens tested: 6

Regulatory Indices:

Ignitability Index	12	Range 0-20
Spread of Flame Index	0	Range 0-10
Heat Evolved Index	0	Range 0-10
Smoke Developed Index	3	Range 0-10

81139

16016

Page 1 of 2

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- Chemical Testing
- Mechanical Testing
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: Accreditation No.
: Accreditation No.

983

Samples and their identifying descriptions have been provided by the client unless otherwise stated.
AWTA
Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test
results
relate only to the sample or samples tested. This document shall not be reproduced except in full and
shall



APPROVED SIGNATORY

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

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106

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 : Akzo Nobel Pty Ltd
51 McIntyre Road
Sunshine VIC 3020

Test Number : 16-005953
Issue Date : 02/12/2016
Print Date : 27/01/2017

These results only apply to the specimen mounted, as described in this report. The result of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

Specimens tended to flash before ignition. Ignition was based on the occurrence of a single flash of flame which lasted longer than 10 seconds.

Each test specimen was clamped in four places.

81139

16016

Page 2 of 2

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APPROVED SIGNATORY

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

Date: 1/21/2019

Ref No: RWCN_TSD_20190121

Document Type: Technical Document

Subject: Test Report Description

Test Report Description

ROCKWOOL stone wool products are non-combustible with a melting point of approximately 1000°C. They are particularly suitable for thermal insulation, fire protection and sound absorption/reduction.

ThermalRock S products are manufactured in a wide variety of thicknesses and densities to suit most requirements, suitable for general application in residential, commercial and industrial buildings.

ThermalRock S60 & S80 are non-combustible, and the fire resistance complied with AS1530.1 standard.

Best Regards

Your faithfully

ROCKWOOL 中国有限公司

January 21, 2019





中国认可
国际互认
检测
TESTING
CNAS L4743

Test Report

No. AJHL1611012644FB-02

Date: DEC.09, 2016

Page 1 of 3

ROCKWOOL FIRESAFE INSULATION (GUANGZHOU) CO.,LTD

3TIANHUA ST.YONGHE DIST.OF GUANGZHOU ECON & TECH DEVELOPMENT
DIST, GUANGZHOU, GUANGZHOU PROVINCE. P.R.C

**THE TEST REPORT IS TO SUPERSEDE THE TEST REPORT No.: AJHL1611012644FB-01, DATE:
NOV.22, 2016**

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description: ROCKWOOL

SGS Ref No.: GZIN16112061CCM

Product Specification: TR-S60(60kg/m³)

Test Requested:

AS 1530.1:1994 Methods for fire tests on building materials, components and structures. Part 1:
combustibility test for materials

Test Results: -- See attached sheet --

Conclusion: In accordance with test results, the tested sample **is not deemed** to be combustible
materials as defined in AS 1530.1-1994 Methods for fire tests on building materials,
components and structures. Part 1: combustibility test for materials.

Test Period:

Sample Receiving Date : NOV.15, 2016

Test Performing Date : NOV.15, 2016 TO NOV.21, 2016

Signed for and on behalf of
SGS-CSTC Co., Ltd. Anji Branch

Allen Zou
Technical Manager



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Test Report

No. AJHL1611012644FB-02

Date: DEC.09, 2016

Page 2 of 3

I. Test Conducted

This test was performed in accordance with AS 1530.1 – 1994 Methods for fire tests on building materials, components and structures. Part 1: combustibility test for materials.

II. Sample details

Description	Rockwool
Color	Khaki
Specimen size	Ø45mm×50mm

III. Conditioning

The submitted sample shall be conditioned in a ventilated oven maintained at 60±5°C for between 20h and 24h, and cooled to ambient temperature in a desiccator prior to testing.

IV. Test Results

Parameter	Results					Mean value
	1	2	3	4	5	
Total duration of sustained flaming ²⁾ , (s)	0	0	0	0	0	0
Initial furnace thermocouple temperature, T _{fi} (°C)	745.7	750.2	749.3	748.2	747.1	
Maximum furnace thermocouple temperature, T _{fm} (°C)	757.0	758.4	761.2	759.3	758.5	
Final furnace thermocouple temperature, T _{ff} (°C)	746.2	745.3	747.3	744.3	746.2	
Furnace thermocouple temperature rise, ΔT _f (°C)	10.8	13.1	13.9	15.0	12.3	13.0
Maximum specimen surface thermocouple temperature, T _{sm} (°C)	710.8	708.8	709.2	711.3	711.4	
Final specimen surface thermocouple temperature, T _{sf} (°C)	697.2	696.3	691.3	692.4	693.5	
Specimen surface thermocouple temperature rise, ΔT _s (°C)	13.6	12.5	17.9	18.9	17.9	16.2
Test duration, (min)	45	40	40	45	45	

To be continued...



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Test Report

No. AJHL1611012644FB-02

Date: DEC.09, 2016

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Note: Tfm: Maximum furnace temperature

Tff: Final furnace temperature

Tsm: Maximum specimen surface temperature

Tsf: Final specimen surface temperature

- 1) The mass of each specimen shall be determined to an accuracy of 0.1g prior to test in the furnace.
- 2) Disregard and individual duration of flaming less than 5s.

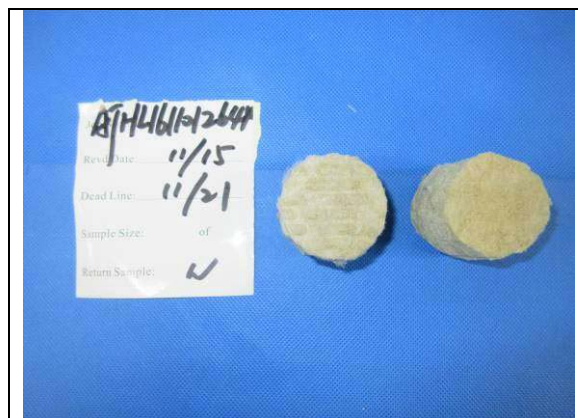
Criteria of combustibility: A material shall be deemed to be combustible under any of the following circumstances:

- (a) The mean duration of sustained flaming is other than zero.
- (b) The mean furnace thermocouple temperature rise, ΔT_f , exceeds 50 °C.
- (c) The mean specimen surface thermocouple temperature rise, ΔT_s , exceeds 50 °C.

Statement:

These test results relate only to the behavior of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

Photo Appendix:



SGS authenticate the photo on original report only

End of Report



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检测
CNAS L0846

TEST REPORT

WSW No.17060782

Product ThermalRock S80

Client Rockwool Firesafe Insulation (Guangzhou) Co., Ltd.

Test Type Sample type inspection

Nanjing Fiberglass Research & Design Institute, Testing Laboratory
China National Fiberglass Product Quality Supervision & Testing Center



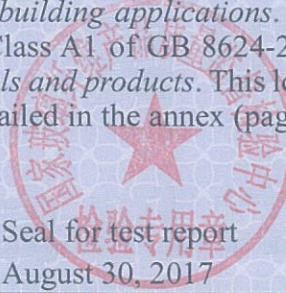
August 30, 2017

Nanjing Fiberglass Research & Design Institute, Testing Laboratory
China National Fiberglass Product Quality Supervision & Testing Center

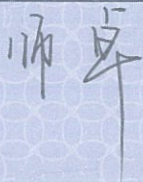
Test Report

WSW No.17060782

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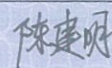
Product	ThermalRock S80	Specification	Rock wool used for steel structure and internal insulation GB/T 19686 80-1200×600×100
Trade mark	ROCKWOOL	Sample state	Earth yellow fibrous board
Consigner	Rockwool Firesafe Insulation (Guangzhou) Co., Ltd.	Test type	Sample type inspection
Address of client	3 Taihua St, Yonghe Dist of Guangzhou city, Guangdong Province	Sample Grade	----
Producer	Rockwool Firesafe Insulation (Guangzhou) Co., Ltd.	Sampling date	June 14, 2017
Sampling site	Enterprise finished product warehouse	Sampler	Ding Qing Zhang Jianhong
Sample quantity	(1200×600×100) mm, 4 pieces	Sampling basic number / lot size	1500m ² / 2260m ²
Test standard	GB/T 19686-2015 GB 8624-2012	Date of production	BATCH NO: L1RW-17-05-C20
Testing Result	The sample has been tested. The items tested conform to the stipulation of GB/T 19686-2015 <i>Rock wool insulation products for building applications</i>. The combustion properties conform to the stipulation of Class A1 of GB 8624-2012 <i>Classification for burning behavior of building materials and products</i>. This lot of products is judged as qualified. The test results are detailed in the annex (page 2-5).  Seal for test report August 30, 2017		
Remark			

Approved by:

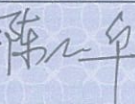


/Technical Chief

Checked by:



Compiled by:



Nanjing Fiberglass Research & Design Institute, Testing Laboratory
China National Fiberglass Product Quality Supervision & Testing Center
Annex to Test Report

WSW No.17060782

Page 2 of 5

Test item		Standard requirement	Test result	Judgment
Appearance		Flat surface, resin even distribution, no scar, stain or damage	Flat surface, resin even distribution, no scar, stain or damage	Pass
Dimensions	Length mm	1200^{+10}_{-3}	1201	Pass
	Width mm	600^{+5}_{-3}	601	
	Thickness mm	100 ± 3	103	
Density kg/m^3		80 ± 8	86	Pass
Fiber diameter μm		≤ 6.0	4.7	Pass
Shot content (over 0.25 mm) %		≤ 7.0	2.9	Pass
Thermal conductivity $\text{W}/(\text{m} \cdot \text{K})$ (Average temperature 25°C)		≤ 0.040	0.035	Pass
Combustibility (Class A1)	PCS MJ/kg	≤ 2.0	0.7	Pass
	Mass loss %	≤ 50	1.8	
	Temperature rise °C	≤ 30	2	
	Duration of sustained flaming s	0	0	

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China National Fiberglass Product Quality Supervision & Testing Center
Annex to Test Report

WSW No.17060782

Page 3 of 5

Test item		Standard requirement	Test result		Judgment
Moisture absorptivity % (50℃, RH95%, 96h)		≤0.5	0.2		Pass
Hydrophobicity %		≥98.0	99.6		Pass
Radionuclide limits	Internal exposure index I _{Ra}	≤1.0	0.1		Pass
	External exposure index I _r	≤1.0	0.2		
Acidity coefficient		≥1.6	1.9		Pass
pH		7.0~9.5	8.5		Pass
Corrosion test on steel plate	Rank sum to reference sample	≥21	40	detailed in page4-5	Pass

Nanjing Fiberglass Research & Design Institute, Testing Laboratory
China National Fiberglass Product Quality Supervision & Testing Center
Annex to Test Report

WSW No.17060782

Page 4 of 5

Details of corrosion test of rock wool on steel plate

1. Test method

GB/T 11835-2007 Annex E

2. Specimen preparation

- 2.1 The dimensions of each specimen are 114mm×38mm×12.7mm as the same with the sterile cotton.
- 2.2 The dimensions of steel plates are 100mm×25mm×0.8mm. Clean the test plates by vapor degreasing for 5min using 1-1-1 trichloroethane or chloroprene. After degreasing, wipe the residue from both sides of the coupons using paper laboratory wipes. Next, immerse for 15min in a hot caustic solution(15% potassium hydroxide (KOH) by weight), rinse thoroughly in distilled water, and immediately dry using paper laboratory wipes.
- 2.3 The dimensions of wire screens are 114mm×38mm, the dimension of open-square grid is 11.0mm.
- 2.4 Each specimen consists of one piece of metal placed between two pieces of insulation. Next, compress this assembly between two pieces of woven wire screen and secure near each end with rubber band to ensure that the compressed thickness of this assembly measures 25mm. The assembled way of steel plates and sterile cotton is the same.

3. Procedure

- 3.1 Vertically suspend the five test specimens and the five control specimens in an atmosphere free of contaminants, with temperature of 49°C and relative humidity of 95% for 96h.
- 3.2 After 96h, remove the specimens from the chamber. The ten metal plates (five test, five control) were examined by five judges with experience in corrosion evaluation. Each judge shall independently rank all ten plates in order from least severe corrosion to most severe corrosion. Upon completion of the judges' ratings, the arithmetic sum of all of the rankings for each plate shall be calculated.
- 3.3 According to the 90% confidence the rank sum test. If this sum is less than 21, then the control plates are judged to be significantly better than the test plates and the insulation tested is considered to have failed the test. Any sum of the rankings for the five control plates ≥ 21 indicates that there is no statistical difference between the control and test plates, and the insulation is considered to have passed.

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Annex to Test Report

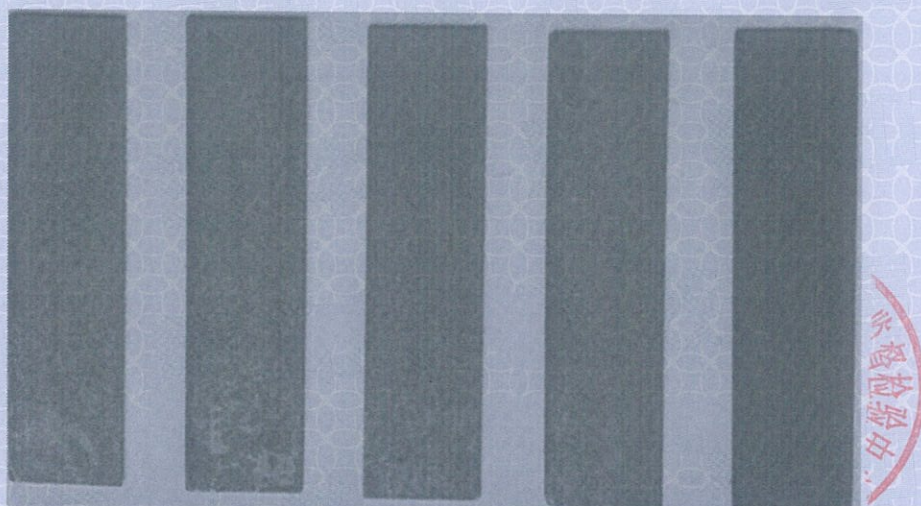
WSW No.17060782

Page 5 of 5

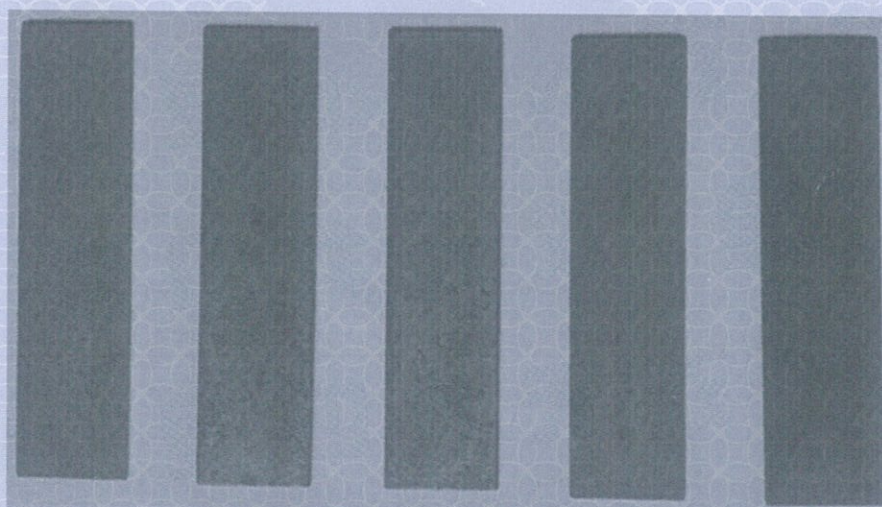
4. Test result

Corrosion test of rock wool on steel plate.

4.1 The appearance of control plates and test plates after test is as follows.



Control plates



Test plates

4.2 Mix the control plates and test plates, the ten plates were examined by five judges with experience in corrosion evaluation. Each judge shall independently rank all ten plates in order from least severe corrosion to most severe corrosion. The average sum of the rankings of control plates is 40.

4.3 According to the 90% confidence the rank sum test, the average sum of the rankings of control plates shall not be less than 21. So the sample is considered to have passed the corrosion test.

Appendix B

Material Evidence of Non-Combustibility by Apex
WMQ-BLD4-APX-FC-RPT-7902



Waterloo Metro Quarter Development - Southern Precinct

Building 4

WMQ-BLD4-APX-FC-RPT-7902

Waterloo OSD BLD4-Material- Evidence of Non-combustibility

078/025c

Issued for Construction

1st December 2023

Revision:C

Regulated Design Record				
Project Address: 49 BOTANY ROAD, WATERLOO 2017 (LOT 190 DP 1257150)				
Project Title: WATERLOO METRO QUARTER DEVELOPMENT- SOUTHERN PRECINCT				
Consent No:SSD 10437		Body Corporate Reg No: DEP0002363		
Drawing Title: MATERIALS LIST		Drawing No: WMQ-BLD4-APX-FC-DRG-F-7002		
Rev	Date dd.mm.yy	Description	DP Full Name	Reg No
B	20.10.23	FOR CONSTRUCTION	Peter Hartigan	DEP0001199
C	27.10.23	FOR CONSTRUCTION	Peter Hartigan	DEP0001199

1. SEE GENERTAL NOTES DRAWING
WMQ-BLD4-APX-FC-DRG-7100



BUTYL TAPE (3D CORNERS)

MATERIAL LIST

GENERAL CATEGORIES	GENERAL DESCRIPTION OF PRODUCT OR PRODUCT USE	PRODUCT NAME	ADDITIONAL INFORMATION
SARKING AND SARKING COMPONENTS	SARKING SPANNING BETWEEN STUDS	PROCTORPASSIVE RAINSCREEN WITH INTEGRATED TAPE (RS-IT)	
	SARKING WASHER FIXING (STAINLESS STEEL)	SFS TCW 47/6 PROPRIETARY AUSTENITIC STAINLESS STEEL A4 COMPRESSION WASHER Ø47MM AVAILABLE FROM DYNAMIC COMPOSITE TECHNOLOGIES	FIXED WITH SFS SX3-S16/A4-6×48-A4 STAINLESS STEEL HEX HEAD SELF DRILLING FASTENER WITH 16MM STAINLESS STEEL A4 AND EPDM-SEAL AVAILABLE FROM DYNAMIC COMPOSITE TECHNOLOGIES
	SARKING WASHER FIXING (PLASTIC)	BRADFIX PLASTI-GRIP WASHER - AVAILABLE FROM CSR BRADFORD	FIXING AS FOR STAINLESS STEEL WASHER
	BUTYL TAPE (3D CORNERS)	PROCTORPASSIVE YOUBYUTE FLEXIBLE PE BUTYL RUBBER TAPE MIN 1MM THICK	FOR USE AT THREE-DIMENSIONAL CORNERS, REFER TO PHOTO ATTACHED
	BUTYL TAPE (SCREW PENETRATIONS)	PROCTORPASSIVE YOUBYUTE SEALING TAPE	FOR SEALING SCREW PENETRATIONS THROUGH SARKING E.G. FOR BRICK TIES AND WASHER FIXINGS
	SARKING TAPE(EXCEPT AT TERMINATION TO CONCRETE)	PROCTOR PASSIVE UV TAPE (REFER TO WMQ-BLD4-APX-FC-DRG-F-7301)	ROLL WIDTH = 60MM
	SARKING TAPE(AT TERMINATION TO CONCRETE)	PROCTOR HIGH TACK TAPE (REFER TO WMQ-BLD4-APX-FC-DRG-F-7302)	ROLL WIDTH = 60MM
CAVITY TRAY AND COMPONENTS	SARKING PRESSURE SEAL	MIN 20X20X1.6 ALUMINIUM ANGLE	FIXED AT MIN 150 CENTRES WITH 8G SS SCREWS
	BRICK CAVITY TRAY	0.3mm ALCOR FLASHING - 300 or 350MM AS NOTED	FIXED AT 450 CENTRES WITH SS SCREW, SAME SIZE AS BRICK TIE.
SEALANTS	SEALANT TO ALCOR FLASHING PRESSURE SEAL	BOSTIK SEAL N FLEX (OR EQUAL COMPATIBLE TBC)	+/- 50% ELONGATION REQUIRED
	FLEXIBLE BRICK SEALANT	BOSTIK SEAL N FLEX (OR EQUAL COMPATIBLE TBC)	+/- 50% ELONGATION REQUIRED
	WEATHER SEALANT (OUTER SEALANT TO GLAZING SYSTEM)	BOSTIK SEAL N FLEX (OR EQUAL COMPATIBLE TBC)	+/- 50% ELONGATION REQUIRED
	WEATHER SEALANT (INNER SEALANT TO GLAZING SYSTEM)	DOWSIL 791	+/- 50% ELONGATION REQUIRED
	COMPRESSIBLE FOAM SEAL	TREMCO ILLMOD 600	SIZE BASED ON JOINT WIDTH AND DEPTH - SEE TREMCO GUIDELINES
	SEALANT TO ALCOR DOUBLE-LOCK CROSS WELTS	FOSROC NITOSEAL MB 175 OR EQUAL	
CAVITY CLOSERS	CAVITY CLOSERS TO BRICK MIN .9MM ZAM		REFER TO WMQ-BLD4-APX-FC-DRG-F-7304
OTHER COMPONENTS	BRICK TIES AND FIXINGS AS SPECIFIED BY STRUCTURAL ENGINEER	BRICK TIES AS SPECIFIED BY STRUCTURAL ENGINEER	ALL BRICK TIES SEALED THROUGH SARKING WITH BUTYL TAPE. ALL BRICK TIES PROVIDED WITH NON-COMBUSTIBLE PROTECTIVE DISC PACKER WIDER THAN BASE OF TIE, TO PROTECT SARKINGFROM TEARING ON BRICK TIE
	ALL MEMBRANES (TO SLAB, BLOCK AND WINDOW BOX ETC)	AS SPECIFIED BY ARCHITECT	PRODUCTS TO BE COMPATIBLE WITH SEALANTS AND OTHER COMPONENTS
	INSULATION	BRADFORD GOLD	NON-COMBUSTIBLE HIGH-PERFORMANCE INSULATION
	FIXINGS GENERAL		ALL FIXINGS GRADE 316 SS

C	Oct.2023	ISSUED FOR CONSTRUCTION
B	Oct.2023	ISSUED FOR CONSTRUCTION
A	Jun.2023	ISSUED FOR CONSTRUCTION

REV	DATE	AMENDMENT
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FACADE CONSULTANT:



Job Title
WATERLOO METRO QUARTER DEVELOPMENT - SOUTHERN PRECINCT

DRAWING TITLE
MATERIALS LIST

DRAWING STATUS:
ISSUED FOR CONSTRUCTION

DRAWN	S.S	DATE	Oct.2023
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JOB NO.	078/025	SCALE (A3)	N.T.S
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DRAWING NO.	WMQ-BLD4-APX-FC-DRG-7002	REV.	C
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EXTERNAL WALL ELEMENTS TABLE

The table below must be completed for all wall types.

Note: Marked up elevations are to accompany this submission

LINING / CLADDING / BUILDING ATTACHMENTS MATERIAL *(Note. Nominate every type of external cladding, attachment and/or wall material)*

External/Cladding Material (Eg Fibre cement, Aluminium composite panel, masonry, steel members etc)	Elevation(s)	Structural frame material	Manufacturer (Eg, Alucobond, Vitracore etc)	Product Name (Eg, Alucobond Plus, Vitracore G2 etc)	Test certificate, Codemark certificate or Fire Engineering Report (List all documents evidencing compliance)	Nominated or proprietary installation requirements (relevant installation details or guidelines must be listed below and attached)
Brick	See Architect's drawings	Steel stud frame	Austral	N/A	N/A	
Aluminium cladding	See Architect's drawings	Steel stud frame	Vitradual or equivalent	N/A	Test certificate no. FNE12495 Codemark number: CM30017 Rev 2	
Brick and weather sealant	See Architect's drawings	N/A	Bostik	Seal 'N' Flex	N/A- NCC C2D10 (4)	

INSULATION *(list all types incorporated in the external wall systems)*

Material Rockwool etc	Elevation	Manufacture (Eg, CSR etc)	Product Name	Test certificate reference
Glasswool	All (generally throughout)	Bradford	Bradford Gold Wall Battens	Test report NR-17008

SARKING *(list all types incorporated in the external wall systems)*

Manufacture (Eg, CSR etc)	Elevation	Product Name	Test certificate reference
Proctor	All elevations	ProctorPassive RS-IT	Thickness <1mm and Flammability Index(AS1530.2)<5 from Technical Data Sheet. DtS by NCC C2D10 (6) (f) See AWTA Product Testing Test Report No.20-005451
Proctor	All elevations	ProctorPassive UV Tape	This is considered a sealant or a gasket therefore N/A per NCC C2D10 (4)

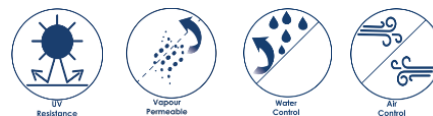
Proctor	All elevations	ProctorPassive YouByute Sealing Tape	This is considered a sealant or a gasket therefore N/A per NCC C2D10 (4)
Proctor	All elevations	ProctorPassive YouByute Flexi Tape	This is considered a sealant or a gasket therefore N/A per NCC C2D10 (4)
Proctor	All elevations	ProctorWrap High Tack Tape	This is considered a sealant or a gasket therefore N/A per NCC C2D10 (4)

ARCHITECTURAL DRAWINGS

Drawing Number	Title	Revision	Date	Prepared by
See Architects Drawing Package				

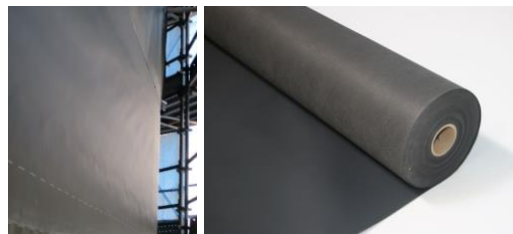
PROCTOR **PASSIVE** Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications



Product Description

ProctorPassive™ Rainscreen with Integrated Tape (RS-IT) is a two layer membrane consisting of a spun bonded polyester layer with a unique functional coating that offers improved resistance against UV and high temperatures up to 120°C. Developed primarily as a vapour permeable sarking for use in open joint rain screen applications, ProctorPassive RS-IT offers a combination of durability and high water holdout without compromising vapour permeance.



Applications

ProctorPassive RS-IT is suitable for installation in vertical wall constructions behind ventilated facades with regularly spaced open joints no greater than 30mm wide accounting for no more than 30% of total surface area. The rainscreen façade has to be ventilated according to the façade manufacturers installation instructions but a ventilation gap (min. 20mm) is necessary.

ProctorPassive RS-IT can also be used as a vapour permeable underlay in metal roof applications.

Long term UV resistance is dependent on the percentage of the cladding that is open, the size of openings, and the width of the cavity. Please contact Proctor Group Australia to seek assurances on the suitability of ProctorPassive RS-IT for the particular application.



Installation

ProctorPassive RS-IT should be installed in accordance with AS/NZS 4200.2 Pliable Building Membranes and Underlays, Part 2 Installation Requirements and in full accordance with the product installation guide. ProctorPassive RS-IT should be installed with the darker black "rubbery" surface facing outwards.

Integrated Tape

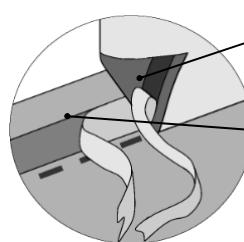
To improve the integrity of installation, ProctorPassive RS-IT is supplied with a factory applied integrated tape on the outer face of the lower course and the rear of the upper course of membrane.

Durability

Although ProctorPassive RS-IT can be used as temporary protection during construction, it can not be used as a fully exposed waterproofing membrane. The product may be damaged by careless handling, high winds or vandalism, and should not be left uncovered for longer than is absolutely necessary. Any damaged areas should be replaced before completion. To ensure maximum long term UV durability, ensure that ProctorPassive RS-IT is covered up by the primary cladding material as soon as possible, and not left exposed to UV for longer than 4 months, or 11 months when the cladding is closed joint.

Benefits

- ☐ High water resistance
- ☐ Suitable for use behind in open joint cladding
- ☐ High UV durability
- ☐ Highly vapour permeable
- ☐ Air barrier
- ☐ Supplied with integrated tape
- ☐ Fixing span tables available



45 mm wide clear integrated adhesive tape on the underside of the membrane.

80 mm wide clear integrated adhesive tape on the outside face of the membrane. The extra width permits some limited flexibility in positioning of the upper course of membrane.

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PROCTOR Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications

Technical Data

Criteria	Reference	Result
Duty Classification	Table 1 AS/NZS 4200.1:2017	Light
Vapour Permeance	ASTM E96	2.7800 µg/N.s
Vapour Resistance	ASTM E96	0.36MN.s/g
	EN 12572 (Sd value)	0.04 m (-0.02/+0.04) equates to 0.2 MNs/g
Vapour Control Classification	AS/NZS 4200.1:2017	Vapour Permeable - Class 4
Emittance	AS/NZS 4201.5	IR Non-reflective - NN
Air Permeability / Air Control Classification	EN 12114:2001	< 0.02 m³/(h.m².50Pa)
	AS/NZS 4200.1, ISO 5636-5	Air Barrier (≥ 0.1 MNs/m³)
Water Barrier	AS/NZS 4201.4	High
Resistance to Dry De-Lamination	AS/NZ 4201.1	Pass
Resistance to Wet De-Lamination	AS/NZ 4201.2	Pass
Shrinkage	AS/NZ 4201.3	Pass < ±0.5%
Folding endurance	AS/NZS 1301.423	Pass MD: ≥2.00 CD: ≥1.7 (log ₁₀ folds)
Flammability Index	AS/NZ 1530 Part 2	1 (Low ≤5)
Fire Characteristics	EN 13501-1 (Euroclass)	B
Thickness	EN 1849.2	0.5 mm
Burst Strength	AS 2001.2.19-1988	647N
Tensile Strength	AS 1301.448	MD: 8.9kN/m CD: 5.3kN/m
Edge Tear Resistance	TAPPI T470	MD: 389N CD: 264N
Electrical Conductivity Classification	AS/NZS 4200.1:2017, AS/NZS 3100-2017	Electrically Non-Conductive
Allowable UV exposure prior to completion of cladding		4 months

Health & Safety

Information on any known health risks on the material are listed in the Material Safety Data Sheets available from Proctor Group Australia. Follow all guidance and industry good practice guidelines. In particular pay attention to the disposal of the removed release liner, as this presents a slip hazard.

Product Performance

ProctorPassive RS-IT performs to specification in normal building applications when installed in accordance with the Product Installation Guide. The information herein is supplied in good faith and to the best of our knowledge was accurate at the time of publication. Users are advised to make their own determination as to the suitability of this information in relation to their particular purpose and specific requirements.

Sample Specification

Sarking should be ProctorPassive RS-IT vapour permeable membrane, tested to AS/NZS 4200.1:2017 standards, secured directly to the outside of the wall frame in accordance with the product installation guide. All laps and penetrations are sealed with ProctorPassive UV Tape. Breather foil does not comply with this specification.

- ☐ Vapour permeance: No less than 2.0µg/N.s (vapour resistance of no greater than 0.5MN.s/g)
- ☐ Burst Strength no less than 600N
- ☐ Duty classification: Light
- ☐ Water Barrier Classification: High
- ☐ Air Control Classification: Air Barrier

Dimensions and Accessories

Product Code	Width (mm)	Length (m)	Area (m²)	Coverage (m²)	Weight kg/roll	Rolls/pallet
ProctorPassive RS-IT	1,500	35	52.5	47.25	16.5	46/pallet
ProctorPassive UV Tape	60	25				10/carton



Australian Wool Testing Authority Ltd - trading as AWTA Product Testing

A.B.N 43 006 014 106

1st Floor, 191 Racecourse Road, Flemington, Victoria 3031

P.O Box 240, North Melbourne, Victoria 3051

Phone (03) 9371 2400

TEST REPORT

Client : Proctor Group Australia
Unit 8, 171-175 Newton Road
Wetherill Park NSW 2164

Test Number : 20-005451
Issue Date : 5/11/2020
Print Date : 6/11/2020

Sample Description Clients Ref : "ProctorPassive Rainscreen RS-IT"
Vapour Permeable UV resistance construction membrane
Colour : Dark Grey/Black
End Use : Sarking/ Weather Resistive Barrier
Nominal Composition : Non-woven polyester with functional UV resistant coating
Nominal Mass per Unit Area/Density : 300g/m2
Nominal Thickness : 0.5mm

AS 1530.2-1993

Methods for Fire Tests on Building Materials, Components and Structures.

Part 2: Test for Flammability of Materials

Date Tested	05/11/2020	
Flammability Index	1	
	Length	Width
Spread Factor	0	0
Heat Factor	1	1
Maximum height (d)		
Mean	3.2	3.1
Coefficient of Variation	8.2	6.6 %
Heat (a)		
Mean	1.5	1.5 °C.min
Coefficient of Variation	0.0	0.0 %
Number of Specimens Tested	6	6
Observation	Visible smoke.	
Comp ASNZS 4200.1-2017 Cl 5.3.6		Low

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

0204/11/06



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These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test, and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

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

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PROCTOR **PASSIVE** UV Tape

UV Resistant Single Sided Tape



Product Description

ProctorPassive UV Tape is a single sided adhesive tape recommended for use with the ProctorPassive Rainscreen vapour permeable membrane.

The carrier of polyester spun bond with black functional coating offers long term UV resistance making the tape suitable for use in open joint rainscreen applications where used as directed. The pressure sensitive polyacrylate adhesive provides exceptionally high initial tack and permanent adhesion.

Applications

ProctorPassive UV Tape is designed for use with ProctorPassive Rainscreen (RS-IT) vapour permeable construction membrane for open joint facades, sealing around doors, windows and pipes.

Installation

Installation of ProctorPassive UV Tape must be in accordance with the installation guide.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure with a squeegee or roller on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +10°C + 30°C prior to application of the tape.

All mechanical load on membranes should be distributed to mechanical fasteners and the tape must not be applied under mechanical load. The use of adhesive tape is not a substitute for the required fixing of materials.

Benefits

- ☐ UV resistance
- ☐ Compatibility with ProctorPassive Rainscreen (RS-IT)
- ☐ Good initial tack
- ☐ Durable robust carrier
- ☐ Non reflective matt finish carrier
- ☐ Air and water tight



Properties	Nominal value
Adhesive Carrier	Spunbonded polyester with function UV resistant coating
Adhesive Type	Solvent free acrylic adhesive
Total thickness	0.6 mm (without liner)
Liner	Silicone Paper
Peel adhesion	≥ 25 N/25mm
Sheer Adhesion	500 g/625mm ²
Temperature range	-30 °C to +90°C
Application Temp.	+10 °C to +30 °C
UV Exposure	Open joint rainscreen: 4 months Face sealed façades: 9 months
Shelf life	1 year in original packing stored at room temperature of around 21°C & 50%RH, and protected from UV in a dry location.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton
All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.	

Ref: ProctorPassive UV Tape PDS Oct 2020 Page 1 of 1

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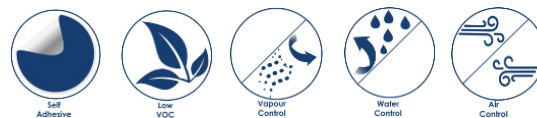
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PROCTOR **PASSIVE** YouByute Flexi Tape

Flexible Butyl Rubber Tape



Product Description

ProctorPassive YouByute Flexi Tape is a strong adhesion highly stretchable PE butyl rubber tape with lasting water and ageing resistance.

Applications

ProctorPassive YouByute Flexi Tape is used in roof and wall construction as a tape for permanent sealing of air barriers, roof underlays, building wraps and around doors, windows and pipes. The tape is suitable for sealing overlaps in edges and corners and locations that require a high degree of flexibility in the tape.

Installation

As with all pressure sensitive tapes, the YouByute Flexi Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure.

The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- ☐ Highly stretchable
- ☐ High tack
- ☐ Long term water resistance
- ☐ High ageing resistance
- ☐ Release liner with finger lift
- ☐ Compatibility with ProctorWrap Rainscreen (RS-IT)
- ☐ Air and water tight
- ☐ Low emission of VOC



Properties	Nominal value
Adhesive Carrier	0.2mm Transparent PE Film
Adhesive Type	Butyl rubber adhesive
Total thickness	2.0mm (uncompressed)
Liner	Silicone Paper - Finger lift
Peel adhesion	≥ 10 N/25mm
Tensile Strength	15 N/25mm
Elongation at break	> 300%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 10m 80mm x 10m
Packaging	50mm: 10 rolls per carton 80mm: 6 rolls per carton
All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.	

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PROCTOR **PASSIVE** YouByute Sealing Tape

Butyl Rubber Tape



Product Description

ProctorPassive YouByute Sealing Tape is a water resistant PE butyl rubber tape with high tack, very high ageing resistance, and high tear strength.

Applications

ProctorPassive YouByute Sealing Tape is used for diffusion tight and watertight sealing behind façades and around windows and doors where not exposed to long term UV. The tape is also used for improving nail and screw penetration sealing.

Installation

As with all pressure sensitive butyl tapes, the YouByute Sealing Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure. The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

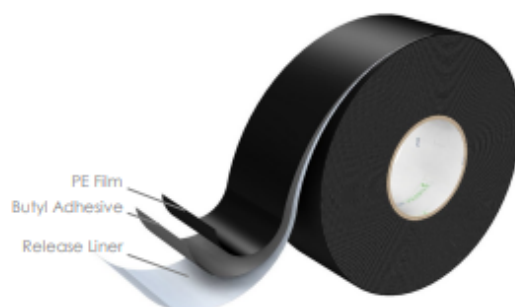
Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- High tack
- Long term water resistance
- High ageing resistance
- Compatibility with ProctorPassive Rainscreen (RS-IT) and ProctorPassive Wraptite SA/UV-SA membranes
- Air and water tight
- Ideal for improving the seal at nail and screw penetrations



Properties	Nominal value
Adhesive Carrier	0.17mm Black Film
Adhesive Type	Butyl rubber adhesive
Total thickness	1.2mm (uncompressed)
Liner	Silicone Paper
Peel adhesion	≥ 20 N/25mm
Tensile Strength	≥ 100 N/25mm
Elongation at break	≥ 250%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 20m
Packaging	12 rolls per carton

All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.

A wide number of factors will impact on the ability to seal around a nail, screw or fixing, such as the substrate, fixing type, exposure to water pressure and installation quality. Although YouByute Sealing Tape will improve sealability, we are unable to warrant or give absolute assurance that the tape will seal the fixing. We do not make claims that this product is "self sealing"

Ref: ProctorPassive YouByute Sealing Tape PDS May 2022 Page 1 of 1

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Product Description

ProctorWrap HighTack Tape is a single sided pressure sensitive adhesive tape, made with an aggressive, modified acrylate adhesive, designed primarily to seal overlaps, joints and repair vapour permeable and vapour and air barrier construction membranes.

Applications

ProctorWrap HighTack Tape is ideal for air-tight bonding and sealing of overlaps of air and vapour barriers and vapour permeable membranes. The tape is suitable for bonding of smooth and slightly rough surfaces and can be used to provide a bond between steel or timber framing and membranes prior to the immediate mechanical fixing of the membrane.

Installation

The tape can bond to polyolefin non-woven membranes, aluminium faced insulation boards, plastics, metals, timber, MDF and other manufactured timber sheathings.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

All mechanical load on membranes should be distributed to mechanical fasteners, the tape not being applied under mechanical load. The use of adhesive tape is not a substitute for the correct fixing of the materials.

As there are many factors beyond our control that can impact on the use, performance and suitability of the product, we suggest that users evaluate the product to determine suitability for the application.

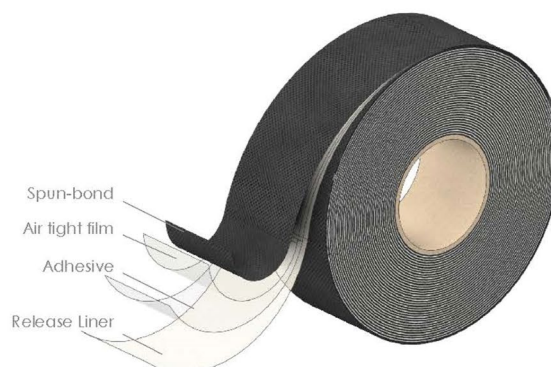
- High initial bond strength
- High initial tack adhesion
- Multiple substrate compatibility
- High strength spun-bonded carrier
- Low VOC



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Properties	Nominal value
Adhesive Type	Polyacrylate adhesive
Total thickness	Approx. 0.7mm (without liner)
Carrier	Non woven fabric with functional air tight film
Peel adhesion	≥ 35 N/25mm
Temperature range	-30 °C to +90 °C
Tensile strength	≥ 100 N / 25 mm
Application temp.	5 °C to 40 °C
Tack	Very High
Shelf life	1 year in original packing stored in a dry location protected from UV at around 50% RH and between 5°C to 25°C avoiding wide temperature fluctuations.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton

All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.



vitradual™

NON-COMBUSTIBLE CASSETTE CLADDING / MANUFACTURED BY FAIRVIEW

TECHNICAL INFORMATION

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DOCUMENT TRACKING

VERSION #	DATE	CHANGES
1.0	06/03/20	Initial issue
1.1	07/10/20	Content & format updated
1.2	02/12/20	Install diagram updated & other minor changes
1.3	12/08/21	Text correction & install considerations updated
1.4	01/03/22	Installation clarifications

1. ABOUT THIS GUIDE

This guide has been developed to effectively assist fabricators and contractors to work with Fairview's aluminium panel: Vitradual.

The information and recommendations contained herein are believed to be correct at time of publishing, March 2022.

Fairview reserves the right to revise the contents of this guide.

2. INTRODUCTION

2.1 ABOUT VITRADUAL

Vitradual is a 3mm non-combustible solid aluminium cassette cladding system that forms part of Fairview's range of BCA compliant, deemed non-combustible cladding solutions; perfectly suitable for Type A and B constructions where non-combustible products are required.

Vitradual is a high impact resistant, solid panel which can be fabricated, curved and rolled. The prefabricated large format cladding panels feature the same PVDF coating system as Fairview's leading aluminium panel Vitracore G2; well proven for its superior quality, extensive colour range and design integrity.

2.2 KEY FEATURES

Vitradual's versatility is achieved due to the combination of high-quality considerations and industry leading components. It is an ideal product for application in Type A and B developments where non-combustible building materials are critical.

Vitradual is one of the few large format cladding panels that are deemed non-combustible when tested to AS1530.1 and AS1530.3.

PRODUCT DNA	Pre-finished solid aluminium panel.
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FINISH	Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial pollution.
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FIXING SYSTEM	A cassette style concealed fixing system which is the same to fabricate and install as traditional ACPs.
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APPLICATION	Type A and B constructions where non-combustible materials are required such as mixed-use developments, residential construction, and large-scale government infrastructure projects like hospitals.
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WARRANTY	15-year warranty, subject to standard terms and conditions.
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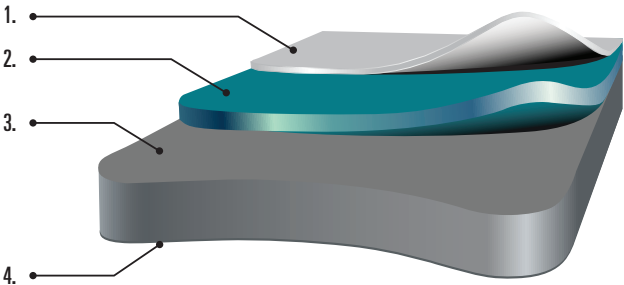
360VIEW	The highly unique, quality control process Fairview has developed to govern our rigorous approach to design and manufacture, material testing, regulatory compliance and product warranty.
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3. PRODUCT SPECIFICATION

3.1 TYPICAL COMPOSITION

- 1. Protective film
- 2. PVDF-Kynar 500® coating system
- 3. 3mm Aluminium
- 4. Protective rear coating

The material is rigid, resistant to blows, breakage and pressure, and has high bending, buckling and breaking strengths.



DIMENSIONS

Thickness: 3mm

Weight: 8.1kg/m²

* Vitradual is not an ACP Panel and has no polyethylene content.

3.2 PANEL SIZES

WIDTH	LENGTH	THICKNESS
1250/1500	2500	3mm
	3200	
	4000	

CUSTOM SIZES ARE AVAILABLE, PLEASE SPEAK TO THE FAIRVIEW TEAM

3.3 MATERIAL DATA

PHYSICAL PROPERTY	VALUE
Tensile Strength – ultimate, F_{tu}^* (MPa)	<140
Tensile Strength – yield, F_{ty}^* (MPa)	117
Compressive strength, F_{cy} (MPa)	96
Shear strength – ultimate, F_{su} (MPa)	83
Shear strength – yield, F_{sy} (MPa)	69
Bearing strength – ultimate, F_{bu} (MPa)	276
Bearing strength – yield, F_{by} (MPa)	172
Compressive MOE, E (MPa)	70,000
Fatigue strength (MPa)	60
Modulus of Resilience (Kj/M^3)	130
Embodied carbon ($kg-CO_2/kg$)	8.1

3.4 AVERAGE EXPANSION

MATERIAL	EXPANSION COEFFICIENT ($\times 10^{-6}/^{\circ}C$)	ELONGATION PER 1000MM $\Delta T=50^{\circ}C$
Vitradual	23.3	1.2
Zinc	26.7	1.3
Steel	12.2	0.6
Concrete	12	0.6

3.5 ALUMINIUM GRADE

Vitradual is proudly manufactured in 3003 series aluminium. 3003 is an architectural grade aluminium with high end performance in architectural applications. It has high corrosion resistance, strength, machinability and formability, as well as having lower thermal expansion, lower thermal conductivity, and less embodied carbon than other grades used in architectural cladding. This results in a strong, accurate and crisp façade that has high oil canning resistance.

If desired, Vitradual can be supplied in 5052 grade aluminium.

4. FINISH

4.1 COATING SPECIFICATIONS

TYPICAL COATING TYPE

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability. These premium paints provide optimum resistance to weather and industrial pollution on commercial, industrial, infrastructure, and residential developments.

More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

For a full list of standard Vitradual colours, refer to our Solid and Metallics Colour Charts.

The Vitradual range also offers the following finishes:

- REPEL - a self-cleaning surface coating.
- VitraArt - for personalised design and imagery.

VITRADUAL KYNAR 500® PVDF DATA

CLASSIFICATION	TEST STANDARD	RESULT	COMMENTS
Nominal Coating thickness	TP-ET-02	45.7 µm	±3.9µm
Colour Uniformity	ASTM D2244-16	ΔE = 0.06	Pass
Specular Gloss	ASTM D523-14	G 24.8	Pass
Dry Film Hardness	ASTM D3363-05 (R2011)e2	3H	Pass
Film Adhesion	ASTM D3359-17	Dry: 5B Wet: 5B Boiling Water: 5B	Pass
Impact Resistance	AAMA 2605 (8.5)	After impact, no removal	Pass
Abrasion Resistance	ASTM D968-17A	118.6	Pass
Muriatic Acid Resistance (15 min spot)	AAMA 2605 (8.7.1)	5B	Pass
Mortar Resistance (24hr pat test)	AAMA 2605 (8.7.2)	5B	Pass
Nitric Acid Resistance	AAMA 2605 (8.7.3)	ΔE = 0.31	Pass
Detergent Resistance	AAMA 2605 (8.7.4)	5B	Pass
Window Cleaner Resistance	AAMA 2605 (8.7.5)	5B	Pass

5. PERFORMANCE

5.1 FIRE

In today's architecture it is not only appearance and product technical details that matter. Other factors such as sustainability, thermal insulation as well as fire protection also play a key role in product selection.

Vitradual is constructed from 100% aluminium, rather than combustible material such as polyethylene or fire rated mineral. This makes Vitradual, in addition to Vitracore G2, an ideal product for applications where non-combustible panels are required, such as high-rise buildings, schools or hospitals.

TEST STANDARD	RESULT		
AS1530.1	NON-COMBUSTIBLE		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1

5.2 THERMAL

THERMAL INSULATING PROPERTIES

THERMAL RESISTANCE FROM -50°C TO +80°C		
TEST STANDARD	THERMAL RESISTANCE 1A M2.K/W	HEAT TRANSMISSION COEFFICIENT W/(M2.K)
Panel Thickness (mm)	Thermal Resistance 1A m2.K/W	Heat Transmission Coefficient W/(m2.K)
3	0.0069	5.65

5.3 SUSTAINABILITY

Although one of the most abundant metals in the Earth, aluminium is one of the most recycled materials around. Around 75% of all aluminium produced is still in use, largely because aluminium can be continually recycled. Vitradual has been developed with the health of the environment and the community in mind. Vitradual aluminium has 2.5% less embodied carbon than common alternative aluminium products.

Fairview's Ecoloop facility provides an end-of-life avenue that enables any newly installed aluminium cladding to be repurposed at the end of the buildings life. Find out more about Ecoloop at www.fv.com.au.

6. STRUCTURAL

6.1 WINDLOADING

The following span and fixing table is applicable when Vitradual is installed as per the Vitradual Cassette Fix installation method. Please refer to the complete Vitradual Spanning and Windloading document for full design and construction notes.

This span table is conservative, and does not include panel stiffening or other project specific engineering. Greater panel sizes can easily be achieved on projects if designed by a qualified engineer using the material data provided. Methods to improve spanning and structural strength can include:

- Bonding Aluminium RHS stiffeners to the panel rear.
- Filling the 'V-groove' with a structural sealant prior to folding and attaching the zed angles.
- Bonding an 'L' angle to the rear of panel folds using a structural sealant.

Panel deflection must not exceed span/60.



Panel Dimensions			Maximum Design Wind Pressure on Panel		Total no. of rivets required per panel (and max. 300mm)				Max. spacing of screws fixing cassette to substructure (mm)			
Panel Width b (mm)	Panel Length a (mm)	a/b	Strength Pu (kPa)	Serviceability Ps (kPa)	Dia. 5	Dia. 6	Dia. 7	Dia.8	No.8	No.10	No.12	No.14
400	400	1	9.000	9.000	8	8	8	8	195	225	260	295
400	450	1.1	9.000	8.846	8	8	8	8	195	225	260	295
400	600	1.5	9.000	5.736	8	8	8	8	195	225	260	295
400	900	2.3	8.367	4.139	8	8	8	8	210	245	280	300
400	1200	3	7.768	3.75	10	8	8	8	230	260	300	300
400	1500	3.8	7.555	3.611	11	10	8	8	235	270	300	300
400	1800	4.5	7.461	3.55	14	11	10	9	240	275	300	300
400	2100	5.3	7.413	3.519	16	13	11	10	240	275	300	300
400	2400	6	7.386	3.502	18	15	13	11	240	275	300	300
400	2700	6.8	7.37	3.491	20	17	14	13	240	275	300	300
400	3000	7.5	7.359	3.484	22	18	16	14	240	275	300	300
400	3300	8.3	7.352	3.48	24	20	17	15	240	275	300	300
400	3600	9	7.347	3.477	26	22	19	17	240	275	300	300
400	4000	10	7.343	3.474	29	24	21	18	240	275	300	300
600	600	1	8.504	3.297	8	8	8	8	140	160	180	210
600	900	1.5	4.813	1.699	8	8	8	8	245	280	300	300
600	1200	2	3.914	1.311	8	8	8	8	300	300	300	300
600	1500	2.5	3.594	1.172	8	8	8	8	300	300	300	300
600	1800	3	3.453	1.111	10	8	8	8	300	300	300	300
600	2100	3.5	3.381	1.08	11	9	8	8	300	300	300	300
600	2400	4	3.34	1.062	12	10	9	8	300	300	300	300
600	2700	4.5	3.316	1.052	14	11	10	9	300	300	300	300
600	3000	5	3.3	1.045	15	13	11	10	300	300	300	300
600	3300	5.5	3.29	1.041	16	14	12	10	300	300	300	300
600	3600	6	3.283	1.038	18	15	13	11	300	300	300	300
600	4000	6.7	3.276	1.035	20	16	14	12	300	300	300	300
900	900	1	3.78	0.977	8	8	8	8	210	240	270	300
900	1200	1.3	2.432	0.588	8	8	8	8	300	300	300	300
900	1500	1.7	1.952	0.45	8	8	8	8	300	300	300	300
900	1800	2	1.74	0.388	8	8	8	8	300	300	300	300
900	2100	2.3	1.632	0.357	8	8	8	8	300	300	300	300
900	2400	2.7	1.571	0.34	9	8	8	8	300	300	300	300
900	2700	3	1.535	0.329	10	8	8	8	300	300	300	300
900	3000	3.3	1.511	0.322	10	9	8	8	300	300	300	300
900	3300	3.7	1.495	0.318	11	9	8	8	300	300	300	300
900	3600	4	1.485	0.315	12	10	9	8	300	300	300	300
900	4000	4.4	1.475	0.312	13	11	10	9	300	300	300	300
1200	1200	1	2.126	0.412	8	8	8	8	280	300	300	300
1200	1500	1.3	1.486	0.274	8	8	8	8	300	300	300	300
1200	1800	1.5	1.203	0.212	8	8	8	8	300	300	300	300
1200	2100	1.8	1.059	0.181	8	8	8	8	300	300	300	300
1200	2400	2	0.979	0.164	8	8	8	8	300	300	300	300
1200	2700	2.3	0.93	0.153	8	8	8	8	300	300	300	300
1200	3000	2.5	0.899	0.147	8	8	8	8	300	300	300	300
1200	3300	2.8	0.878	0.142	9	8	8	8	300	300	300	300
1200	3600	3	0.863	0.139	10	8	8	8	300	300	300	300
1200	4000	3.3	0.85	0.136	10	9	8	8	300	300	300	300

7. DURABILITY

7.1 EVALUATION

Durability is defined in the ABCB handbook as “... the capability of a building or plumbing installation to perform its function over a specified period.”

The ABCB handbook also provides this context for consideration: “Durability is not an inherent property of a material or component. It is the outcome of complex interactions among a number of factors.”

For building components durability is described in terms of design life. The durability performance of a building by its ability to remain fit-for-purpose over its design life in the environment it is subjected to and with appropriate maintenance.

The minimum design life for a wall cladding system on a building with a normal design life category is 15 years (refer to ABCB Handbook table 3.1).

7.2 STRUCTURAL

The NCC referenced standard for actions on buildings AS/NZ 1170 series provides direction for determining the appropriate loads on building components. Typically, a 50-year design life is the basis for structural design.

The design capacity of Vitradual and its supports and fixings, must be determined in accordance with this design life using verification method BV1.

Project specifications for Vitradual that are created in accordance with this document therefore have structural adequacy for a design life of 50 years.

7.3 MATERIALS

Vitradual has been subjected to many tests and assessments concerning its durability, including accelerated weathering of 4000 hours of accelerated salt exposure.

For durability of the paint finishes used on Vitradual, refer to Kynar 500® FSF® documentation available at www.kynar500.com. Kynar 500® resin has been exposed to over 50 years of South Florida exposure testing with excellent results.

For added scrutiny, each batch of manufactured product also undergoes stringent QA checks prior to delivery to ensure ongoing product quality is maintained into the future. Find out more about Fairview's 360 Quality at www.fv.com.au.

8. INSTALLATION CONSIDERATIONS

8.1 INSTALLATION CONSIDERATIONS

- All sheets should be installed in the same direction as marked on the protective film to prevent possible finish variation.
- As minor colour variation can occur between production lots, it is recommended to place total requirement for a project in one order to ensure colour consistency.
- Where aluminium materials come in contact with dissimilar metals, a proper insulator or isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action.
- For Cassette Fix, the returns between panel joints should not be caulked before film is removed.
- Please ensure Vitradual is used as part of a compliant wall system, with all components complying with the Deemed-to-Satisfy provisions of the relevant NCC, or approved as part of a performance solution.

8.2 PROTECTIVE FILM

- Make sure no damage will occur to the panel following removal of protective film.
- Remove protective film within 45 days of installation to avoid glue residue on panel surface due to weathering.
- Do not apply PVC tapes, polyurethane sealant or silicone sealant onto Vitradual protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating.
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the panel.

8.3 ACCESSORIES

- Please refer to the Vitrafix brochure.

8.4 SEQUENCE

As a rule, the sequence of installation is as follows:

1. Installation of the water membrane as per manufacturers requirements.
2. Installation of top hats, levelled and fixed as per wind loading requirements.
3. Vitradual panels fabricated and prepared for installation.
4. Installation of fabricated Vitradual panels, fixing through Z angles to tophats as per wind loading requirements.
5. Caulking applied to panel joints as per manufacturers requirements.
6. Removal of protective film within 45 days of installation.

8.5 SEALANT

The standard Vitradual Cassette fix system details a sealed panel joint. A variety of sealants are suitable for use in this application, but the following requirements apply:

- Low modulus +/- 50% flexibility.
- Minimum 10 year warranty in external applications.
- Supplier's confirmation for adhesion to PVDF painted surfaces.
- Approval from Fairview.

Vitradual can be installed unsealed for shadow line joints, but the following must be noted for the warranty to apply:

- Aluminium zed angles to be powder coated, and mitred at panel joints so not to leave openings once installed.
- Exposed fixings must be stainless steel or class 4 galvanised screws. Often these will be required to be colour matched to meet the architectural design intent.
- The waterproof membrane behind the panels must be installed at a high level of quality.
- This is not covered by testing to FP1.4 or Codemark, so an assessment of the façade may be required for approval.

8.6 CAVITY BARRIERS

While Vitradual is non-combustible and will not contribute to the spread of fire, it is good practice to install cavity barriers where a cladding product extends several floors. In order to maintain a drained and ventilated façade it is recommended that open-state cavity barriers be used.

8.7 MOISTURE MANAGEMENT

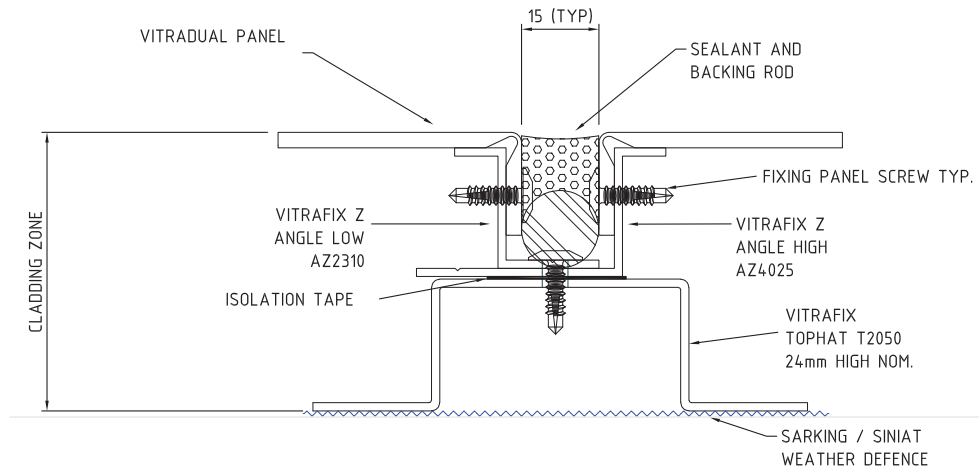
Moisture ingress and condensation is one of the most common causes of defects in Australian buildings today. A drained and ventilated façade cavity is recognised as best practice in providing a high level of moisture management. The Vitradual details reflect this, with openings at top and bottom of walls designed to encourage air flow and allow the cavity to remove any condensation or other moisture.

Where an open cavity is not achievable (such as a window head or base of a fascia), it is recommended weep holes be provided. These are 10mm diameter, located 600mm apart. Note that in areas where there is no condensation risk weep holes may not be required.

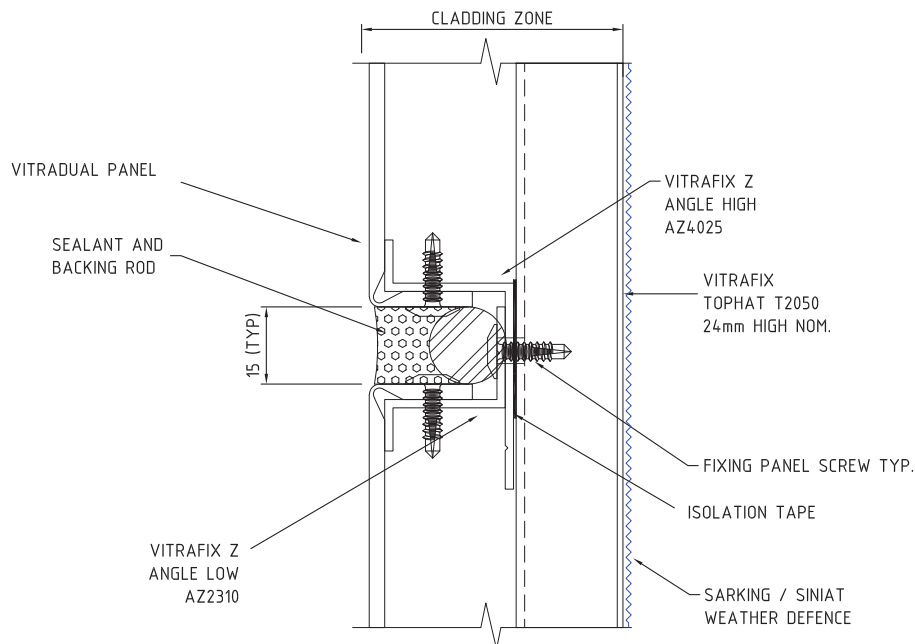
Details 4,7 & 11 include provision for drainage of liquid water, this can be disregarded if the wall system adequately treats this elsewhere.

9. INSTALLATION DETAILS

1. TYPICAL VERTICAL PANEL JOINT DETAIL



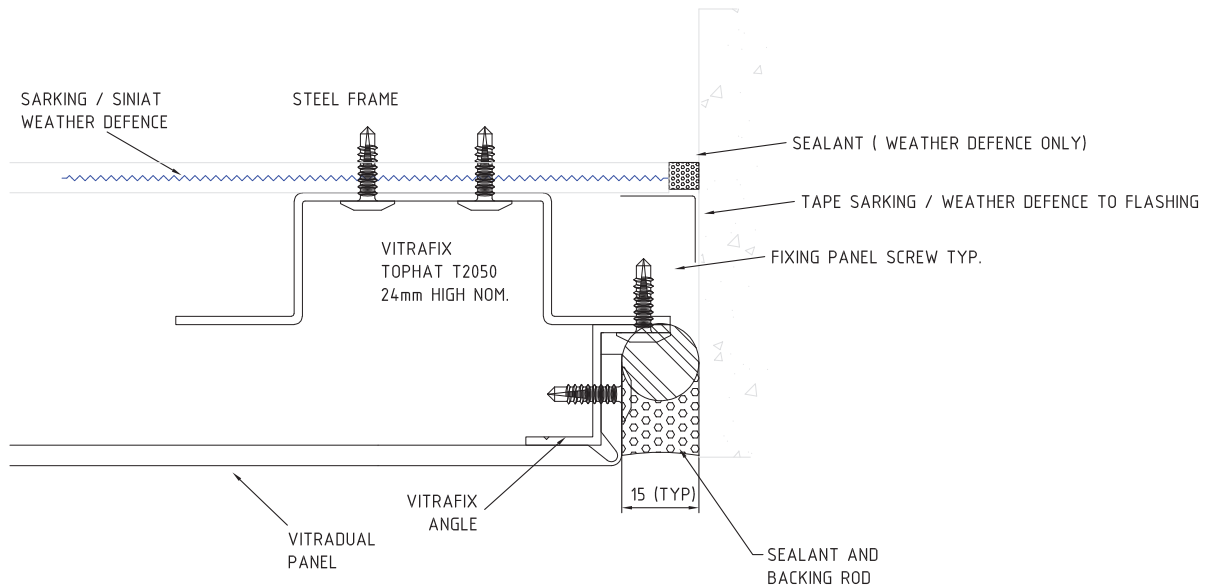
2. HORIZONTAL JOINT DETAIL



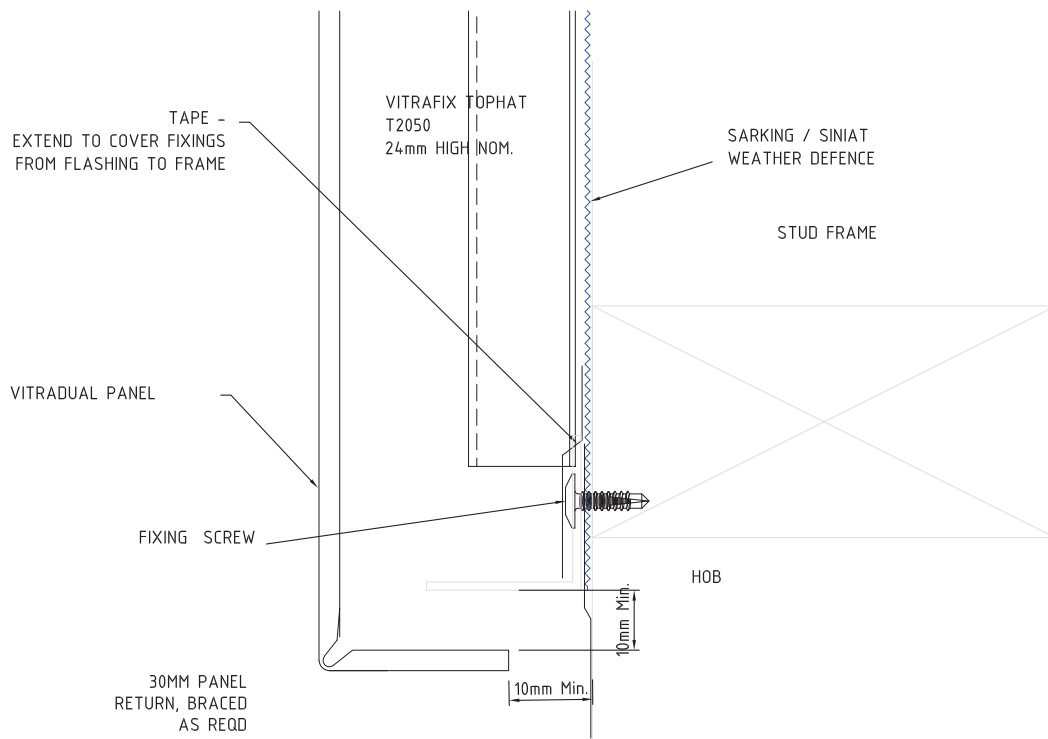
DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

3. WALL JUNCTION DETAIL



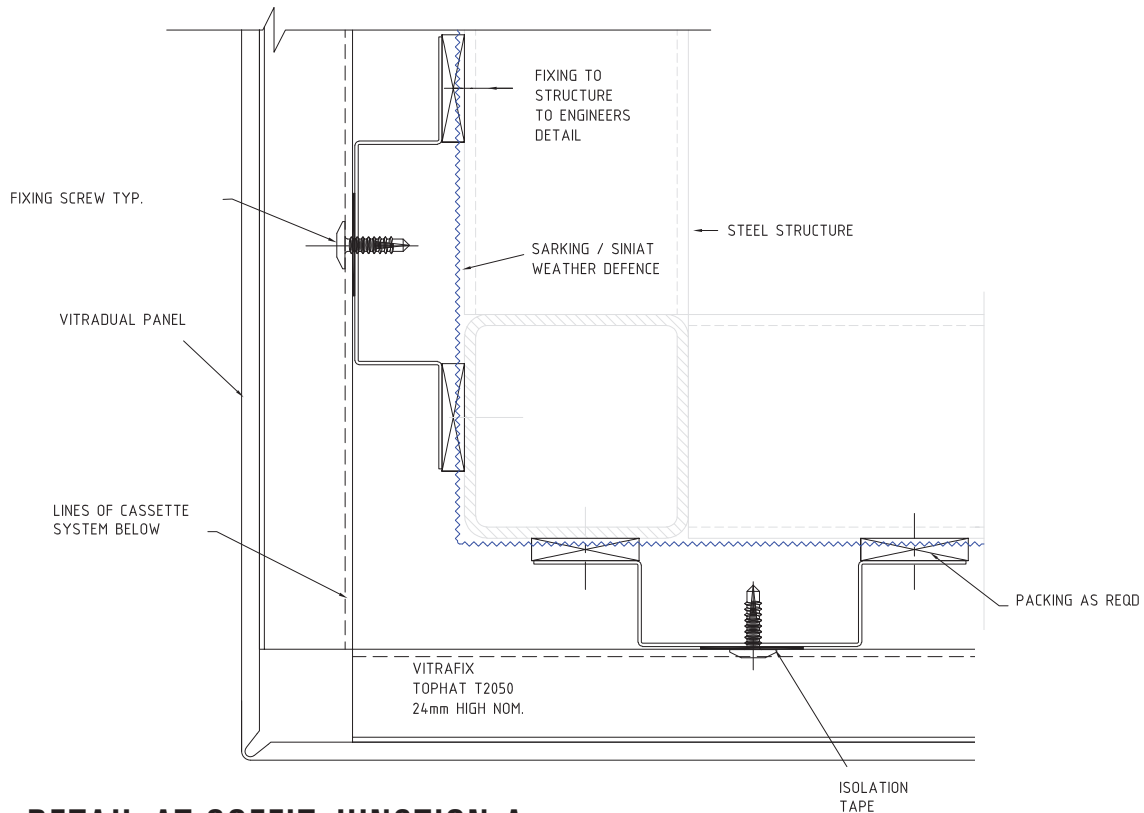
4. BASE DETAIL



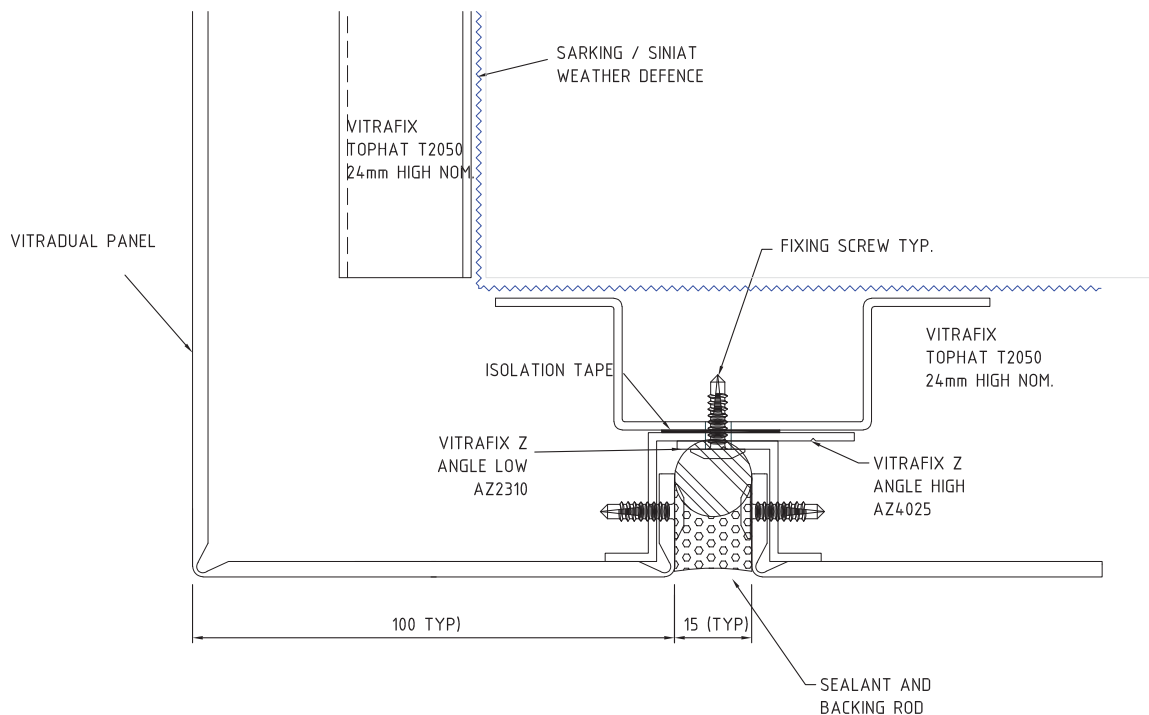
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5. EXTERNAL CORNER DETAIL



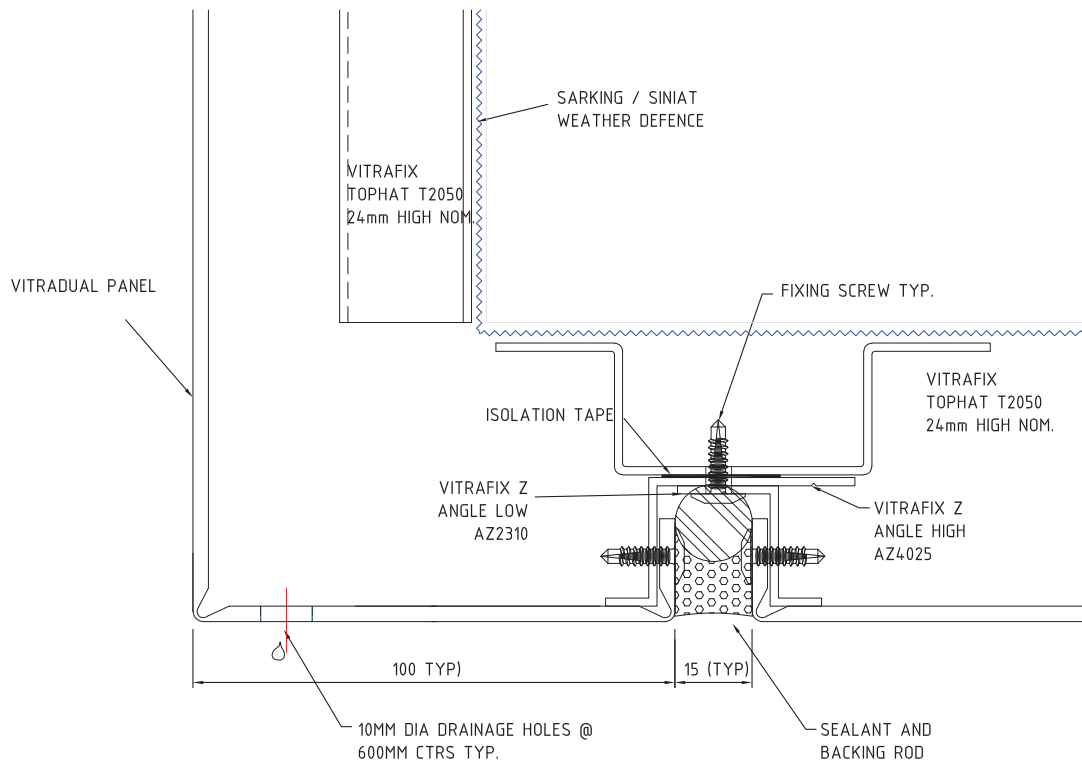
6. DETAIL AT SOFFIT JUNCTION A



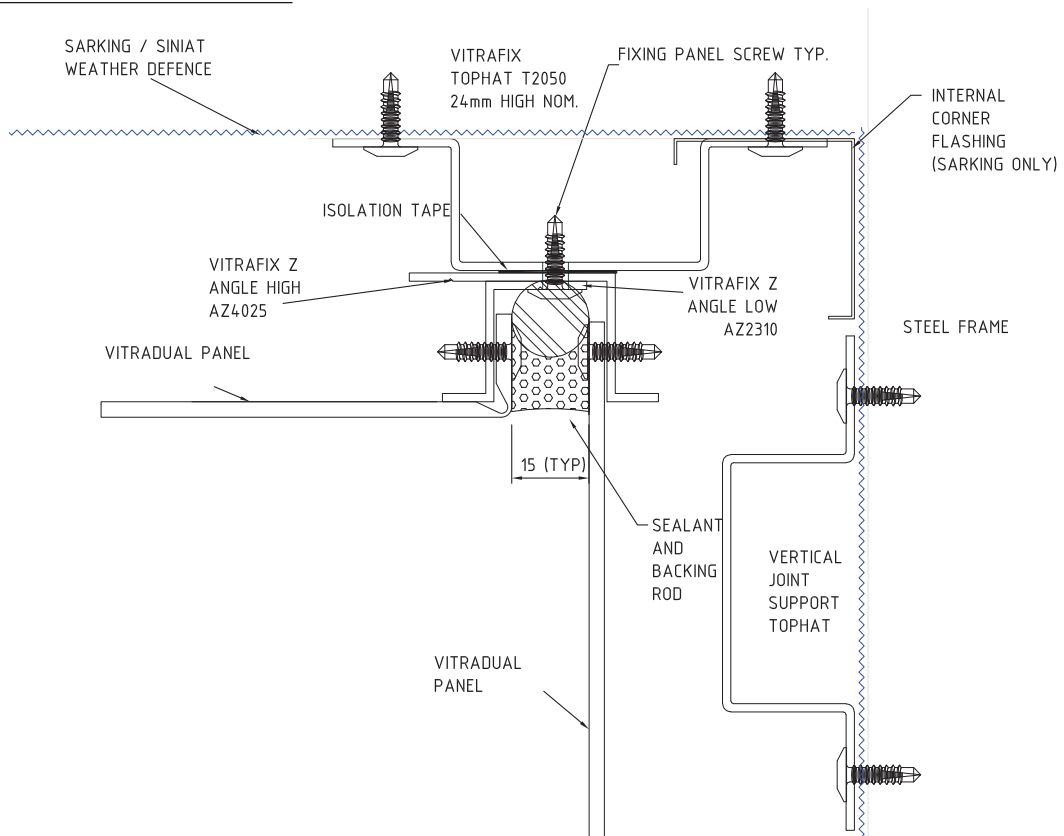
DISCLAIMER:

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7. DETAIL AT SOFFIT JUNCTION B



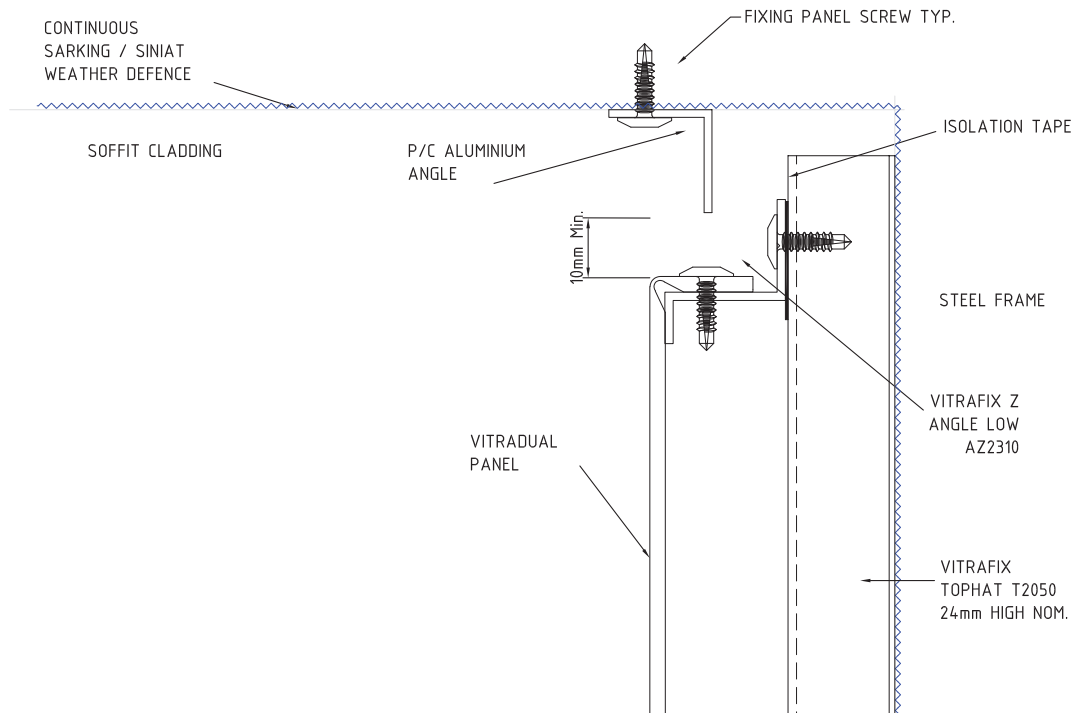
8. REAR SOFFIT DETAIL



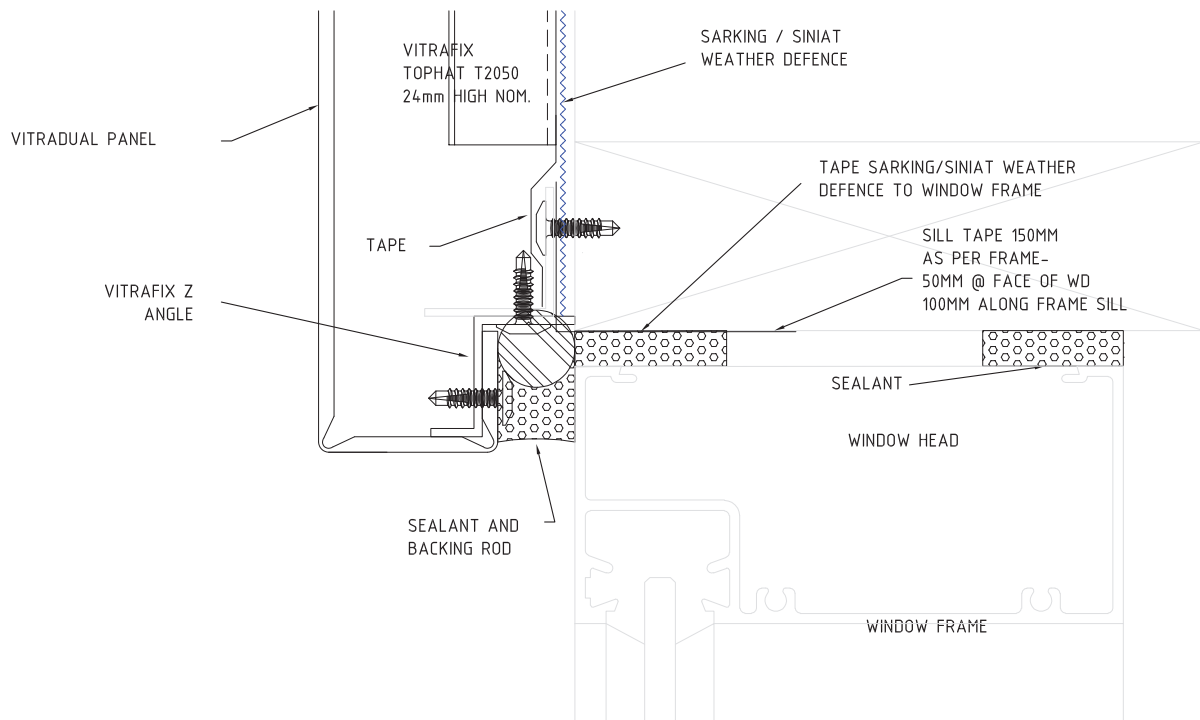
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9. VENTILATED SOFFIT DETAIL



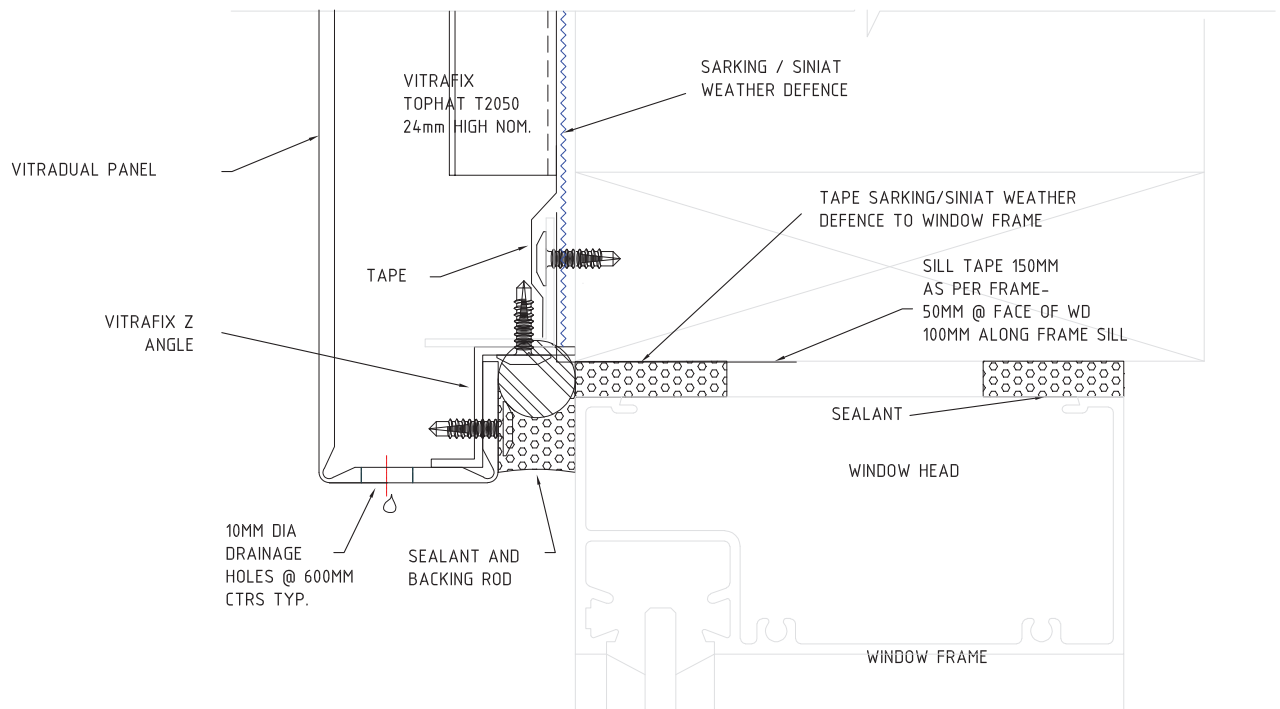
10. WINDOW HEAD DETAIL A



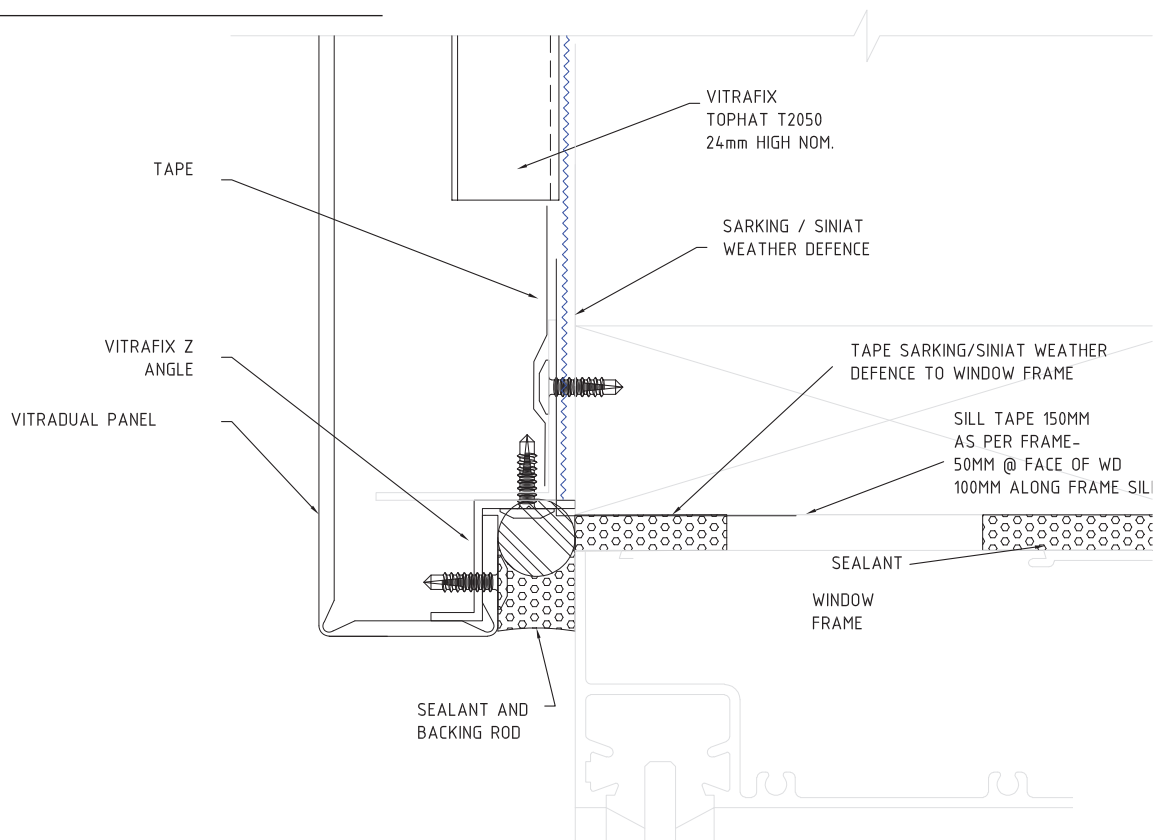
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11. WINDOW HEAD DETAIL B



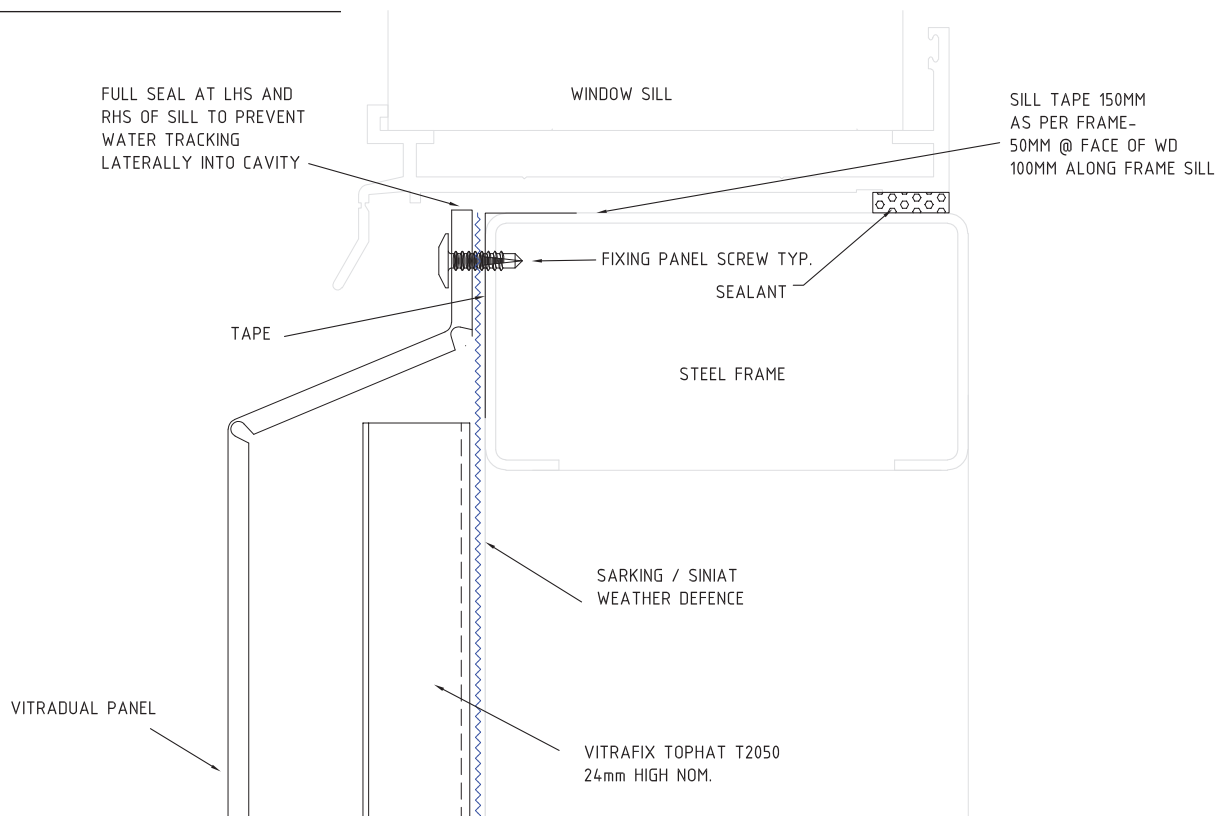
12. WINDOW JAMB DETAIL



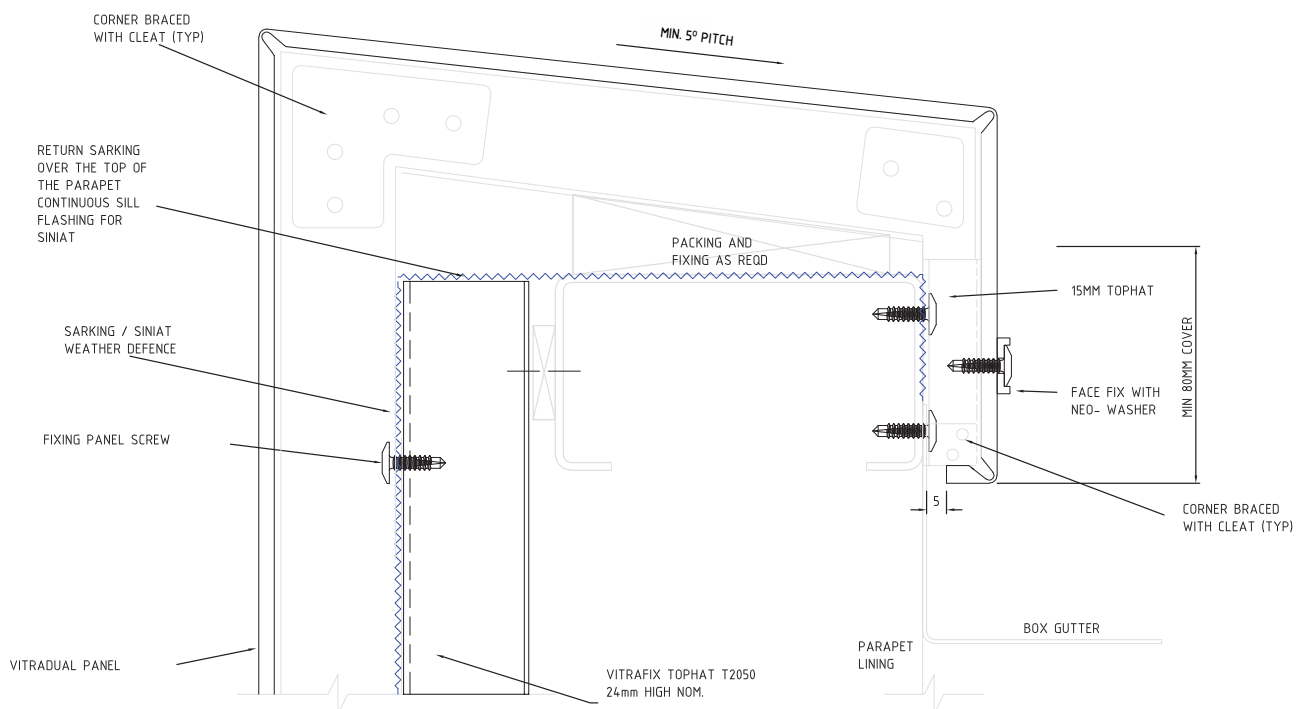
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13. WINDOW SILL DETAIL



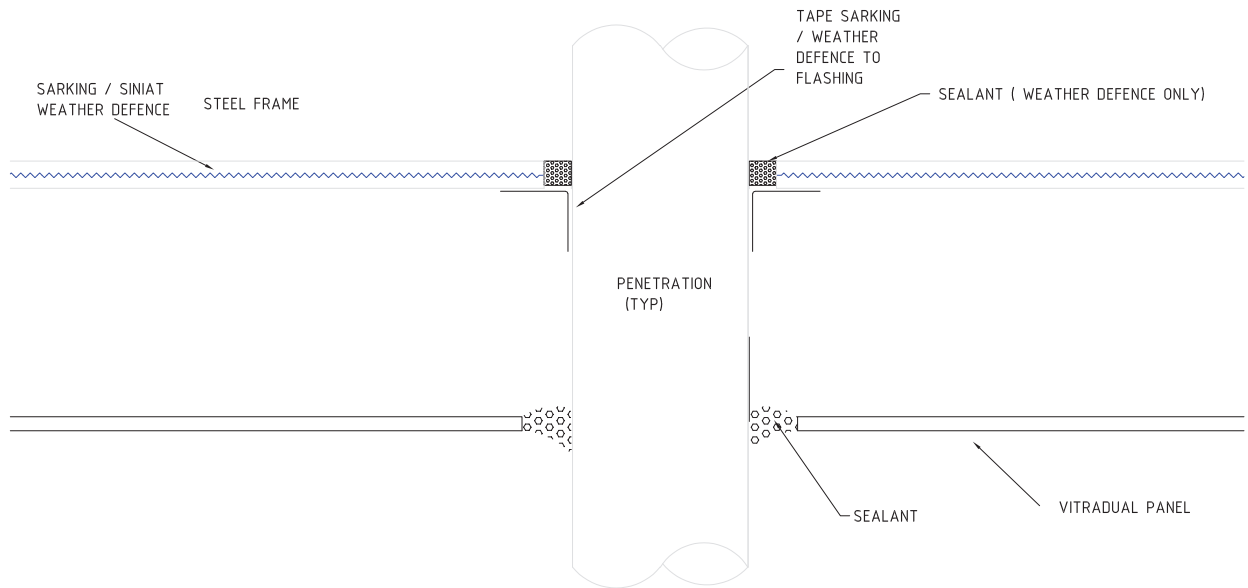
14. PARAPET CAPPING DETAIL



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15. TYPICAL PENETRATION DETAIL



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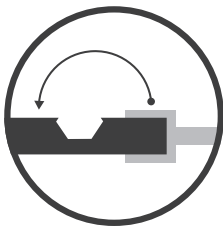
10. FABRICATION DETAIL

10.1 FABRICATION CONSIDERATIONS



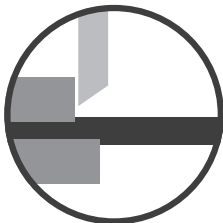
CONTOUR CUTTING

Vitradual panel can be contour cut with water jets, CNC routers, copy routers and jigsaws. Coolant is recommended for router processing. See section 10.4.



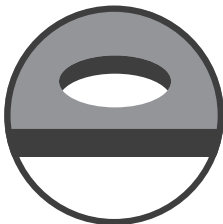
FOLDING

There must be between 0.7mm and 1mm of aluminium left at the base of the routed groove. Too much material can cause stress and result in a larger radius fold than desired. It will also make folding the panel more difficult and prevent the required fold angle from being obtained. Too little material can result in panel cracking. See section 10.3.



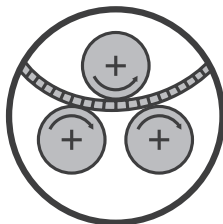
SHEARING

Shearing can be done with a guillotine. Ensure the blanking tools are padded. Shearing causes a slight roll down along the cut edge of the panel.



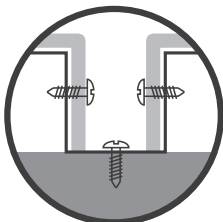
PUNCHING

The punching of flat formed parts from Vitradual is performed in the same way as a solid aluminium sheeting, using sharp tools and dies with minimal cutting clearance. Varying shapes may easily be punched with normal aluminium punching machinery. As with shearing, a slight roll down may occur.



ROLL BENDING

Vitradual panel can be bent with a roll-bending machine. Use polished rollers free of imperfections. Minimum radius of 200mm.



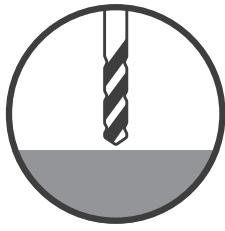
SCREWING

Vitradual can be screwed with conventional stainless steel or C4 galvanised screws for metal. Allow for thermal expansion.



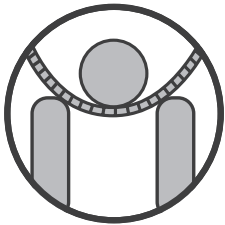
RIVETING

Riveting is possible with the usual equipment and solid rivets or blind rivets. For outdoor use allow for thermal expansion.



DRILLING

Vitradual panel can be drilled with centre point twist drills normally used for aluminium or machines common for metals. Drill material: High-Speed Steel (HSS).



BENDING

Bending is possible with a folding table or brake press. The inside bending radius is roughly 5 times the Vitradual panel thickness. Use protective foils. For serial production, tests should be made on sample panels.

10.2 MACHINING

Vitradual is designed to be machined on a CNC with cutting fluid.

10.3 CNC GROOVE

TOOL	90Deg, 3mm Flat Bottom Groover
FEED	3,000mm/minute
SPINDLE	18,000mm/minute

CNC Grooving requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

Leave a minimum of 0.7mm aluminium remaining at base of groove.

10.4 CNC CUTTING

TOOL	4.76mm Single flute upspiral cutter
FEED	1500mm/minute
SPINDLE	21,000mm/minute

CNC cutting requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

11. TYPICAL WARRANTY DETAILS

11.1 WARRANTY CONSIDERATIONS

Vitradual is an incredibly durable material when used in the right application. When assessing an installation for warranty defects, unless given express written authorization from Fairview, check for the following:

- More than a 5° pitch (prevent risk of water pooling).
- Panels installed with directional arrows consistent (unless intentional).
- Maintenance schedule is documented and undertaken.

Please contact your Fairview representative for full warranty terms and conditions or any product specific enquiries.

11.2 KEEP YOUR WARRANTY FRESH

Maintaining your Vitradual finish is an important component to maintaining your warranty. Document each time you clean your Vitradual panels. Cleaning frequencies are based on project location and are provided in the warranty.

RECOMMENDED CLEANING AGENTS

- Mineral spirits
- Organic cleaners
- PH-Neutral solvents

12. MISCELLANEOUS

12.1 MANUFACTURING QUALITY

360 VIEW is the highly unique, quality control process Fairview developed to govern our rigorous approach to design and manufacturing, material testing, regulatory compliance, and product warranty. To find out more visit www.fv.com.au/solutions/compliance.

ACCEPTABLE VARIATION

Width	± 2.0mm
Length	± 4.0mm
Thickness	± 2%
Bow	Maximum 0.5% of the length and/or width
Squareness	Maximum 5.0mm
Surface Defects	The surface shall not have any irregularities such as dents, scratches and other imperfections in accordance with our quality assurance.

12.2 HANDLING AND STORAGE

- Considerable care should be taken in the handling of Vitradual.
- Vitradual panels are sensitive to impact, particularly shocks from small, hard objects, which can dent the aluminium.
- A minimum of two people should be used when sliding large sheets to avoid scratching.
- To prevent surface damage when stacking Vitradual, there should be nothing between the panels.
- Vitradual should be stored in a cool and dry area where temperature is relatively stable.
- Pallets of Vitradual should be stored horizontally with adequate support to prevent sagging.
- Stacked pallets should be identically sized and not more than four (4) pallets high.

12.3 REPORT REGISTER

BCA 2019 VOL1 SECTION	DESCRIPTION	TEST ASSESSMENT	REPORT/REFERENCE NUMBER
C – Fire Resistance	Combustibility	AS 1530.1	FNC11690
	Early Fire Hazard Properties	AS 1530.3	FNE12495
F – Health and Amenity	Weatherproofing	AS 4284	30B-19-0059-TRP-6774697-2 30B-19-0059-TRP-6774698-2
G – Ancillary Provisions	BAL Ratings	IGNIS Assessment	IGNS-5289 Issue 01 Rev00
Additional/ Supporting	Assessment	RED FIRE REPORT NCC2019	190603_JV19-00103_Fairview NCC2019_Vitradual_v1
	Coating Standard	AAMA2605-17	180710004SHF-BP-8
	CodeMark	CodeMark	Please contact us for our current CodeMark number

DISCLAIMER

While the information provided relating to Fairview products is true to the tests and measures available to us, the information provided in this article is general in nature only and does not constitute project-specific building, construction or fire-safety advice. Before acting on any information on this document, you should consider the appropriateness of the information having regard to your project parameters and requirements.

Due to the uncontrollable conditions and methods of job scope, as well as the variable skills and judgment of users/installers, and the quality of equipment, tools, etc; the suggestions and recommendations contained in this manual are provided without warranty.

Fairview products are only deemed suitable or compliant after approval from building and construction professionals associated with specific projects and developments. If you'd like some further insight about this topic, contact Fairview on 1800 007 175 or email helpdesk@fv.com.au. We're here to help.



FAIRVIEW™

DEFINING ARCHITECTURE SINCE 1963

AUSTRALIA / NEW ZEALAND / UNITED KINGDOM

SALES ENQUIRIES 1800 007 175 HELPDESK.AU@FV.COM.AU



Certificate of Conformity

Certification Body:



Global-Mark Pty Ltd,
Suite 4.07,
32 Delhi Road,
North Ryde NSW
2113, Australia
Ph: +61 2 9886 0222
global-mark.com.au

Certificate Holder:

FVA Group Pty Ltd
18-20 Donald St
Lithgow NSW 2790
Ph: +61 2 6352 2355
www.fv.com.au

Certificate number: CM30017 Rev 2

THIS IS TO CERTIFY THAT

VITRADUAL

Type and/or use of product:

VITRADUAL panels are used in external wall cladding, in all building types (NCC Volume 1 & 2)

Description of product:

VITRADUAL panels are 3 mm thick PVDF coil coated solid Aluminium panels installed with metal fixing system. Standard panel sizes include widths of 1,250mm & 1,500mm and lengths of 2,500mm, 3,200mm & 4,000mm. Custom panel sizes up to 1,500mm x 4,000mm.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S)

BCA 2022

	Volume One		Volume Two and Housing Provisions (HP)	
Performance Requirement(s)	B1P1	Structural Provisions	H1P1	Structural stability and resistance to actions
	B1P2	Structural Provisions		
	F3P1	Damp and Weatherproofing	H2P2	Weatherproofing
Deemed-to-Satisfy Provision(s):	B1D4 (e)	Structural Resistance	HP 2.2.4 (k)	Structural Resistance
	C2D10 (6)(e)	Non-Combustible Material		
	G5D3	Construction in bushfire prone areas Protection – residential buildings	H7D4 (2)(a)	Construction in bushfire prone areas
	G5D4	Construction in bushfire prone areas Protection – certain Class 9 buildings		

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the certificate holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.

Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this certificate.

The purpose of Global-Mark **construction site audits** is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions

In placing the **CodeMark mark** on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein. In issuing this Certificate of Approval Global-Mark has relied on the **expertise of external bodies** (laboratories, and technical experts).

Herve Michoux
Global-Mark Managing Director

Peter Gardner
Unrestricted Building Certifier

Date of issue: 29/06/2023

Date of expiry: 29/06/2026



Certificate number: CM30017 Rev 2

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	State or territory variation(s):	NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	Structural Resistance	WA 2.2.4 (k)	Structural Resistance
		NSW G5D3 NSW G5D4 VIC G5D4 SA G5D5	Bushfire: Protection – residential buildings Bushfire: Protection – certain Class 9 buildings Bushfire: Protection – certain Class 9 buildings Bushfire attack levels	NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	Construction in bushfire prone areas Construction in bushfire prone areas Construction in bushfire prone areas
SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B					
Limitations and conditions:					Building classification/s:
Volume 1 – B1P1 & Volume 2 – H1P1 Vitradual panel system as described has maximum design wind load limits documented within the Vitradual Technical Manual, dated March 2020. Wind load limits, construction detail and fixing must follow the relevant details contained within the Vitradual Technical Manual, dated March 2020. Supporting structures & connections (including stud frame & sub framing members) must be designed / specified to withstand project loads including but not limited to ULS & SLS wind loads.					1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P1 (2) (e), (f) & (i) & Volume 2 – H1P1 (2) (e), (f) & (i) Snow, liquid pressure and earth pressure actions are excluded.					1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P4 & Volume 2 – H1P2 Compliance for flood hazard areas is excluded.					1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 F3P1 & Volume 2 H2P2 A VitraDual external wall must be constructed using either a pliable building membrane or Rigid Air Barrier, subject to the following: - the Flexible Wall Wrap or Rigid Air Barrier must present an Air & Water barrier for the purposes of weatherproofing, and - When a Flexible wall wrap (Water Barrier) is used, the system remains weatherproof up to Serviceability wind loads of +1.5 kPa & -1.8 kPa, and - When a Rigid Air Barrier is used for a wall wrap, the system remains weatherproof up to Serviceability wind loads of +3.5 kPa & -4.0 kPa, and - Design & installation complies fully with Vitradual Technical Manual, dated March 2020, and - Design accommodates deflection movements due to all design loads & temperature variations, and - Installation Contractor complies with manufacturer’s instructions for sealants, shop drawings & project specifications, and - Fixings are installed in accordance with manufacturer’s instructions & procedures, fixings to be weathertight and not restrict thermal or wind movements of the facade, and					1, 2, 3, 4, 5, 6 & 9

Certificate of Conformity

	8. Perforated "Breather" wall wrap membranes must not be used.	
	Volume 1 - C2D10 This Certification is based upon the system being installed using components & accessories specified in the "System Components" section of the Vitradual Technical Manual, dated March 2020 & the Vitrafix Accessories Brochure dated March 2020 (refer Appendix B2). Substitution of such components & / or accessories may be permitted, however the general performance specifications of components & / or accessories must be maintained for this certificate to remain valid.	2, 3, 4, 5, 6, 7, 8 & 9
	Volume 1 - C2D10 (1) In a building required to be of Type A or B construction, construction elements and their components must be non-combustible for all external walls, common walls and non-loadbearing internal walls that are required to be fire-resisting. This includes the requirement for Rigid Air Barriers to be non-combustible, where used.	2, 3, 4, 5, 6, 7, 8 & 9
	Volume 1 - C2D10 (6) Pliable building membranes / "Sarking-type materials" must not exceed 1mm in thickness and must have a Flammability index not greater than 5.	2, 3, 4, 5, 6, 7, 8 & 9
	Volume 1 - G5D3 & Volume 2 - H7D4 (2)(a) In designated bushfire prone areas, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, Vitradual is permitted for use as external wall cladding only in buildings subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19. In Queensland (per QLD G5D2 & QLD H7D4(3)), areas where the classified vegetation is Group F rainforest (excluding wet sclerophyll forest types), mangrove communities and grasslands under 300mm high, are excluded.	1, 2, 3 & 10a or deck immediately adjacent or connected to building class 1, 2 or 3
	Volume 1 - NSW G5D3 & Volume 2 - NSW H7D4 In designated bushfire prone areas, subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19, determined in accordance with the Planning for Bush Fire Protection, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, except as modified by Planning for Bush Fire Protection, Vitradual is permitted for use as external wall cladding. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection. Site specific conditions arising from: - the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required, or - the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development have not been considered for the compliance assessment.	1, 2, 3, Class 4 part of a building & 10a building or deck immediately adjacent or connected to building of class 1, 2, 3 or Class 4 part of a building

Certificate of Conformity

	Volume 1 – NSW G5D4 In designated bushfire prone areas subject to a Bushfire Attack Level (BAL) not exceeding BAL—12.5, determined in accordance with Planning for Bush Fire Protection, when the building is constructed in accordance with: 1) For class 9 buildings, Specification 43 except as modified by Planning for Bush Fire Protection, or 2) For class 10a buildings or decks, AS3959: 2018 including Amendments 1 & 2 except as modified by Planning for Bush Fire Protection and S43C13, Vitradual is permitted for use as external wall cladding. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection. Site specific conditions arising from the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development are site specific and have not been considered for the compliance assessment. General The supporting structures including stud frame & cavity sub framing, plus internal linings shall be designed & specified by a suitably qualified design professional in accordance with manufacturer guidelines. Installation shall be conducted by suitably qualified and trained building professionals. Design, Specification and Installation shall be in accordance with the Vitradual Technical Manual, dated March 2020 (refer Appendix B2).	Class 9 building that is a special fire protection purpose; and a Class 10a building or deck immediately adjacent or connected to such building 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
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Certificate of Conformity

APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

Refer to page 1 of this certificate.

A2 Description of product

Refer to page 1 of this certificate.

This product is NOT an Aluminium Composite Panel (ACP).

A3 Product specification

Refer to items 1 & 2 listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A4 Manufacturer and manufacturing plant(s)

FVA Group Pty Ltd

18-20 Donald Street

Lithgow NSW 2790

Ph: + 61 2 6352 2355

www.fv.com.au

A5 Installation requirements

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A6 Other relevant technical data

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.
- Any referenced documents within the above listed technical literature.

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

The following assessment methods have been used to determine compliance with BCA 2022

Code Clause	Assessment Method(s)	Evidence of suitability	Evidence reference in B2
BCA Volume One B1P1	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume Two H1P1	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One B1P2	A2G2 (2) (a), (b)(ii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One F3P1	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume Two H2P2	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume One B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One C2D10 (6)(e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two H7D4 (2)(a)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions WA 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One NSW G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NSW G5D4 VIC G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One SA G5D5	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9



Certificate of Conformity

B2 Reports

The following reports have been used as evidence to determine compliance with BCA 2022:

Ref	Author	Reference	Date / Revision	Description	NATA Registration
1.	Fairview	VitraDual – Technical Information	March 2020	Product Technical Manual	-
2.	Fairview	VitraFix – Accessories Brochure	March 2020	Accessories Brochure	-
3.	Enertren	FAR-106 Vitradual Structural Design	12 December 2019	Structural Assessment Report	-
4.	Enertren	FAR-092 Span Tables	23 January 2019	Structural Span Tables	-
5.	SGS Australia	N-0519-0921	25 October 2019	Material Investigation Report	-
6.	CSIRO	FNC 11690	16 August 2016	Fire Test Report	165
7.	AWTA	16-002875	7 June 2016	Fire Test Report	1356
8.	Red Fire Engineers	JV19-00103-v2	27 March 2020	Fire Assessment Report	-
9.	Exova WarringtonFire UK	WF 400695v2	5 June 2018	Fire Classification Report	UKAS 0249
10.	BG&E Facades	FVA Cladding Products - VitraDual	27 August 2018	Weather tightness assessment report	-
11.	FacadeLab NZ	18-02	20 April 2018	Weather tightness test report	IANZ 1091
12.	VIPAC Engineers	30B-19-0059-TRP-6774697-1	1 April 2020	Weather tightness test report	676
13.	VIPAC Engineers	30B-19-0059-TRP-6774698-0	2 April 2020	Weather tightness test report	676

The Certificate Holder has chosen not to make the above identified evidence of compliance publicly available, due to the documents being considered commercial in confidence.

End of Certificate.

Certificate of Test

Quote No.: NC7536

REPORT No.: FNC11690

COMBUSTIBILITY TEST FOR MATERIALS IN ACCORDANCE WITH AS 1530.1-1994

TRADE NAME: Vitradual

SPONSOR: Fairview Architectural Pty Ltd
18-20 Donald St
LITHGOW NSW 2790
AUSTRALIA

**DESCRIPTION OF
TEST SAMPLE:**

The sponsor described the tested specimen as an uncoated solid aluminium panel. The 45-mm diameter aluminium discs were loose laid on each other and stacked up without adhesive to form the 50-mm height suitable for testing.

Nominal total thickness: 3-mm
Nominal mass: 7.9 kg/m²
Nominal total density: 2380 kg/m³
Colour: silver (mill finish)

TEST PROCEDURE: Five (5) samples were tested in accordance with Australian Standard 1530 Methods for fire tests on building materials, components and structures, Part 1- 1994: Combustibility Test for Materials.
An alternative suitable insulating material was used to fill the annular space between the furnace tubes, as specified in Clause 4.2 of ISO 1182:2010.

RESULTS: Mean furnace thermocouple temperature rise..... 9.6°C
Mean specimen centre thermocouple temperature rise 5.8°C
Mean specimen surface thermocouple temperature rise..... 6.4°C
Mean duration of sustained flaming..... 0 seconds
Mean mass loss 0.3%

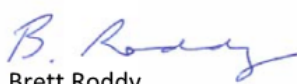
DESIGNATION: The material is NOT deemed COMBUSTIBLE according to the test criteria specified in Clause 3.4 of AS 1530.1-1994.

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

DATE OF TEST: 21 June 2016

Issued on the 16th day of August 2016 without alterations or additions.


Heherson Alarde
Testing Officer


Brett Roddy
Team Leader, Fire Testing and Assessments

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NATA Accredited Laboratory
Number: 165
Corporate Site No 3625

Accredited for compliance with ISO/IEC 17025.

CSIRO INFRASTRUCTURE TECHNOLOGIES

14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile: 61 2 9490 5555 www.csiro.au



Certificate of Test

QUOTE No.: NE8296

REPORT No.: FNE12495

AS/NZS 1530.3:1999 SIMULTANEOUS DETERMINATION OF IGNITABILITY, FLAME PROPAGATION, HEAT RELEASE AND SMOKE RELEASE

TRADE NAME: Vitradual

SPONSOR: Fairview Architectural Pty Limited
18-20 Donald Street
LITHGOW NSW 2790
AUSTRALIA

DESCRIPTION OF SAMPLE:

The sponsor described the tested specimen as a prefinished solid aluminium panel with a polyvinylidene fluoride (PVDF) coating on one face.

Nominal thickness of coating: 35 μm
Nominal thickness of aluminium: 3 mm
Nominal total thickness: 3.035 mm
Nominal mass: 8.1 kg/m²
Colour: range of colours (white, red, black)

Note: The samples were tested with the coating as the exposed face.

TEST PROCEDURE:

Six samples were tested in accordance with AS/NZS 1530, Method for fire tests on building components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, each sample was clamped to the specimen holder in four places. As per clause 2.2.1 of the standard where a result is required to cover a range of colours, the laboratory tested the lightest and darkest colours of the range as prescribed by the sponsor.

RESULTS:

The following means and standard errors were obtained:

Parameter	Mean	Standard Error
Ignition Time (min)	N/A	N/A
Flame Spread Time (s)	N/A	N/A
Heat Release Integral (kJ/m ²)	N/A	N/A
Smoke Release (log ₁₀ D)	-2.097	0.124

For regulatory purposes these figures correspond to the following indices:

Ignitability Index	Spread of Flame Index	Heat Evolved Index	Smoke Developed Index
(0-20)	(0-10)	(0-10)	(0-10)
0	0	0	1

The results only apply to the specimen mounted as described in this report. The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

DATE OF TEST: 21 November 2019

Issued on the 6th day of December 2019 without alterations or additions.



Shaw Tran
Testing Officer



Brett Roddy
Team Leader, Fire Testing and Assessments

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NATA Accredited Laboratory
Number: 165
Corporate Site No 3625

Accredited for compliance with ISO/IEC 17025 – Testing.

CSIRO INFRASTRUCTURE TECHNOLOGIES

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Bradford Gold® & Gold® Hi-Performance

Refer to product table below for applicable product codes covered by this document

Issue **G**

Product Type & Application

Bradford Gold® and Gold Hi-Performance (HP) are non-combustible Glasswool thermal insulation products. They are for use in external walls and ceilings to reduce heat transfer through the building envelope.

Compliance with the NCC

For use in Australia, when correctly specified and installed, this product provides the following compliance:

NCC 2019

- **Thermal** - Complies with NCC 2019 Volume 1 Amend. 1 Section J1.2(a), NCC 2019 Volume 2 Amend. 1 Section 3.12.1.1(a), and all state-prescribed variations. This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2019 Volume 1 Amend. 1 C1.9(a) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Specification C1.10 Clause 7.

NCC 2022

- **Thermal** - Complies with NCC 2022 Volume 1 J4D3(1) and ABCB Housing Provisions Standard 2022 13.2.2(1). This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2022 Volume 1 C2D10(1) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2022 Volume 1, S7C7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Table S7C7.

Conditions of Storage, Use & Maintenance

- Store in the original packaging in a cool, dry area, away from foodstuffs. Ensure packages are adequately labelled, protected from physical damage, and sealed when not in use. Avoid packaging being stored under UV light (direct sunlight) for long periods.

Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.

Specific Design or Installation Instructions

- Isolate power before installation.
- **Caution:** Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. In new build construction with electrical wiring in accordance with AS/NZS 3000: 2018 or later, wiring may be partially or completely surrounded for up to 400mm. If more than 400mm is surrounded, or for wiring pre AS/NZS 3000:2018, seek advice from a licenced electrician. Refer to legislation and referenced standards for full details or seek advice from an electrician if in doubt.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- Suitable for applications that specify non-combustible bulk insulation products - not suitable for exposed internal wall and ceiling lining applications that require a Group Number.
- Insulation should be installed so that it forms a continuous layer and abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member.
- Compensate for gaps as specified by the NCC 2019 Volume 2 Amend. 1, 3.12.1.2(e) and Table 3.12.1.1h, ABCB Housing Provisions Standard 2022 13.2.3(5) and Table 13.2.3w. It should be installed at nominal thickness, except where it crosses structures, services and fittings.
- Ceiling perimeter batts may be required to achieve compliance depending upon roof and exterior wall design.
- Suitable for applications where the product is protected from direct UV light, water and wind pressure during and after installation.

For general installation guidance refer to the product installation guide at Bradfordinsulation.com.au

Supplementary information - Additional installation guidance for this product can be found in AS3999.

Bradford Gold® & Gold® Hi-Performance

Limitations of Use

- **IMPORTANT:** Do Not Modify This Product: Compliance with the evidence of suitability data referenced in this document is only achieved by the product or configuration listed in this PTS.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- This product is not suitable for use as an exposed internal wall or ceiling lining in applications which require a Group Number in accordance with AS ISO 9705 and AS 5637.1 (NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 4, NCC 2022 Volume 1 S7C4).
- Unfaced Glasswool is not a water or vapour barrier and is not suitable for water or vapour control.
- Maximum service temperature is 300°C for Glasswool.
- Check the plasterboard, ceiling tile or ceiling grid manufacturer's weight limitations prior to increasing the recommended R-Values or densities to ensure the structure can support the additional weight of the insulation batts.

Evidence of Suitability

- Testing to AS/NZS 4859.1 across the following reports-
 - CSR Lab Report R-20004A
 - CSR Lab Report R-20005
 - CSR Lab Report R-20006
 - CSR Lab Report R-20007
 - CSR Lab Report R-20014
 - CSR Lab Report R-20015
 - CSR Lab Report R-20016
 - CSR Lab Report R-20017
 - CSR Lab Report R-20018
 - CSR Lab Report R-20019
 - CSR Lab Report R-20020
 - BRANZ Report DI11505-001
 - BRANZ Report DI11505-002
 - BRANZ Report DI12309-001
 - BRANZ Report DI13245-001
- Testing and Professional Assessment to AS 1530.1 across the following reports –
 - CSIRO Assessment FCO-2812.
 - CSIRO Report FNC-9694
 - CSR NATA Lab Report NR-17008
 - CSR NATA Lab Report NR-18006
 - CSR NATA Lab Report NR-18007
 - CSR NATA Lab Report NR-20003
 - CSR NATA Lab Report NR-20004
 - CSR NATA Lab Report NR-22102
 - CSR NATA Lab Report NR-22103
- Professional Assessment, AS/NZS 1530.3 –
 - Warringtonfire Assessment FAS200045

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Ceiling Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
R2.5	140	1160 x 430	16	8.0	9.0	7	111720
R2.5	140	1160 x 580	16	10.8	12.2	7	111719
R3.0	165	1160 x 430	16	8.0	9.0	6	15226
R3.0	165	1160 x 580	16	10.8	12.2	6	15256
R3.5	185	1160 x 430	16	8.0	9.0	5	15241
R3.5	185	1160 x 580	10	6.7	7.6	8	41895
R4.1	215	1160 x 430	10	5.0	5.6	7	111716
R4.1	215	1160 x 580	10	6.7	7.6	7	111715
#R5.0 (HP)	240	1160 x 430	8	4.0	4.5	5	105417#
R5.0 (HP)	240	1160 x 430	8	4.0	4.5	6	467911
#R5.0 (HP)	240	1160 x 580	8	5.4	6.1	5	105419#
R5.0 (HP)	240	1160 x 580	8	5.4	6.1	6	467912
#R6.0 (HP)	260	1160 x 430	6	3.0	3.4	5	77871#
R6.0 (HP)	260	1160 x 430	6	3.0	3.4	6	467949
#R6.0 (HP)	260	1160 x 580	6	4.0	4.5	5	77849#
R6.0 (HP)	260	1160 x 580	6	4.0	4.5	6	467960
#R7.0 (HP)	290	1160 x 430	4	2.0	2.3	5	122546#
R7.0 (HP)	290	1160 x 430	4	2.0	2.3	6	467961
#R7.0 (HP)	290	1160 x 580	4	2.7	3.0	5	122545#
R7.0 (HP)	290	1160 x 580	4	2.7	3.0	6	467962

Product discontinued December 2022.

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Wall Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
#R1.5	75	1160 x 430	22	11.0	12.5	7	111727#
#R1.5	75	1160 x 580	22	14.8	16.7	7	111726#
#R1.5 *	75	1200 x 450	22	11.8	11.8	7	127776#
#R1.5 *	75	1200 x 600	22	15.8	15.8	7	127781#
R2.0 (HP)	75	1160 x 420	12	5.8	7.0	6	152166
R2.0 (HP)	75	1160 x 570	12	7.9	9.1	6	152192
R2.0 (HP) *	75	1200 x 450	12	6.5	6.5	6	131367
R2.0 (HP) *	75	1200 x 600	12	8.6	8.6	6	131368
R2.0	90	1160 x 430	22	11.0	12.5	5	15250
R2.0	90	1160 x 580	18	12.1	13.6	6	15229
R2.0 *	90	1200 x 450	18	9.7	9.7	6	127777
R2.0 *	90	1200 x 600	18	12.9	12.9	6	127782
R2.2 (HP)	75	1160 x 420	6	2.9	3.5	6	152168
R2.2 (HP)	75	1160 x 570	6	4.0	4.5	6	152194
R2.2	90	1160 x 430	16	8.0	9.0	5	170351
R2.2	90	1160 x 580	16	10.8	12.2	5	170227
R2.5 (HP)	90	1160 x 420	9	4.4	5.0	6	181430^
R2.5 (HP)	90	1160 x 570	9	6.0	6.7	6	181471^
R2.5 (HP) *	90	1200 x 450	9	4.9	4.9	6	181412^
R2.5 (HP) *	90	1200 x 600	9	6.5	6.5	6	181433^
R2.7 (HP)	90	1160 x 420	5	2.4	2.8	5	152191^
R2.7 (HP)	90	1160 x 570	5	3.3	3.8	5	152197^
R2.7 (HP) *	90	1200 x 450	5	2.7	2.7	5	127780^
R2.7 (HP) *	90	1200 x 600	5	3.6	3.6	5	126512^
R4.0 (HP)	140	1160 x 420	5	2.4	2.8	6	181432^
R4.0 (HP)	140	1160 x 570	5	3.3	3.8	6	181416^

* Suitable for steel frame construction.

Product discontinued 31st July 2022.

^ AS/NZS 1530.3 Test Report available.

Bradford Gold® & Gold® Hi-Performance

Additional Product Data

Maximum Service Temperature		300°C (suitable where a long term surface operating temperature $\geq 90^{\circ}\text{C}$ is required for insulation around heat generating equipment.)
Fire Hazard Properties	When assessed in accordance with AS/NZS 1530 Part 3-1999	• Ignitability: 0 • Spread of flame: 0 • Heat Evolved: 0 • Smoke Developed: 1
Non-Combustibility	When assessed to AS 1530 Part 1	Non - Combustible
Sample Specification – Wall Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance having a material R-Value; $R_{m...}$ (specify R-Value) @ XXmm... (specify thickness).	
Sample Specification – Ceiling Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance Ceiling Batts R ___ $\text{m}^2 \text{K/W}$ (specify type) as manufactured by Bradford Insulation.	

Other Accreditation



FBS-1 Glasswool - The fibre component of these products is listed by Safe Work Australia as Man-made Vitreous Fibre (Glasswool) of low bio persistence as specified under Note Q in the Australian Hazardous Substances Information System and in the Australian Approved Criteria documentation. In accordance with EU ATP 31 (2009) these fibres are not classified as an irritant, or as carcinogenic.
Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.



National Asthma Council Sensitive Choice

TEST REPORT NR-17008

AS1530.1 Combustibility Test – CSR Bradford™ Gold R2.7 HP Wall Batts

Product Trade name: CSR Bradford™ Gold R2.7 HP Wall Batts

Sponsor: CSR Bradford
Triniti 3, 39 Delhi Rd North Ryde NSW 2113

Sample ID: FC1444

Description of material: Randomly selected one pack of 90mm CSR Bradford™ Gold R2.7 HP Wall Batts, batch No 173241702

Date of test: 13-15/12/2017

Date of issue: 18/12/2017

Test apparatus: ETT Non-Combustibility Apparatus Complied to standard EN ISO1182/AS1530.1 with furnace performance wall & centreline temperatures measured on 27/02/2012

Test Procedure: Five (5) test specimens were randomly cut from received material, conditioned and tested in accordance with AS1530 Methods for fire test on building materials, components and structures Part1-1994 Combustibility test for materials.

Test Results:

Mean Furnace thermocouple temperature rise ΔT_f	3.3	± 0.5	°C
Mean Specimen Centre thermocouple temperature rise ΔT_c	6.1	± 0.5	°C
Mean Specimen Surface thermocouple temperature rise ΔT_s	3.8	± 0.5	°C
Mean duration of sustained flaming.....	0.0	± 0.5	S
Mean mass loss.....	5.0	± 0.5	%

Additional Information:

Mean LOI* 4.9 % (checked accord to BS2972:1989)

Mean Density* 33.5 kg/m³

* NATA accreditation does not cover the performance of these services.

Observation: Specimens flamed but not greater than 1s

Combustibility: **Not deemed Combustible**

Statement:



ACCREDITED FOR
TECHNICAL
COMPETENCE

Accreditation No: 993

Accredited for compliance with ISO/IEC 17025 – Testing.

CSR Technical Centre 376 Victoria Street Wetherill Park 2164 NSW Ph: 02 9844 7967 Fax: 02 9844 7803

Approved Signatory: SHERRY MA

Signatory's Signature:



Test Data NR-17008

Test was conducted according to standard AS1530.1 and data were recorded and summarised in table 1.

Table 1: Individual test data and summary

Test Condition		Individual results					Arithmetic Mean
		FC1444-1	FC1444-2	FC1444-3	FC1444-4	FC1444-5	
Sample Conditioning: 60°C ≥20hrs	Initial weight (g)	2.7773	2.7695	2.8047	2.5918	2.4316	33.46
	Sample Density (kg/m ³)	34.93	34.83	35.27	32.59	30.58	
	Conditioned weight /initial mass (g)	2.7742	2.7662	2.7987	2.5889	2.4295	
Mass Loss	Final mass (g)	2.6379	2.6134	2.6746	2.4415	2.326	4.96
	% Mass loss	4.91	5.52	4.43	5.69	4.26	
Flaming	Cumulative duration of flaming ≥5s (s)	0	0	0	0	0	0
Furnace Temperature rise	Initial furnace temperature (°C)	751.93	750.33	752.57	750.96	751.87	3.34
	Temperature drift in 10 minutes (°C)	1.36	0.96	0.89	1.06	1.11	
	Max furnace temperature (°C)	775.1	776	776.7	775.9	775.3	
	Final furnace temperature (°C)	772.3	774.7	771.3	771.7	772.3	
	Furnace temperature rise (°C)	2.8	1.3	5.4	4.2	3	
Specimen centre Temperature rise	Max centre temperature (°C)	759.4	765.8	762	766.2	758.9	6.12
	Final centre temperature (°C)	755.1	763.9	750.2	758.3	754.2	
	Centre temperature rise (°C)	4.3	1.9	11.8	7.9	4.7	
Specimen surface Temperature rise	Max surface temperature (°C)	759.5	760.8	762.3	758.9	760.8	3.78
	Final surface temperature (°C)	757.7	758.5	754.4	754.1	758.7	
	Surface temperature rise (°C)	1.8	2.3	7.9	4.8	2.1	
Test duration	Test period (mins)	30	30	30	30	30	
	Temperature drift in last 10/5 minutes (°C)	0.1	1.58	1.3	1.73	1.19	



ACCREDITED FOR
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Accreditation No: 993

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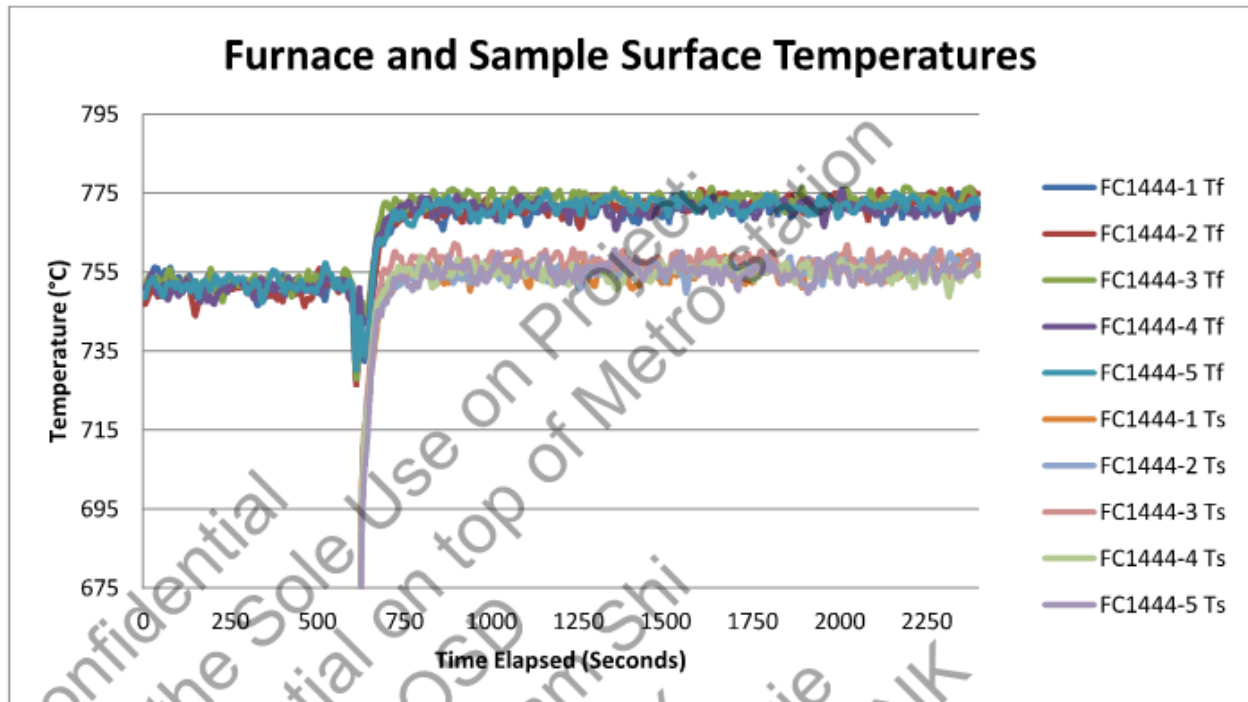
CSR Technical Centre 376 Victoria Street Wetherill Park 2164 NSW Ph: 02 9844 7967 Fax: 02 9844 7803

Approved Signatory: SHERRY MA

Signatory's Signature: 

Individual sample furnace temperature and surface temperature were also presented in Graph 1.

Graph 1: Furnace and sample surface temperatures



Test officer: Nanxi Liu/Sherry Ma



Accreditation No: 993

Accredited for compliance with ISO/IEC 17025 – Testing.

CSR Technical Centre 376 Victoria Street Wetherill Park 2164 NSW Ph: 02 9844 7967 Fax: 02 9844 7803

Approved Signatory: SHERRY MA

Signatory's Signature:

Appendix C

External Wall System Disclosure Statement by Xavier Knight
XK SS04.1 NSW EWSDS - BCA 2022

AWNING/ROOFING AND EXTERNAL WALL SYSTEM DISCLOSURE STATEMENT (DESIGN)

AWNING/ROOFING AND EXTERNAL WALL COMPONENTS (TYPE A & B CONSTRUCTION)

Project Name	<i>Waterloo Metro Quarter – OSD Southern Precinct</i>
Address	<i>49 Botany Road, Waterloo 2017 (LOT 190 DP 1257150)</i>
Part of Building	<i>Building 4 Brick veneer wall, CFC and aluminium cladding</i>
BCA referred to	<i>BCA 2022</i>

- I confirm that the table provided overleaf identifies all the proposed works and external wall elements designed for the subject development, including the component elements of those systems, and any attachments thereto.
- I have undertaken reasonable investigations to ascertain and confirm that these systems and components comply with the non-combustibility requirements of Clause C2D10 (prev. C1.9) of the BCA, such as reviewing product technical information, fire test reports, code mark certificates, fire-engineer's reports and external consultant advice.
- Attachments to the building comply with clause C2D14 (prev. C1.14) of the BCA.
- Any ancillary elements are either non-combustible, exempt under Clause C2D10 and/or C2D14 (prev. C1.9 and/or C1.14) or have been addressed through a Performance Solution by an Accredited Fire Safety Engineer.
- We confirm that our design has been coordinated with the requirements of the architectural specification and drawings.
- ~~The wall systems have been designed as nominated in the Section J Assessment Report (add reference) and BCA 2022 and BASIX Certificate (add reference).~~
- The wall system designs are consistent with all Fire Engineering Reports applicable to the building (*WMQ-SITE-OMN-FE-RPT-001-00*)
- The wall system designs comply with the Performance Requirements of F3P1 (prev. FP1.4) of the BCA 2022 for Weatherproofing and Performance Solution
 - *PSR Waterloo OSD BLD4- F3P1 Performance Solution - Issue A – Apex, dated 9/11/2023,*
 - *BLD 4 F3P1 Performance Based Design Brief by Micos - WMQ-BLD4-MIC-FC-RPT-7901 [02]*
 - *BLD 4 F3P1 Performance Based Solution Report by Eureka - WMQ-BLD4-MIC-FC-RPT-7902 [02]*that addresses weatherproofing compliance
- The design complies with the particulars requirements of Part B1 of the BCA 2022 including glass, fixings, dead and live loads, wind loads and earthquake loads in accordance with the following standards.
 - AS 1170.0 Structural design actions – General principles
 - AS 1170.1 Structural design actions – Permanent, imposed and other actions
 - AS 1170.2 Structural design actions – Wind actions
 - AS 1170.4 Structural design actions – Earthquake actions in Australia
 - AS 1664.1 Aluminium Structures
 - AS 3700 Masonry Structures
 - AS 5216 Design of post-installed and cast-in fastenings in concrete
 - National Construction Code 2022 Vol. 1

- Where required by C3D7 (prev. C2.6), spandrel separation achieving an FRL of 60/60/60 has been designed and complies with the requirements of C3D7 (prev. C2.6) of BCA 2022.
- The wall system designs are consistent with the DA stamp approved plans as referenced in DA (SSDA 10437)
- No Aluminium Composite Panels deemed combustible have been proposed as part of the external wall system.
- ~~The proposed paint thickness is not more than 1mm.~~
- Supporting documents that demonstrate compliance for attachments to walls for the relevant sections of the BCA are provided and attached.
- I am a suitably qualified person and my qualifications and accreditations are listed below.
- The information contained in this statement is true and accurate to the best of my knowledge.

Name of Designer:
Qualifications /
Accreditations:

Feris Chehade
Registered Structural Engineer No.: DEP0000119
And
Education and Experience in Façade Engineering:
Xavier Knight Pty Ltd
Level 7, 210 Clarence St, Sydney NSW 2000
88105800



Signature

17/11/2022

Date

EXTERNAL WALL ELEMENTS TABLE

The table below must be completed for all wall types.

Note: Marked up elevations are to accompany this submission

LINING / CLADDING / BUILDING ATTACHMENTS MATERIAL *(Note. Nominate every type of external cladding, attachment and/or wall material)*

External/Cladding Material (Eg Fibre cement, Aluminium composite panel, masonry, steel members etc)	Elevation(s)	Structural frame material	Manufacturer (Eg, Alucobond, Vitracore etc)	Product Name (Eg, Alucobond Plus, Vitracore G2 etc)	Test certificate, Codemark certificate or Fire Engineering Report (List all documents evidencing compliance)	Nominated or proprietary installation requirements (relevant installation details or guidelines must be listed below and attached)
CFC sheet	East, south and west	Stud wall and concrete wall	James Hardie	Exotec	CM40221 Rev 1	ExoTec Facade Panel Install Guide July 2021
Aluminium cladding	All elevations	Stud wall and blockwall	Fairview	Vitradual	CM30117 R2	Vitradual_Technical-Brochure
Masonry	All elevations	Stud wall and concrete wall	Austral Bricks	Bowral 76		Design of Clay Masonry Walls for Fire Resistance

INSULATION *(list all types incorporated in the external wall systems)*

Material Rockwool etc	Elevation	Manufacture (Eg, CSR etc)	Product Name	Test certificate reference
Glasswool	All elevations	CSR	Bradford Gold	Refer to technical datasheet attached

SARKING *(list all types incorporated in the external wall systems)*

Manufacture (Eg, CSR etc)	Elevation	Product Name	Test certificate reference
Proctor group	All elevations	ProctorPassive Rainscreen with Integrated Tape (RS-IT)	20-005451

Proctor group	All elevations	ProctorPassive YouByute Sealing Tape	
Proctor group	All elevations	ProctorPassive YouByute Flexi Tape	
Proctor group	All elevations	ProctorPassive UV Tape	
Proctor group	All elevations	ProctorWrap HighTack Tape	

SPANDRELS (Note. Nominate every type of spandrel)

Spandrel Material (Eg Fibre cement, Aluminium composite panel, masonry, steel members etc)	Elevation(s)	Structural frame material	Manufacturer (Eg, Alucobond, Vitracore etc)	Product Name (Eg, Alucobond Plus, Vitracore G2 etc)	Test certificate, Codemark certificate or Fire Engineering Report (List all documents evidencing compliance)	Nominated or proprietary installation requirements (relevant installation details or guidelines must be listed below and attached)
CFC sheet	East, south and west	Stud wall and concrete wall	James Hardie	Exotec	CM40221 Rev 1	ExoTec Facade Panel Install Guide July 2021
Aluminium cladding	All elevations	Stud wall and blockwall	Fairview	Vitradual	CM30117 R2	Vitradual Technical - Brochure
Masonry	All elevations	Stud wall and concrete wall	Austral Bricks	Bowral 76		Design of Clay Masonry Walls for Fire Resistance

OTHER SUPPORTING DOCUMENTATION

Manufacturer / Product	Document	Reference Number	Date
Rondo Stud	GALVABOND - ZINC METAL COATED STEEL STRIP AND SHEET - standard coil Rondo Pro Design Manual – Standards and Codes		20/12/2022
13mm Plasterboard	Fire assessment report	FAS190252	26/05/2022

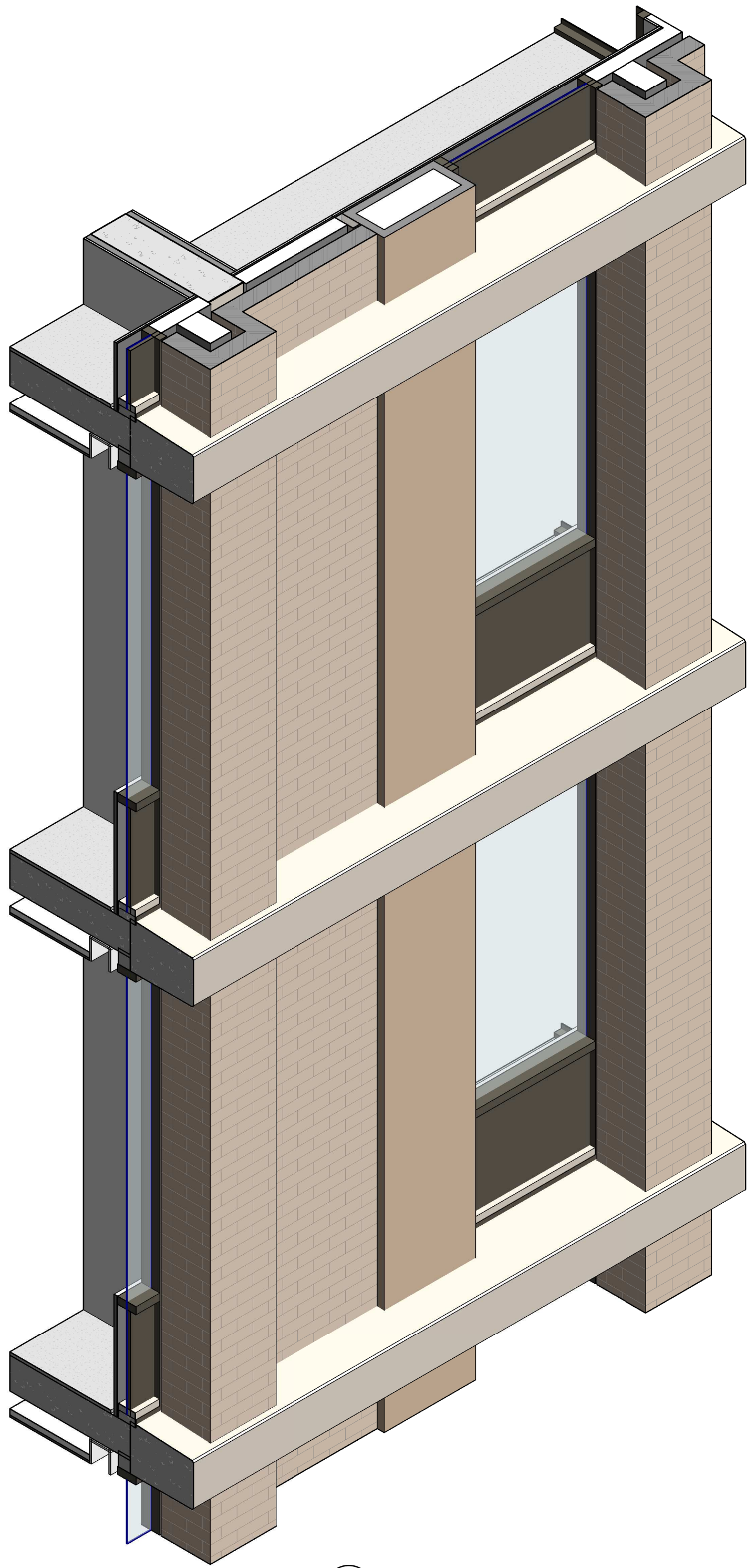
ARCHITECTURAL DRAWINGS

Drawing Number	Title	Revision	Date	Prepared by
WMQ-BLD4-BSA-AR-DWG-A03.001	Level 01 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.002	Level 02 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.003	Level 03 – 04 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.005	Level 05 – 07 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.008	Level 08 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.009	Level 09 GA Plan	D	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A03.010	Roof Plan	C	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.001	Level 01 Concrete Plan	C	09/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.002	Level 02 Concrete Plan	D	24/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.003	Level 03 – 04 Concrete Plan	C	16/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.005	Level 05 – 07 Concrete Plan	C	16/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.008	Level 08 Concrete Plan	C	16/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.009	Level 09 Concrete Plan	C	16/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A04.010	Roof Plan Concrete Plan	B	06/10/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.001	Level 01 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.002	Level 02 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.003	Level 03 – 04 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.005	Level 05 – 07 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.008	Level 08 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.009	Level 09 Plan	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.016	Wall Types -Sheet 6 - External Walls	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A05.017	Wall Types -Sheet 7 – Façade	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A09.001	External Elevations - North	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A09.002	External Elevations - East	A	03/11/2023	BatesSmart

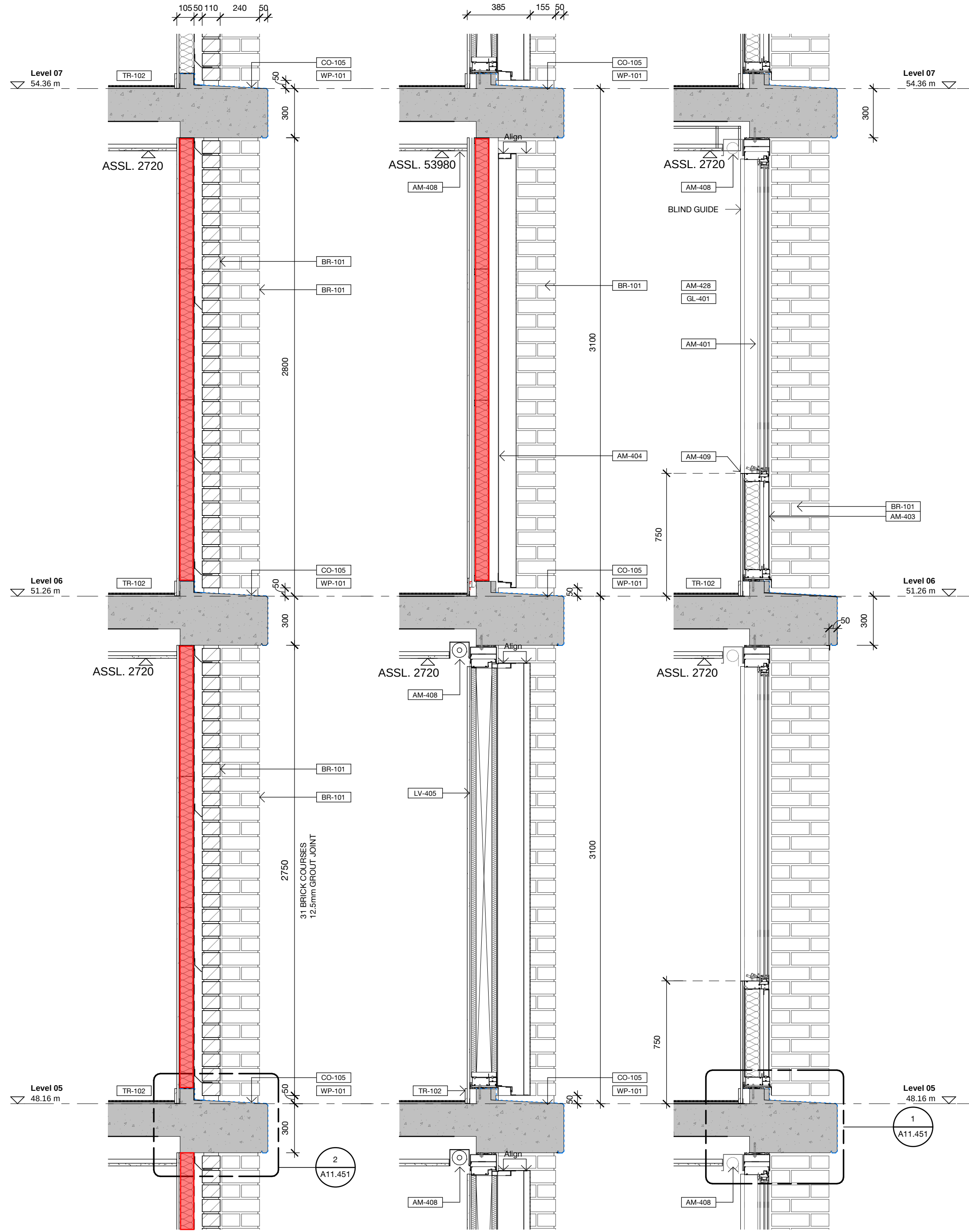
WMQ-BLD4-BSA-AR-DRG-A09.003	External Elevations - South	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A09.004	External Elevations - West	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.000	Axonometrics	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.001	Elevations	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.101	Setout L01	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.105	Setout L05-L07	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.109	Setout L09	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.401	FT-401 Facade Brick on Stud Framing - Fixed Window with Perforated Panel	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.401B	FT-401B Facade Brick on Stud Framing - Opening Window with Attenuator West	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.401C	FT-401C -Level 01 Facade Variations	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.402	FT-402 Eastern Balcony Louvre Screen	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.403	FT-403 Typical Perforated Balcony	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.404	FT-404 Corridor Louvre	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.405	FT-405 Facade Brick on Stud Framing with Awning Window	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.406	FT-406 Northern Balcony Angled Louvre	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.407	FT-407 Northern Balcony Expressed Steel Edge	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.408	FT-408 Eastern Recessed Fixed Window	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.409	FT-409 - FT-410 Fixed Window with Louvres + Facade Brick on Stud Framing	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.411	FT-411 Movement Joint at Core w/ Curved Brick FT-409B Slot Window w/ Louvre	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.412	FT-412 Level 01 Balcony with Planter	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.413	FT-413 - North Corridors	A	03/11/2023	BatesSmart

WMQ-BLD4-BSA-AR-DWG-A11.414	FT-414 – Level 01 North Glass Balustrade	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.415	Façade Type - Level 01 Façade Variations	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.416	Façade L01 Maintenance Access	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.417	Façade Type – L08 Façade Variations	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.418	Façade Type FT-403B L09 West	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.419	L09 Terrace Section	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.421	Façade Type FT-421 L09 Wire Mesh Screen	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.422	Façade Type FT-422 Level 09 Window + Plant Louvres	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DRG-A11.422B	Façade Type FT-422 L09 Lobby + Plant Access	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.423	L09 Roof Terrace Awning	A	03/11/2023	BatesSmart
WMQ-BLD4-BSA-AR-DWG-A11.424	L09 Roof Terrace Awning	A	03/11/2023	BatesSmart

Regulated Design Record				
Project Address: 49 Botany Road, Waterloo 2017 (LOT 190 DP 1257150)				
Project Title: Waterloo Metro Quarter Development - Southern Precinct				
Consent No: SSD 10437		Body Corporate No: DEP0001256		
Drawing Title: FT-401 Facade Brick on Stud Framing -Opening Window with Perforated Panel		Drawing No: WMQ-BLD4-BSA-AR-DRG-A11.401		
Rev	Date	Description	DP Full Name	Reg No
A	03.11.23	DCD-0058	Guy Lake	DEP0001730
ONLY INFORMATION ON THE REVISIONS ABOVE IS APPROVED FOR CONSTRUCTION SUBSEQUENT REVISIONS HAVE NOT BEEN DECLARED				



6 FT-401
3D



3 FT-401 -Wall
1 : 20

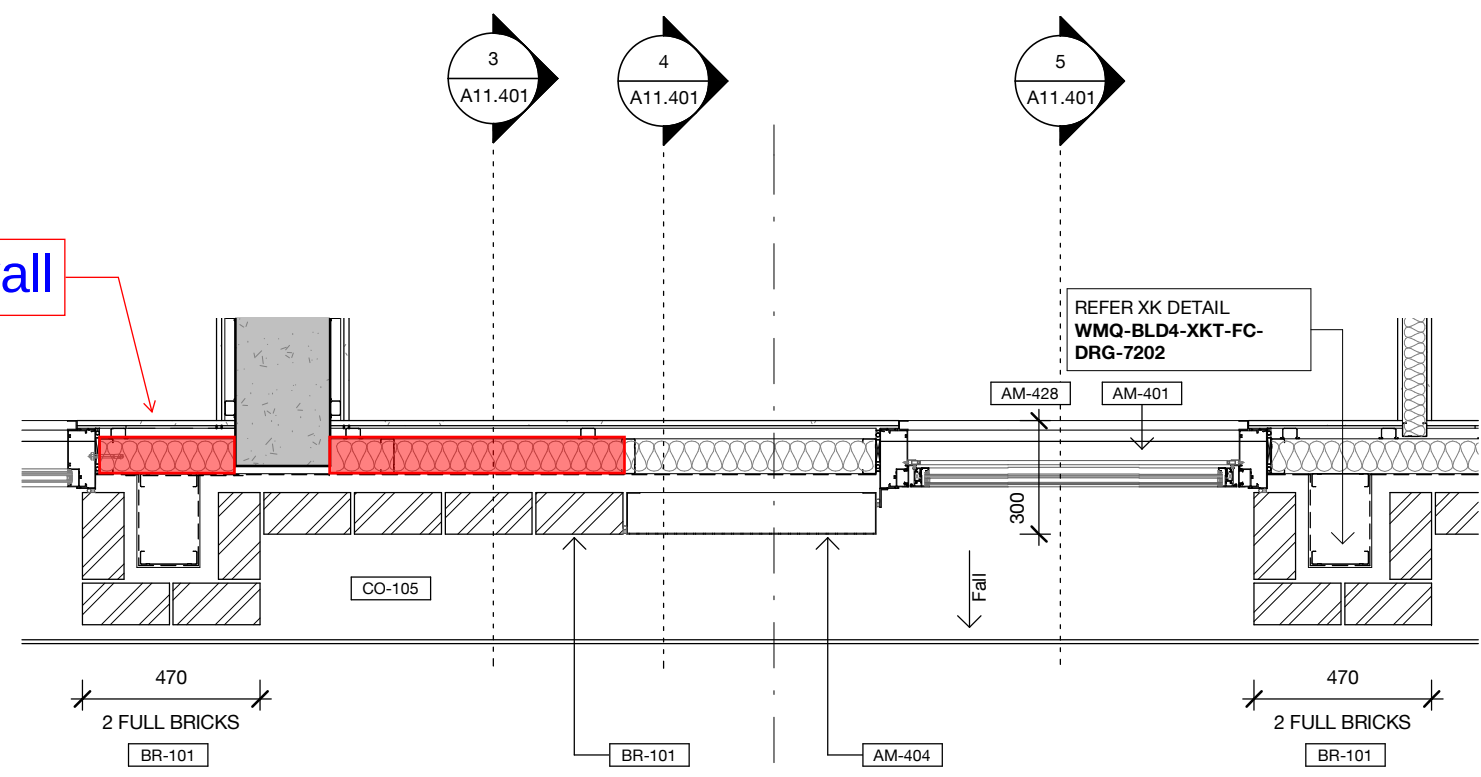
4 FT-401 -Attenuator
1 : 20

5 FT-401 -Window
1 : 20



2 FT-401
Elevation
1 : 20

Insulated spandrel wall



1 FT-401
1 : 20

4.D

4.D

Mark up location of spandrel

Recent revision history		
#	Description	Date
1	END OF YEAR WIP	17.12.20
2	WIP ISSUE	01.03.21
3	For Tender	19.03.21
4	For Tender	26.03.21
5	For Co-Ordination	06.05.23
6	Facade Updates For Coordination	04.07.23
7	For Coordination	25.08.23
A	DCD-0058	03.11.23

Notes

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Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Revision Notes

Revision A

- / Sheet size change to B1
- / RAB board removed
- / Brick support added
- / Detail references added

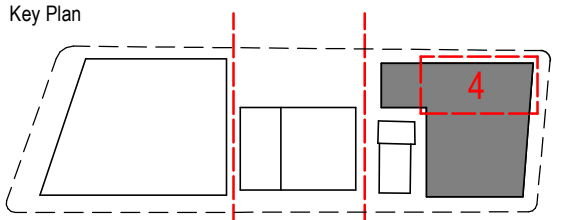
PENETRATION + SET-OUT
INFORMATION BASED ON:

WMQ-BLD4-RBG-ST-MDL-001-RVT-R20	[194]
WMQ-BLD4-FFR-FS-MDL-6000	[46]
WMQ-BLD4-GES-EL-MDL-4000-RVT-R20	[172]
WMQ-BLD4-PPG-HY-MDL-001-RVT-R20	[198]
WMQ-BLD4-DEA-ME-MDL-0101-RVT-R20	[106]

Regulated Design Record

The Building Element for which this design has been prepared and the subject of this Design Declaration is: (Refer to checked item below)

☐ (F) Fire Safety Systems
☐ (W) Waterproofing
☐ (L) Load-bearing
☒ (B) Building Enclosure
☐ (S) Building Services



North Point



Consultant

BATESSMART

Project

WATERLOO METRO QUARTER DEVELOPMENT - SOUTHERN PRECINCT

Project number

WMQ-BLD4-BSA

Size check

25mm

Scale

1 : 20

Sheet title

Facade Type

FT-401 Facade Brick on Stud Framing -Opening Window with Perforated Panel

Status

ISSUED FOR CONSTRUCTION

Sheet number

WMQ-BLD4-BSA-AR-DRG-A11.401

Revision

A



Installation Guide

ExoTec™ Facade Panel
and Fixing System

COMMERCIAL

Australia July 2021

Make sure your information is up to date.

When specifying or installing James Hardie™ products, ensure that you have the current technical information and guides. If in doubt, or you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.



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MADE IN AUSTRALIA

1 INTRODUCTION

James Hardie's ExoTec™ facade panel provides a durable, expressed joint panel appearance for building facades and fascias and, together with the ExoTec™ fixing system, offers versatility to architects and builders. A variety of design styles can be created including curved walls, panels installed upright vertically, horizontally or in a brick pattern.

A wide range of decorative finishes can be used to the ExoTec™ Facade Panel including site-applied acrylic textures and available factory-applied polyurethane plain colours and metallic finishes. Refer to Section 8 Finishes for more information.

This document is a guide only. It is intended for use by builders, cladding installers and other contractors who may be involved with the installation of the ExoTec™ facade panel and fixing system.

The 9mm thick ExoTec™ facade panels may be used in wall facades, fascias and soffits.

If you are an installer...

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer.

If you are a specifier...

or other responsible party for a project, ensure the information in these specifications is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

NOTE

All dimensions shown are in millimetres unless noted otherwise.

All Australian Standards referenced in this manual are current edition and must be complied with.

2 SAFE WORKING PRACTICES

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain sand, a source of respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'score and snap' knife, fibre cement shears or, where not feasible, use a HardieBlade™ Saw Blade (or equivalent) and dust-reducing circular saw attached to an appropriate, well maintained, M-class vacuum or greater with appropriate filter; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (minimum P1) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up use a M-class vacuum or greater with appropriate filter, both of which are well maintained and appropriate for capturing fine (respirable) dust. Alternatively, use wet clean-up methods - never dry sweep. For further information, refer to our installation instructions and Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

CUTTING OUTDOORS

1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Use one of the following methods based on the required cutting rate:
 - Best** ▪ Villaboard™ knife ▪ Hand guillotine ▪ Fibreshear
 - Better** ▪ Position the cutting station in a well-ventilated area. Use a dust reducing circular saw equipped with HardieBlade™ Saw Blade or comparable fibre cement blade and well maintained M-class vacuum or greater with appropriate filter for capturing fine (respirable) dust. Wear a properly-fitted, approved dust mask or respirator (minimum P1).

CUTTING INDOORS

- Cut only using Villaboard™ knife, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in a well-ventilated area

DRILLING / OTHER MACHINING

When drilling or machining you should always wear a P1 dust mask and warn others in the immediate area.

IMPORTANT NOTES

1. For maximum protection (lowest respirable dust production) James Hardie recommends always using best practice cutting methods where feasible.
2. NEVER use a power saw indoors.
3. ALWAYS use a circular saw blade that carries the HardieBlade™ logo or is of at least comparable performance.
4. NEVER dry sweep - Use wet suppression, or an M class vacuum or greater with appropriate filter.
5. NEVER use grinders.
6. ALWAYS follow tool manufacturers' safety recommendations.

DUST MASKS AND RESPIRATORS

As a minimum, an AS/NZS1716 P1 respirator must be used when doing any activity that may create dust. For more extensive guidance and options for selecting respirators for workplaces please refer to Australian/New Zealand Standard 1715:2009 "Selection, Use and Maintenance of Respiratory Protective Equipment".

P1 respirators should be used in conjunction with the above cutting practices to minimise dust exposure.

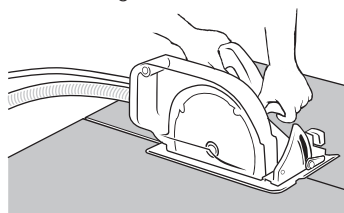
For further information, refer to Safety Data Sheet (SDS) available at www.jameshardie.com.au. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

WORKING INSTRUCTIONS

Refer to recommended safe working practices before starting any cutting or machining of product.

HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie™ fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector which can be connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



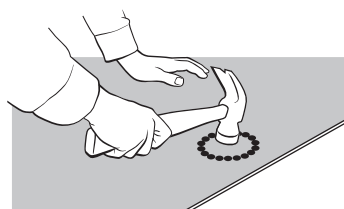
HOLE-FORMING

For smooth clean cut circular holes:

- Mark the centre of the hole on the sheet.
- Pre-drill a pilot hole.
- Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.

For irregular holes:

- Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face.
- Tap carefully to avoid damage to sheets, ensuring the sheet edges are properly supported.



STORAGE AND HANDLING

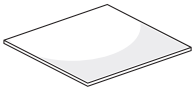
To avoid damage, all James Hardie™ building products should be stored with edges and corners of the sheets protected from chipping.

James Hardie™ building products must be installed in a dry state and protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

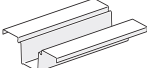
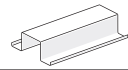
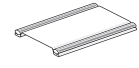
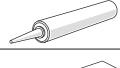
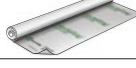
QUALITY

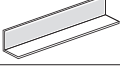
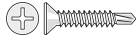
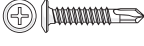
James Hardie conducts stringent quality checks to ensure any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

3 PRODUCT INFORMATION

EXOTEC™ FACADE PANEL INFORMATION				
PRODUCT	DESCRIPTION	QUANTITY / SIZE (NOMINAL)		
	ExoTec™ facade panel Dense compressed panel. Square edge. Factory sealed on all six sides. Each panel has a distinctive white face, which accepts a wide range of paint finishes. The panel must be installed with the white side facing the exterior of the structure. Nom. density: 1550kg/m³	Thickness	Width	Lengths
		9mm	1200mm	2400, 3000

NOTE: Not all combinations of thicknesses, width and length are available ex stock, but are available to order. Check with James Hardie for availability of panel sizes.

PRODUCT / ACCESSORIES / TOOLS SUPPLIED BY JAMES HARDIE		
ACCESSORIES	DESCRIPTION	QUANTITY/SIZE (APPROX)
	ExoTec™ Top Hat A rolled metal section, for use with ExoTec™ facade panel and fixing system, designed to span vertically across the building structure to support facade panels and isolate differential movement of the panels from those of the structure. 124mm wide x 35mm deep x 0.75mm gauge thick. (Approximately)	45 per pack 6,000mm (305948) 7,200mm (305947)
	James Hardie™ Intermediate Top Hat A metal top hat installed vertically for use with ExoTec™ and ComTex® facade panel and fixing system, for intermediate sheet support. 50mm wide face x 35mm deep x 0.75mm gauge thick.(Approximately)	50 per pack 6,000mm (305950) 7,200mm (305949)
	ExoTec™ Gasket Snap Strip. 3,620mm long For use with the ExoTec™ facade panel and fixing system, this gasket snap strip is specially designed to clip into the ExoTec™ Top Hat at vertical facade panel joints to cover fixings to the structure and to provide an initial weather seal and drainage using a neoprene gasket.	10 per pack (305556)
	James Hardie™ Backing Strip.1,190mm, 2390mm, 2990mm A weather seal at horizontal panel joints for use with ExoTec™ facade panel and fixing system and Matrix™ cladding.	10 per pack 1,190mm (305557) 2,390mm (305558) 2,990mm (305559)
	James Hardie™ Facade Washers Facade washers used for exposed fastener fixing with ExoTec™ facade panel and fixing system and Matrix™ cladding.	1000 per bag (305565)
	James Hardie™ Base Coat. 4kg tub, 15kg bag A water-resistant base coat compound used to finish over countersunk fasteners with epoxy.	4 per box - 4kg, 1 each - 15kg 4kg tub (305535) 15kg bag (305591)
	James Hardie™ Joint Sealant, 300mL cartridge A general purpose, paintable, exterior grade polyurethane joint sealant.	20 per box (305534)
	RAB™ board RAB is an all-in-one airtight, weatherproof, vapour permeable and non-combustible rigid 6mm fibre-cement sheathing for residential or commercial applications where the structural design require strong/stiffer shear walls.	40 per pack 1200mm x 2450mm (402980) 1200mm x 2750mm (405131) 1200mm x 3000mm (402981)
	HardieWrap™ weather barrier A non-perforated, highly breathable and reflective safe-glare weather barrier designed to be used behind ExoTec™ facade panel and fixing system to help protect the building. Unit size 2750mm x 3000mm.	1 each (305664)
	HardieEdge™ Trim An architectural slab edge solution fabricated from high-quality powder coated aluminium. Base Trim Unit size: 3950mm. 4 per pack. See right for all HardieEdge™ components:	Base Trim 4 per pack. (305911) Base Trim Joints 12 per pack. (305912) Internal Corner 12 per pack. (305913) External Corner 12 per pack. (305914)
TOOLS	DESCRIPTION	QUANTITY/SIZE (APPROX)
	HardieBlade™ Saw Blade. 185mm diameter A 185mm diameter poly-diamond blade for fast and clean cutting of James Hardie™ fibre cement.	1 Each (300660)

PRODUCT / ACCESSORIES / TOOLS NOT SUPPLIED BY JAMES HARDIE			
James Hardie recommends the following products for use in conjunction with ExoTec™ facade system. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturer for information on their warranties and further information on their products.			
ACCESSORIES	DESCRIPTION	ACCESSORIES	DESCRIPTION
	Miscellaneous light gauge pressed metal section Sections 1mm minimum to 1.2mm maximum corrosion resistant metal. Used in internal and external corner details.		Flexible tape A flexible self-adhesive tape used in preparation of a window. Refer to the window installation section in this Guide for more information.
	Bond breaker tape Used when filling vertical joints to prevent sealant from bonding to top hat.		Base coat applicator A recommended method of applying James Hardie™ base coat over epoxy filled countersunk screw heads. This method minimises waste. Base coat is easily sanded by comparison to epoxy fillers.
	6mm masonry drill Provides a 6.2mm to 6.3mm diameter hole. Used to pre-drill clearance holes for fasteners.		Epoxy flush sealing (2 part) Countersunk head screws are flush sealed using Megapoxy P1.
	Countersunk head drill 6mm countersunk bit.		
FASTENERS	DESCRIPTION	FASTENERS	DESCRIPTION
	Countersunk fasteners No. 10x30 countersunk head self drilling screws - Class 3 minimum coating.		Exposed head fasteners No. 10x25mm pan, wafer or hex head self drilling screws Class 3 Minimum coating.

4 DESIGN CONSIDERATIONS

4.1 COMPLIANCE

All design and construction must comply with the appropriate requirements of the current Building Code of Australia (BCA), regulations and standards.

4.2 SLAB AND FOOTINGS

The slab and footings on which the building is situated must be designed and certified by a qualified structural engineer according to all relevant codes, regulations and standards.

4.3 GROUND CLEARANCES

Install James Hardie™ external cladding with a minimum 150mm clearance to the earth on the exterior of the building or in accordance with local building codes if greater than 150mm is required. Also, maintain a minimum 50mm clearance between James Hardie™ external cladding and roofs, decks, paths, steps and driveways.

Adjacent finished grade must slope away from the building in accordance with local building codes, typically a minimum slope of 50mm minimum over the first metre.

Do not install external cladding in areas where it may remain in contact with standing water or debris.

4.4 MOISTURE MANAGEMENT

The ExoTec™ facade panel and fixing system acts as a weather shield. To achieve a particular level of weathertightness, the designer must determine the appropriate moisture management detailing for the project. The designer should consider the following matters when making that determination:

- It is the responsibility of the builders and designers to identify moisture related risks associated with any particular building design. It is the responsibility of the builder to ensure appropriate moisture management is provided during framed wall construction through effective use of flashings, sealants and vapour permeable membranes such as HardieWrap™ weather barrier, building wraps, vapour retarders and damp proof course. Before installing panels, all wall openings, penetrations, intersections, connections, window sills, heads and jambs must incorporate appropriate flashing and waterproofing. Materials, components and the installation practices that are used to manage moisture in framed wall construction must, at a minimum, comply with the requirements of relevant standards, building codes and the manufacturer's specifications.
- Sealant at sheet joints must be installed where detailed in this literature. For wind pressures up to 4.0kPa, see Clauses 6.2 and 6.3. For pressures including and above 4.0kPa, both vertical and horizontal joints must be sealant filled, see Clause 6.5. Refer to Clause 6.4 for suitable joint sealant. Where sealant is exposed, refer to the sealant manufacturer for durability information.
- For high walls it may be necessary to provide flashing to drain the facade at one or more intermediate levels.
- The installation of smoke, vermin and other barriers must not restrict moisture from reaching flashings.

For information on membrane refer to clause 5.2 of this guide

4.5 TOP HAT FRAMING

ExoTec™ facade panels must be fixed to ExoTec™ top hat and intermediate JH top hat sections which are installed vertically over steel, masonry or timber structures, See Figure 1. ExoTec™ top hat and intermediate JH top hat sections must not be installed horizontally. Ensure a planar fixing surface for ExoTec™ facade panels. The structure can either be straightened or packed out between the substructure and top hats. Packing out of top hats must be limited to 20mm maximum.

It is the responsibility of the project engineer to determine the appropriate wind pressures for the project and specify the fixing of the top hats to the structure. The engineer must limit the deflection of the supporting structure to span/250 for Serviceability Wind Load.

The nominal spacing between top hats is 605mm for a 1200mm wide panel and 455mm for a 900mm wide panel, i.e. top hats are required at panel edges and at intermediate spacings within the panels. The ExoTec™ top hats at panel edges have the legs facing out from the structure and at intermediate locations the intermediate JH top hat is used, with the legs fixed to the structure, see Figure 2.

The maximum spans and nominal spacings of ExoTec™ top hats and intermediate JH top hats for wall and soffit applications are provided in Tables 2 and 3 respectively, see page 6. For wall applications, the maximum cantilever distance of the top hats is one quarter of the single span shown in Table 2.

4.6 SEALANT FILLED JOINTS

For design wind pressures including and above 4.0kPa, all horizontal and vertical joints must be continuously sealed over bond breaker tape.

Where joints are required to be sealant filled, James Hardie™ Joint Sealant and Bostik Seal 'n' flex are recommended. Where vertical joints are sealed, a bond breaker tape must be installed behind the sealant.

4.7 CURVED FACADES

The ExoTec™ facade panel and fixing system can be used to follow curved walls as described below:

For radii 10m or greater

ExoTec™ facade panels can be easily bent to the curve of the frame. ExoTec™ facade panels are to be fixed in a horizontal orientation only. Refer to Table 4 for maximum top hat spacing.

TABLE 1

MAX. TOP HAT SPACING FOR VARIOUS RADII

RADII (m)	MAX. TOP HAT SPACING (mm)
	1200mm wide panels
10 to 15	400
>15	To suit wind loading

NOTES

- The closer the spacing of top hats, the less likely they will read through as facets in the panels, particularly at a small radii.
- 9mm thick panels may be able to be curved to a smaller radius, but this is likely to overstress panels.

NOTE

When fixing curved sheets, commence fixing from the centre and work outwards to avoid "drumminess".

Particular care should be taken when curving panels to ensure the supports are on a true curve. If not, apart from poor appearance, there is a risk of locally over-stressing the panels and causing cracking.

Alternate materials and installation methods are available for radii less than specified above including, glass reinforced cement (GRC) installed according to manufacturer's specifications.

For further information on curved facades contact James Hardie on 13 11 03.

TABLE 2 - WALLS

WALLS - MAXIMUM EXOTEC™ TOP HAT AND JH INTERMEDIATE TOP HAT SPANS (mm) FOR ULTIMATE DESIGN WIND PRESSURES														
SPAN TYPE	NOMINAL TOP HAT SPACING (mm)	ULTIMATE DESIGN WIND PRESSURE (kPa)												
		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Single Span	300	2413	2108	1915	1778	1673	1589	1520	1461	1411	1367	1328	1293	1261
	450	2107	1841	1673	1553	1461	1388	1328	1277	1233	1194	1160	1115	1075
	600	1914	1672	1520	1411	1328	1261	1206	1160	1101	1050	1005	965	923
2 Span Continuous	300	3234	2825	2408	2106	1885	1711	1574	1459	1364	1281	1210	1147	1091
	450	2825	2245	1885	1639	1459	1321	1210	1119	1042	976	919	869	825
	600	2408	1885	1574	1364	1210	1091	997	919	854	787	721	666	619
3 Span Continuous	300	2981	2605	2366	2197	2042	1855	1706	1582	1479	1390	1312	1244	1184
	450	2605	2275	2042	1777	1582	1432	1312	1213	1130	1059	998	944	897
	600	2366	2042	1706	1479	1312	1184	1082	998	927	861	789	728	676

TABLE 3 - SOFFITS

SOFFITS - MAXIMUM EXOTEC™ TOP HAT AND INTERMEDIATE JH TOP HAT SPANS (mm) FOR ULTIMATE DESIGN WIND PRESSURES														
SPAN TYPE	NOMINAL TOP HAT SPACING (mm)	ULTIMATE DESIGN WIND PRESSURE (kPa)												
		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Single Span	300	2311	2047	1873	1746	1648	1569	1503	1447	1398	1356	1318	1284	1253
	450	2020	1789	1637	1526	1440	1371	1313	1264	1221	1184	1148	1104	1064
	600	1835	1625	1487	1386	1308	1245	1193	1143	1086	1037	994	956	906
2 Span Continuous	300	3099	2713	2316	2038	1832	1671	1540	1431	1339	1260	1192	1131	1077
	450	2649	2130	1808	1585	1418	1288	1183	1096	1023	960	905	857	809
	600	2231	1785	1508	1317	1174	1063	974	900	838	768	706	653	607
3 Span Continuous	300	2856	2530	2315	2158	1986	1811	1670	1552	1453	1367	1293	1227	1168
	450	2496	2210	1960	1718	1538	1397	1283	1189	1110	1042	983	931	884
	600	2268	1934	1636	1428	1274	1154	1057	977	910	840	772	714	664

4.8 MOVEMENT JOINTS

Movement joints are required to limit or remove stresses from the panels. Movement joints are provided by the nominal 10mm expressed or sealant filled joints at the perimeter of the panels.

Vertical structural joints may be required in the cladding to coincide with structural joints in the structure to accommodate the anticipated movement.

Horizontal structural joints are required at slab level where the framing supporting the top hats moves with the creep deflection in the slab.

NOTE

The project engineer is responsible for specifying the anticipated movement.

5 PREPARATION

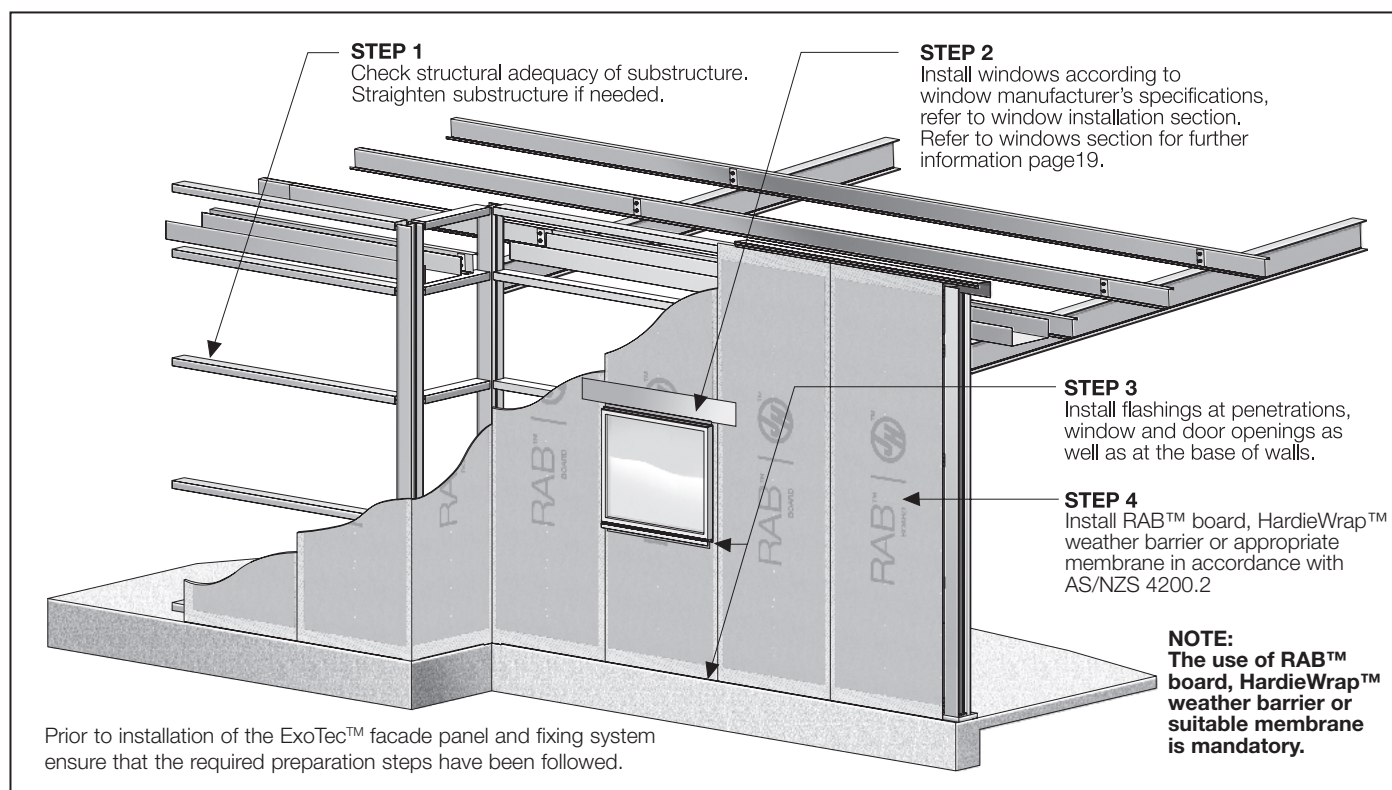


FIGURE 1 PREPARATION OF SUB-STRUCTURE

NOTES

- For high walls it may be necessary to provide flashing to drain the facade at one or more intermediate levels. The installation of any barrier must not restrict moisture from reaching flashings and draining out.
- The engineer must limit the deflection of the supporting structure to span/250 for serviceability Wind Load.

5.1 SUBSTRUCTURE

The ExoTec™ top hat and intermediate JH top hat sections are installed vertically over steel girts, masonry, concrete walling and in residential applications over timber or steel framing. In a residential application, noggings between studs can be used as intermediate support for ExoTec™ top hat and intermediate JH top hat sections.

A qualified structural engineer must design the substructure and the connection between the substructure and the top hats.

5.2 WEATHER BARRIER

A suitable water control membrane must be installed under James Hardie™ cladding in accordance with the AS/NZS 4200.2 'Pliable building membranes and underlays – Installation' and NCC requirements or other relevant and appropriate standards. James Hardie has tested and certified the use of HardieWrap™ weather barrier or RAB™ board for climate zones 2-8 within Australia. HardieWrap™ weather barrier is a Class 4 vapour permeable membrane that delivers a triple-shield of protection to help against external weather penetration, internal condensation management and external heat penetration through its safe-glare reflective layer.

If using an alternate product in lieu of HardieWrap™ weather barrier or RAB board™ or the project is located in a hot humid area (Climate Zone 1), the designer must ensure that the product is fit for purpose and it has the following classification in accordance with AS/NZS 4200.1:2017 'Pliable building membranes and underlays – Materials':

HardieWrap™ weather barrier is suitable for use as a component of non-combustible walls and in bushfire prone areas as it has a "Low" Flammability Index in accordance with AS 1530.2 and is under 1mm in thickness.

TABLE 4

WEATHER BARRIER CLASSIFICATION		
Climate Zones (NCC)	Water Barrier Class (AS/NZS 4200)	Vapour Permeance Class (AS/NZS 4200.1)
2-8	High Water Barrier	Vapour permeable (Class 3 or 4)
1		Vapour Barrier (Class 1 or 2)

Soft compressible insulation installed between the front of the wall studs and directly behind the external cladding can cause installation issues and is thus not recommended.

5.3 FLASHING

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to top hat and sheet installation. Refer to Clause 2.5 for moisture management requirements.

5.4 THERMAL BREAK

The NCC 2019 sections J0.5 and 3.12.1 volumes 1 and 2 respectively, state for both residential and commercial buildings a thermal break with an R 0.2m² K/W must be installed behind external cladding where the cladding and internal lining make direct contact with the same metal frame.

The ExoTec™ facade panel installed with the ExoTec™ Fixing System in accordance with this installation guide does not require a thermal break as the panel is attached to the outside face of the 'Metal-Framed Single-Stud' wall and not directly connected to the metal framing member that supports the interior wall lining.

Please refer to letter of opinion from Cameron Chick of Acronem Consulting to verify this solution meets the minimum NCC requirements.

Please ensure the proposed application complies with the NCC, standards and thermal performance opinion.

6 PANEL AND TOP HAT LAYOUT

The ExoTec™ facade panels can be installed upright horizontally or vertically. The panel layout will determine the location of the ExoTec™ and intermediate JH top hats, see Figures 3 to 6. The vertical expressed joints may be aligned or offset in a brick pattern layout.

KEY
TH: ExoTec™ top hat
INT: Intermediate JH top hat

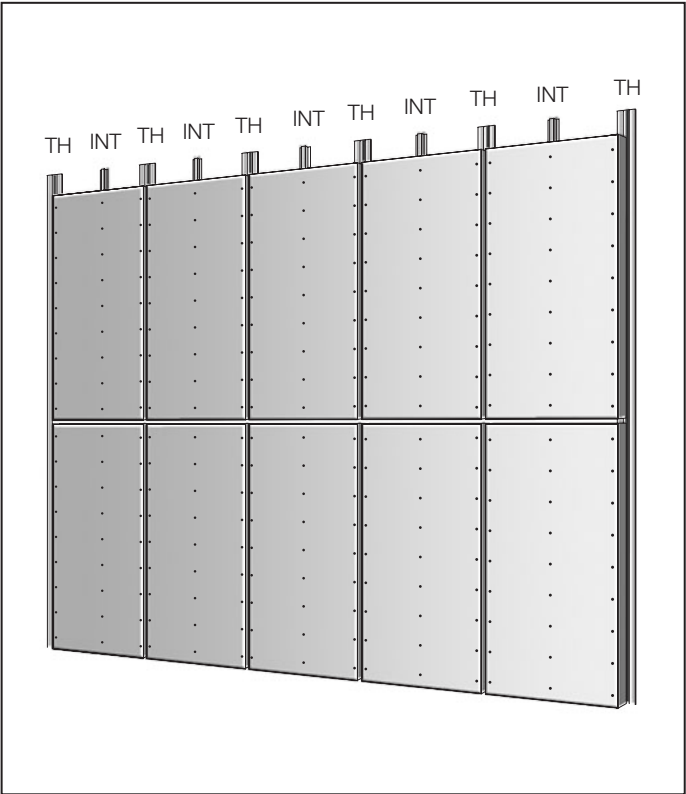


FIGURE 2 VERTICAL LAYOUT ALIGNED GRID PATTERN

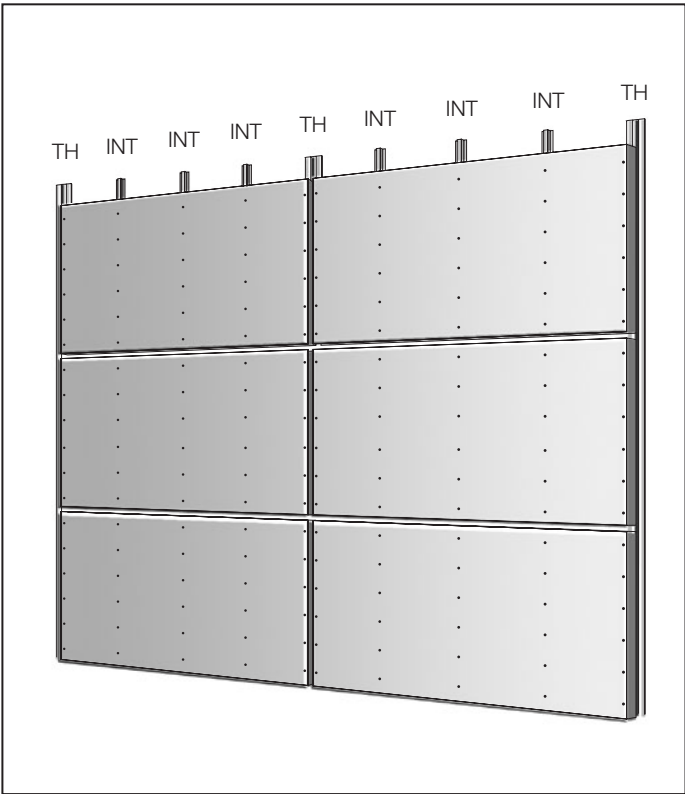


FIGURE 4 HORIZONTAL LAYOUT ALIGNED GRID PATTERN

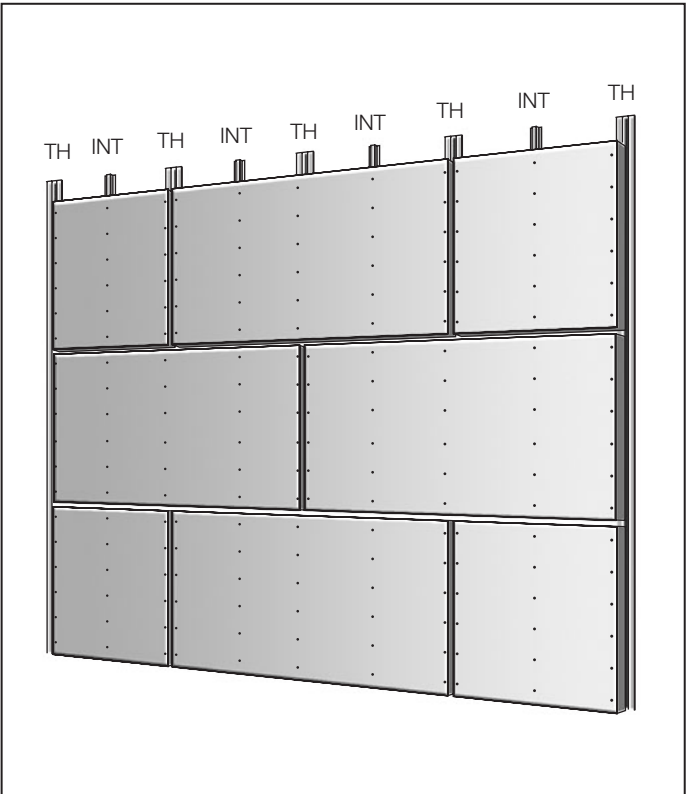


FIGURE 3 HORIZONTAL LAYOUT BRICK GRID PATTERN

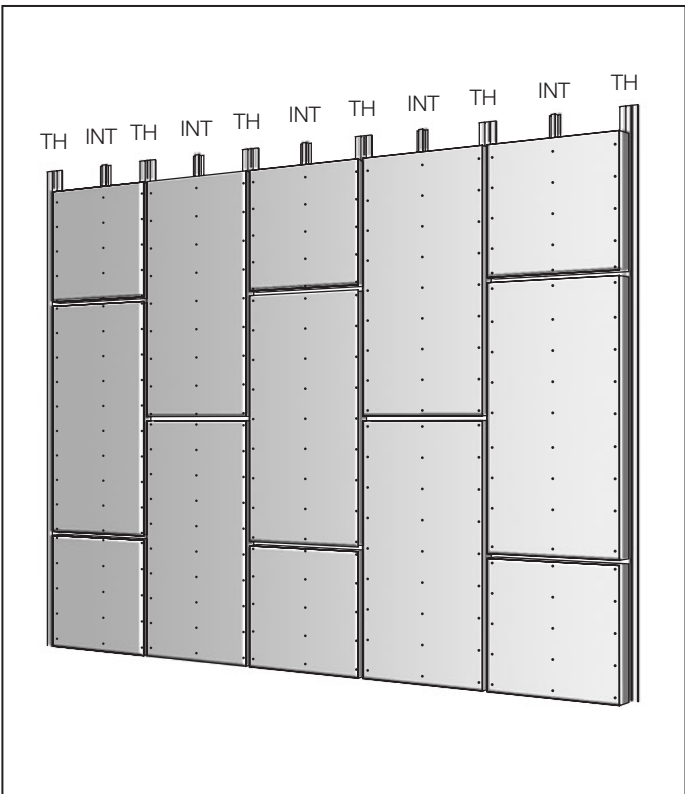


FIGURE 5 VERTICAL LAYOUT BRICK GRID PATTERN

7 INSTALLATION

7.1 TOP HAT INSTALLATION

ExoTec™ facade panels must be fixed to:

- 1) ExoTec™ top hat for vertical sheet joints.
- 2) Intermediate JH top hat for supporting the panels between vertical sheet joints.

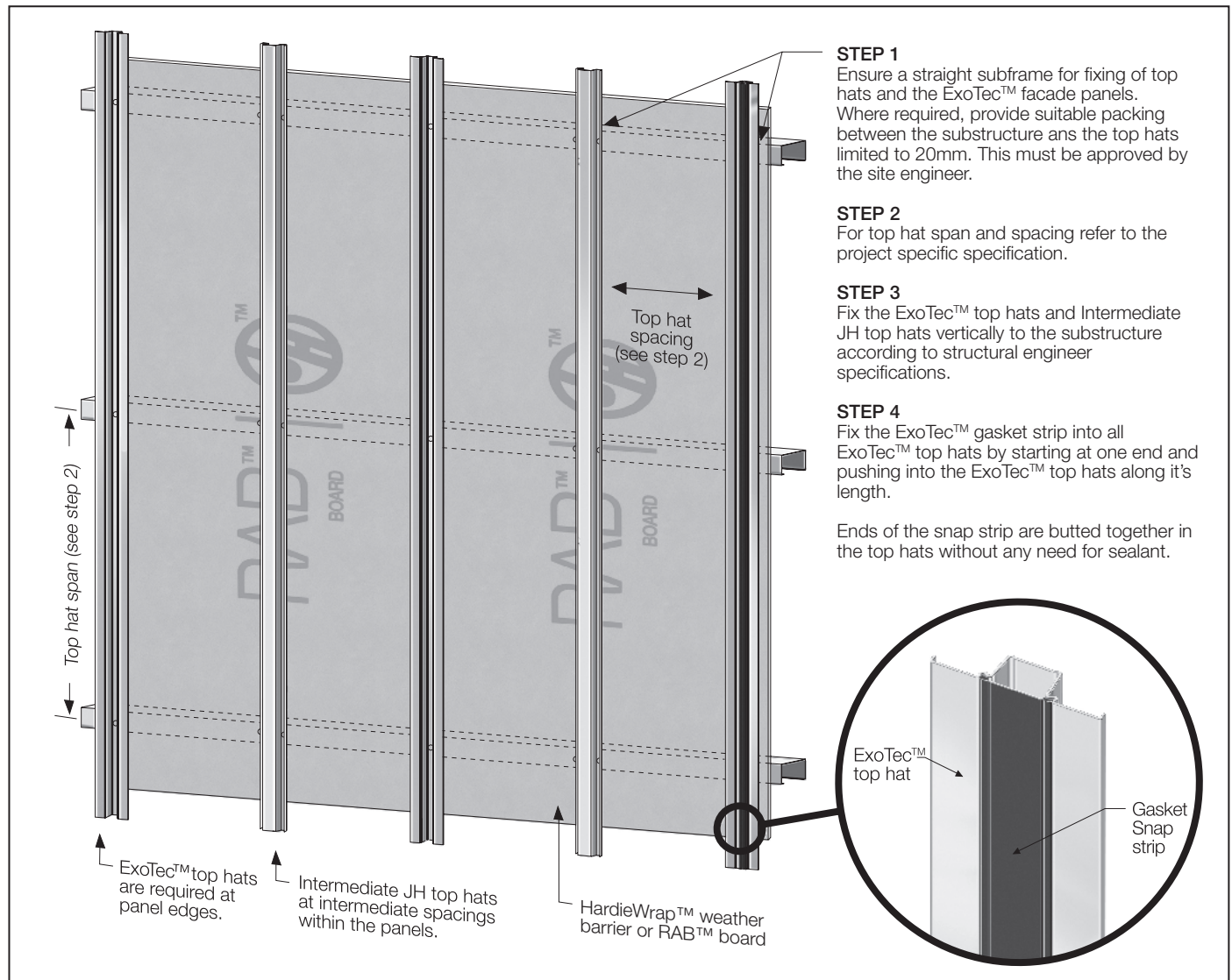


FIGURE 6 TOP HAT INSTALLATION

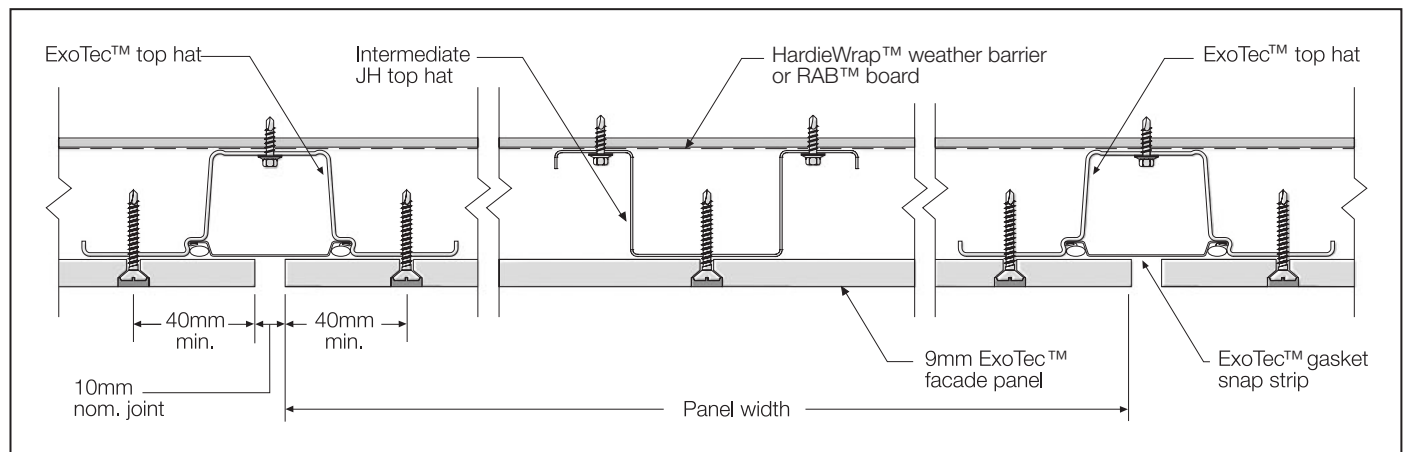


FIGURE 7 TOP HAT AND PANEL FIXING DETAIL FOR EXOTEC™ PANELS

7.2 PANEL INSTALLATION

Panels are installed with a 10mm nominal expressed joint between adjacent panels, vertically and horizontally. Vertical joints up to 20mm width can be formed, with additional care required at installation to ensure the panel edges cover the ExoTec™ gasket snap strip on both sides of the joint. A minimum vertical expressed joint of 6mm is allowed with care. Horizontal joints are a nominal 10mm.

NOTE
When applying sealant to the edge of the ExoTec™ facade panel, refer to page 13 for recommended sealants.

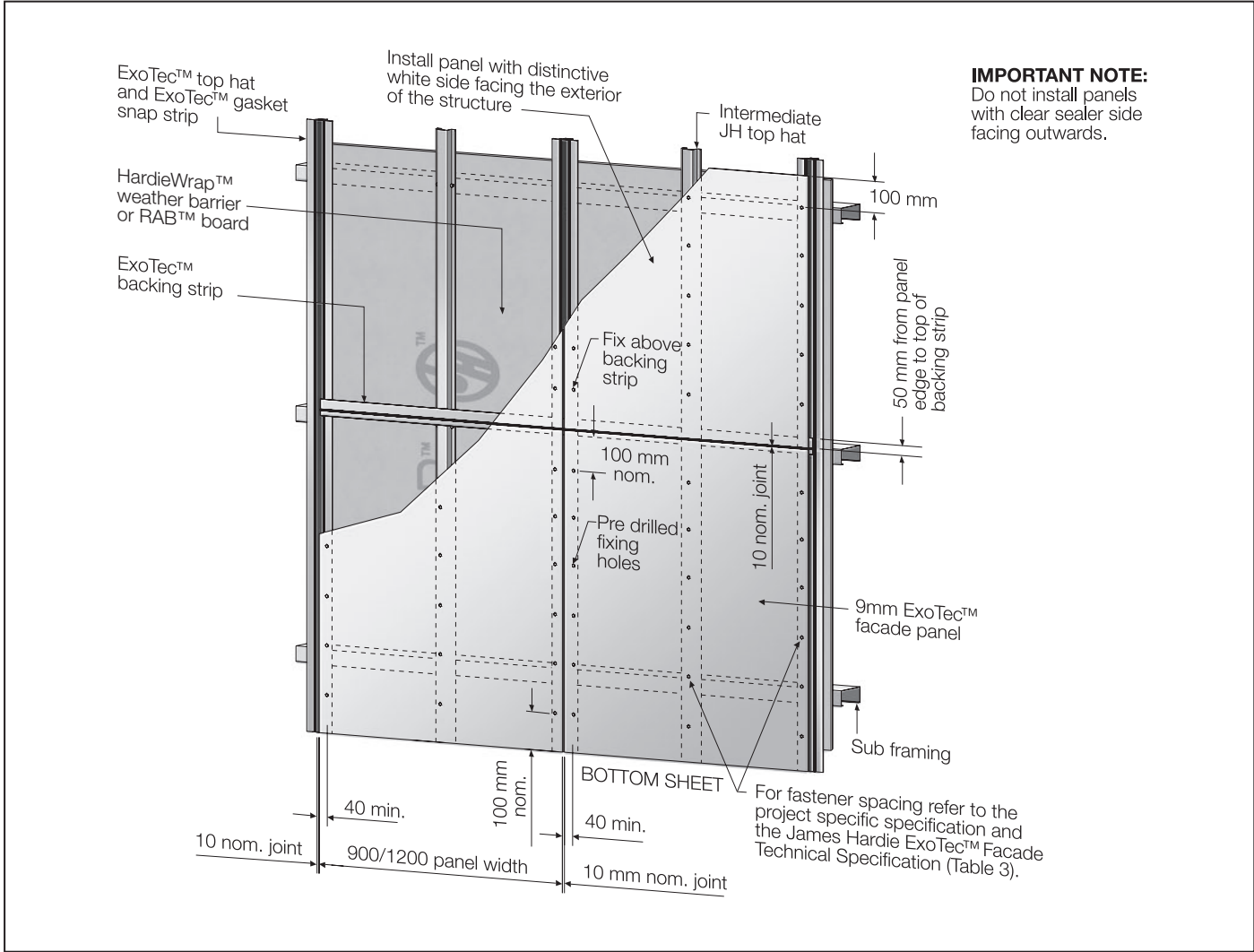


FIGURE 9 TYPICAL PANEL AND FRAMING LAYOUT

7.3 FASTENER SPACINGS

Table 5 indicates the maximum fastener spacings at sheet edges and at intermediate JH top hats for wall and soffit applications.

TABLE 5 - WALLS & SOFFIT

FASTENER SPACINGS FOR WALL AND SOFFIT APPLICATION			
Design Wind Pressure (kPa)	Top Hat Spacing (mm)	WALLS Max. Fastener Spacing (mm)	SOFFITS Max. Fastener Spacing (mm)
1.0	600	600	600
1.5	600	600	600
2.0	600	575	550
2.5	600	450	425
3.0	600	350	350
3.5	*600	350*	N/A
3.5	450	450	425
4.0	450	400	375
4.5	450	350	325
5.0	450	300	300
5.5	450	275	275
6.0	450	250	250
6.5	400	250	250
7.0	400	250	250

NOTES TO TABLES 2, 3 AND 5

- Top hat deflection for serviceability limit state design to AS 1170.2 is limited to span/250, except where * is shown it is span/180.
- Design wind pressures to be in accordance with AS 1170.2 for ultimate strength design.
- For permissible design wind pressure, divide the ultimate strength design wind pressures by 1.5.
- For higher design wind pressures (ultimate), contact James Hardie on 13 11 03.

7.4 FASTENING METHODS

Panels may be fixed to ExoTec™ top hats and intermediate JH top hats by either:

- Countersunk fasteners:** flush finished over screw heads with a suitable epoxy, and then with James Hardie™ base coat. Generally used with site-applied acrylic coatings. **NOTE:** Countersunk fastening is not suitable for pre-finished facade panels.
- Exposed head screws:** using pan, wafer or hex head screws. Used where pre-finished panels are installed. Exposed head fasteners may be colour coated to match panel finish.

Fasteners must have the appropriate level of durability required for the intended project. This is of particular importance in coastal areas, subject to salt spray and other corrosive environments.

Fasteners must be fully compatible with all other materials that the fasteners will come in contact with, to ensure the durability and integrity of assembly.

Contact fastener manufacturers for more information.

Countersunk Fasteners

NOTE:

- Mark fastener locations as specified, see Figure 8.
- Drill clearance holes into ExoTec™ facade panel, for No.10 gauge screws using a 6mm countersunk masonry drill, which provides a 6.2 to 6.3mm diameter hole, see Figure 10. Countersink hole to a depth of 2.5mm to 3mm. This is measured from the top of the screw to the top of the sheet, see Figure 15.

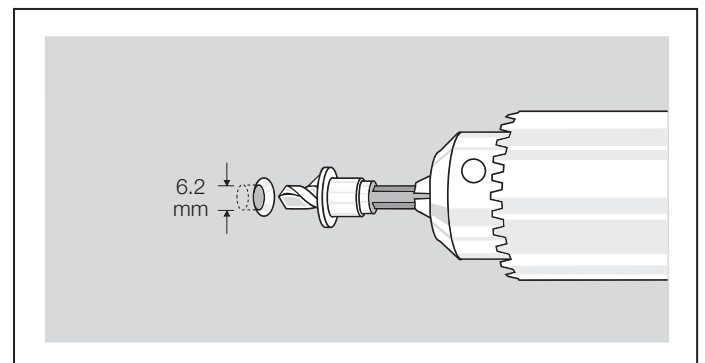


FIGURE 10 DRILL COUNTERSINK HOLE

NOTE:

Do not use hammer action.

- Fasten panel into top hat with corrosion resistant (Class 3 min.) No. 10 gauge x 30mm countersunk head self drilling fasteners. For areas within a corrosive environment refer to fastener manufacturer for suitability and compatibility of fasteners.
- Clean dust out of holes to ensure adhesion of epoxy sealer.
- Mix only sufficient epoxy for immediate use. James Hardie recommends the use of Megapoxy P1.
- Cover countersink fastener with epoxy leveled flush with sheet. To accommodate for second coat do not overfill hole. Allow epoxy to cure.

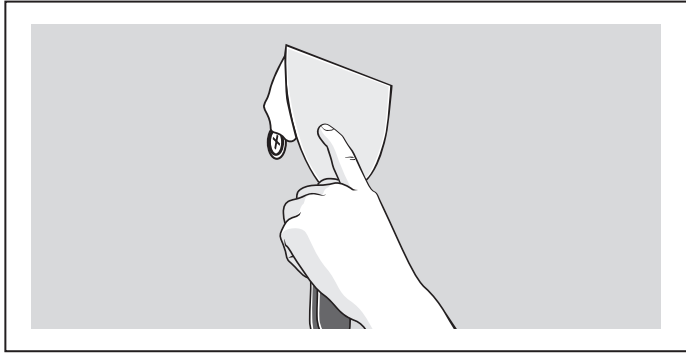


FIGURE 11 COVER COUNTERSINK FASTENER WITH EPOXY

7. Apply James Hardie™ base coat over epoxy using the base coat applicator. See Figures 12, 13, and 14.

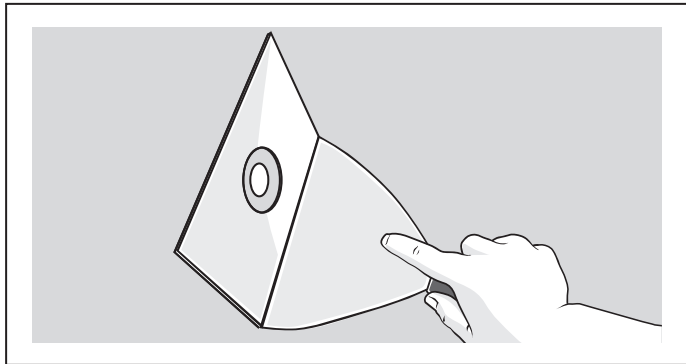


FIGURE 12 FIX BASE COAT APPLICATOR OVER EPOXY FILLED SCREW HEAD

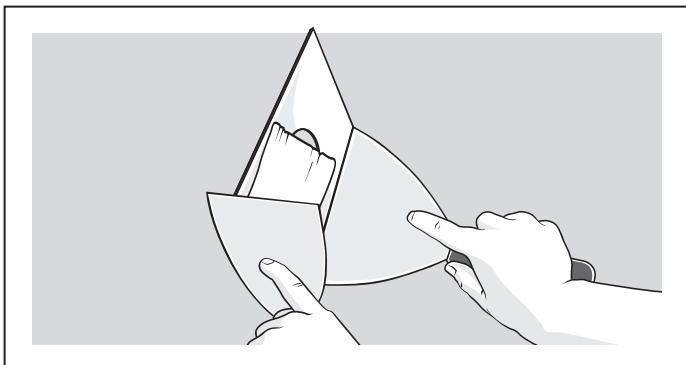


FIGURE 13 APPLY JAMES HARDIE™ BASE COAT OVER EPOXY FILLED SCREW HEAD

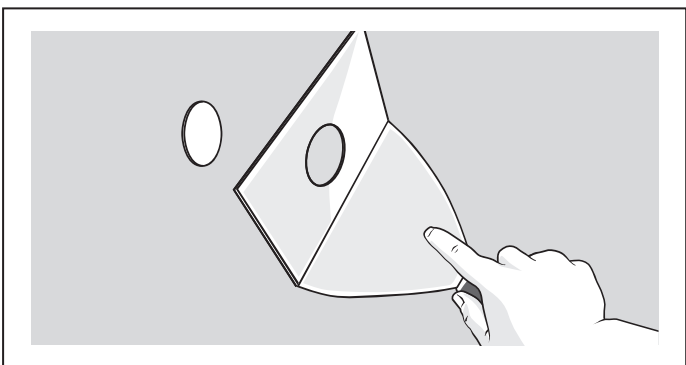


FIGURE 14 SCREW HEAD COVERED BY EPOXY AND JH BASE COAT

8. Sand James Hardie™ base coat smooth when cured with 100-120 grit sandpaper.

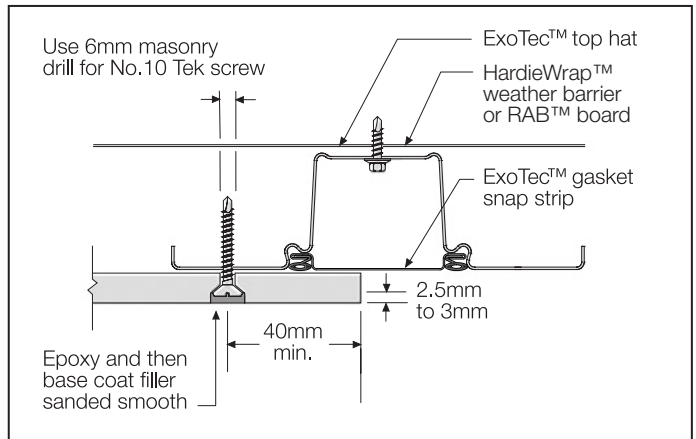


FIGURE 15 COUNTERSUNK FASTENER DETAIL

Do not use hammer action.

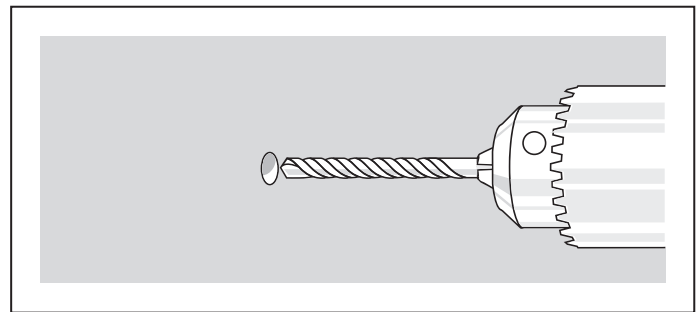


FIGURE 16 DRILL CLEARANCE HOLE

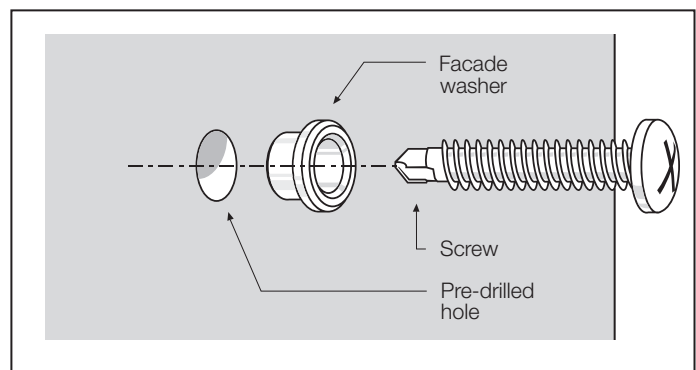


FIGURE 17 WASHER AND SCREW INSTALLATION

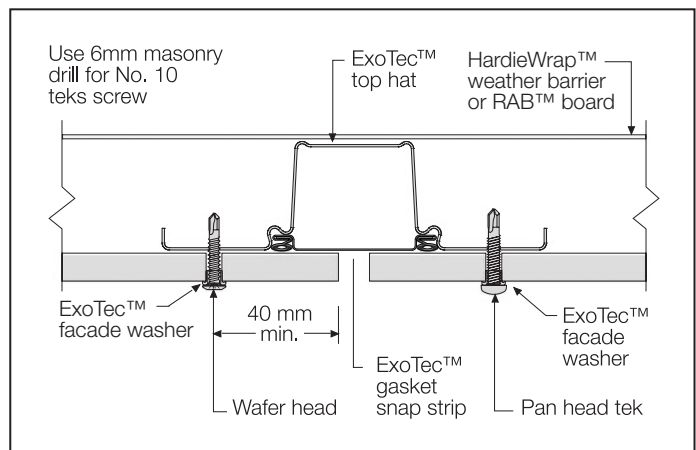


FIGURE 18 EXPOSED HEAD FASTENER DETAIL

7.5 BACKING STRIP INSTALLATION

At horizontal panel joints, ExoTec™ backing strips are adhered along the back top edge of the ExoTec™ facade panel prior to panel installation.

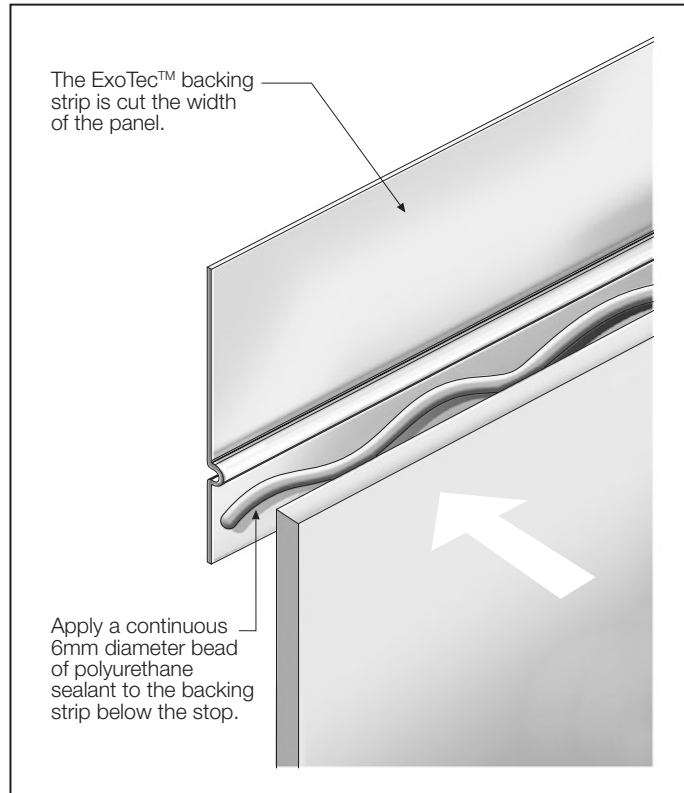


FIGURE 19 APPLYING SEALANT TO EXOTEC™ BACKING STRIP

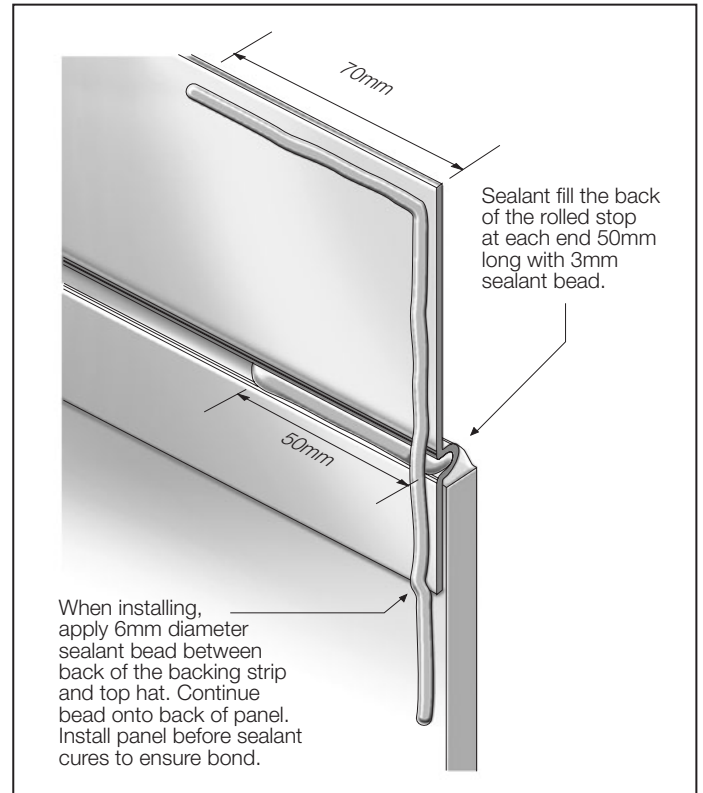


FIGURE 21 SEALING EXOTEC™ BACKING STRIP END DETAIL

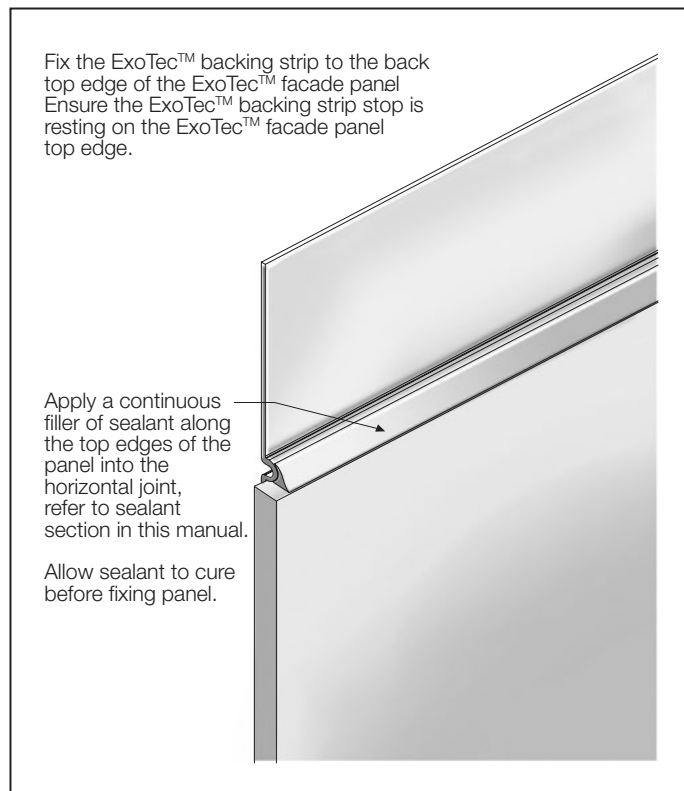


FIGURE 20 APPLYING SEALANT TO HORIZONTAL JOINT

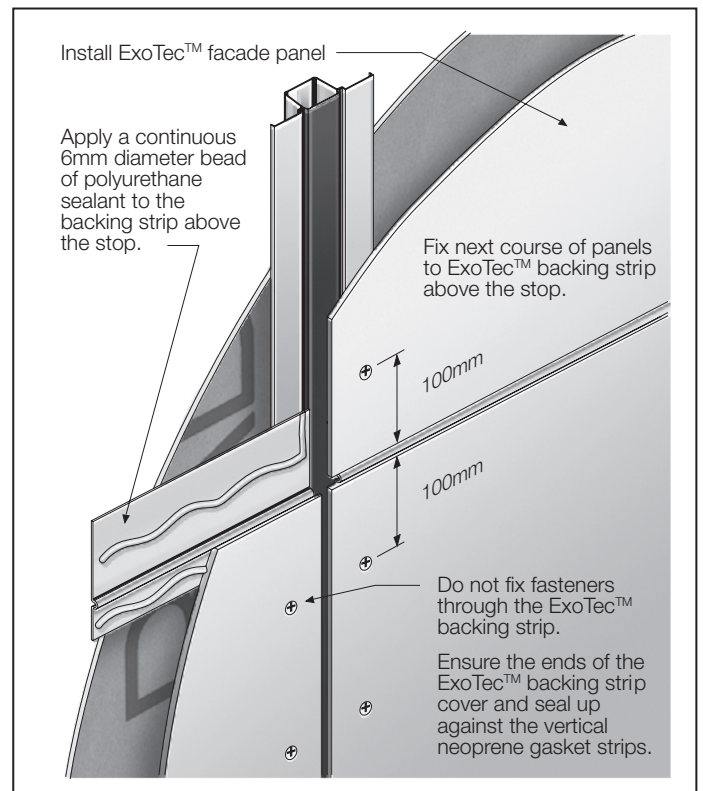


FIGURE 22 INSTALLING NEXT COURSE OF PANELS DETAILS

7.6 JOINTS AND JUNCTIONS

7.6.1 Joints

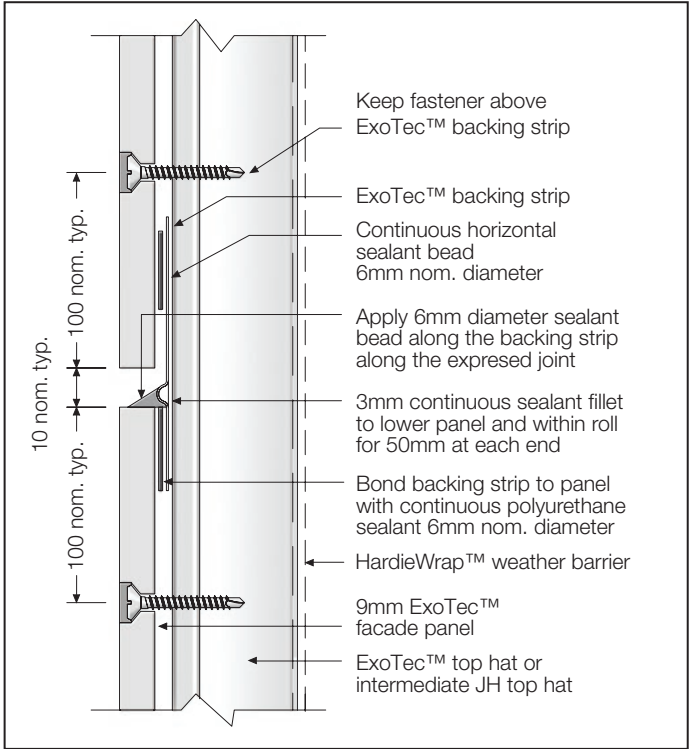


FIGURE 23 HORIZONTAL PANEL JOINT DETAIL

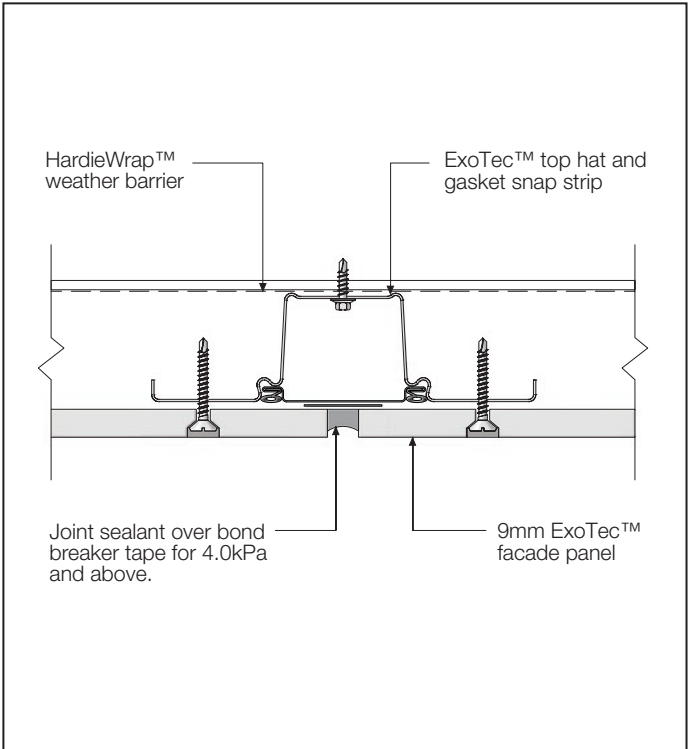


FIGURE 24 PANEL JOINTS IN HIGH WIND LOAD AREAS DETAIL

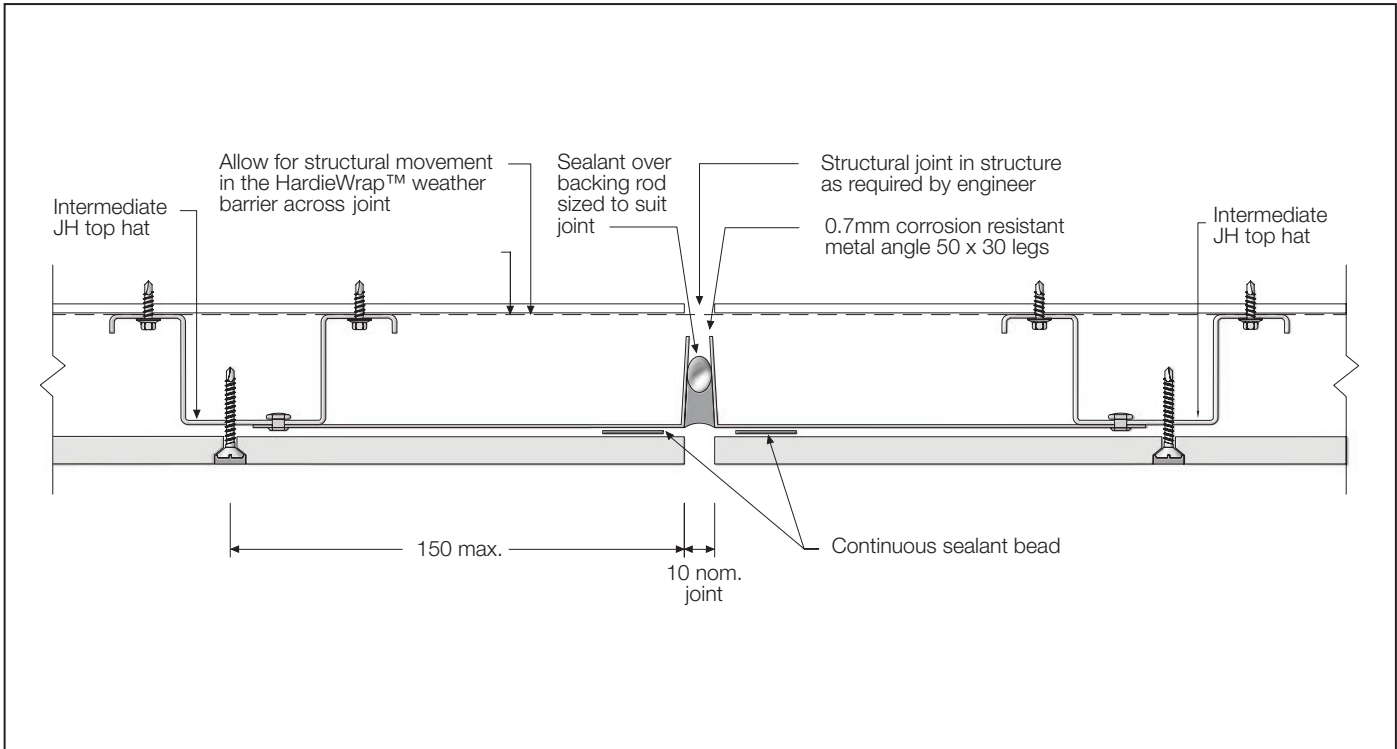


FIGURE 25 VERTICAL STRUCTURAL JOINT DETAIL

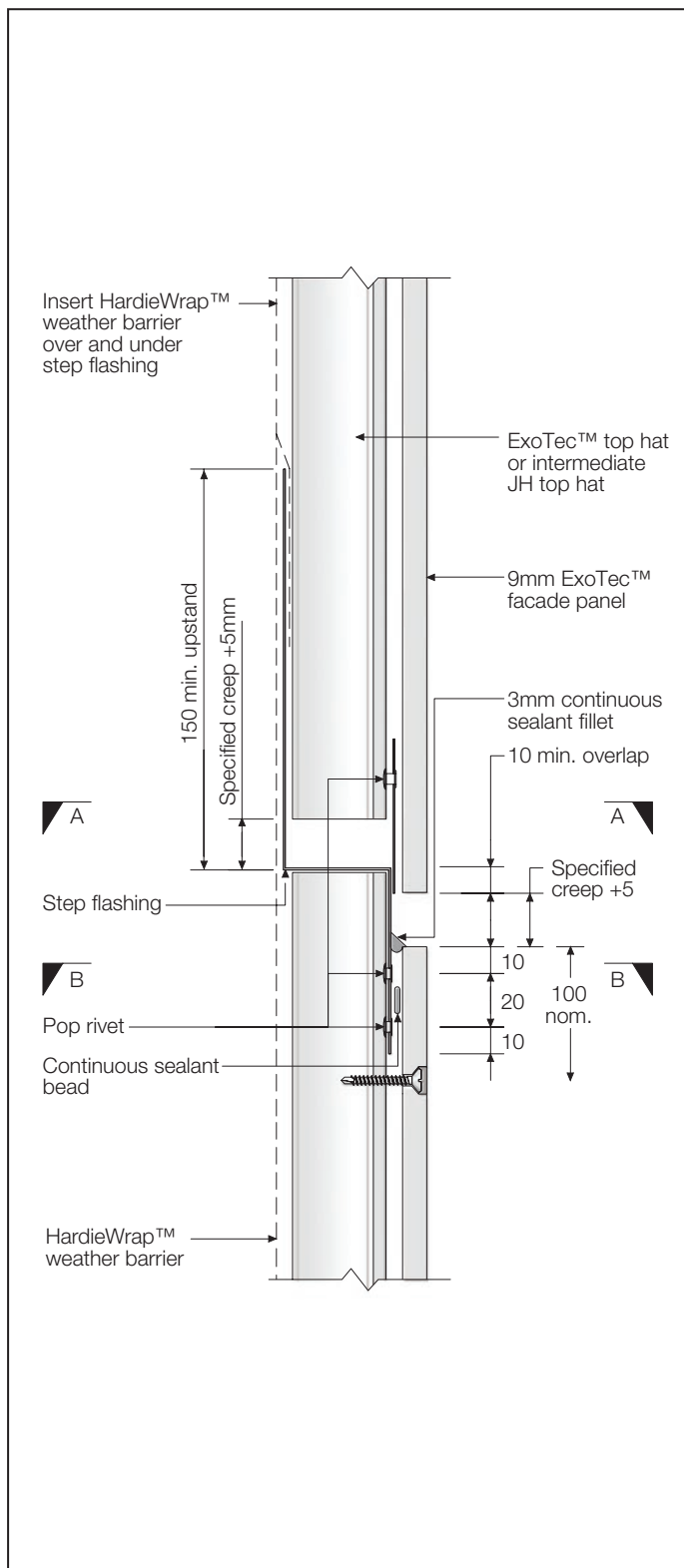


FIGURE 26 HORIZONTAL STRUCTURAL JOINT DETAIL

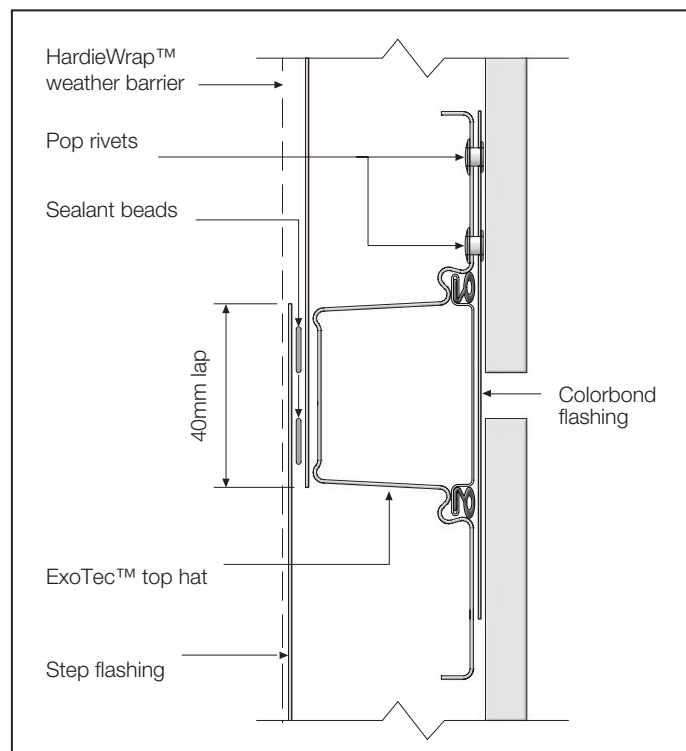


FIGURE 27 SECTION AA

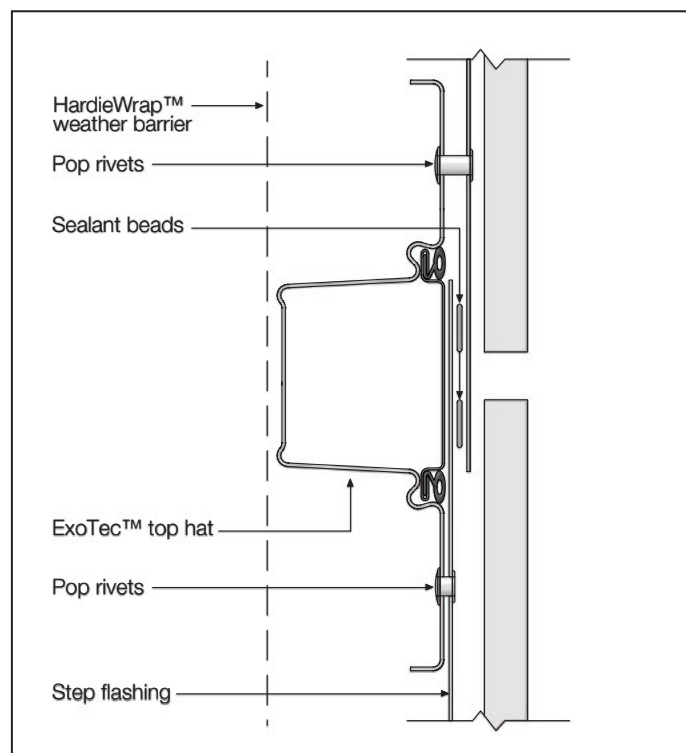


FIGURE 28 SECTION BB

7.6.2 Junctions

Base Slab Junction

This junction can be treated in a number of ways, two of which are illustrated in Figures 23 and 25.

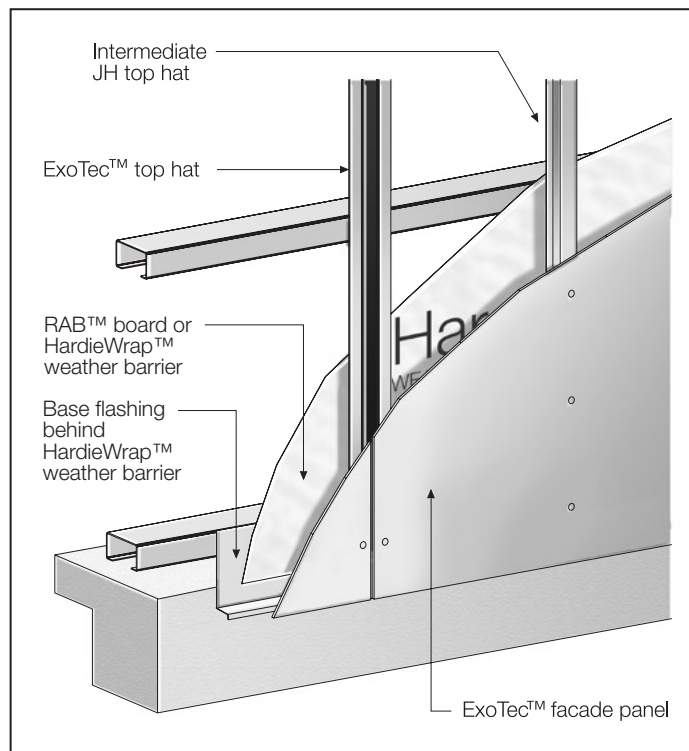


FIGURE 29 WALL BASE TYPICAL CUTAWAY DETAIL 1

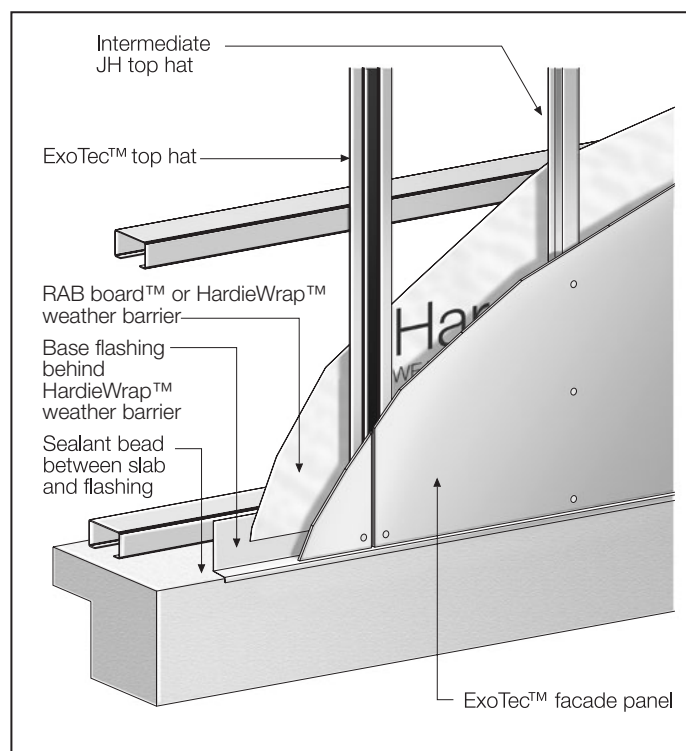


FIGURE 31 WALL BASE CUTAWAY TYPICAL DETAIL 2

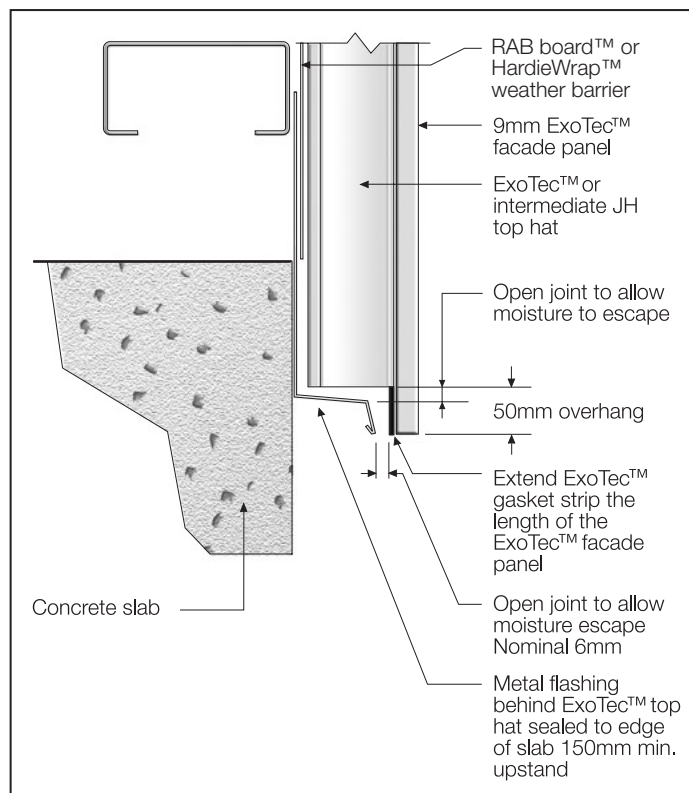


FIGURE 30 WALL BASE TYPICAL DETAIL 1

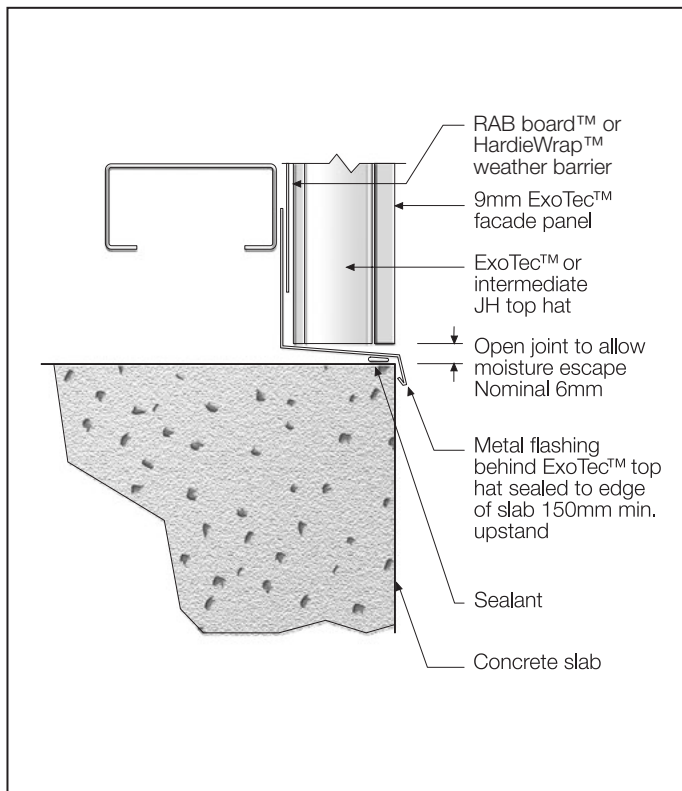


FIGURE 32A WALL BASE TYPICAL DETAIL 2

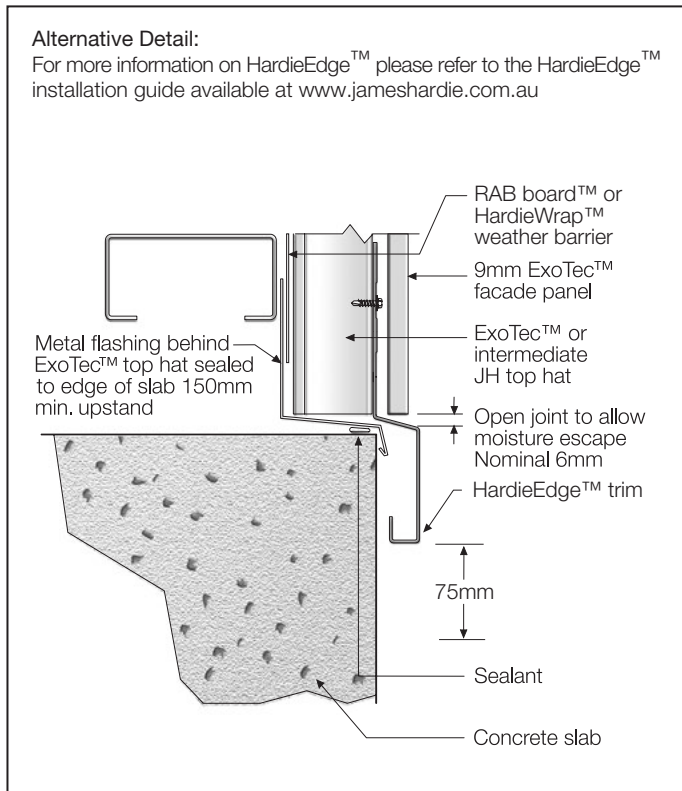


FIGURE 32B WALL BASE TYPICAL DETAIL 2 WITH HARDIEEDGE™ TRIM

Head Slab Junction

Where the cladding forms a junction with an exposed slab, the detail must accommodate for slab deflection. Refer to the structural engineer for appropriate recommendations. A typical deflection head detail is shown in Figure 27.

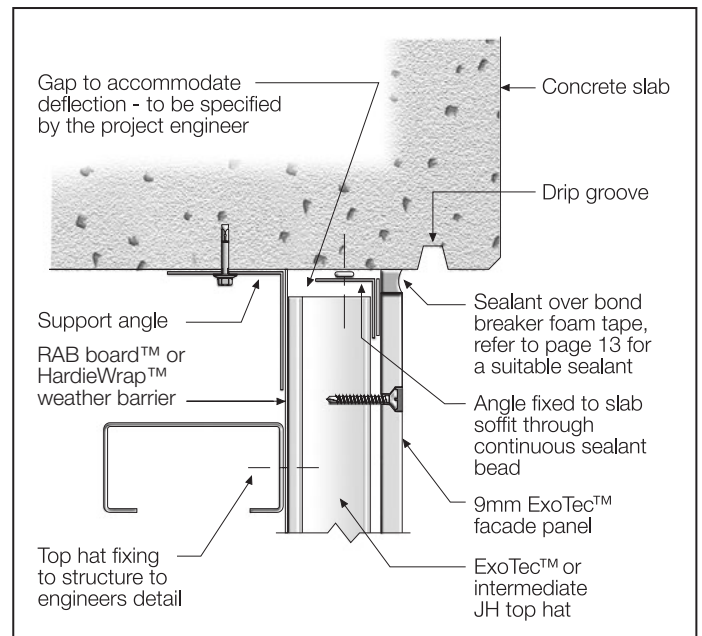


FIGURE 33 WALL DEFLECTION HEAD USED UNDER SLAB

Soffit Junction

There are many ways of detailing the soffit junction and it is important to ensure that a drip edge is provided. A typical approach to install the soffit fascia junction is shown in Figure 28. Ensure the ExoTec™ gasket snap strip is installed to the bottom of the fascia panel.

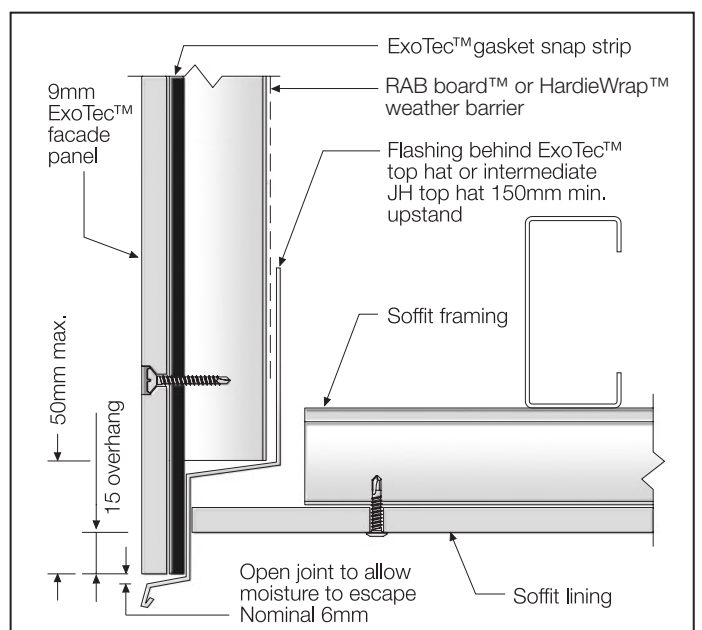


FIGURE 34 TYPICAL SOFFIT DETAIL

NOTE

It is essential that a continuous flashing is provided behind the top hats at the base of the fascia to allow moisture to escape.

Wall Junction

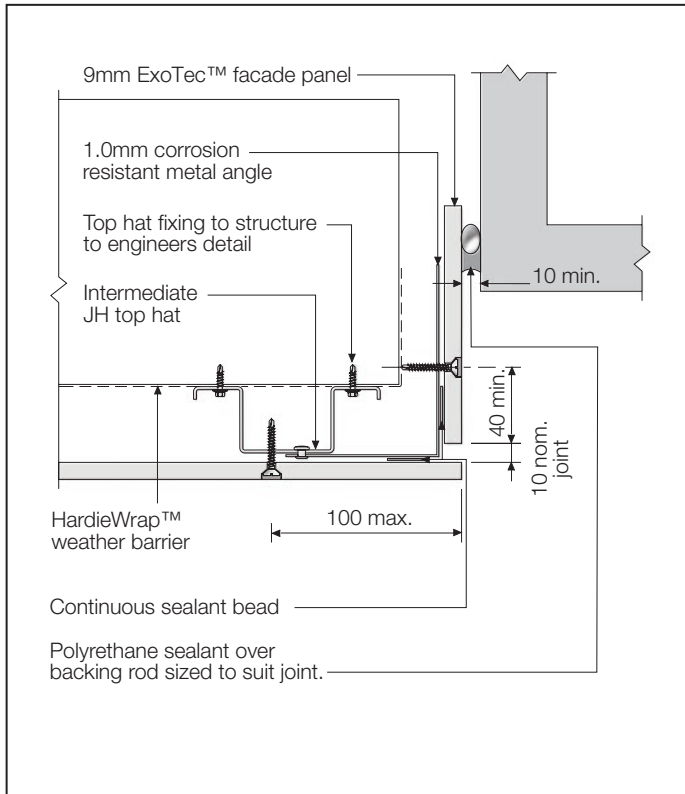


FIGURE 35 PLAN VIEW: STEP FLASHING TO MASONRY WALL

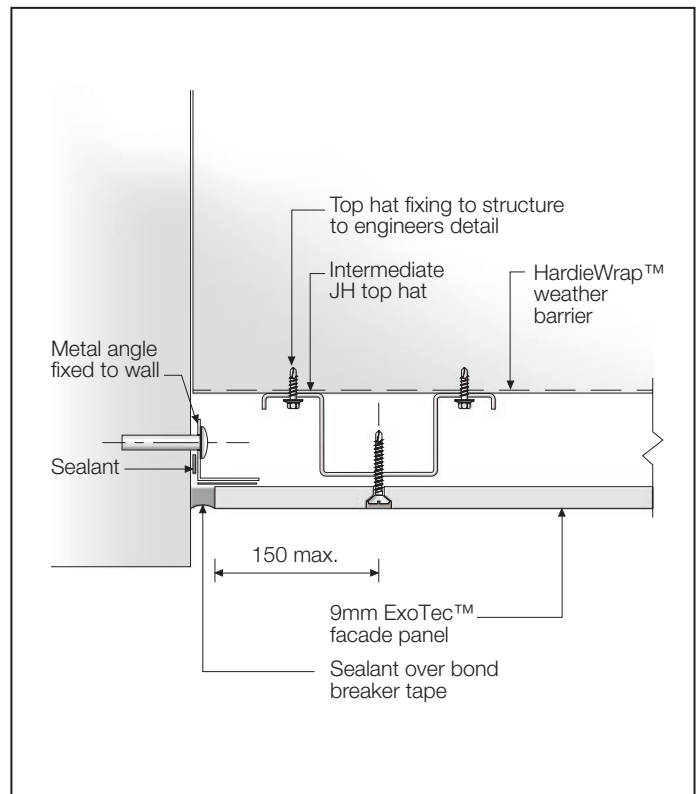


FIGURE 36 PLAN VIEW: ABUTTING TO MASONRY WALL

7.7 EXTERNAL CORNERS

This section contains various methods of finishing external corners using the ExoTec™ facade panel and fixing system

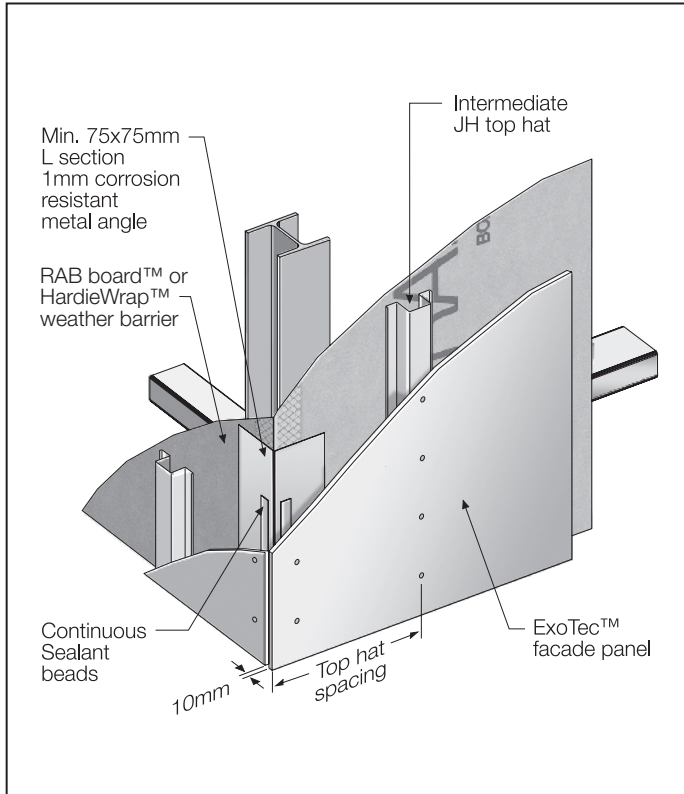


FIGURE 37 EXTERNAL CORNER CUTAWAY DETAIL

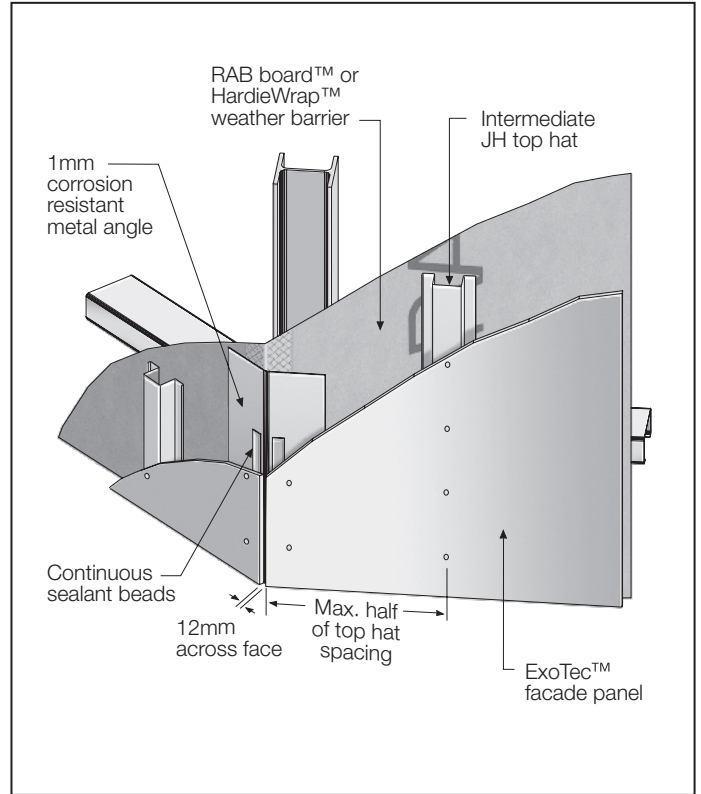


FIGURE 39 NON SQUARE EXTERNAL CUTAWAY CORNER

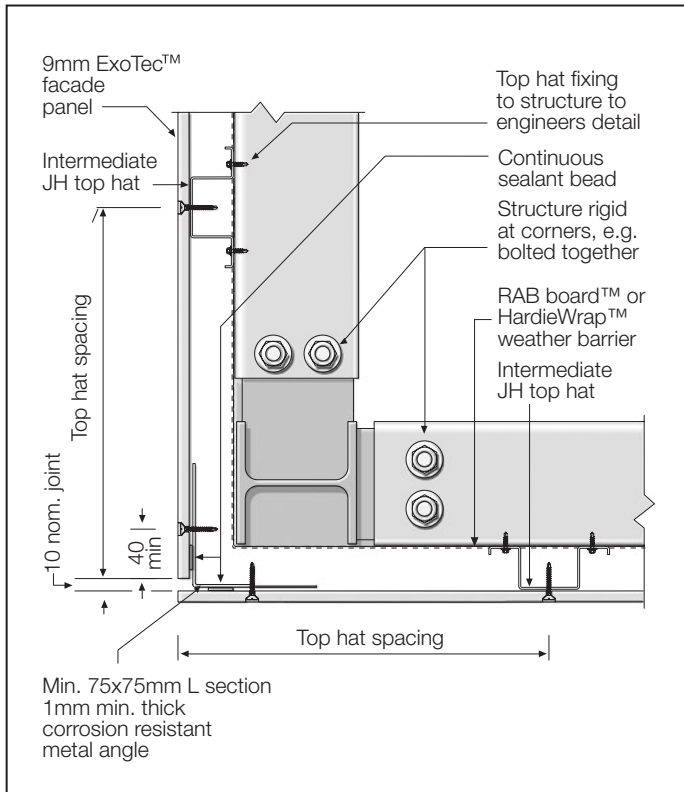


FIGURE 38 EXTERNAL CORNER DETAIL

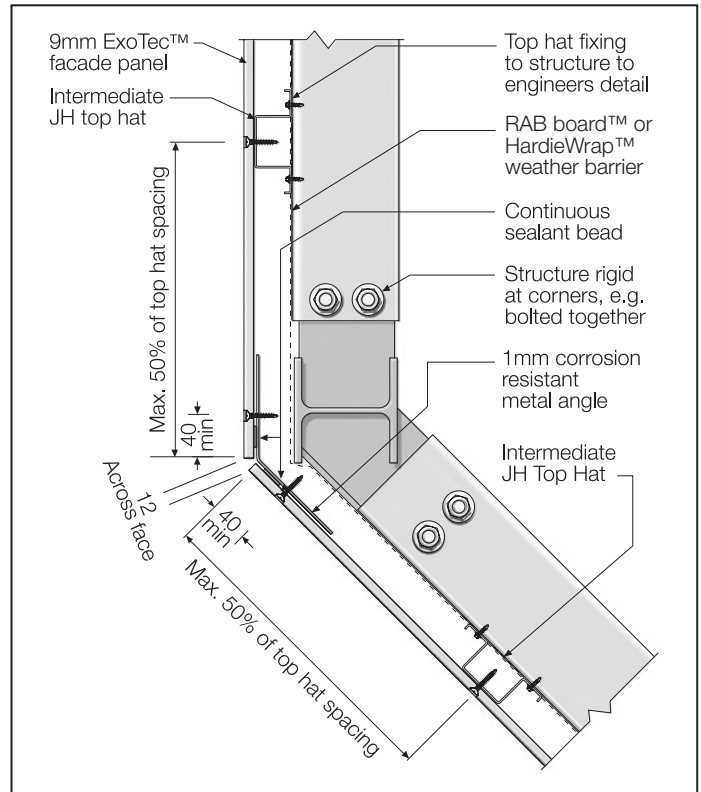


FIGURE 40 NON SQUARE EXTERNAL CORNER

7.8 INTERNAL CORNERS

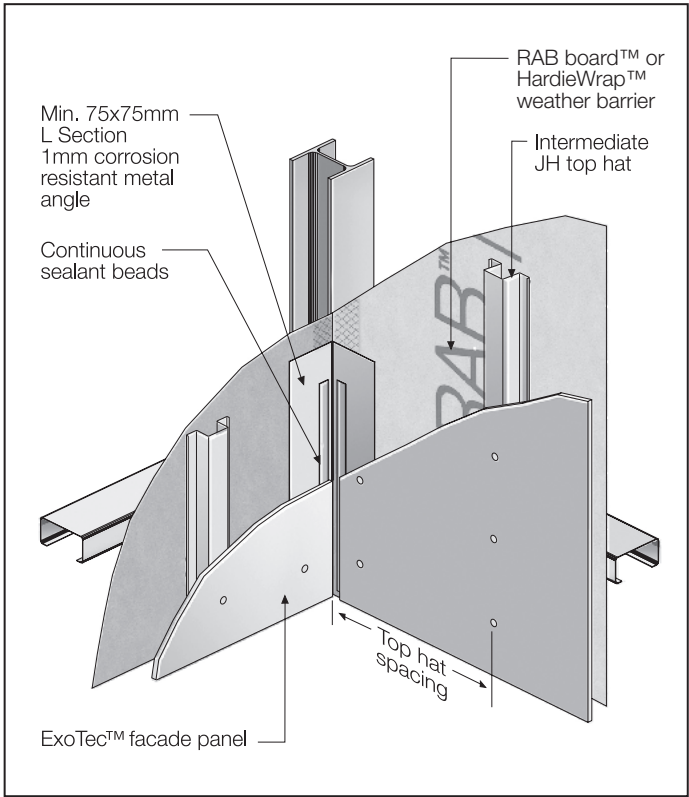


FIGURE 41 INTERNAL CORNER CUTAWAY DETAIL

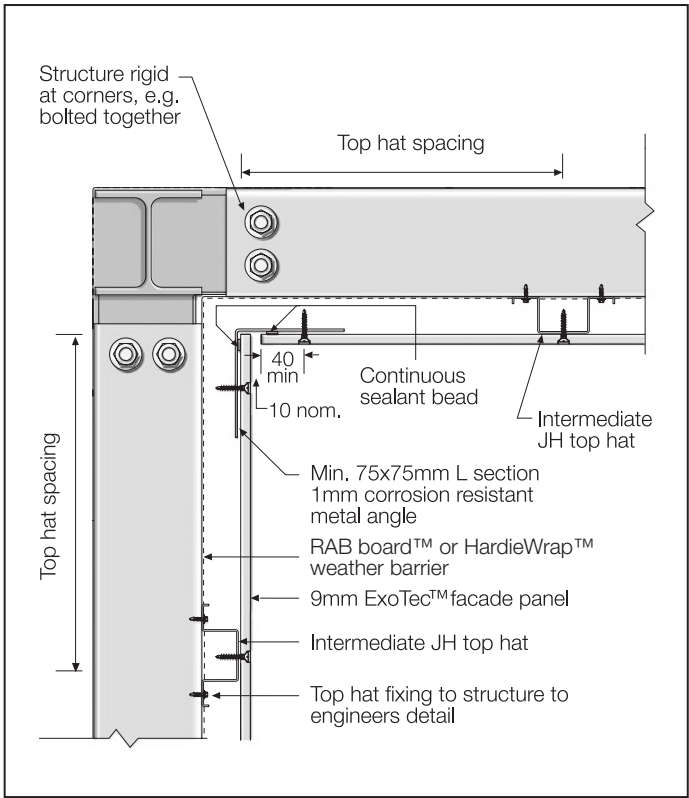


FIGURE 42 INTERNAL CORNER DETAIL

7.9 WINDOWS

The ExoTec™ facade panel and fixing system provides an opportunity to consider a range of alternative window treatments. The building designer, in conjunction with the window manufacturer, must consider the adequate weatherproofing of the window application.

Windows may be flush with the facade using figures 35– 45. This is a guide only. All windows are different and sufficient provision for moisture management must be made.

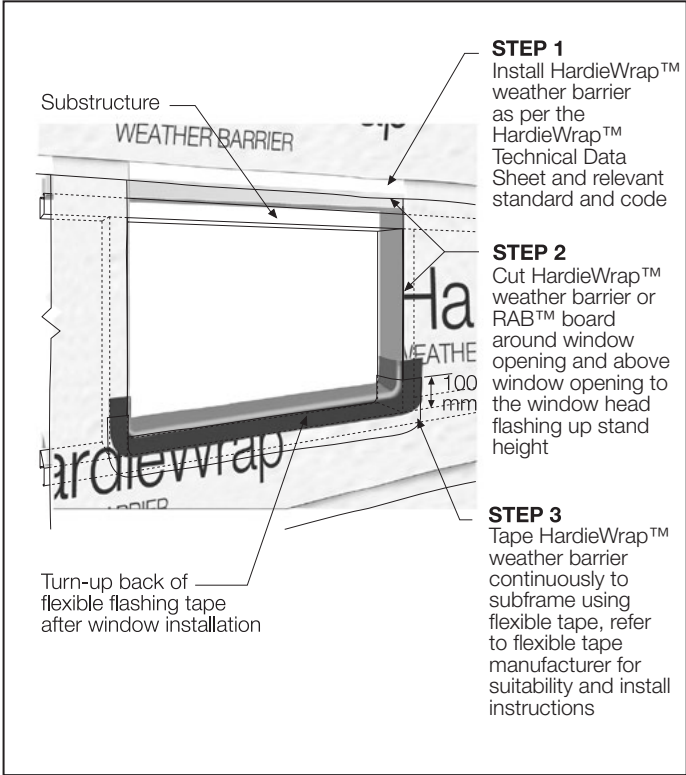


FIGURE 43 INSTALLATION OF HARDIEWRAP™ WEATHER BARRIER

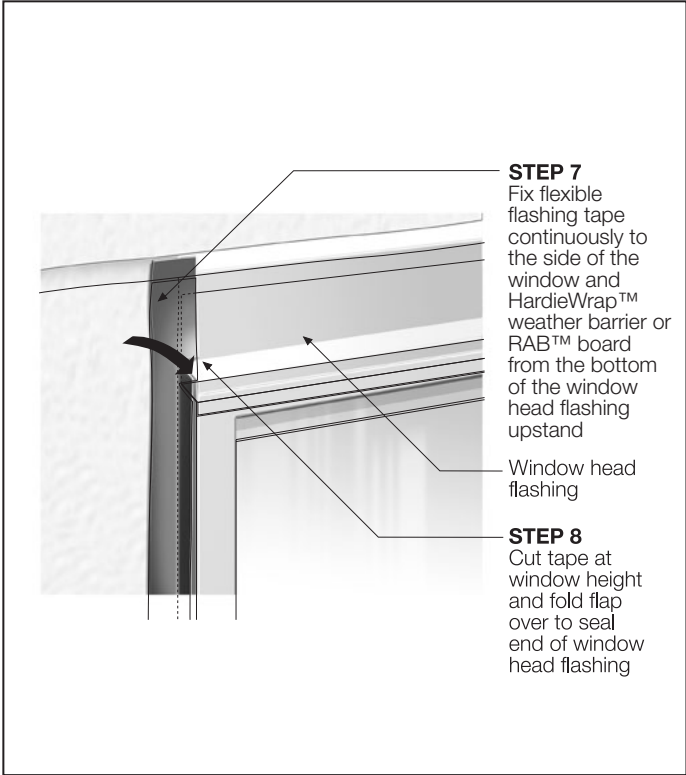


FIGURE 45 HEAD INSTALLATION OF WINDOW

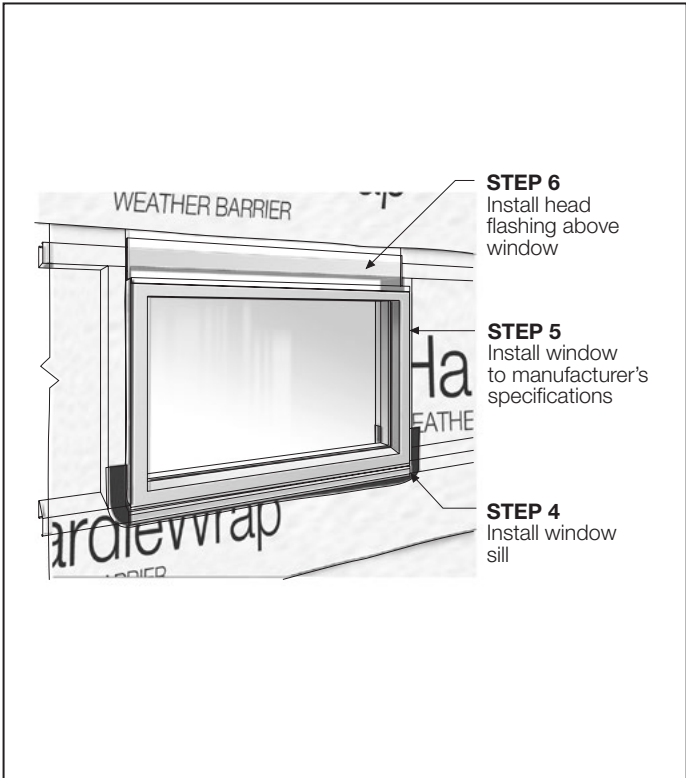


FIGURE 44 INSTALLATION OF WINDOW



FIGURE 46 INSTALLATION OF WINDOW

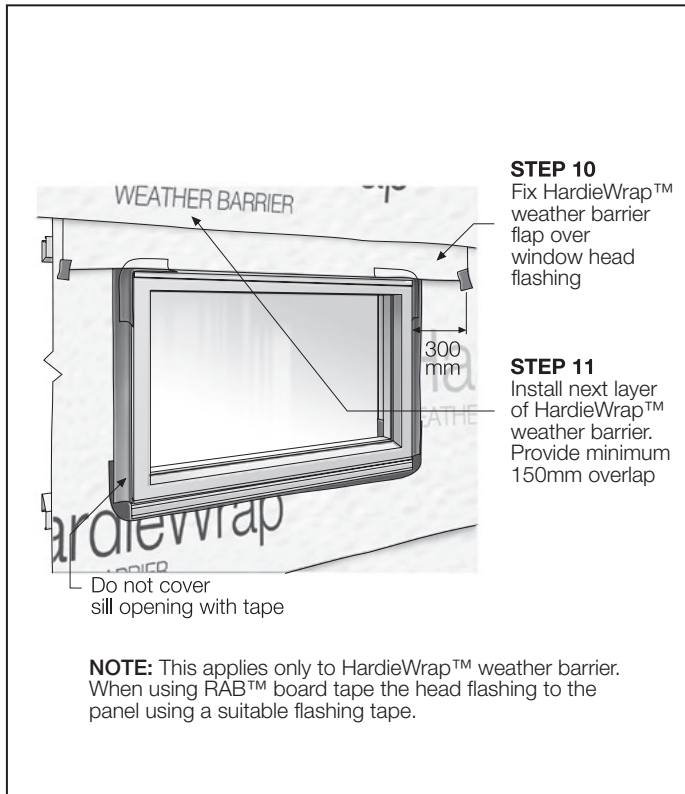


FIGURE 47 PREPARATION AROUND WINDOW

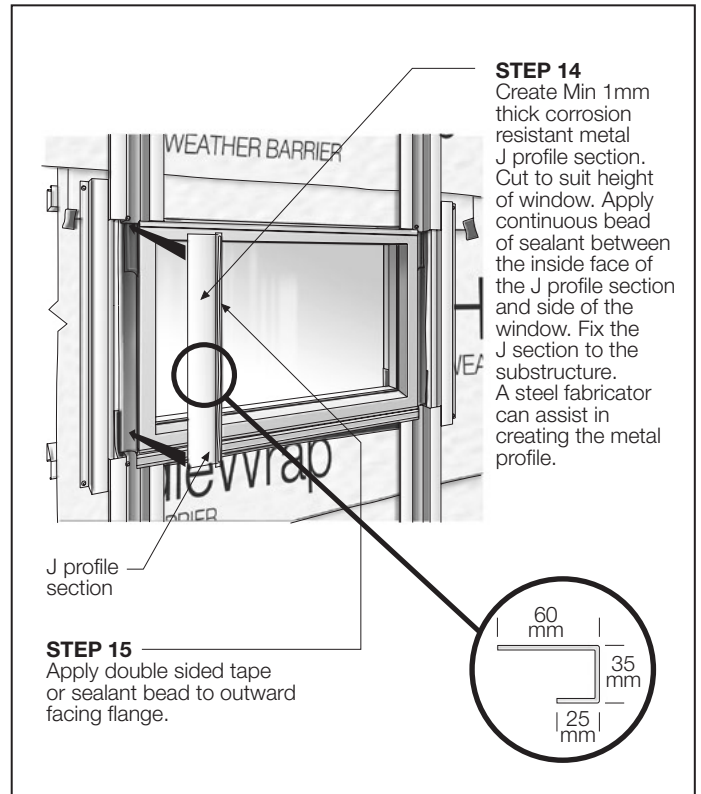


FIGURE 49 INSTALLATION OF J SECTION

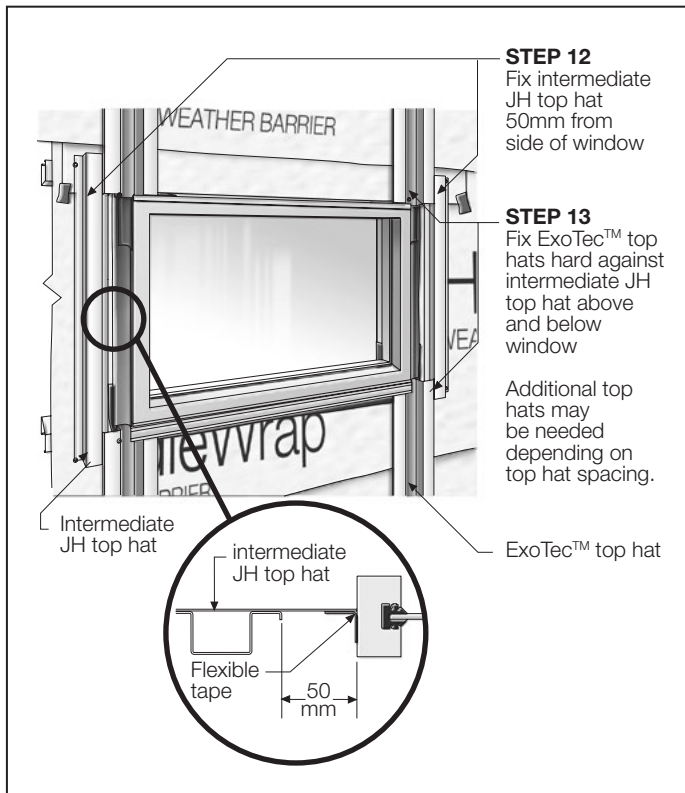


FIGURE 48 INSTALLATION OF TOP HATS AROUND WINDOW

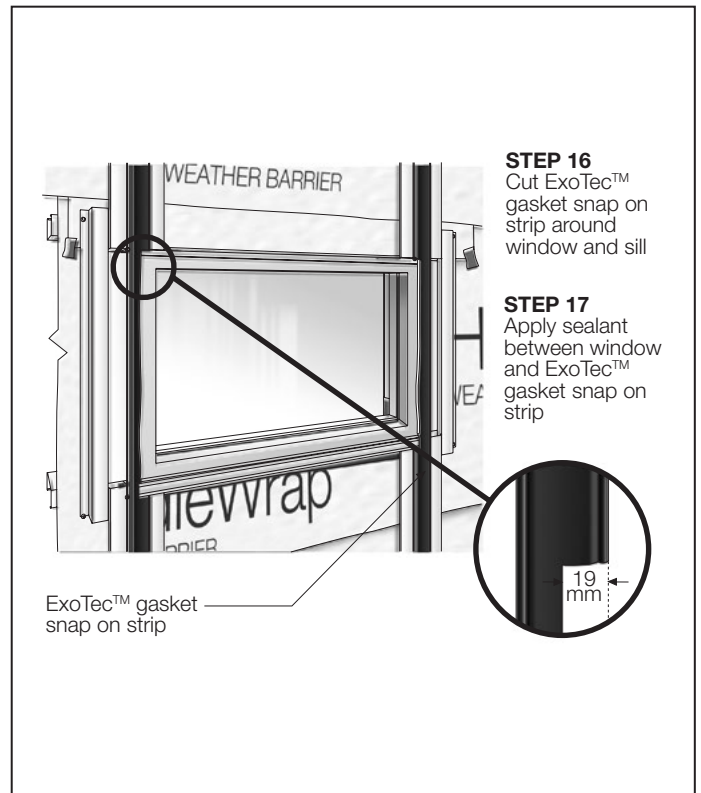


FIGURE 50 INSTALLATION OF SNAP ON STRIP

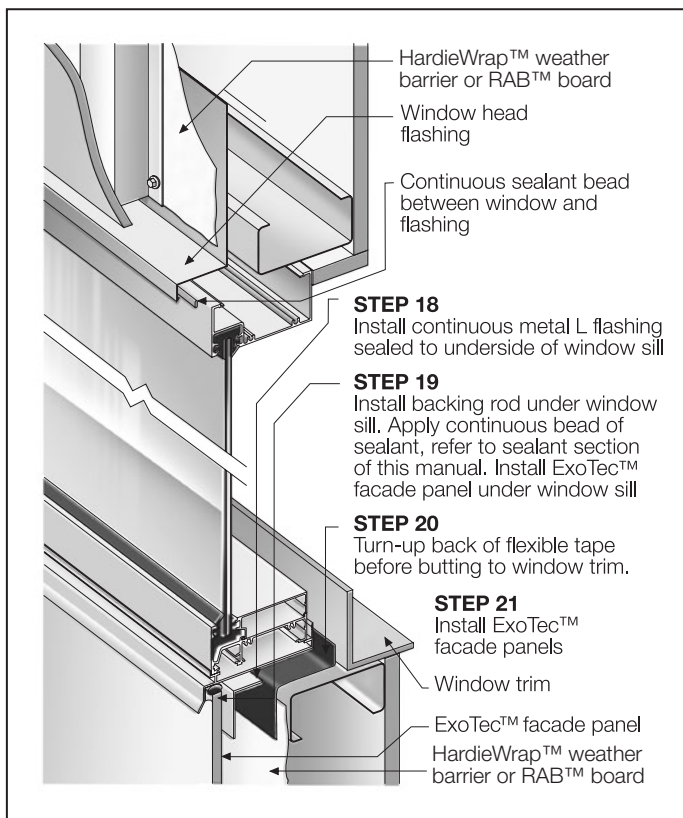


FIGURE 51 OVERVIEW CUTAWAY SECTION OF WINDOW

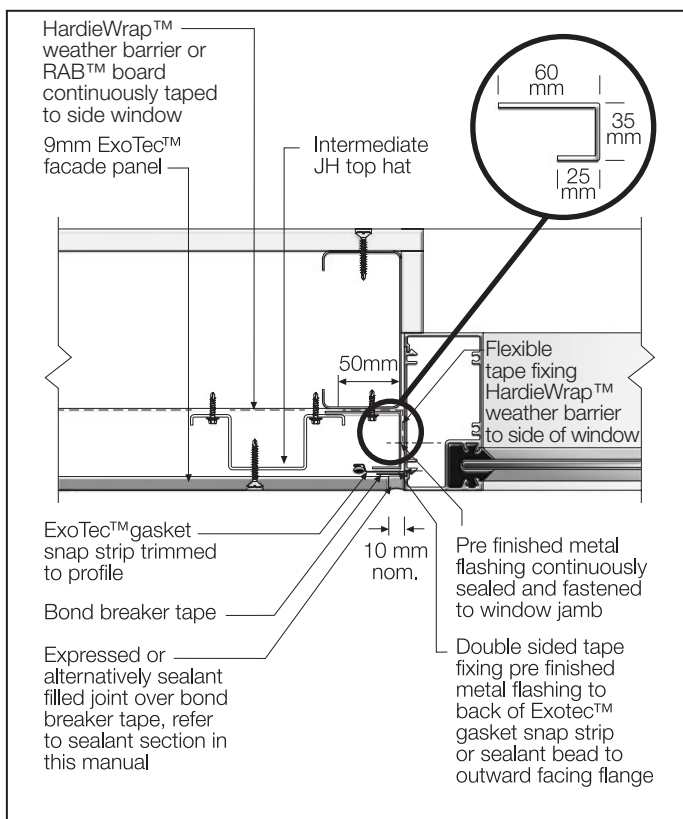


FIGURE 52 WINDOW JAMB DETAIL

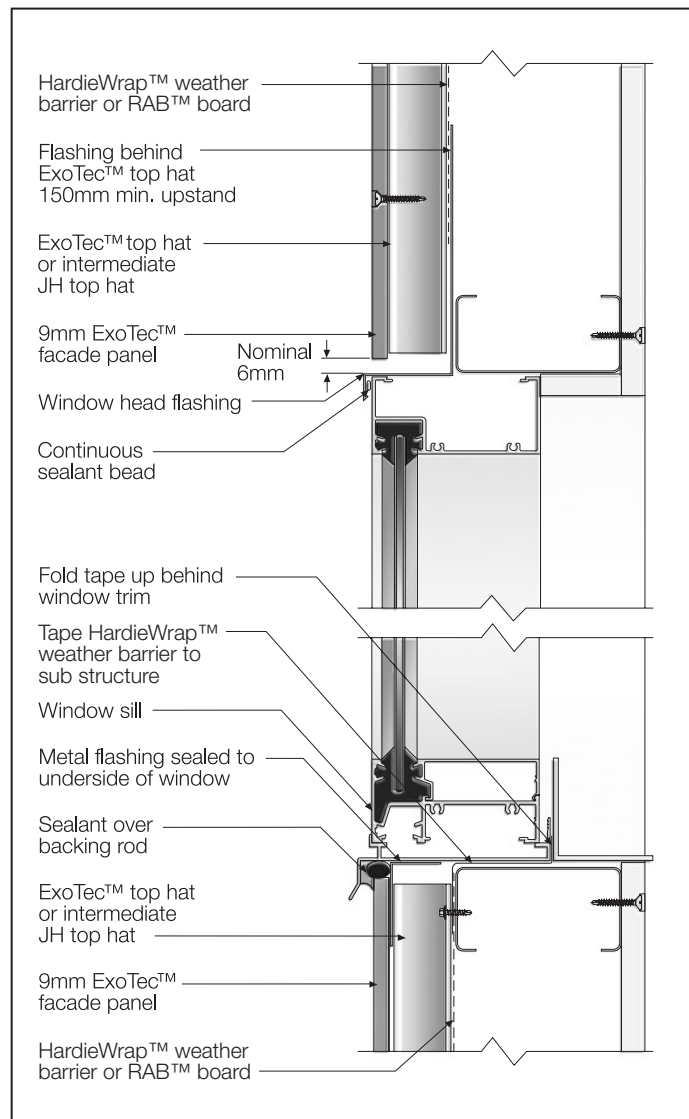


FIGURE 53 CROSS SECTION OF WINDOW

8 FINISHING

7.10 PARAPET DETAILS

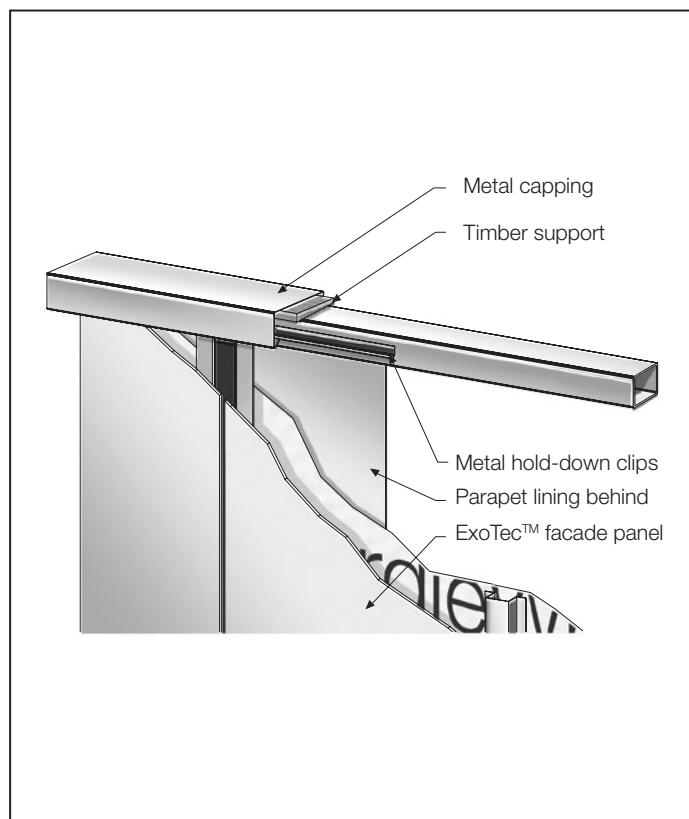


FIGURE 54 PARAPET CAPPING CUTAWAY DETAIL 1

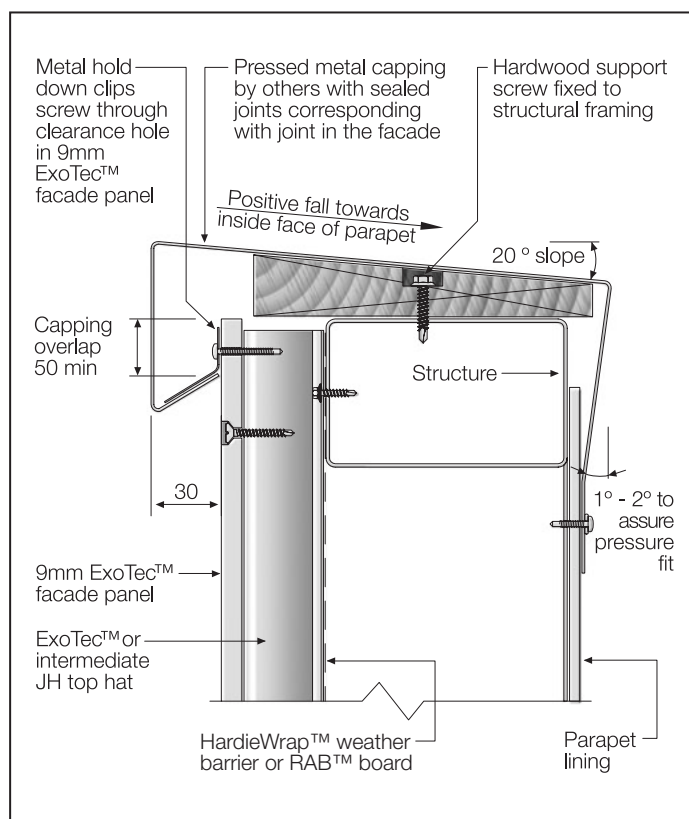


FIGURE 55 PARAPET CAPPING DETAIL 1

8.1 GENERAL

Painted ExoTec™ Facade Panels

ExoTec™ facade panels will readily accept a wide variety of applied finishes, including site-applied textures and factory finishes.

For site-applied finishes (acrylic coatings), follow the paint manufacturer's recommended advice to adequately cover the sanded smooth James Hardie™ base coat filler applied over the epoxy filled concealed fixings (refer to fixing section).

In order to seal cut edges or sanded patches two coats of an appropriate primer should be applied at the time of cutting or sanding e.g. Dulux AcraPrime 501/1 (water based).

The face and edges of the panels must be coated in accordance with the paint manufacturer's recommendations.

For further information contact the relevant paint manufacturer.

Pre-finished (3rd Party) ExoTec™ Facade Panels

Polyurethane paints are not suitable as a site-applied finish, but can be factory coated prior to installation. It is the responsibility of the applicator to ensure that the paint is compatible with the existing factory-applied sealer and primer on the Exotec surface, and that the panel surface will achieve the desired finish. This may require additional processing such as sanding. James Hardie does not warrant the finish nor performance of the coating.

Pre-finished panels are generally installed using colour-matched exposed head fasteners.

Some environments require special coatings. Painting selection and specifications are dependant on the paint chosen. Refer to the paint manufacturer.

Fixing tiles onto ExoTec™ facade panels is not recommended.

8.2 PANELS EXPOSED TO DIRECT SUNLIGHT

The Exotec™ panels must not be left unfinished while exposed to direct sunlight for any period greater than three months. The face must be over-coated as recommended by the paint companies mentioned above. However, if the rear clear sealer is exposed to direct sunlight by its application, e.g. fascias, plantrooms, etc., then the clear sealer must be coated with a minimum of two coats of an exterior grade acrylic, pigmented white, with a minimum of 10 years warranty, by one of the paint companies previously mentioned.

It is the responsibility of the specifier to identify other weather related risks with any particular building design.

NOTE

Refer to the previously mentioned paint companies for suitable rear face surface preparation on the ExoTec™ facade panels.

9 MAINTENANCE

8.3 COASTAL AND ALPINE AREAS

In coastal areas located within 1km* of the shoreline or large expanses of salt water (e.g. Port Phillip Bay, Sydney Harbour east of the Spit and Harbour Bridges, Swan River west of the Narrows Bridge), one of the following is required:

- All horizontal and vertical expressed joints must be filled with a suitable sealant, refer to the sealant filled joints section within this specification.
- Where both the horizontal and vertical expressed joints are not filled, the joints and panels must be washed down twice a year. On unprotected walls, rain will perform this washdown, but where walls are protected by soffits above, the washdown twice per year is a maintenance requirement.

It is the responsibility of the specifier to determine normal maintenance requirements.

The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- In coastal areas, a six monthly washdown of expressed joints must be done as per Clause 8.3. of this installation guide.
- Annual checks and maintenance for the exposed sealant (3mm fillet at horizontal joints, filled vertical and horizontal joints) referenced in Clauses 6.2, 6.3, 6.4, 6.5, 6.6, 7.1, 9, 11.1 and 11.2, must be done as required by the sealant manufacturer.
- Maintenance to painted surfaces must be carried in accordance with the paint manufacturer's specification, refer to section 14 in this manual.
- As required, clear debris build up against ExoTec™ facade panels.
- Maintain sealant as per manufacturer recommendations, to ensure weather seal.
- Clean out gutters, blocked pipes and overflows as required.

More frequent re-sealing may be required for panels installed in harsher environments, for example, coastal areas, exposure to chemicals or pollutants.

NOTES



**For information and advice
call 13 11 03 | jameshardie.com.au**

Australia July 2021

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vitradual™

NON-COMBUSTIBLE CASSETTE CLADDING / MANUFACTURED BY FAIRVIEW

TECHNICAL INFORMATION

WWW.FV.COM.AU





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DOCUMENT TRACKING

VERSION #	DATE	CHANGES
1.0	06/03/20	Initial issue
1.1	07/10/20	Content & format updated
1.2	02/12/20	Install diagram updated & other minor changes
1.3	12/08/21	Text correction & install considerations updated
1.4	01/03/22	Installation clarifications

1. ABOUT THIS GUIDE

This guide has been developed to effectively assist fabricators and contractors to work with Fairview's aluminium panel: Vitradual.

The information and recommendations contained herein are believed to be correct at time of publishing, March 2022.

Fairview reserves the right to revise the contents of this guide.

2. INTRODUCTION

2.1 ABOUT VITRADUAL

Vitradual is a 3mm non-combustible solid aluminium cassette cladding system that forms part of Fairview's range of BCA compliant, deemed non-combustible cladding solutions; perfectly suitable for Type A and B constructions where non-combustible products are required.

Vitradual is a high impact resistant, solid panel which can be fabricated, curved and rolled. The prefinished large format cladding panels feature the same PVDF coating system as Fairview's leading aluminium panel Vitracore G2; well proven for its superior quality, extensive colour range and design integrity.

2.2 KEY FEATURES

Vitradual's versatility is achieved due to the combination of high-quality considerations and industry leading components. It is an ideal product for application in Type A and B developments where non-combustible building materials are critical.

Vitradual is one of the few large format cladding panels that are deemed non-combustible when tested to AS1530.1 and AS1530.3.

PRODUCT DNA	Pre-finished solid aluminium panel.
--------------------	-------------------------------------

FINISH	Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability, providing the optimum resistance to weather and industrial pollution.
---------------	---

FIXING SYSTEM	A cassette style concealed fixing system which is the same to fabricate and install as traditional ACPs.
----------------------	--

APPLICATION	Type A and B constructions where non-combustible materials are required such as mixed-use developments, residential construction, and large-scale government infrastructure projects like hospitals.
--------------------	--

WARRANTY	15-year warranty, subject to standard terms and conditions.
-----------------	---

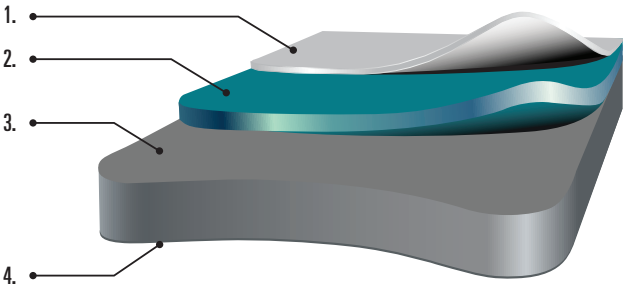
360VIEW	The highly unique, quality control process Fairview has developed to govern our rigorous approach to design and manufacture, material testing, regulatory compliance and product warranty.
----------------	--

3. PRODUCT SPECIFICATION

3.1 TYPICAL COMPOSITION

- 1. Protective film
- 2. PVDF-Kynar 500® coating system
- 3. 3mm Aluminium
- 4. Protective rear coating

The material is rigid, resistant to blows, breakage and pressure, and has high bending, buckling and breaking strengths.



DIMENSIONS

Thickness: 3mm

Weight: 8.1kg/m²

* Vitradual is not an ACP Panel and has no polyethylene content.

3.2 PANEL SIZES

WIDTH	LENGTH	THICKNESS
1250/1500	2500	3mm
	3200	
	4000	

CUSTOM SIZES ARE AVAILABLE, PLEASE SPEAK TO THE FAIRVIEW TEAM

3.3 MATERIAL DATA

PHYSICAL PROPERTY	VALUE
Tensile Strength – ultimate, F_{tu}^* (MPa)	<140
Tensile Strength – yield, F_{ty}^* (MPa)	117
Compressive strength, F_{cy} (MPa)	96
Shear strength – ultimate, F_{su} (MPa)	83
Shear strength – yield, F_{sy} (MPa)	69
Bearing strength – ultimate, F_{bu} (MPa)	276
Bearing strength – yield, F_{by} (MPa)	172
Compressive MOE, E (MPa)	70,000
Fatigue strength (MPa)	60
Modulus of Resilience (Kj/M^3)	130
Embodied carbon (kg-CO ₂ /kg)	8.1

3.4 AVERAGE EXPANSION

MATERIAL	EXPANSION COEFFICIENT ($\times 10^{-6}/^{\circ}C$)	ELONGATION PER 1000MM $\Delta T=50^{\circ}C$
Vitradual	23.3	1.2
Zinc	26.7	1.3
Steel	12.2	0.6
Concrete	12	0.6

3.5 ALUMINIUM GRADE

Vitradual is proudly manufactured in 3003 series aluminium. 3003 is an architectural grade aluminium with high end performance in architectural applications. It has high corrosion resistance, strength, machinability and formability, as well as having lower thermal expansion, lower thermal conductivity, and less embodied carbon than other grades used in architectural cladding. This results in a strong, accurate and crisp façade that has high oil canning resistance.

If desired, Vitradual can be supplied in 5052 grade aluminium.

4. FINISH

4.1 COATING SPECIFICATIONS

TYPICAL COATING TYPE

Vitradual uses only the highly recognised PVDF Kynar 500® or FEVE paints known for their high durability. These premium paints provide optimum resistance to weather and industrial pollution on commercial, industrial, infrastructure, and residential developments.

More than 50 years of South Florida Exposure Testing is continuing to confirm the superior chemical and physical properties of fluoropolymer coatings.

For a full list of standard Vitradual colours, refer to our Solid and Metallics Colour Charts.

The Vitradual range also offers the following finishes:

- REPEL - a self-cleaning surface coating.
- VitraArt - for personalised design and imagery.

VITRADUAL KYNAR 500® PVDF DATA

CLASSIFICATION	TEST STANDARD	RESULT	COMMENTS
Nominal Coating thickness	TP-ET-02	45.7 µm	±3.9µm
Colour Uniformity	ASTM D2244-16	ΔE = 0.06	Pass
Specular Gloss	ASTM D523-14	G 24.8	Pass
Dry Film Hardness	ASTM D3363-05 (R2011)e2	3H	Pass
Film Adhesion	ASTM D3359-17	Dry: 5B Wet: 5B Boiling Water: 5B	Pass
Impact Resistance	AAMA 2605 (8.5)	After impact, no removal	Pass
Abrasion Resistance	ASTM D968-17A	118.6	Pass
Muriatic Acid Resistance (15 min spot)	AAMA 2605 (8.7.1)	5B	Pass
Mortar Resistance (24hr pat test)	AAMA 2605 (8.7.2)	5B	Pass
Nitric Acid Resistance	AAMA 2605 (8.7.3)	ΔE = 0.31	Pass
Detergent Resistance	AAMA 2605 (8.7.4)	5B	Pass
Window Cleaner Resistance	AAMA 2605 (8.7.5)	5B	Pass

5. PERFORMANCE

5.1 FIRE

In today's architecture it is not only appearance and product technical details that matter. Other factors such as sustainability, thermal insulation as well as fire protection also play a key role in product selection.

Vitradual is constructed from 100% aluminium, rather than combustible material such as polyethylene or fire rated mineral. This makes Vitradual, in addition to Vitracore G2, an ideal product for applications where non-combustible panels are required, such as high-rise buildings, schools or hospitals.

TEST STANDARD	RESULT		
AS1530.1	NON-COMBUSTIBLE		
AS1530.3	PASS	Ignitability Index	0
	PASS	Heat Evolved	0
	PASS	Spread of Flame	0
	PASS	Smoke Developed	1

5.2 THERMAL

THERMAL INSULATING PROPERTIES

THERMAL RESISTANCE FROM -50°C TO +80°C		
TEST STANDARD	THERMAL RESISTANCE 1A M2.K/W	HEAT TRANSMISSION COEFFICIENT W/(M2.K)
Panel Thickness (mm)	Thermal Resistance 1A m2.K/W	Heat Transmission Coefficient W/(m2.K)
3	0.0069	5.65

5.3 SUSTAINABILITY

Although one of the most abundant metals in the Earth, aluminium is one of the most recycled materials around. Around 75% of all aluminium produced is still in use, largely because aluminium can be continually recycled. Vitradual has been developed with the health of the environment and the community in mind. Vitradual aluminium has 2.5% less embodied carbon than common alternative aluminium products.

Fairview's Ecoloop facility provides an end-of-life avenue that enables any newly installed aluminium cladding to be repurposed at the end of the buildings life. Find out more about Ecoloop at www.fv.com.au.

6. STRUCTURAL

6.1 WINDLOADING

The following span and fixing table is applicable when Vitradual is installed as per the Vitradual Cassette Fix installation method. Please refer to the complete Vitradual Spanning and Windloading document for full design and construction notes.

This span table is conservative, and does not include panel stiffening or other project specific engineering. Greater panel sizes can easily be achieved on projects if designed by a qualified engineer using the material data provided. Methods to improve spanning and structural strength can include:

- Bonding Aluminium RHS stiffeners to the panel rear.
- Filling the 'V-groove' with a structural sealant prior to folding and attaching the zed angles.
- Bonding an 'L' angle to the rear of panel folds using a structural sealant.

Panel deflection must not exceed span/60.



Panel Dimensions			Maximum Design Wind Pressure on Panel		Total no. of rivets required per panel (and max. 300mm)				Max. spacing of screws fixing cassette to substructure (mm)			
Panel Width b (mm)	Panel Length a (mm)	a/b	Strength Pu (kPa)	Serviceability Ps (kPa)	Dia. 5	Dia. 6	Dia. 7	Dia. 8	No.8	No.10	No.12	No.14
400	400	1	9.000	9.000	8	8	8	8	195	225	260	295
400	450	1.1	9.000	8.846	8	8	8	8	195	225	260	295
400	600	1.5	9.000	5.736	8	8	8	8	195	225	260	295
400	900	2.3	8.367	4.139	8	8	8	8	210	245	280	300
400	1200	3	7.768	3.75	10	8	8	8	230	260	300	300
400	1500	3.8	7.555	3.611	11	10	8	8	235	270	300	300
400	1800	4.5	7.461	3.55	14	11	10	9	240	275	300	300
400	2100	5.3	7.413	3.519	16	13	11	10	240	275	300	300
400	2400	6	7.386	3.502	18	15	13	11	240	275	300	300
400	2700	6.8	7.37	3.491	20	17	14	13	240	275	300	300
400	3000	7.5	7.359	3.484	22	18	16	14	240	275	300	300
400	3300	8.3	7.352	3.48	24	20	17	15	240	275	300	300
400	3600	9	7.347	3.477	26	22	19	17	240	275	300	300
400	4000	10	7.343	3.474	29	24	21	18	240	275	300	300
600	600	1	8.504	3.297	8	8	8	8	140	160	180	210
600	900	1.5	4.813	1.699	8	8	8	8	245	280	300	300
600	1200	2	3.914	1.311	8	8	8	8	300	300	300	300
600	1500	2.5	3.594	1.172	8	8	8	8	300	300	300	300
600	1800	3	3.453	1.111	10	8	8	8	300	300	300	300
600	2100	3.5	3.381	1.08	11	9	8	8	300	300	300	300
600	2400	4	3.34	1.062	12	10	9	8	300	300	300	300
600	2700	4.5	3.316	1.052	14	11	10	9	300	300	300	300
600	3000	5	3.3	1.045	15	13	11	10	300	300	300	300
600	3300	5.5	3.29	1.041	16	14	12	10	300	300	300	300
600	3600	6	3.283	1.038	18	15	13	11	300	300	300	300
600	4000	6.7	3.276	1.035	20	16	14	12	300	300	300	300
900	900	1	3.78	0.977	8	8	8	8	210	240	270	300
900	1200	1.3	2.432	0.588	8	8	8	8	300	300	300	300
900	1500	1.7	1.952	0.45	8	8	8	8	300	300	300	300
900	1800	2	1.74	0.388	8	8	8	8	300	300	300	300
900	2100	2.3	1.632	0.357	8	8	8	8	300	300	300	300
900	2400	2.7	1.571	0.34	9	8	8	8	300	300	300	300
900	2700	3	1.535	0.329	10	8	8	8	300	300	300	300
900	3000	3.3	1.511	0.322	10	9	8	8	300	300	300	300
900	3300	3.7	1.495	0.318	11	9	8	8	300	300	300	300
900	3600	4	1.485	0.315	12	10	9	8	300	300	300	300
900	4000	4.4	1.475	0.312	13	11	10	9	300	300	300	300
1200	1200	1	2.126	0.412	8	8	8	8	280	300	300	300
1200	1500	1.3	1.486	0.274	8	8	8	8	300	300	300	300
1200	1800	1.5	1.203	0.212	8	8	8	8	300	300	300	300
1200	2100	1.8	1.059	0.181	8	8	8	8	300	300	300	300
1200	2400	2	0.979	0.164	8	8	8	8	300	300	300	300
1200	2700	2.3	0.93	0.153	8	8	8	8	300	300	300	300
1200	3000	2.5	0.899	0.147	8	8	8	8	300	300	300	300
1200	3300	2.8	0.878	0.142	9	8	8	8	300	300	300	300
1200	3600	3	0.863	0.139	10	8	8	8	300	300	300	300
1200	4000	3.3	0.85	0.136	10	9	8	8	300	300	300	300

7. DURABILITY

7.1 EVALUATION

Durability is defined in the ABCB handbook as “... the capability of a building or plumbing installation to perform its function over a specified period.”

The ABCB handbook also provides this context for consideration: “Durability is not an inherent property of a material or component. It is the outcome of complex interactions among a number of factors.”

For building components durability is described in terms of design life. The durability performance of a building by its ability to remain fit-for-purpose over its design life in the environment it is subjected to and with appropriate maintenance.

The minimum design life for a wall cladding system on a building with a normal design life category is 15 years (refer to ABCB Handbook table 3.1).

7.2 STRUCTURAL

The NCC referenced standard for actions on buildings AS/NZ 1170 series provides direction for determining the appropriate loads on building components. Typically, a 50-year design life is the basis for structural design.

The design capacity of Vitradual and its supports and fixings, must be determined in accordance with this design life using verification method BV1.

Project specifications for Vitradual that are created in accordance with this document therefore have structural adequacy for a design life of 50 years.

7.3 MATERIALS

Vitradual has been subjected to many tests and assessments concerning its durability, including accelerated weathering of 4000 hours of accelerated salt exposure.

For durability of the paint finishes used on Vitradual, refer to Kynar 500® FSF® documentation available at www.kynar500.com. Kynar 500® resin has been exposed to over 50 years of South Florida exposure testing with excellent results.

For added scrutiny, each batch of manufactured product also undergoes stringent QA checks prior to delivery to ensure ongoing product quality is maintained into the future. Find out more about Fairview's 360 Quality at www.fv.com.au.

8. INSTALLATION CONSIDERATIONS

8.1 INSTALLATION CONSIDERATIONS

- All sheets should be installed in the same direction as marked on the protective film to prevent possible finish variation.
- As minor colour variation can occur between production lots, it is recommended to place total requirement for a project in one order to ensure colour consistency.
- Where aluminium materials come in contact with dissimilar metals, a proper insulator or isolation tape should be applied to insulate between dissimilar materials in order to avoid corrosive and electrolytic action.
- For Cassette Fix, the returns between panel joints should not be caulked before film is removed.
- Please ensure Vitradual is used as part of a compliant wall system, with all components complying with the Deemed-to-Satisfy provisions of the relevant NCC, or approved as part of a performance solution.

8.2 PROTECTIVE FILM

- Make sure no damage will occur to the panel following removal of protective film.
- Remove protective film within 45 days of installation to avoid glue residue on panel surface due to weathering.
- Do not apply PVC tapes, polyurethane sealant or silicone sealant onto Vitradual protective film. The plasticiser contained in these materials can penetrate the protective film and cause a gloss change in the coating.
- Do not apply spray paint or permanent marker to the film as the colour may penetrate the film and affect the panel.

8.3 ACCESSORIES

- Please refer to the Vitrafix brochure.

8.4 SEQUENCE

As a rule, the sequence of installation is as follows:

1. Installation of the water membrane as per manufacturers requirements.
2. Installation of top hats, levelled and fixed as per wind loading requirements.
3. Vitradual panels fabricated and prepared for installation.
4. Installation of fabricated Vitradual panels, fixing through Z angles to tophats as per wind loading requirements.
5. Caulking applied to panel joints as per manufacturers requirements.
6. Removal of protective film within 45 days of installation.

8.5 SEALANT

The standard Vitradual Cassette fix system details a sealed panel joint. A variety of sealants are suitable for use in this application, but the following requirements apply:

- Low modulus +/- 50% flexibility.
- Minimum 10 year warranty in external applications.
- Supplier's confirmation for adhesion to PVDF painted surfaces.
- Approval from Fairview.

Vitradual can be installed unsealed for shadow line joints, but the following must be noted for the warranty to apply:

- Aluminium zed angles to be powder coated, and mitred at panel joints so not to leave openings once installed.
- Exposed fixings must be stainless steel or class 4 galvanised screws. Often these will be required to be colour matched to meet the architectural design intent.
- The waterproof membrane behind the panels must be installed at a high level of quality.
- This is not covered by testing to FP1.4 or Codemark, so an assessment of the façade may be required for approval.

8.6 CAVITY BARRIERS

While Vitradual is non-combustible and will not contribute to the spread of fire, it is good practice to install cavity barriers where a cladding product extends several floors. In order to maintain a drained and ventilated façade it is recommended that open-state cavity barriers be used.

8.7 MOISTURE MANAGEMENT

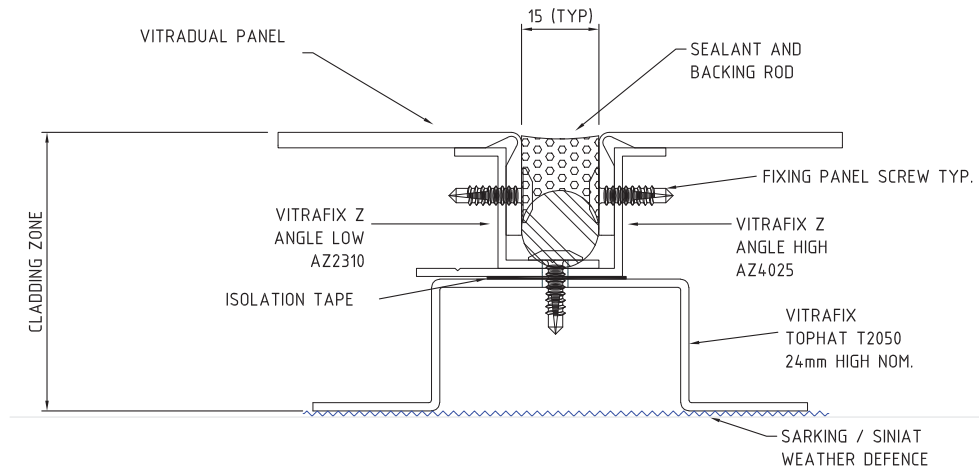
Moisture ingress and condensation is one of the most common causes of defects in Australian buildings today. A drained and ventilated façade cavity is recognised as best practice in providing a high level of moisture management. The Vitradual details reflect this, with openings at top and bottom of walls designed to encourage air flow and allow the cavity to remove any condensation or other moisture.

Where an open cavity is not achievable (such as a window head or base of a fascia), it is recommended weep holes be provided. These are 10mm diameter, located 600mm apart. Note that in areas where there is no condensation risk weep holes may not be required.

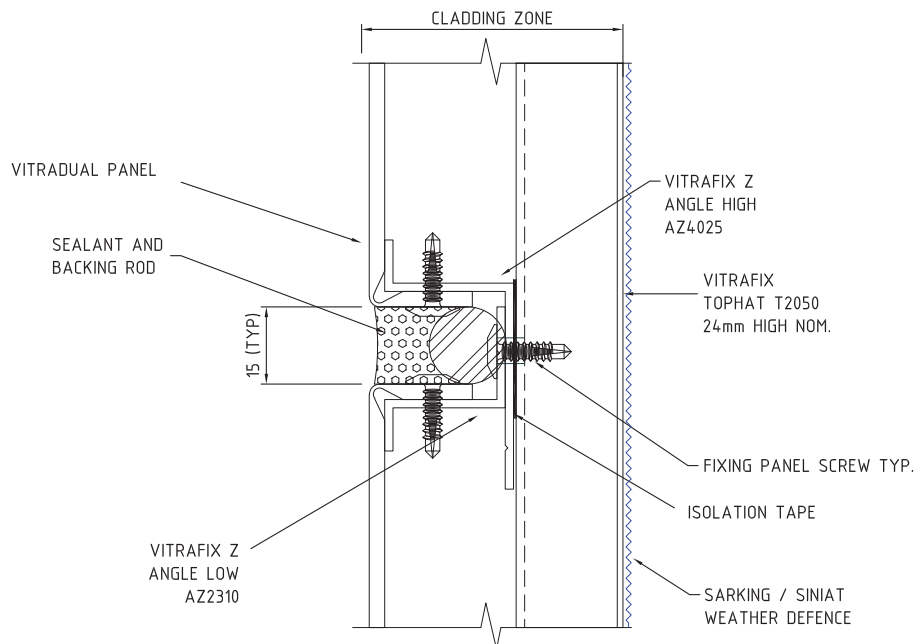
Details 4,7 & 11 include provision for drainage of liquid water, this can be disregarded if the wall system adequately treats this elsewhere.

9. INSTALLATION DETAILS

1. TYPICAL VERTICAL PANEL JOINT DETAIL



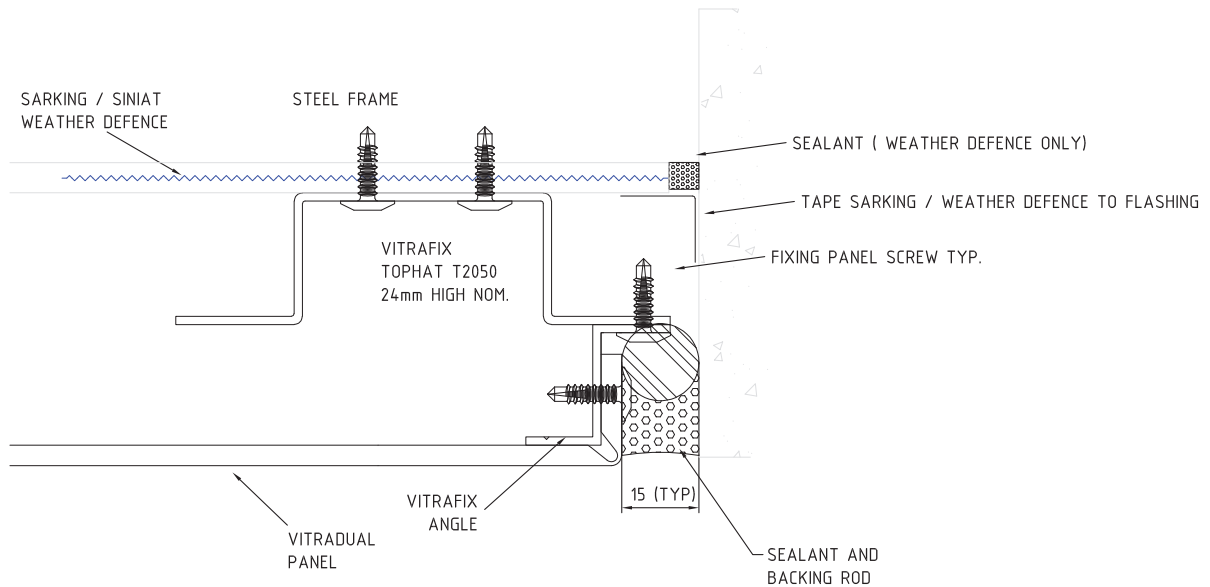
2. HORIZONTAL JOINT DETAIL



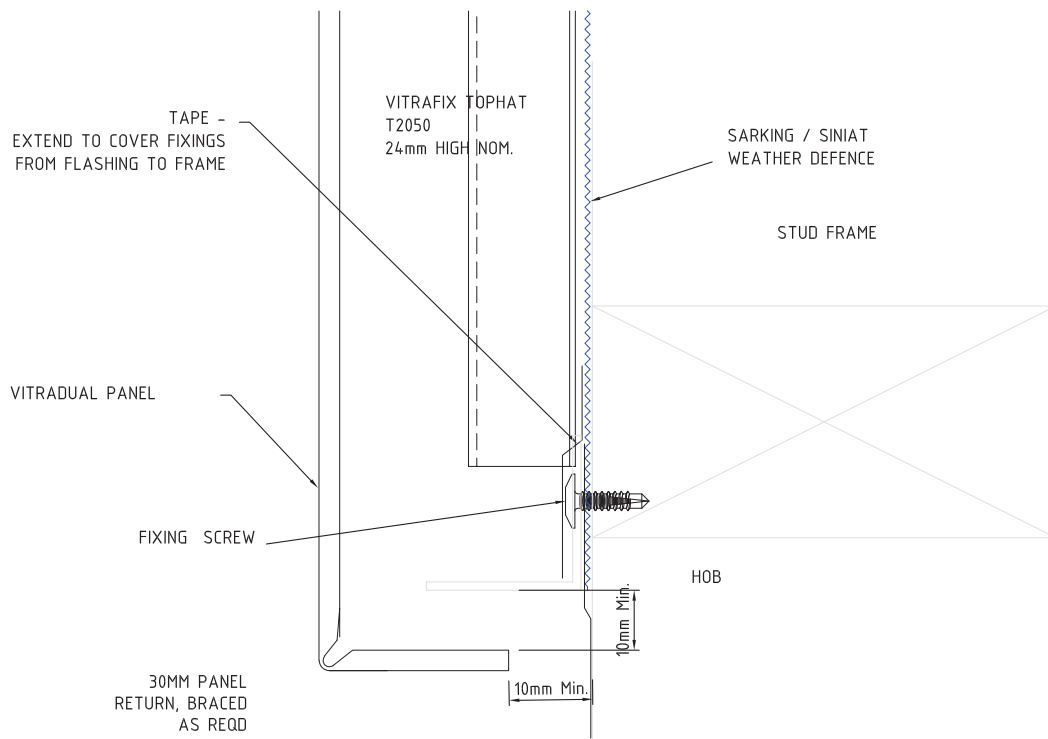
DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

3. WALL JUNCTION DETAIL



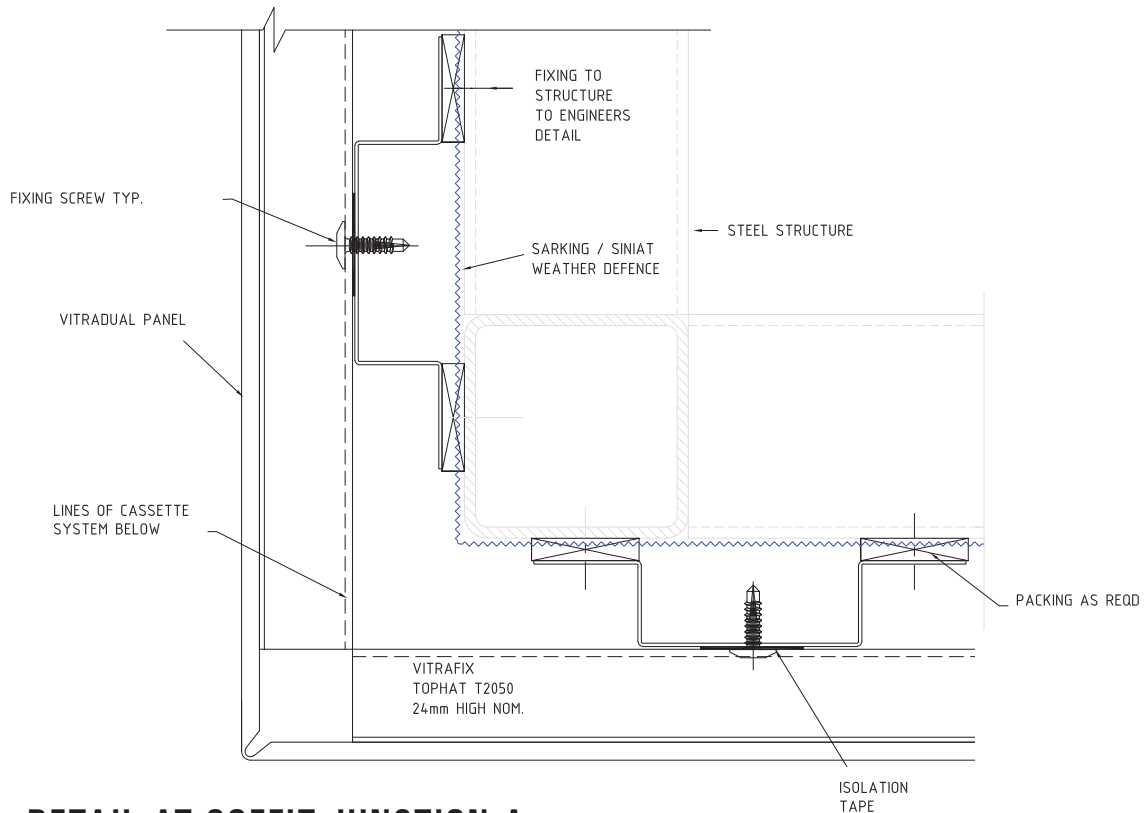
4. BASE DETAIL



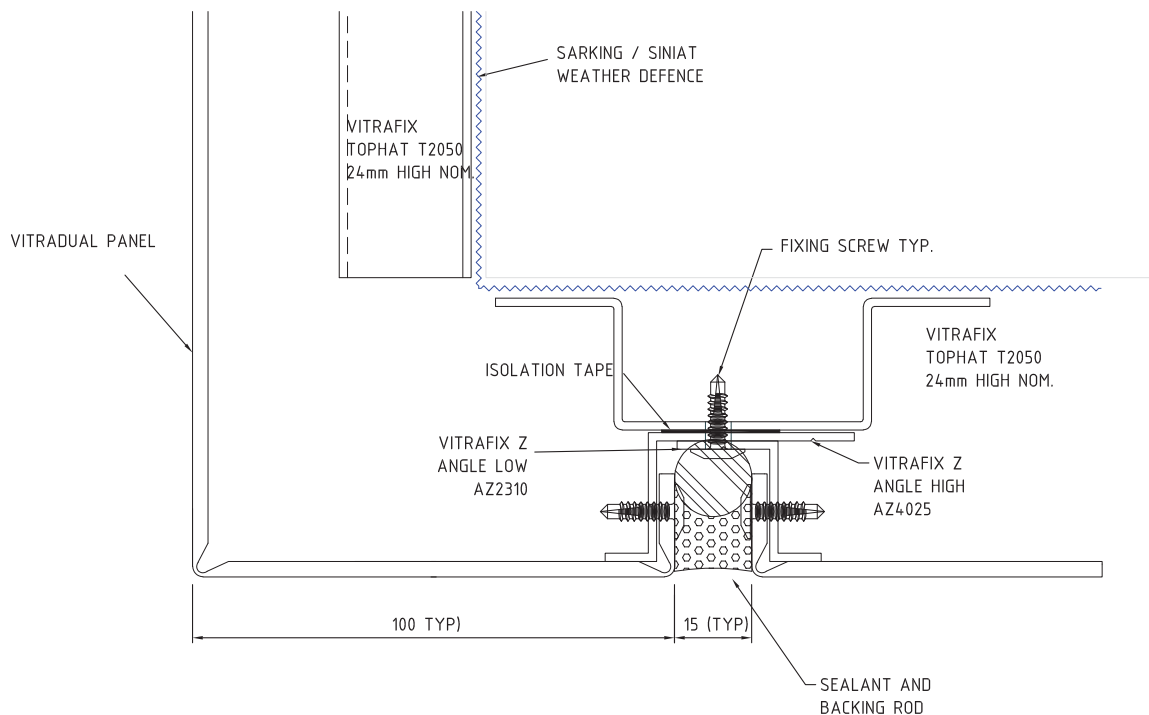
DISCLAIMER:

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5. EXTERNAL CORNER DETAIL



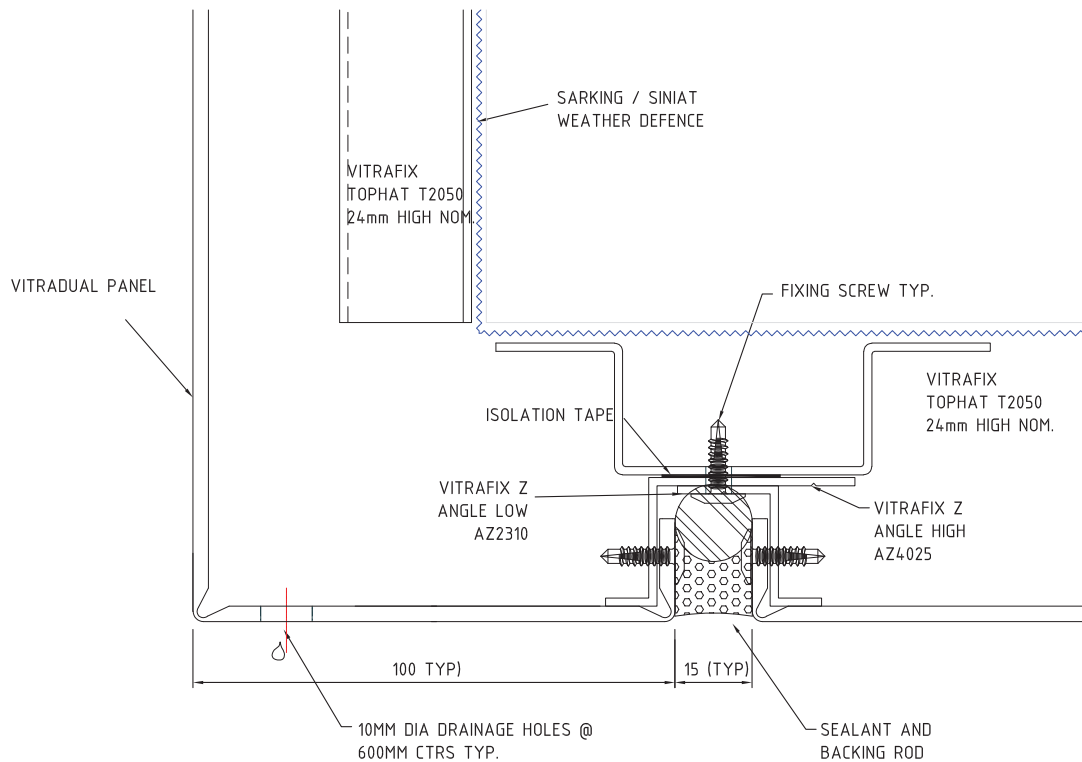
6. DETAIL AT SOFFIT JUNCTION A



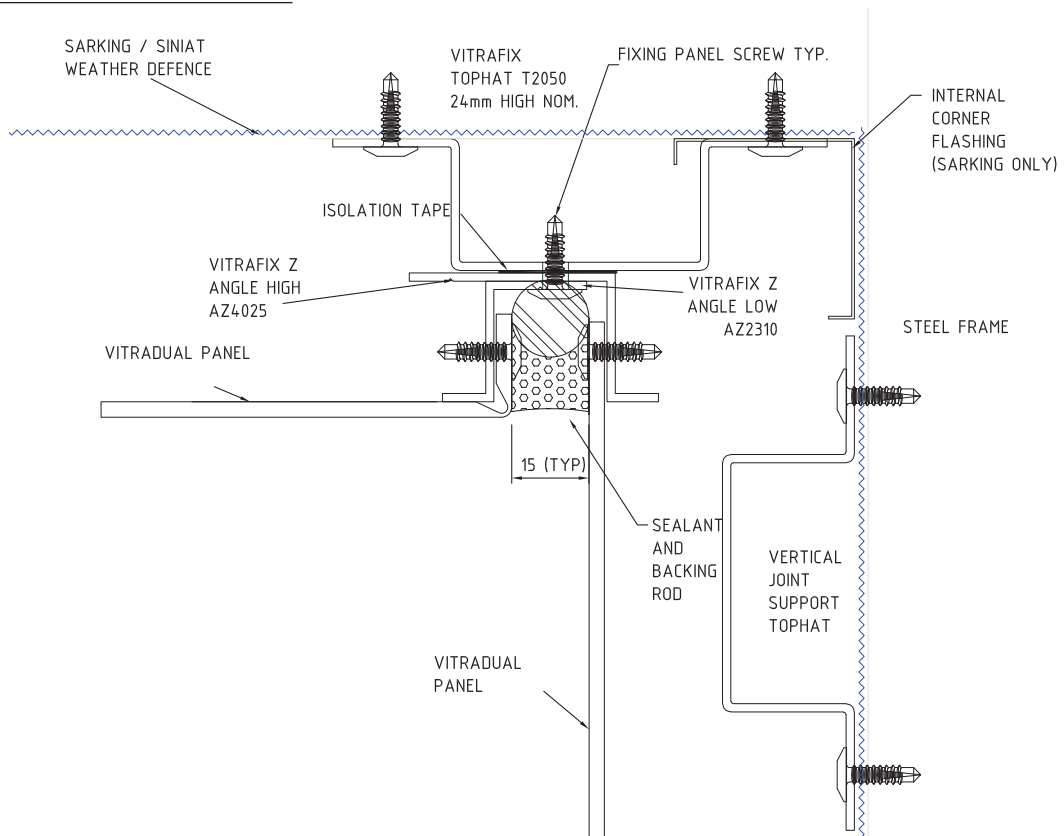
DISCLAIMER:

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7. DETAIL AT SOFFIT JUNCTION B



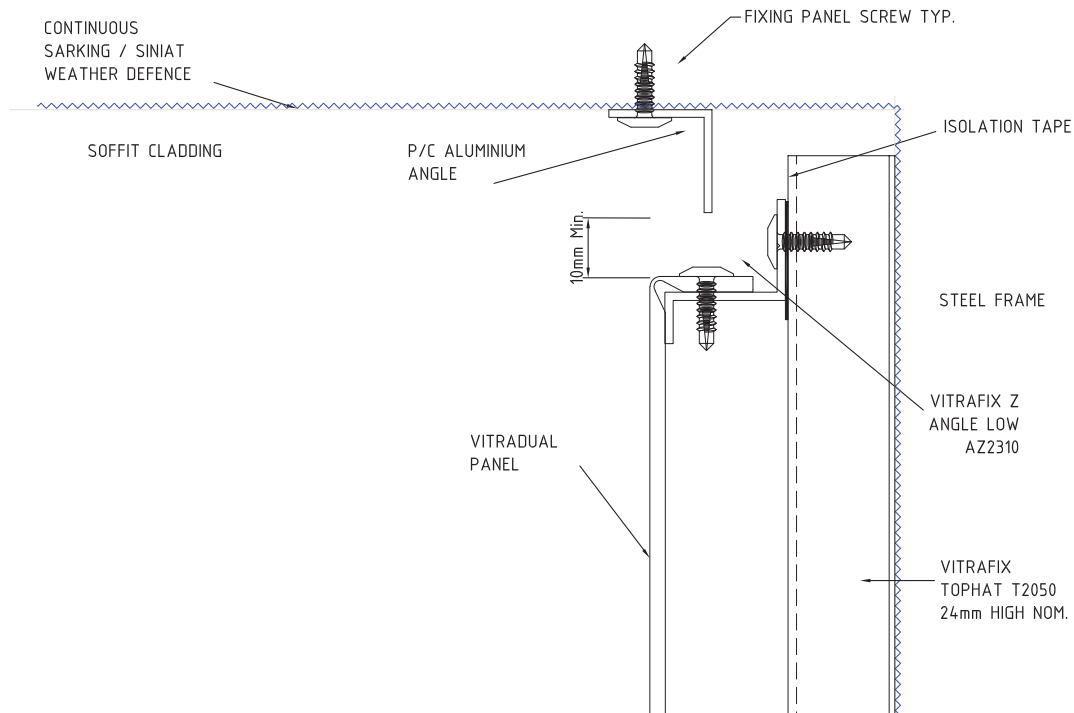
8. REAR SOFFIT DETAIL



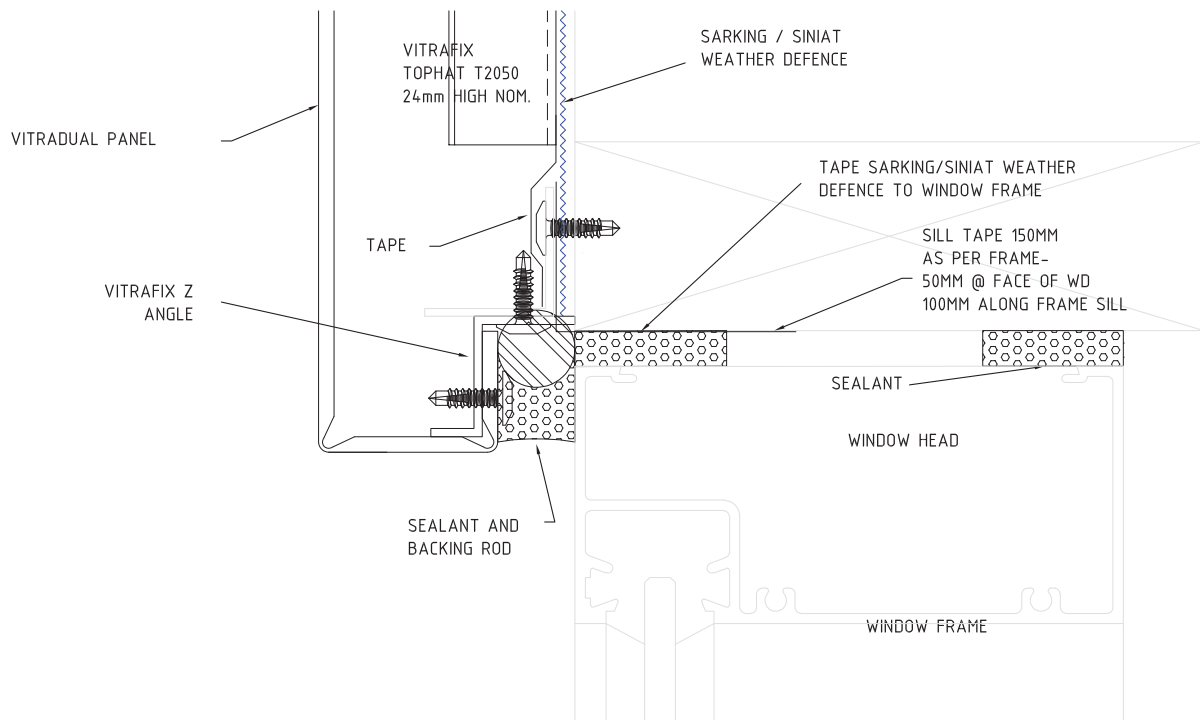
DISCLAIMER:

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9. VENTILATED SOFFIT DETAIL



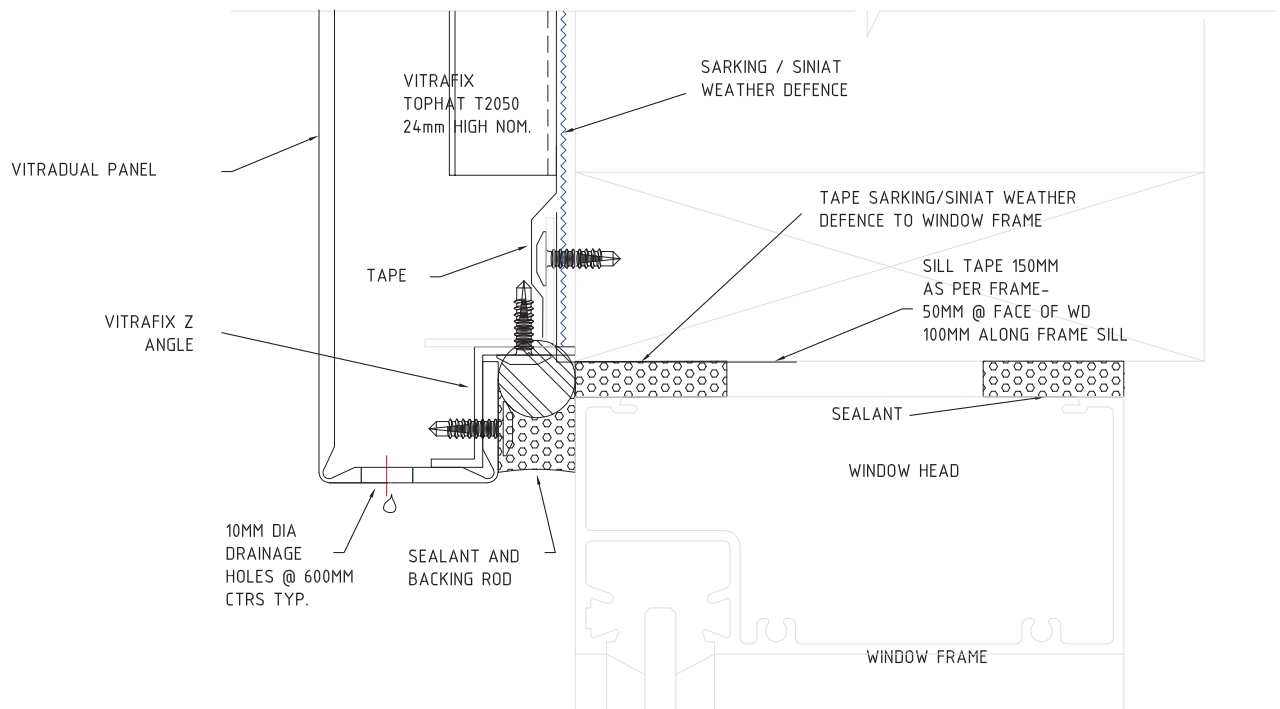
10. WINDOW HEAD DETAIL A



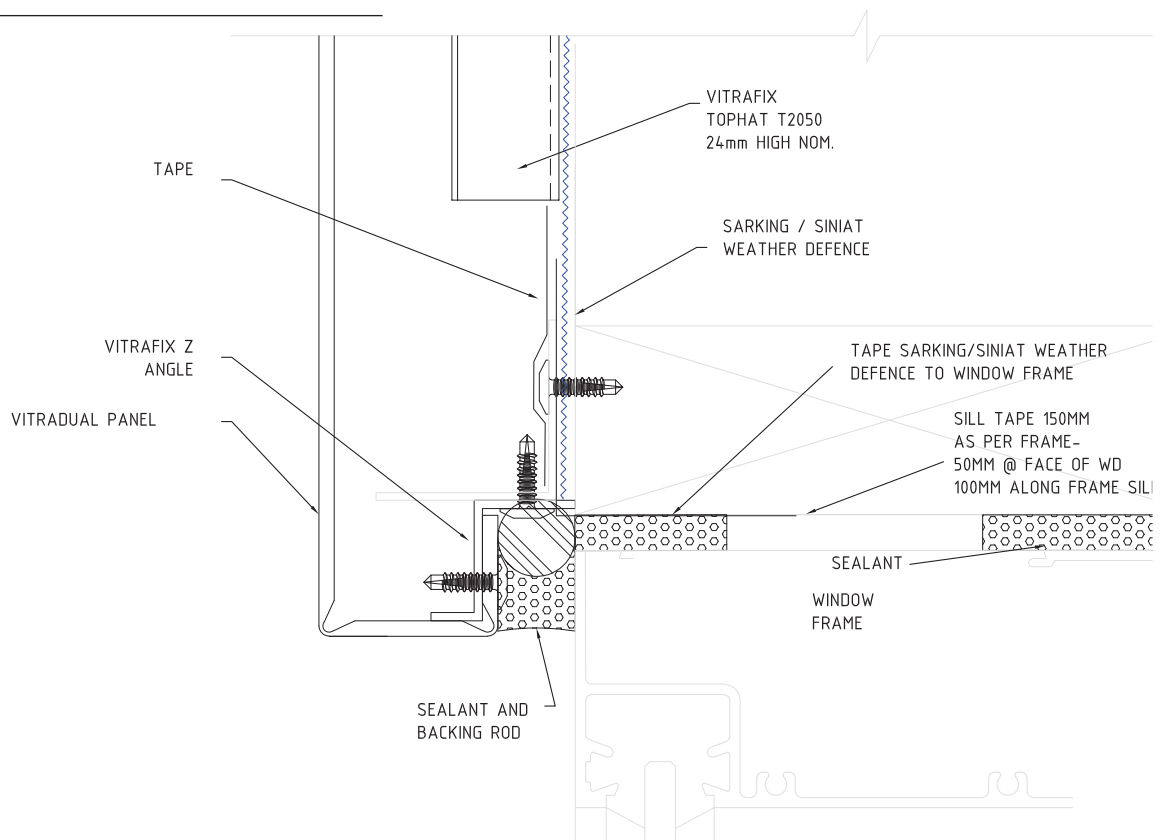
DISCLAIMER:

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11. WINDOW HEAD DETAIL B



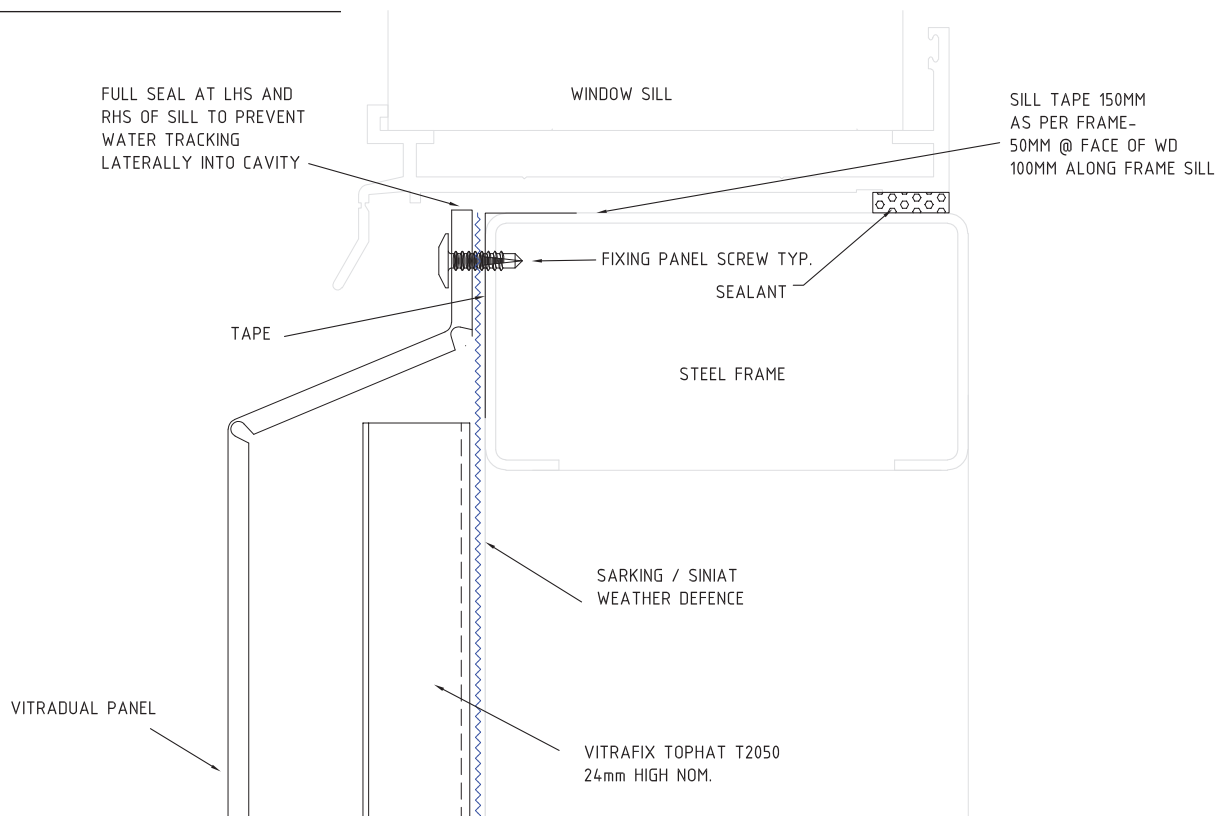
12. WINDOW JAMB DETAIL



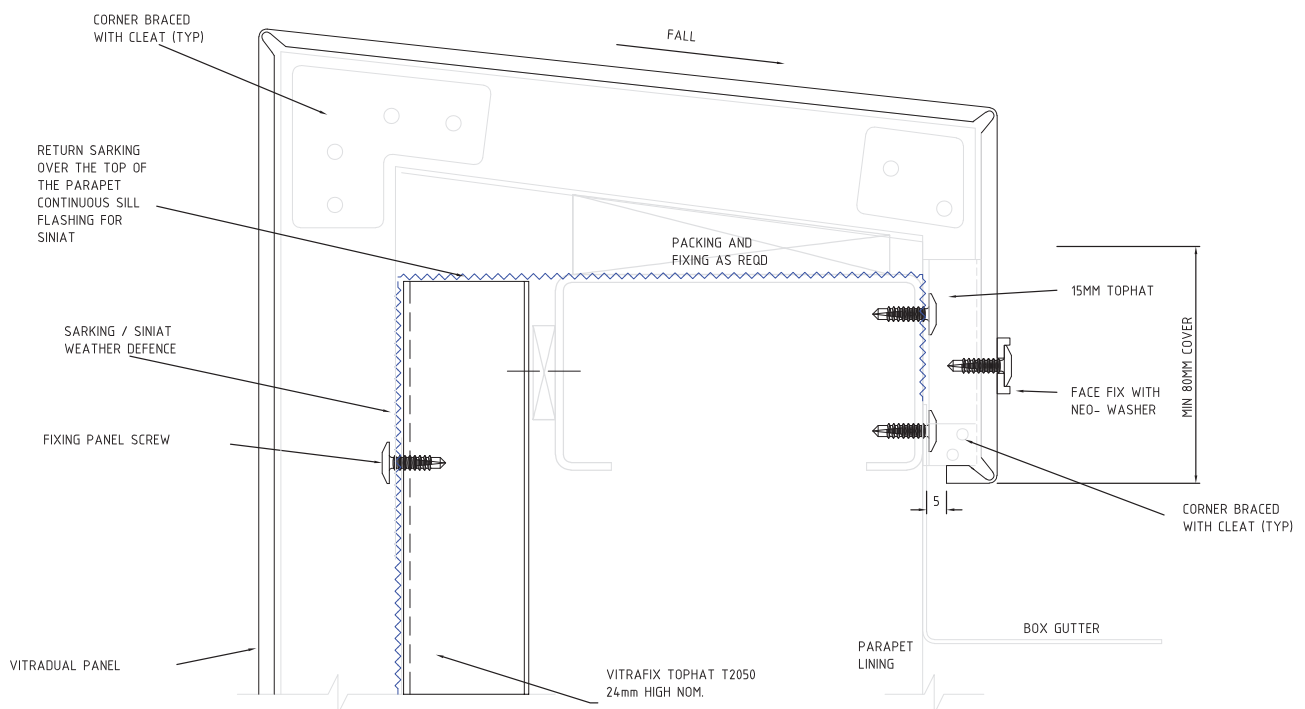
DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

13. WINDOW SILL DETAIL



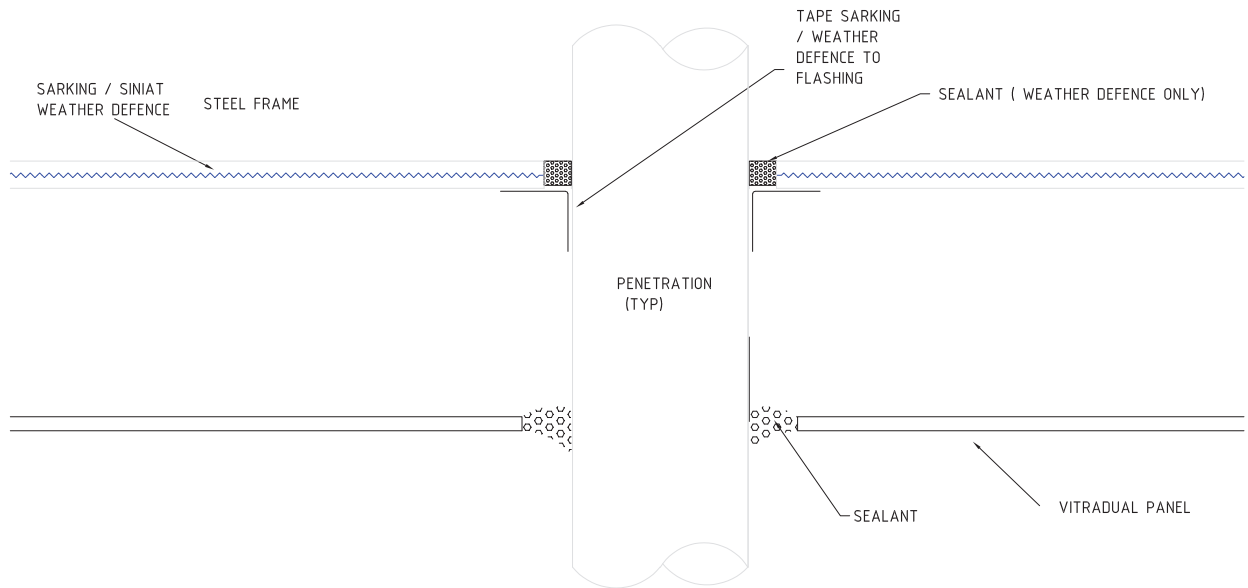
14. PARAPET CAPPING DETAIL



DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

15. TYPICAL PENETRATION DETAIL



DISCLAIMER:

These details are limited to the generalized design specification for Vitradual, and are intended for use by a technically skilled person only. Use of the same is at their own discretion and risk.

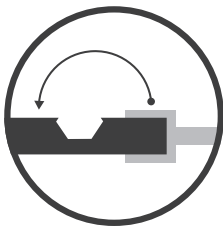
10. FABRICATION DETAIL

10.1 FABRICATION CONSIDERATIONS



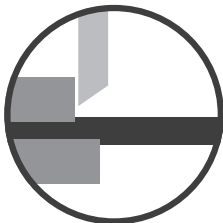
CONTOUR CUTTING

Vitradual panel can be contour cut with water jets, CNC routers, copy routers and jigsaws. Coolant is recommended for router processing. See section 10.4.



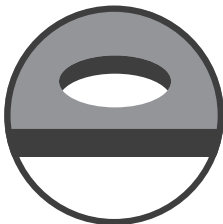
FOLDING

There must be between 0.7mm and 1mm of aluminium left at the base of the routed groove. Too much material can cause stress and result in a larger radius fold than desired. It will also make folding the panel more difficult and prevent the required fold angle from being obtained. Too little material can result in panel cracking. See section 10.3.



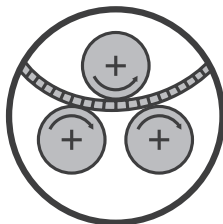
SHEARING

Shearing can be done with a guillotine. Ensure the blanking tools are padded. Shearing causes a slight roll down along the cut edge of the panel.



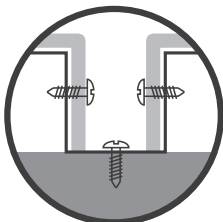
PUNCHING

The punching of flat formed parts from Vitradual is performed in the same way as a solid aluminium sheeting, using sharp tools and dies with minimal cutting clearance. Varying shapes may easily be punched with normal aluminium punching machinery. As with shearing, a slight roll down may occur.



ROLL BENDING

Vitradual panel can be bent with a roll-bending machine. Use polished rollers free of imperfections. Minimum radius of 200mm.



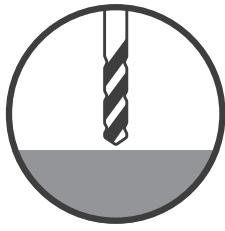
SCREWING

Vitradual can be screwed with conventional stainless steel or C4 galvanised screws for metal. Allow for thermal expansion.



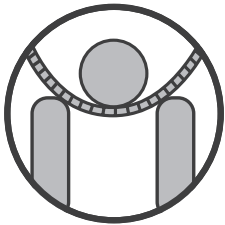
RIVETING

Riveting is possible with the usual equipment and solid rivets or blind rivets. For outdoor use allow for thermal expansion.



DRILLING

Vitradual panel can be drilled with centre point twist drills normally used for aluminium or machines common for metals. Drill material: High-Speed Steel (HSS).



BENDING

Bending is possible with a folding table or brake press. The inside bending radius is roughly 5 times the Vitradual panel thickness. Use protective foils. For serial production, tests should be made on sample panels.

10.2 MACHINING

Vitradual is designed to be machined on a CNC with cutting fluid.

10.3 CNC GROOVE

TOOL	4.76mm Single flute upspiral cutter
FEED	1500mm/minute
SPINDLE	21,000mm/minute

CNC Grooving requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

Leave a minimum of 0.7mm aluminium remaining at base of groove.

10.4 CNC CUTTING

TOOL	4.76mm Single flute upspiral cutter
FEED	1500mm/minute
SPINDLE	21,000mm/minute

CNC cutting requires a 3D ramp into the Groove with cutting fluid also required to prevent Vitradual from overheating.

Recommended cutting fluid is TRICK-SOL high performance water soluble cutting oil mixed at a 1:3 ratio oil to water, or equivalent.

Ensure the cutting fluid is correctly applied to the cutting bit during machining.

11. TYPICAL WARRANTY DETAILS

11.1 WARRANTY CONSIDERATIONS

Vitradual is an incredibly durable material when used in the right application. When assessing an installation for warranty defects, unless given express written authorization from Fairview, check for the following:

- More than a 5° pitch (prevent risk of water pooling).
- Panels installed with directional arrows consistent (unless intentional).
- Maintenance schedule is documented and undertaken.

Please contact your Fairview representative for full warranty terms and conditions or any product specific enquiries.

11.2 KEEP YOUR WARRANTY FRESH

Maintaining your Vitradual finish is an important component to maintaining your warranty. Document each time you clean your Vitradual panels. Cleaning frequencies are based on project location and are provided in the warranty.

RECOMMENDED CLEANING AGENTS

- Mineral spirits
- Organic cleaners
- PH-Neutral solvents

12. MISCELLANEOUS

12.1 MANUFACTURING QUALITY

360 VIEW is the highly unique, quality control process Fairview developed to govern our rigorous approach to design and manufacturing, material testing, regulatory compliance, and product warranty. To find out more visit www.fv.com.au/solutions/compliance.

ACCEPTABLE VARIATION

Width	± 2.0mm
Length	± 4.0mm
Thickness	± 2%
Bow	Maximum 0.5% of the length and/or width
Squareness	Maximum 5.0mm
Surface Defects	The surface shall not have any irregularities such as dents, scratches and other imperfections in accordance with our quality assurance.

12.2 HANDLING AND STORAGE

- Considerable care should be taken in the handling of Vitradual.
- Vitradual panels are sensitive to impact, particularly shocks from small, hard objects, which can dent the aluminium.
- A minimum of two people should be used when sliding large sheets to avoid scratching.
- To prevent surface damage when stacking Vitradual, there should be nothing between the panels.
- Vitradual should be stored in a cool and dry area where temperature is relatively stable.
- Pallets of Vitradual should be stored horizontally with adequate support to prevent sagging.
- Stacked pallets should be identically sized and not more than four (4) pallets high.

12.3 REPORT REGISTER

BCA 2019 VOL1 SECTION	DESCRIPTION	TEST ASSESSMENT	REPORT/REFERENCE NUMBER
C – Fire Resistance	Combustibility	AS 1530.1	FNC11690
	Early Fire Hazard Properties	AS 1530.3	FNE12495
F – Health and Amenity	Weatherproofing	AS 4284	30B-19-0059-TRP-6774697-2 30B-19-0059-TRP-6774698-2
G – Ancillary Provisions	BAL Ratings	IGNIS Assessment	IGNS-5289 Issue 01 Rev00
Additional/ Supporting	Assessment	RED FIRE REPORT NCC2019	190603_JV19-00103_Fairview NCC2019_Vitradual_v1
	Coating Standard	AAMA2605-17	180710004SHF-BP-8
	CodeMark	CodeMark	Please contact us for our current CodeMark number

DISCLAIMER

While the information provided relating to Fairview products is true to the tests and measures available to us, the information provided in this article is general in nature only and does not constitute project-specific building, construction or fire-safety advice. Before acting on any information on this document, you should consider the appropriateness of the information having regard to your project parameters and requirements.

Due to the uncontrollable conditions and methods of job scope, as well as the variable skills and judgment of users/installers, and the quality of equipment, tools, etc; the suggestions and recommendations contained in this manual are provided without warranty.

Fairview products are only deemed suitable or compliant after approval from building and construction professionals associated with specific projects and developments. If you'd like some further insight about this topic, contact Fairview on 1800 007 175 or email helpdesk@fv.com.au. We're here to help.



FAIRVIEW™

DEFINING ARCHITECTURE SINCE 1963

AUSTRALIA / NEW ZEALAND / UNITED KINGDOM

SALES ENQUIRIES 1800 007 175 HELPDESK.AU@FV.COM.AU

Certification Body:

CMI
CERTIFICATION
ABN: 81 663 250 815
JAS-ANZ Accreditation
No. Z4450210AK
PO Box 273,
Palmwoods Qld 4555
Australia
P: +61 7 5445 2199
www.cmicert.com.au
office@cmicert.com.au

Certificate Holder:

JamesHardie
James Hardie Australia
Pty Ltd
ABN: 12 084 635 558
10 Colquhoun St,
Rosehill NSW 2142
P: 13 11 03
www.jameshardie.com.au

Certificate number: CM40221 Rev1

THIS IS TO CERTIFY THAT

Exotec™ Facade Panel and Fixing System

Type and/or use of product:

External Façade Panel and Fixing System.

Description of product:

The James Hardie Exotec™ Facade Panel and Fixing System is an express joint façade system comprising of compressed fibre cement (CFC) panels and the proprietary James Hardie top hat system. Panels are supplied as paintable or pre-finished.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S)

BCA 2019 (Amdt. 1)

	Volume One	Volume Two
Performance Requirement(s):	BP1.1(b)(i) & (iii) Structural reliability – Permanent and wind actions FP1.4 Weatherproofing – Subject to <i>Limitation and Condition 2</i> .	P2.1.1(b)(i) & (iii) Structural reliability – Permanent and wind actions P2.2.2 Weatherproofing – Subject to <i>Limitation and Condition 2</i> .
Deemed-to-Satisfy Provision(s):	C1.9(a)(i), (d)&(e)(iv) &(vi) Non-combustible building elements G5.2 Construction in bushfire prone areas (BAL Low-40) J1.5 Energy Efficiency – External Walls. Must be used in conjunction with other building elements to achieve a Total R Value. Refer A3	3.5.4.3(a) Wall cladding boards – Fibre-cement 3.5.4.4(a) Sheet wall cladding 3.5.4.5 Eaves and soffit linings 3.10.5.0 Bushfire areas (BAL Low-40) 3.12.1.4 Energy Efficiency – External Walls. Must be used in conjunction with other building elements to achieve a Total R Value. Refer A3 3.10.5.0 (NSW, QLD), Part 3.12 (NSW, NT, SA, Qld, Tas, ACT)
State or territory variation(s):	G5.2 (NSW & SA)	

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B


Richard Donarski - CMI


Don Grehan – Unrestricted Building Certifier

Date of issue: 21/03/2023

Date of expiry: 17/05/2024



Certificate of Conformity

Limitations and conditions:

1. The ExoTec™ Façade Panel and Fixing system must be installed in accordance with the relevant James Hardie technical literature.
 - a. Where ExoTec™ Façade Panel is to be painted on-site or finished with a factory applied coating, the panels must be specified and installed in accordance with the ExoTec™ Façade Panel and Fixing System Installation Guide (May 2021).
 - b. A qualified Structural Engineer must design the substructure and the connection between the substructure and the top hats.
 - c. It is the responsibility of the Project Engineer to determine the appropriate wind pressure for the project and specify the fixing of the top hats to the structure. The Engineer must limit deflection of the supporting structure to span/250 for Serviceability Wind Load in accordance with AS 1170.2:2011 'Structural design actions Wind actions'.
2. To satisfy FP1.4 & P2.2.2 via verification, the relevant design is required to meet the criteria of FV1.1 and/or V2.2.1 to the satisfaction of the Appropriate Authority as defined by the NCC. The site specific building must;
 - (a)(i) has a risk score of 20 or less, when the sum of all risk factor scores are determined in accordance with Table FV1.1/V2.2.1a; and
 - (a)(ii) is not subjected to an ultimate limit state wind pressure of more than 2.5kPa; and
 - (a)(iii) includes only windows that comply with AS 2047

Compliance with Weatherproofing is limited to the tested specimen detailed in A3, deviations from this specimen, is subject to site specific design and approval by the regulatory authority.
3. Compliance with BP1.1(b)(iii) & P2.1.1(b)(iii) excludes resistance to impact loading from windborne debris.
4. The Exotec™ Façade Panel, as certified, will contribute to the overall thermal performance of the building; however, the performance values are for guidance only and must be verified by a suitably qualified person(s). It is the responsibility of the building designer to ensure the minimum thermal requirements for the building envelope is achieved.
5. In order to maintain compliance with BAL, it is the responsibility of the Building Designer to ensure compliance is achieved in accordance with AS 3959:2018.
6. No assessment has been undertaken on the product for Part F6 of Vol 1 or Part 3.8.7 of Vol 2 of the 2019 BCA for Condensation management. A pliable building membrane complying with AS/NZS 4200.1:2017 must be installed in accordance with AS/NZS 4200.2:2017 to separate the wall cladding panels from any water sensitive materials.
7. In all installations, the minimum clearance between the underside of panel and the adjoining surface level below must comply with the specifications in Part 3.5.4.7 of Volume 2 of the NCC.
8. The use of the certified product/system is subject to these Limitations and Conditions and must be read in conjunction with the Scope of Certification below.

Building classification/s:

Class 1,2,3,4,5,6,7,8,9 & 10

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the Certificate Holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.

Only criteria as identified within this Certificate of Conformity can be used for CodeMark certification claims. Where other claims are made in a client's Installation Manual, Website or other documents that are outside the criteria on this Certificate of Conformity, such criteria cannot be used or claimed to meet the requirements of this CodeMark certification.

The NCC defines a Performance Solution as one that complies with the Performance Requirements by means other than a Deemed-to-Satisfy Solution. A Building Solution that relies on a CodeMark Certificate of Conformity that certifies a product against the Performance Requirements cannot be considered as Deemed-to-Satisfy Solution.



Certificate of Conformity

This Certificate of Conformity may only relate to a part of a Performance Solution. In these circumstances other evidence of suitability is needed to demonstrate that the relevant Performance Requirements have been met. The relevant provisions of the Governing Requirements in Part A of the NCC will also need to be satisfied.

This Certificate of Conformity is issued based on the evidence of compliance as detailed herein. Any deviation from the specifications contained in this Certificate of Conformity is outside of this document's scope and the installation of the certified product will not be covered by this Certificate of Conformity.

Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this certificate.

When using the CodeMark logo in relation to or on the product/system, the Certificate Holder makes a declaration of compliance with the Scope of Certification and confirms that the product is identical to the product certified herein. In issuing this Certificate of Conformity, CMI Certification Pty Ltd (CMI) has relied on the experience and expertise of external bodies (laboratories and technical experts).

Nothing in this document should be construed as a warranty or guarantee by CMI, and the only applicable warranties will be those provided by the Certificate Holder.

APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

As per page 1.

A2 Description of product

System Components

Product	Description	Quantity / Size (Nominal)		
		Thickness (mm)	Width (mm)	Lengths (mm)
Exotec™ facade panel	Dense compressed panel. Square edge. Factory sealed on all six sides. The Nominal density of the 9mm board is 1550kg/m ³ . The Paintable panel has a distinctive white face, which accepts a wide range of paint finishes. The panel must be installed with the white side facing the exterior of the structure. The Pre-Finished Panel is pre-sealed by James Hardie to create a natural “raw” fibre-cement aesthetic with an optional pre-finish using factory applied coating via a third-party supplier.	9	900	1800, 2100,
			200	2400, 2700 and 3000
		12	1200	2400 and 3000
Exotec™ Top Hat	A rolled metal section, for use with Exotec™ façade panel and fixing system, designed to span vertically across the building structure to support façade panels and isolate different movement of the panels from those of the structure.	0.75 gauge	124 wide x 35 deep	6000 and 7200
James Hardie Intermediate Top Hat	A metal top hat installed vertically for use with Exotec™ and ComTex façade panel and fixing system, for intermediate sheet support.	0.75 gauge	50 wide x 35 deep	6000 and 7200
Exotec™ Gasket Snap Strip	For use with the Exotec™ façade panel fixing system, this gasket snap strip is specially designed to clip into the Exotec™ Top Hat at vertical façade panel joints to cover fixings to the structure and to provide an initial weather seal and drainage using a neoprene gasket.	-	-	3620
James Hardie Backing Strip	A weather seal at horizontal panel joints for use with Exotec™ façade panel and fixing system.	-	-	1190, 2390 and 2990
James Hardie Façade Washers	Façade washers used for exposed fastener fixing with Exotec™ façade panel and fixing system.	-	-	-
James Hardie Base Coat	A water-resistant base coat compound used to finish over countersunk fasteners with epoxy.	-	-	-
James Hardie Joint Sealant	A general purpose, paintable, exterior grade polyurethane joint sealant.	-	-	-
HardieEdge™ Trim	An architectural slab edge solution fabricated from high-quality powder coated aluminium.	-	-	3950
HardieWrap™ Weather Barrier	A non-perforated, highly breathable and reflective safe-glare weather barrier.	<1mm	2750	30000/roll

Certificate of Conformity

A3 Product specification

Physical Properties	Saturated Condition	Equilibrium Condition 23°C – 50% RH	Standard
Average Bending Strength	> 7.0MPa		
Category	3	-	AS/NZS 2908.2:2000
Type	A		
Density in kg/m ³ (Oven Dry)	1490	-	AS/NZS 2908.2:2000
Watertightness	-	Passes	AS/NZS 4284:2008 & AS/NZS 2908.2:2000
Dimensional Conformance	-	Passes	AS/NZS 2908.2:2000
Heat-Rain Durability			
Warm Water Resistance		Passes	AS/NZS 2908.2:2000
Freeze-Thaw Resistance			
Soak-dry			
Combustibility	Suitable where non-combustible materials are required in accordance with C1.9 of the BCA		Deemed to comply with BCA

Bushfire Provided any joints are no greater than 3mm or appropriately sealed, compliance with AS 3959-2009 as well as the National Construction Code of Australia 2019 Volumes 1 and 2 for BAL-Low to BAL-40.

Thermal Properties The ExoTec™ facade panels will contribute to the overall thermal performance of the building; however, it is the responsibility of the building designer to ensure the minimum thermal requirements for the building envelope is achieved.

When tested in accordance with ASTM C518, the 9mm panel achieves an R-Value of 0.015. It is the responsibility of the building designer to ensure the minimum R-Value for the building envelope is achieved.

Weatherproofing Exotec™ Facade Panel and Fixing System was tested in accordance with the Verification Method FV1.1 and V2.2.1 'Weatherproofing' test procedure as contained within National Construction Code of Australia and subsequently assessed for validation against the certified product.

Results

Test Type	Criteria	Result
Structural Test	100% Serviceability Limit State Pressure of 1.51kPa for 1 minute in both positive and negative directions.	Pass
Static Water Penetration	30% Serviceability Limit State Pressure 455Pa for 15 minutes	Pass
	Pass Criteria: No presence of water on the inside surface of the façade.	
Cyclic Water Penetration	Cyclic @ 30-60% SLS – 455 to 910 Pa	Duration: 5 minutes
	Cyclic @ 30-60% SLS – 122 Pa	Duration: 15 minutes
	Cyclic @ 30-60% SLS – 455 to 910 Pa	Duration: 5 minutes
	Pass Criteria: No presence of water on the inside surface of the facade.	Pass

Source: Test Report No. TS002-21, Weathertightness in accordance with FV1.1 & V2.2.1; dated 22/03/2021.

Certificate of Conformity

A4 Manufacturer and manufacturing plant(s)

Exotec™ Facade Panels and Fixing Systems are manufactured in Australia by James Hardie Australia Pty Ltd. Contact Certificate Holder for details.

A5 Installation requirements

The ExoTec™ Façade Panel and Fixing system must be installed in accordance with the relevant James Hardie technical literature. Where ExoTec™ Façade Panel is to be painted on-site or finished with a factory applied coating, the panels must be specified and installed in accordance with the [ExoTec Facade Panel Install Guide July 2021](#).

Failure to install, finish or maintain this product in accordance with applicable building codes, regulations, standards and James Hardie's written application instructions may lead to personal injury, affect system performance, violate local building codes, and void James Hardie's product warranty.

A6 Other relevant technical data

Fire Resistance Testing conducted by CSIRO on the Exotec™ Cladding materials in accordance with AS/NZS 3837:1998 and are classified as Group 1 material. (Average Specific Extinction Area 55.1m²/Kg).

Source: CSIRO Certificate No. 1126 dated 28/08/2008.

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

1. Characteristic Type Testing – A5.2(1)(d). Reports from Accredited Testing Laboratories.
2. Bushfire Provisions – A5.2(1)(e). Reports from a professional engineer.
3. Fire Safety Provisions A5.2(1)(d). Reports from Accredited Testing Laboratories.
4. Structural Provisions A5.2(1)(e). Reports from a professional engineer.
5. Thermal Provisions A5.2(1)(e). Reports from a professional engineer.
6. Weatherproofing Provision A5.2(1)(d). Reports from Accredited Testing Laboratories.

B2 Reports

1. Acronem Consulting Australia Pty Ltd; Thermal break requirements for Exotec™ on Metal Frames Single Stud; Dated 28/11/2017.
2. BRANZ, Project Number: EC0712; Thermal Conductivity Measurement of Six Samples of Fibre Cement Board Products; Dated 17/10/2003.
3. Cardno; Engineering Report S11713-LO-44A; Certification of James Hardie ExoTec™ Façade Panel and Fixing System - compliance to AS/NZS 1170.2-2002 Clause 2.5.5 & AS 4040.3-1992; Dated 18/08/2009.
4. CSIRO; NATA Accreditation No. 165; Certificate No.: 1126; Certificate of Assessment in accordance with AS/NZS 3837 Group Number 1 and Average specific extinction area: 55.1m²/kg; Dated 28/08/2008.
5. David Beneke Consulting Pty Ltd; Report No. 2011-45-LO-05; Certification of James Hardie ExoTec™ Façade Systems in High Wind Applications; Dated 19/04/2011.
6. David Beneke Consulting Pty Ltd; Report No. 2011-45-LO-83; Structural Certification of the James Hardie Exotec™ Facade System - Revision 4; Dated 02/08/2018.
7. David Beneke Consulting Pty Ltd; Report No. 2011-45-LO-84; Structural Certification of The James Hardie Exotec™ Facade System used in Soffit Applications - Revision 2; Dated 02/08/2018.
8. Ignis Solutions Pty Ltd; Evaluation No. IGNS-6690-01 Issue 01 Revision 00[2018]; Compliance with AS 3959-2009 BAL Low-40; Dated 31/03/2018.
9. James Hardie Research Pty Ltd; NATA Accreditation No. 14220; Compliance Certificate ExoTec™ Façade Panel - Characteristic Type Tests required by AS/NZS 2908.2:2000; Dated July 2010.
10. James Hardie Research Pty Ltd; NATA Accreditation No. 14220; Report No. TS002-21; Weathertightness (FV1.1 / V2.2.1 Weatherproofing); Dated 22/03/2021.

The Certificate Holder has chosen not to make the above evidence of compliance publicly available, due to the documents being considered commercial in confidence.

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Certificate number: CM30017 Rev 2

THIS IS TO CERTIFY THAT

VITRADUAL

Type and/or use of product:

VITRADUAL panels are used in external wall cladding, in all building types (NCC Volume 1 & 2)

Description of product:

VITRADUAL panels are 3 mm thick PVDF coil coated solid Aluminium panels installed with metal fixing system. Standard panel sizes include widths of 1,250mm & 1,500mm and lengths of 2,500mm, 3,200mm & 4,000mm. Custom panel sizes up to 1,500mm x 4,000mm.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S)

BCA 2022

	Volume One		Volume Two and Housing Provisions (HP)	
Performance Requirement(s)	B1P1	Structural Provisions	H1P1	Structural stability and resistance to actions
	B1P2	Structural Provisions		
	F3P1	Damp and Weatherproofing	H2P2	Weatherproofing
Deemed-to-Satisfy Provision(s):	B1D4 (e)	Structural Resistance	HP 2.2.4 (k)	Structural Resistance
	C2D10 (6)(e)	Non-Combustible Material		
	G5D3	Construction in bushfire prone areas Protection – residential buildings	H7D4 (2)(a)	Construction in bushfire prone areas
	G5D4	Construction in bushfire prone areas Protection – certain Class 9 buildings		

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the certificate holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.

Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this certificate.

The purpose of Global-Mark **construction site audits** is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions

In placing the **CodeMark mark** on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein. In issuing this Certificate of Approval Global-Mark has relied on the **expertise of external bodies** (laboratories, and technical experts).



Herve Michoux
Global-Mark Managing Director



Peter Gardner
Unrestricted Building Certifier

Date of issue: 29/06/2023

Date of expiry: 29/06/2026



Certificate of Conformity

	State or territory variation(s):	NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	Structural Resistance	WA 2.2.4 (k)	Structural Resistance
		NSW G5D3 NSW G5D4 VIC G5D4 SA G5D5	Bushfire: Protection – residential buildings Bushfire: Protection – certain Class 9 buildings Bushfire: Protection – certain Class 9 buildings Bushfire attack levels	NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	Construction in bushfire prone areas Construction in bushfire prone areas Construction in bushfire prone areas

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B

Limitations and conditions:	Building classification/s:
Volume 1 – B1P1 & Volume 2 – H1P1 Vitradual panel system as described has maximum design wind load limits documented within the Vitradual Technical Manual, dated March 2020. Wind load limits, construction detail and fixing must follow the relevant details contained within the Vitradual Technical Manual, dated March 2020. Supporting structures & connections (including stud frame & sub framing members) must be designed / specified to withstand project loads including but not limited to ULS & SLS wind loads.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P1 (2) (e), (f) & (i) & Volume 2 – H1P1 (2) (e), (f) & (i) Snow, liquid pressure and earth pressure actions are excluded.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 – B1P4 & Volume 2 – H1P2 Compliance for flood hazard areas is excluded.	1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
Volume 1 F3P1 & Volume 2 H2P2 A VitraDual external wall must be constructed using either a pliable building membrane or Rigid Air Barrier, subject to the following: - the Flexible Wall Wrap or Rigid Air Barrier must present an Air & Water barrier for the purposes of weatherproofing, and - When a Flexible wall wrap (Water Barrier) is used, the system remains weatherproof up to Serviceability wind loads of +1.5 kPa & -1.8 kPa, and - When a Rigid Air Barrier is used for a wall wrap, the system remains weatherproof up to Serviceability wind loads of +3.5 kPa & -4.0 kPa, and - Design & installation complies fully with Vitradual Technical Manual, dated March 2020, and - Design accommodates deflection movements due to all design loads & temperature variations, and - Installation Contractor complies with manufacturer's instructions for sealants, shop drawings & project specifications, and - Fixings are installed in accordance with manufacturer's instructions & procedures, fixings to be weathertight and not restrict thermal or wind movements of the façade, and	1, 2, 3, 4, 5, 6 & 9

Certificate of Conformity

8. Perforated "Breather" wall wrap membranes must not be used.	
Volume 1 - C2D10 This Certification is based upon the system being installed using components & accessories specified in the "System Components" section of the Vitradual Technical Manual, dated March 2020 & the Vitrafix Accessories Brochure dated March 2020 (refer Appendix B2). Substitution of such components & / or accessories may be permitted, however the general performance specifications of components & / or accessories must be maintained for this certificate to remain valid.	2, 3, 4, 5, 6, 7, 8 & 9
Volume 1 – C2D10 (1) In a building required to be of Type A or B construction, construction elements and their components must be non-combustible for all external walls, common walls and non-loadbearing internal walls that are required to be fire-resisting. This includes the requirement for Rigid Air Barriers to be non-combustible, where used.	2, 3, 4, 5, 6, 7, 8 & 9
Volume 1 – C2D10 (6) Pliable building membranes / "Sarking-type materials" must not exceed 1mm in thickness and must have a Flammability index not greater than 5.	2, 3, 4, 5, 6, 7, 8 & 9
Volume 1 – G5D3 & Volume 2 – H7D4 (2)(a) In designated bushfire prone areas, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, Vitradual is permitted for use as external wall cladding only in buildings subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19. In Queensland (per QLD G5D2 & QLD H7D4(3)), areas where the classified vegetation is Group F rainforest (excluding wet sclerophyll forest types), mangrove communities and grasslands under 300mm high, are excluded.	1, 2, 3 & 10a or deck immediately adjacent or connected to building class 1, 2 or 3
Volume 1 – NSW G5D3 & Volume 2 – NSW H7D4 In designated bushfire prone areas, subject to Bushfire Attack Level BAL-Low, BAL-12.5 & BAL-19, determined in accordance with the Planning for Bush Fire Protection, when the building is constructed in accordance with AS3959: 2018 including Amendments 1 & 2, except as modified by Planning for Bush Fire Protection, Vitradual is permitted for use as external wall cladding. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection. Site specific conditions arising from: - the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required, or - the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development have not been considered for the compliance assessment.	1, 2, 3, Class 4 part of a building & 10a building or deck immediately adjacent or connected to building of class 1, 2, 3 or Class 4 part of a building

Certificate of Conformity

	Volume 1 – NSW G5D4 In designated bushfire prone areas subject to a Bushfire Attack Level (BAL) not exceeding BAL—12.5, determined in accordance with Planning for Bush Fire Protection, when the building is constructed in accordance with: 1) For class 9 buildings, Specification 43 except as modified by Planning for Bush Fire Protection, or 2) For class 10a buildings or decks, AS3959: 2018 including Amendments 1 & 2 except as modified by Planning for Bush Fire Protection and S43C13, Vitradual is permitted for use as external wall cladding. The compliance assessment of the certified system is limited to sections 7.5 and 8.3.2 of Planning for Bush Fire Protection. Site specific conditions arising from the development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development are site specific and have not been considered for the compliance assessment. General The supporting structures including stud frame & cavity sub framing, plus internal linings shall be designed & specified by a suitably qualified design professional in accordance with manufacturer guidelines. Installation shall be conducted by suitably qualified and trained building professionals. Design, Specification and Installation shall be in accordance with the Vitradual Technical Manual, dated March 2020 (refer Appendix B2).	Class 9 building that is a special fire protection purpose; and a Class 10a building or deck immediately adjacent or connected to such building 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10
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APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

Refer to page 1 of this certificate.

A2 Description of product

Refer to page 1 of this certificate.

This product is NOT an Aluminium Composite Panel (ACP).

A3 Product specification

Refer to items 1 & 2 listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A4 Manufacturer and manufacturing plant(s)

FVA Group Pty Ltd

18-20 Donald Street

Lithgow NSW 2790

Ph: + 61 2 6352 2355

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A5 Installation requirements

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.

A6 Other relevant technical data

Refer to items listed in Appendix B2:

- VITRADUAL Technical Manual, dated March 2020.
- VITRAFIX Accessories Brochure, dated March 2020.
- Any referenced documents within the above listed technical literature.

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

The following assessment methods have been used to determine compliance with BCA 2022

Code Clause	Assessment Method(s)	Evidence of suitability	Evidence reference in B2
BCA Volume One B1P1	A2G2 (2) (a), (b)(iii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume Two H1P1	A2G2 (2) (a), (b)(iii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One B1P2	A2G2 (2) (a), (b)(iii) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One F3P1	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume Two H2P2	A2G2 (2) (a), (b)(i) & (c)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 10, 11, 12 & 13
BCA Volume One B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One C2D10 (6)(e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two H7D4 (2)(a)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NT B1D4 (e) QLD B1D4 (e) WA B1D4 (e)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Housing Provisions WA 2.2.4 (k)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 1, 2, 3, 4 & 5
BCA Volume One NSW G5D3	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One NSW G5D4 VIC G5D4	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume One SA G5D5	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9
BCA Volume Two NSW H7D4 (2)(a) QLD H7D4 (3) SA H7D4 (3)	A2G3 (2) (a) & (b)	A5G3 (1) (d) & (e) – Test Report & Expert Judgement	Items 6, 7, 8 & 9

Certificate of Conformity

B2 Reports

The following reports have been used as evidence to determine compliance with BCA 2022:

Ref	Author	Reference	Date / Revision	Description	NATA Registration
1.	Fairview	VitraDual – Technical Information	March 2020	Product Technical Manual	-
2.	Fairview	VitraFix – Accessories Brochure	March 2020	Accessories Brochure	-
3.	Enertren	FAR-106 Vitradual Structural Design	12 December 2019	Structural Assessment Report	-
4.	Enertren	FAR-092 Span Tables	23 January 2019	Structural Span Tables	-
5.	SGS Australia	N-0519-0921	25 October 2019	Material Investigation Report	-
6.	CSIRO	FNC 11690	16 August 2016	Fire Test Report	165
7.	AWTA	16-002875	7 June 2016	Fire Test Report	1356
8.	Red Fire Engineers	JV19-00103-v2	27 March 2020	Fire Assessment Report	-
9.	Exova WarringtonFire UK	WF 400695v2	5 June 2018	Fire Classification Report	UKAS 0249
10.	BG&E Facades	FVA Cladding Products - VitraDual	27 August 2018	Weather tightness assessment report	-
11.	FacadeLab NZ	18-02	20 April 2018	Weather tightness test report	IANZ 1091
12.	VIPAC Engineers	30B-19-0059-TRP-6774697-1	1 April 2020	Weather tightness test report	676
13.	VIPAC Engineers	30B-19-0059-TRP-6774698-0	2 April 2020	Weather tightness test report	676

The Certificate Holder has chosen not to make the above identified evidence of compliance publicly available, due to the documents being considered commercial in confidence.

End of Certificate.



Manual 5



Design of Clay Masonry Walls for Fire Resistance

We represent the clay brick and paver manufacturers of Australia.

Our purpose is to make sure clay brick is recognised as the pre-eminent building material by leading architects, engineers, developers, builders and property owners.

We're here to promote great home and commercial design using clay brick and pavers.

Revised and republished 2018.

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When a masonry wall is subjected to fire, which is usually only on one side, a thermal gradient is created through the thickness of the wall and the expansion of the material causes bowing towards the fire source. If this bowing extends far enough it can cause collapse of the wall. Even if the wall does not collapse, it can crack because of internal stresses caused by restraint of the thermal expansion, or it can heat up sufficiently to allow flammable material on the side away from the fire to ignite. Both these consequences can cause the fire to spread.

1 Introduction

A large proportion of the National Construction Code (NCC) deals with the design of buildings for fire safety. The NCC sets out the requirements, while the means for satisfying these requirements are detailed in the Australian Masonry Structures standard AS 3700². The commentary to AS 3700³ also contains useful background information on design for fire resistance and guidance on using the standard.

The NCC specifies that walls must be designed to achieve three Fire Resistance Levels (FRLs). These are defined as:

(i) Structural adequacy

The ability of a wall to continue to perform its structural function for the fire resistance period.

(ii) Integrity

The ability of a wall to maintain its continuity and prevent the passage of flames and hot gases through cracks in the wall for the fire resistance period.

(iii) Insulation

The ability of a wall to provide sufficient insulation such that the side of the wall away from the fire does not exceed a pre-defined temperature during the fire resistance period. However, it should be noted that at this temperature – a rise of 140°C over the ambient temperature or a maximum of 180°C – surface finished and furnishings in contact with or near the wall may combust. The resultant fire resistance level is expressed in minutes for each

of these periods and always in the same order. For example, an FRL of 90/90/90 means a fire resistance period of 90 minutes each for structural adequacy, integrity and insulation.

In setting the required levels for FRL, the NCC takes into account many factors including –

- (i) The class of building of which the wall forms a part.
- (ii) The height and size of the building.
- (iii) Whether the wall is loadbearing or non-loadbearing.
- (iv) How close it is to a boundary or another building (for external walls).

In order to satisfy these requirements of the NCC, AS 3700 sets out rules for determining a fire resistance period of a masonry wall for each of structural adequacy, integrity and insulation. The fire resistance period (FRP) must be equal to or greater than the FRL for each mode of behaviour.

The FRP may be found by either –

- (i) The use of tabulated values,
- (ii) The use of test results, or
- (iii) A recognised method of calculation.

Tabulated values are conservative and test results will usually give a more cost-effective outcome. However, tabulated values can be used by referring only to AS 3700, whereas the use of test results will usually require precise knowledge of the type of masonry unit to be used. Rules of interpreting the results of fire tests carried out on masonry walls are given in AS 3700. Where two or more results of tests on the same type of masonry unit are available, interpolation and extrapolation from these results can be used. The third alternative, a recognised method of calculation, is difficult not practical given the current state of research.

Structural adequacy and insulation requirements have been determined from an extensive test program conducted since the late 1970's^{4,5}. The results of these tests enable the determination of the relationship (or shape of the curve) for these properties. The structural adequacy charts in this manual were developed based on table 6.1 of AS 3700 and represent the lower bound of the test results.

The FRP for structural adequacy is specific to the wall type and its boundary support conditions. Most common wall types and sizes are covered in this manual; for those not shown, designers should refer to the brick manufacturer for test results.

Note: Some masonry members are not required by the NCC to confine the spread of fire (ie. have an FRL for insulation and/or integrity).

2 Design for Fire Resistance

2.1 Structural Adequacy

The charts in this manual allow the designer to directly determine the fire resistance period for structural adequacy for a given wall type with specific boundary conditions over a range of height and length.

These charts are based on the limits for slenderness ratio given in AS 3700, which are summarised for clay masonry in Table 1. The slenderness ratio is calculated in accordance with AS 3700 Clause 6.3.2.2.

Table 1: Maximum Slenderness Ratio for Structural Adequacy of Clay Masonry Walls

Fire resistance period for structural adequacy (mins)	30	60	90	120	180	240
Maximum slenderness ratio	25.0	22.5	21.0	20.0	18.0	17.0

The FRP for structural adequacy is specific to the wall type and its boundary support conditions. Most common wall types and sizes are covered in this manual; for those not shown, designers should refer to the brick manufacturer for test results. The use of the charts and design from test results are explained and illustrated with examples in Section 3.1.

2.2 Integrity

Tabulated values for integrity resistance are not provided in AS 3700. A member is deemed to have the required fire resistance for integrity if that level is met for both structural adequacy and insulation. Put simply, the fire resistance for integrity can be taken as the lesser of the values tabulated for structural adequacy and insulation. Design from test results is also an option and this is explained in Section 3.2.

2.3 Insulation

The fire resistance period for insulation is a function of the material thickness of the wall. This manual allows a designer to calculate the fire resistance period for insulation for clay brick walls of any thickness. Design for insulation by tabulated values and test results are explained and illustrated in Section 3.3.

2.4 Specific Test Results Take Precedence

Although clay brick properties are consistent for a particular product, they may vary widely between different products because of differences in raw materials and manufacturing processes.

Recognising that most products will produce a superior performance to the lower bound, some brick manufacturers have submitted specific products for fire testing. Accordingly, specific test results should take precedence over the lower bounds expressed in this manual.

2.5 Brick Veneer Construction

Brick veneer walls consist of an outer lead of brickwork tied to a steel or timber supporting frame. The brickwork provided insulation fire protection to the supporting frame against an external fire source. When required, structural adequacy is provided by the supporting frame.

For housing, where the external walls are closer than 0.9m to the boundary, or closer than 1.8m to another building on the site (that is not a class 10a building) there is a requirement for 60/60/60 FRL (see the NCC). Brick walls in accordance with AS4773.16 are deemed to satisfy this requirement.

2.6 Reinforced Masonry

There are several additional requirements specified by AS 3700 for reinforced masonry:

- (i) Minimum reinforcement for member spanning horizontally – such that the member can withstand a design lateral load of 0.5 kPa.
- (ii) Minimum reinforcement for a member spanning vertically – such that the member can withstand the greater of:
 - (a) A flexural moment equivalent to the applied vertical compressive loads times height/36, or
 - (b) A design lateral load of 0.5 kPa.
- (iii) Protection of reinforcement – for structural adequacy, the cover to the face exposed to fire should not be less than the appropriate value summarised in Table 2.

Table 2: Protection for reinforcement for structural adequacy

Fire resistance period for structural adequacy (mins)	30	60	90	120	180	240
Minimum dimension from reinforcement to exposed masonry face	30	30	30	40	50	60

2.7 Walls with Openings

If a wall has an opening greater than one-fifth the height of the wall, the structural adequacy FRP must be calculated by regarding the wall as divided into two sub-panels with a free edge at the centre of the opening.

The FRP for structural adequacy is specific to the wall type and its boundary support conditions. Most common wall types and sizes are covered in this manual; for those not shown, designers should refer to the brick manufacturer for test results.

2.8 Chases

The chasing of masonry members that are subject to fire shall be kept to a minimum. For the purpose of determining structural adequacy, chases in vertically spanning walls may be ignored if:

- (i) The chase is vertical; or
- (ii) The chase is horizontal and its length is not greater than four times the wall thickness.

Otherwise, the slenderness ratio of the wall is to be based on the overall thickness of the wall less the depth of the chase.

Chases in walls spanning both horizontally and vertically (panel action) can be ignored if:

- (i) The chase is horizontal and its length is not greater than half the wall length; or
- (ii) The chase is vertical and its length is not greater than half the wall height.

Otherwise, the slenderness ratio of the wall is to be based on the thickness of the wall less the depth of the chase. Alternatively, where a vertical chase is greater than half the height of the wall, the chase may be regarded as an unsupported edge and the wall designed as two sub-panels.

For the purpose of determining integrity and insulation resistance, the effect of chases in walls of solid, cored or grouted hollow units can be ignored if:

- (i) The chase depth is less than 30 mm,
- (ii) The section of chase is less than 1000 mm², and
- (iii) The total chases face area on both sides of the wall is less than 100,000 mm² per five square metres of walling.

Otherwise, determine the integrity and insulation FRPs based on the wall thickness less the chase depth. For ungrouted hollow masonry units, the integrity and insulation FRPs must always be determined based on the wall thickness less the chase depth.

2.9 Recesses

Recesses made in walls for services may be ignored provided:

- (i) They penetrate less than half the wall thickness, and
- (ii) Their total area (in both faces) within any five square metres of walling is not more than 10,000 mm².

Otherwise, the wall thickness for fire resistance should be taken as the overall thickness less the depth of the recess.

2.10 Protection of Structural Steelwork

The minimum material thickness of masonry to provide fire protection to structural steelwork, including mullions, is a value obtained from AS4100⁷ or Table 3.

Table 3: Minimum material thickness of clay masonry for the protection of structural steel

Sides of column exposed to fire	Column spaces (3)	Minimum material thickness of clay masonry (mm) (2)				
		Fire Resistance Level (FRL) (1)				
		60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
≤3	Filled	50	50	50	65	90
	Unfilled	50	50	65	-	-
4	Filled	50	50	50	75	100
	Unfilled	50	50	65	-	-

Notes:

- (1) Fire Resistance Level (FRL) expressed in terms of minutes for: insulation / integrity / structural adequacy
- (2) Maximum 25% coring allowed
- (3) Filled column space means that all the area surrounding the column, including re-entrant zones (eg. between flanges of a universal column), is completely filled with grout and masonry.

3 Determining a Fire Resistance Period

3.1 Structural Adequacy

3.1.1 General

The fire resistance period (FRP) for structural adequacy may be calculated from tabulated values or by test results. The charts in this manual have been formulated using the tabulated values in AS 3700. For design using the charts, the FRP for structural adequacy may be read directly from the appropriate chart taking into account the boundary conditions as shown by the icon on the top right of each chart. The FRP is indicated at the point where the wall height and length intersect on the chart.

Design from test results is illustrated by example in Section 3.1.5.

3.1.2 Cavity Walls

Cavity wall charts in this manual are based on the leaves being approximately equally loaded (within 10 per cent of each other). If the leaves are not equally loaded the wall should be designed as a single-leaf wall using the thickness and fixity of the more heavily loaded leaf. Note that it is most common for leaves to be not equally loaded.

For cavity walls where both leaves have a superimposed axial force within 10 per cent of each other (including where there is no load on either leaf) AS 3700 allows the slenderness ratio to be based on:

- (i) A thickness equal to two-thirds of the sum of the thicknesses of the two leaves; and
- (ii) The fixity of the leaf not exposed to the fire.

Where cavity walls are constructed with leaves of different masonry unit types, the structural adequacy should be based on the less fire-resistance material.

3.1.3 Slenderness Ratio

For structural adequacy design, using either the charts or test results, the slenderness ratio (S_{rf}) is determined in accordance with Clause 6.3.2.2 of AS 3700 as follows:

For vertically spanning walls (with no support along either vertical edge):

$$S_{rf} = \frac{a_{vf}H}{t} \quad (1)$$

Where –

a_{vf} = Vertical span coefficient (0.75 where there is lateral support on the top edge, otherwise 2.0)

H = Clear height of the member

t = Overall thickness of the member

For a wall with at least one vertical edge supported (panel action) the slenderness ratio is given by the lesser of:

$$S_{rf} = \frac{a_{vf}H}{t} \quad (2)$$

$$S_{rf} = \frac{0.7}{t} \sqrt{a_{vf}H a_h L} \quad (3)$$

$$S_{rf} = \frac{a_h L}{t} \quad (4)$$

Where –

a_h = Horizontal span coefficient (1.0 where there is lateral support along both vertical edges, or 2.5 where there is lateral support along one vertical edge)

L = The clear length of the member

and the other symbols are as defined before.

3.1.4 Design Loads for Lateral Supports

For structural adequacy design, it is essential that any laterally supporting members and their connections have the capacity to support the wall. Supports and their connections must be designed in accordance with Clauses 2.6.3 and 2.6.4 of AS 3700.

These requirements are summarised as:

- (i) Lateral supporting members should be capable of resisting the static reactions for the appropriate load combination, plus 2.5% of the design vertical load.
- (ii) Connections should be capable of resisting the load on the member derived from (i) multiplied by 1.25.

3.1.5 Structural Adequacy by Test Results

As discussed in the introduction, structural adequacy charts represent lower bound values and specific test results, where available, can be used to obtain a more favourable result.

Where two or more test results are available, and

- (i) the test results are for walls built with the same type of clay masonry units, which AS 3700 defines as having the same mineralogy and geological type, blended in the same proportions and manufactured by similar processes,
- (ii) the slenderness ratios of the specimens cover a minimum range of two, and
- (iii) the slenderness ratio of the member is not more than two outside the tested range,

then the fire resistance period is obtained by determining a coefficient C_s as the lowest value from substituting the test results in the following equation.

$$C_s = \frac{(S_{rf}-13)}{\ln(720/t_f)} \quad (5)$$

Where –

S_{rf} = The slenderness ratio of the tested specimen, determined according to Section 3.1.3 above.

t_f = The time to failure in structural adequacy for the tested specimen (minutes).

It is necessary to evaluate C_s from each test result and adopt the minimum value of C_s .

As discussed in the introduction, structural adequacy charts represent lower bound values and specific test results, where available, can be used to obtain a more favourable result.

This minimum value can then be used in Equation 5 to determine the FRP for a member with a slenderness ratio not more than two outside the test range.

Example:

Test 1: $S_{ef} = 18$ $t_f = 180$ therefore $C_s = 3.61$
 Test 2: $S_{ef} = 21$ $t_f = 90$ therefore $C_s = 3.85$

Therefore adopt $C_s = 3.61$ as the minimum. This value can then be substituted in Equation 5 for the design of walls having slenderness ratios between 16 and 23.

It could therefore be calculated that a member made from the same type of clay masonry units with $S_{ef} = 23$ would have a time to failure of 45 minutes for structural adequacy. Therefore, adopt an FRP of 30 minutes for this wall.

It should be noted that the results of tests on non-loadbearing walls must only be applied to design of other non-loadbearing walls, not to the design of loadbearing walls.

3.2 Integrity

3.2.1 Integrity from Tabulated Values

As explained in Section 2.2, a member is deemed to have the required fire resistance for integrity if that level is met for both structural adequacy and insulation. For design from tabulated values, the FRP is determined for structural adequacy and insulation, and the fire resistance for integrity is the lesser of these values.

3.2.2 Integrity by Test Results

When a single test result is available, the FRP of a member can be taken equal to the tested value, provided the thickness is not less than that of the test specimen.

Where two or more test results are available, and

- (iv) the test results are for walls built with the same type of clay masonry units, which AS 3700 defines as having the same mineralogy and geological type, blended in the same proportions and manufactured by similar processes, and
- (v) the thicknesses of the test specimens cover a minimum range of 20 mm,

then the FRP of the masonry member may be linearly interpolated between the test results. Extrapolation is not permitted.

3.3 Insulation

3.3.1 Material thickness

For a solid wall built from cored or solid units (including those with frogs), or from hollow units fully grouted, the material thickness is the overall thickness of the wall.

For these purposes, a cored unit is one with voids not greater than 30 per cent of the total unit volume. For a wall built from hollow unit (with voids greater than 30 per cent) the material thickness is the net volume of the unit divided by the area of the exposed vertical face of the unit where the net volume of the unit equals total volume minus volume of voids. Illustrated in Figure 1 (as examples to illustrate the concept) are four typical hollow clay units.

For cavity walls, the material thickness is equal to the sum of the material thicknesses of the separate leaves.

For a rendered wall, any render up to 20 mm thickness applied to the face of the wall not exposed to fire may be considered part of the material thickness. On a face exposed to fire, render is assumed to be ineffective.

3.3.2 Insulation by Tabulated Values

Material thicknesses for insulation are tabulated in AS 3700, from which Table 3 is a summary applicable to clay masonry.

Table 3: Material Thickness of Clay Masonry for Insulation Resistance

Fire resistance period for insulation (mins)	30	60	90	120	180	240
Material thickness (mm)	60	90	110	130	160	180

3.3.3 Insulation by Test Results

When one test result is available, the thickness of the designed member must not be less than the thickness of the test specimen.

Where two or more test results are available, and

- (i) the test results are for walls built with the same type of clay masonry units, which AS 3700 defines as having the same mineralogy and geological type, blended in the same proportions and manufactured by similar processes, and
- (ii) the material thicknesses of the test specimens cover a minimum range of 20mm,

then the fire resistance period is obtained by determining a coefficient C_i as the lowest value from substituting the test results in the following equation.

$$t_c = C_i t_m^{1.7} \quad (6)$$

Where –

t_m = The material thickness of the tested specimen, determined according to Section 3.3.1 (millimetres).

t_c = The time to failure in insulation for the tested specimen (minutes).

It is necessary to evaluate C_i from each test result and adopt the minimum value of C_i .

This minimum value can then be used in Equation 6 to determine the FRP for a member with a material thickness not more than 20 mm outside the test range.

Example:

Test 1: $t_m = 110\text{mm}$ $t_c = 90\text{ min}$ therefore $C_i = 0.030$

Test 2: $t_m = 180\text{mm}$ $t_c = 240\text{ min}$ therefore $C_i = 0.035$

Therefore adopt $C_i = 0.030$ as the minimum. This value can then be substituted in Equation 6 for the design of walls having material thickness between 90 and 200.

It could therefore be calculated that a member made from the same type of clay masonry units with material thickness of 150 mm would have a time to failure of 150 minutes for insulation. Therefore, adopt an FRP of 120 minutes for this wall.

Figure 1.
A Selection of Typical Hollow Clay Units to Illustrate the Concept of Material Thickness for Insulation

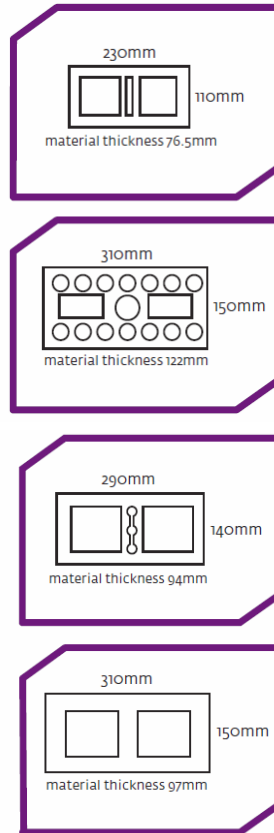


Chart 1.
Structural Adequacy FRP (minutes) for 90 mm Clay Masonry Walls with Simple Supports on Four Sides

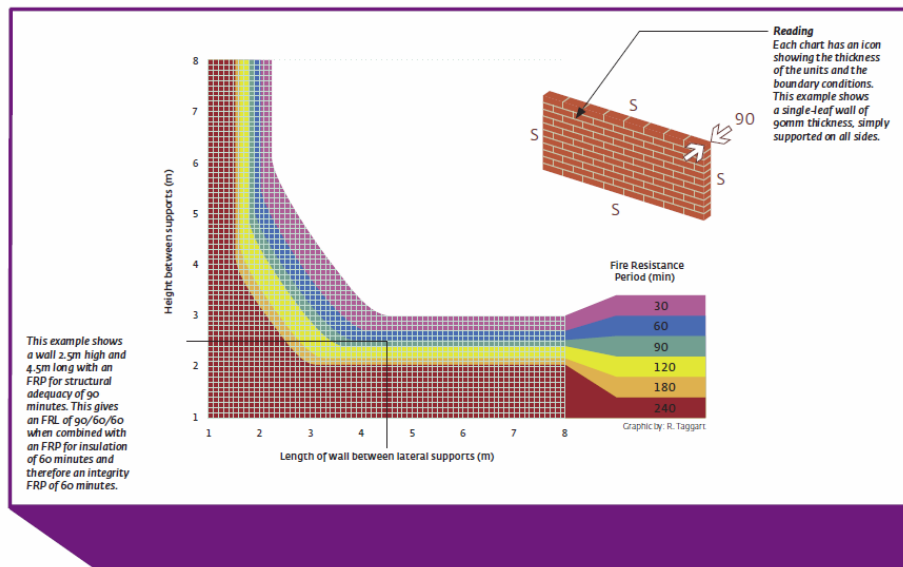


Chart 2.
Structural Adequacy FRP (minutes) for 110 mm Clay Masonry Walls with Simple Supports on Four Sides

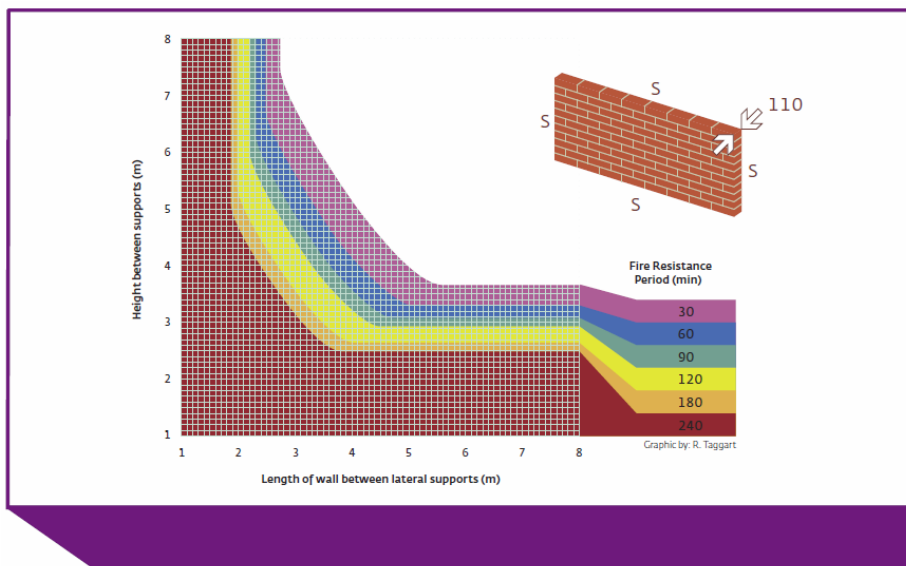


Chart 3.
Structural Adequacy FRP (minutes) for 140 mm Clay Masonry Walls with Simple Supports on Four Sides

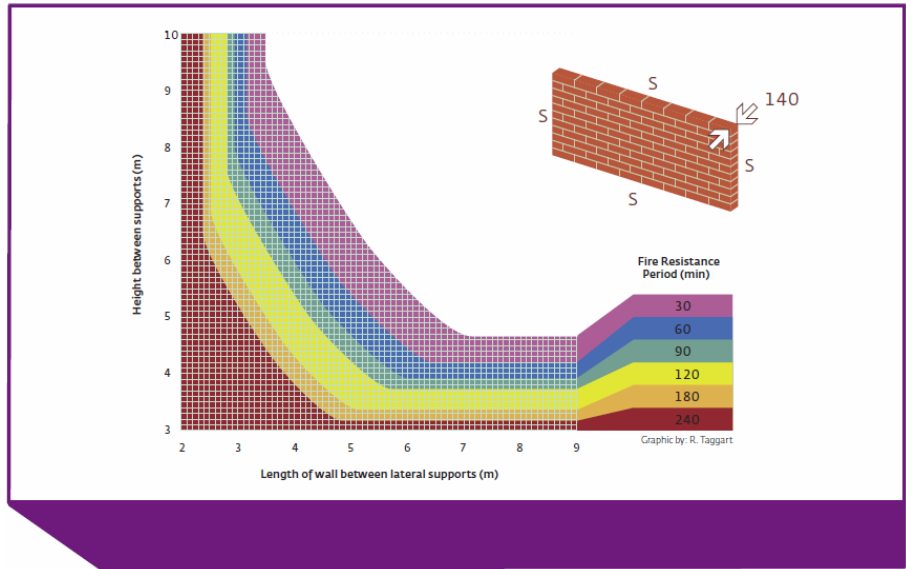


Chart 4.
Structural Adequacy FRP (minutes) for 150 mm Clay Masonry Walls with Simple Supports on Four Sides

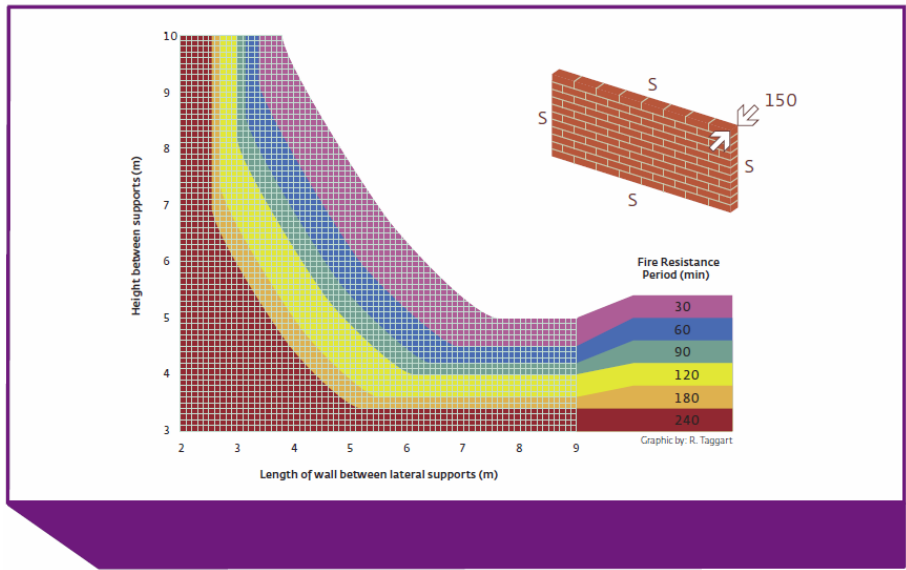


Chart 5.
Structural Adequacy FRP (minutes) for 190 mm Clay Masonry Walls with Simple Supports on Four Sides

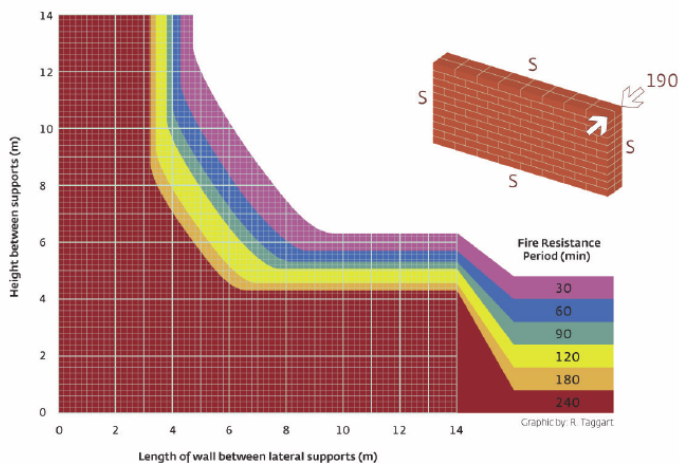


Chart 6.
Structural Adequacy FRP (minutes) for 230 mm Clay Masonry Walls with Simple Supports on Four Sides

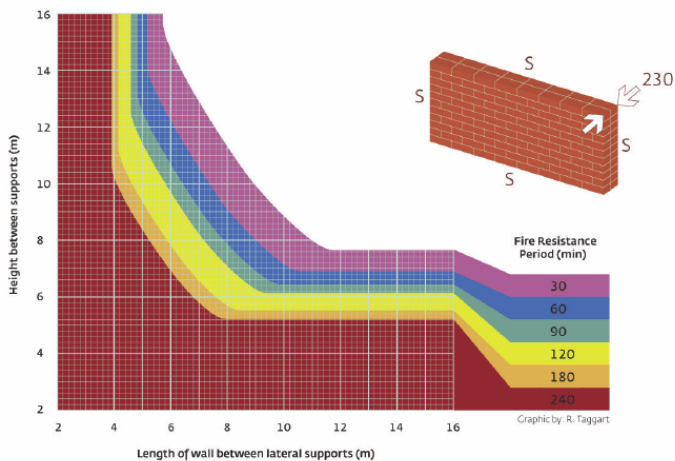
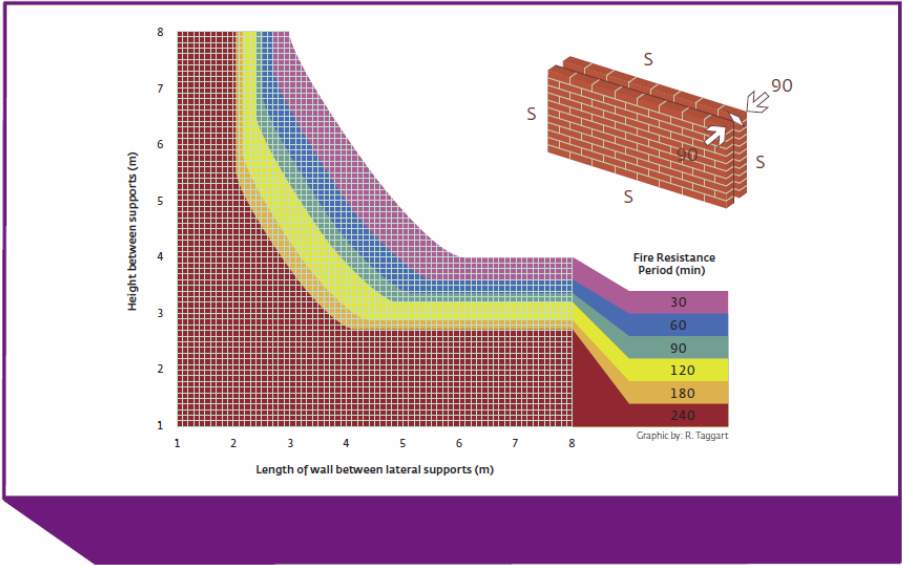
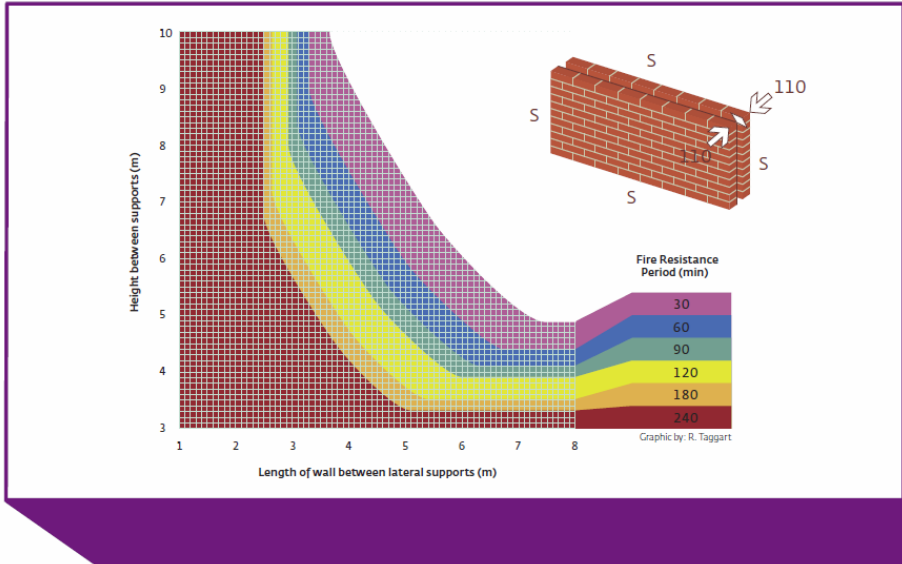


Chart 7.
Structural Adequacy FRP (minutes) for 90-90 mm Cavity Clay Masonry Walls with Simple Supports on Four Sides



Note: It is assumed that both leaves are approximately equally loaded (see Section 3.1.2)

Chart 8.
Structural Adequacy FRP (minutes) for 110-110 mm Cavity Clay Masonry Walls with Simple Supports on Four Sides



Note: It is assumed that both leaves are approximately equally loaded (see Section 3.1.2)

Chart 9.
Structural Adequacy FRP (minutes) for 110 mm Clay Masonry Walls with Simple Supports on Three Sides and One Side Free

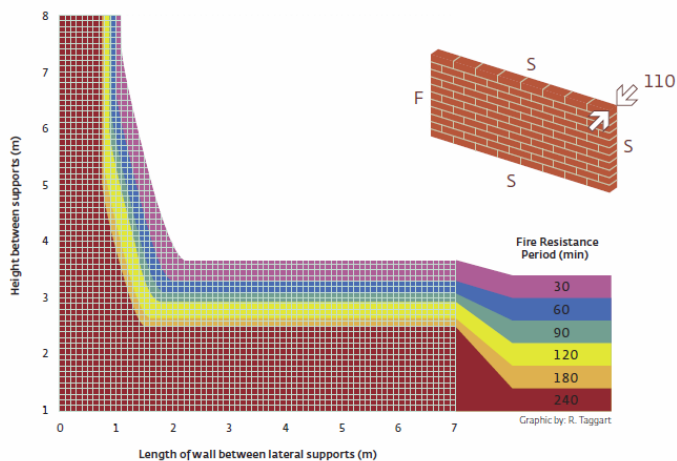


Chart 10.
Structural Adequacy FRP (minutes) for 140 mm Clay Masonry Walls with Simple Supports on Three Sides and One Side Free

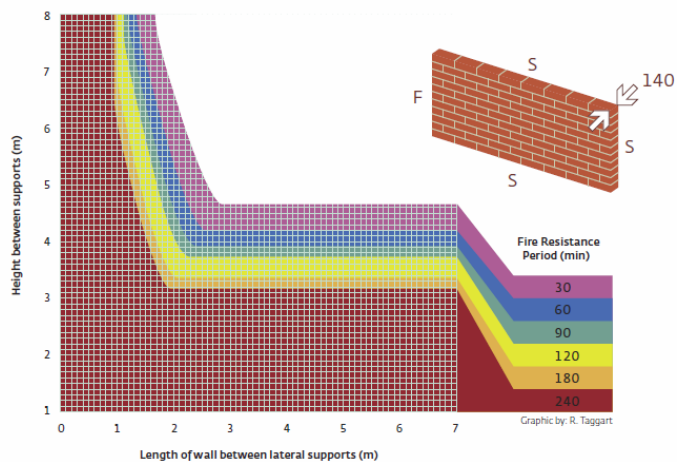


Chart 11.
Structural Adequacy FRP (minutes) for 150 mm Clay Masonry Walls with Simple Supports on Three Sides and One Side Free

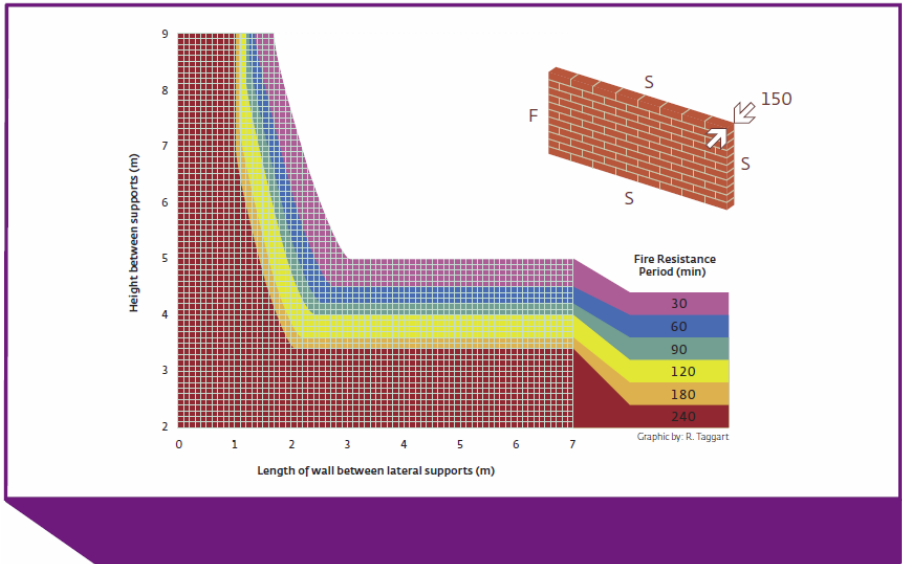


Chart 12.
Structural Adequacy FRP (minutes) for 190 mm Clay Masonry Walls with Simple Supports on Three Sides and One Side Free

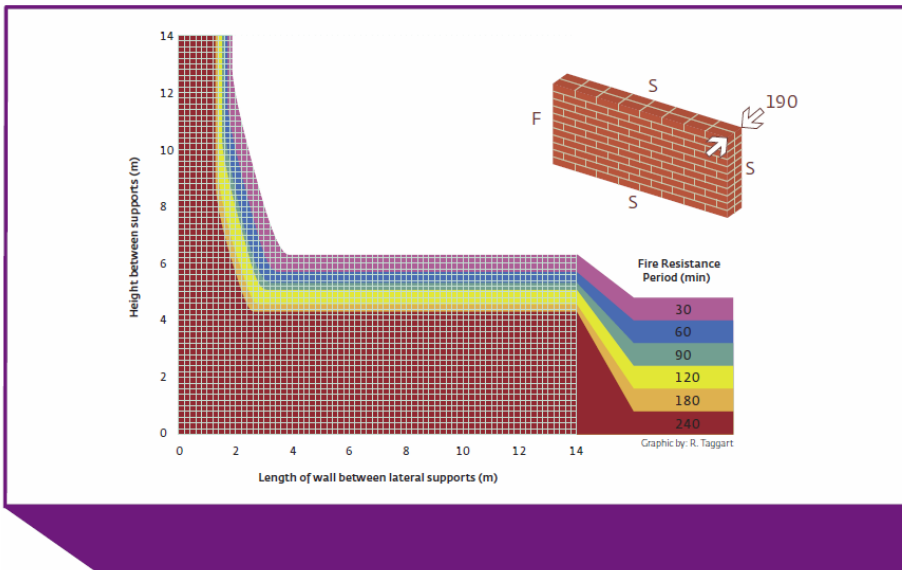


Chart 13.
Structural Adequacy FRP (minutes) for 230 mm Clay Masonry Walls with Simple Supports on Three Sides and One Side Free

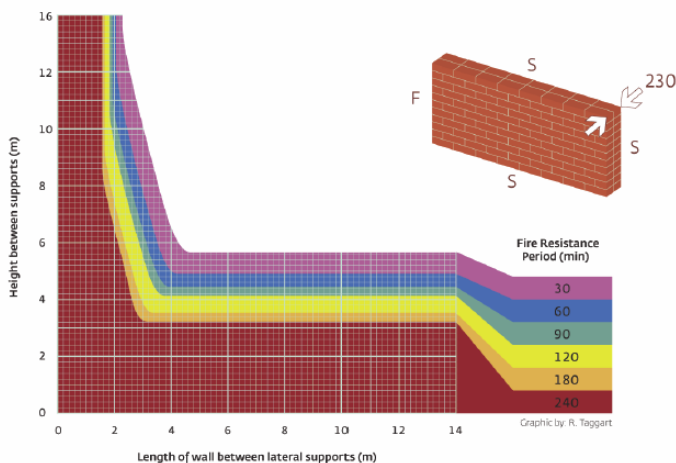
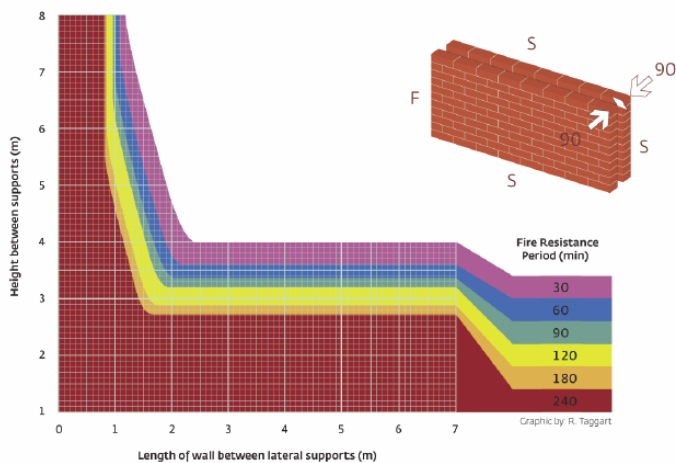
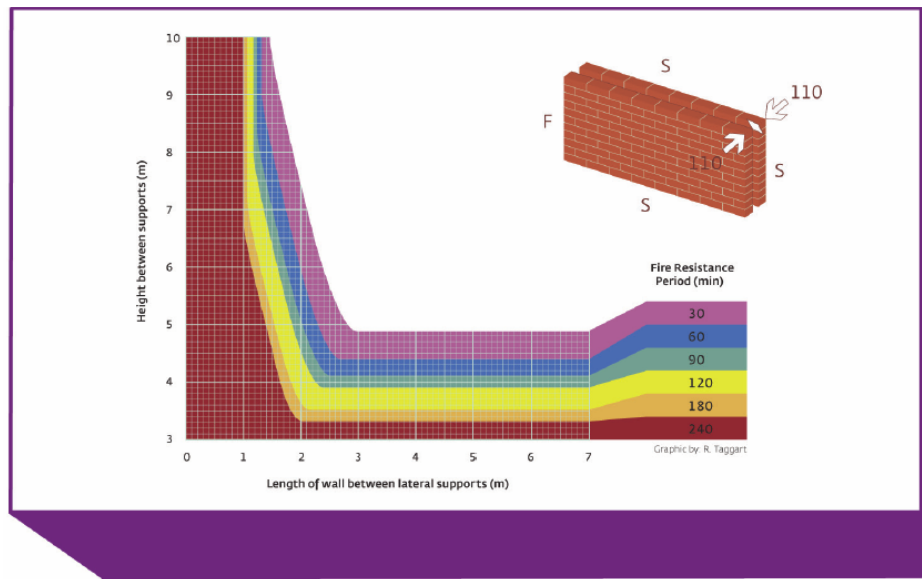


Chart 14.
Structural Adequacy FRP (minutes) for 90-90 mm Cavity Clay Masonry Walls with Simple Supports on Three Sides and One Side Free



Note: It is assumed that both leaves are approximately equally loaded (see Section 3.1.2)

Chart 15.
Structural Adequacy FRP (minutes) for 110-110 mm Cavity Clay Masonry Walls with Simple Supports on Three Sides and One Side Free



Note: It is assumed that both leaves are approximately equally loaded (see Section 3.1.2)

Chart 16.
Structural Adequacy FRP (minutes) for 190mm Clay Masonry Walls with Simple Supports on Three Sides and the Top Free

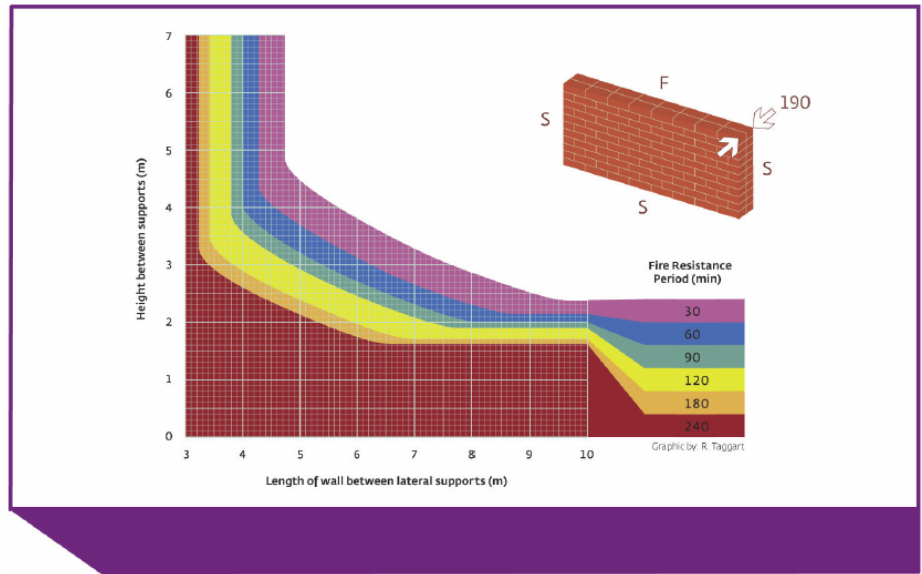


Chart 17.
Structural Adequacy FRP (minutes) for 230 mm Clay Masonry Walls with Simple Supports on Three Sides and the Top Free

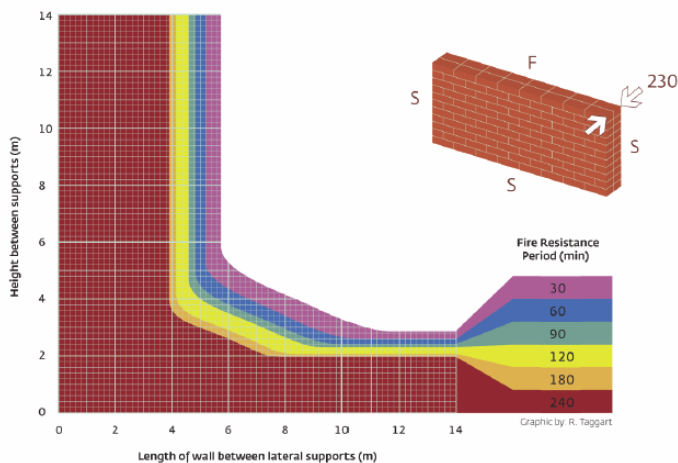
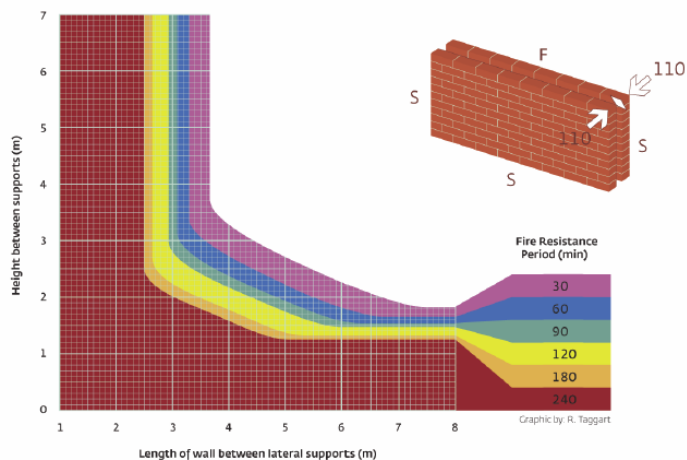


Chart 18.
Structural Adequacy FRP (minutes) for 110-110 mm Cavity Clay Masonry Walls with Simple Supports on Three Sides and the Top Free



Note: It is assumed that both leaves are approximately equally loaded (see Section 3.1.2)

4 References

- 1 *National Construction Code (NCC)*, Australian Building Codes Board, Canberra, NCC: 2016.
- 2 *AS 3700:2018 Masonry Structures*, Standards Australia, Sydney, 2018.
- 3 *AS 3700 Supp 1: 2012 Masonry Structures – Commentary*, Standards Australia, Sydney, 2012.
- 4 Lawrence, S.J. & Gnanakrishnan, N. *The Fire Resistance of Masonry Walls – A Summary of Australian Research and its Relevance to Codes and Building Regulations*. Technical Record 531, National Building Technology Centre, Sydney, 1987.
- 5 Lawrence, S.J. & Gnanakrishnan, N. *The Fire Resistance of Masonry Walls – An Overview*. Proceedings of the 1st National Structural Engineering Conference, Institution of Engineers, Australia, Melbourne, August 1987, pp.431-437.
- 6 *AS 4773.1: 2015 Masonry in small buildings – Part 1: Design*, Standards Australia, Sydney, 2015.
- 7 *AS4100 – 1998 Steel Structures*, Standards Australia, Sydney, Reconfirmed 2016.

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Cover image:

Gympie Aquatic Recreation Centre. **Finalist, Horbury Hunt Commercial Awards 2017.**

Architect: Liquid Blu

Photographer: Christopher Frederick Jones

Manufacturer: Bowral Bricks

Product: Chillingham White

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Bradford Gold® & Gold® Hi-Performance

Refer to product table below for applicable product codes covered by this document

Issue **G**

Product Type & Application

Bradford Gold® and Gold Hi-Performance (HP) are non-combustible Glasswool thermal insulation products. They are for use in external walls and ceilings to reduce heat transfer through the building envelope.

Compliance with the NCC

For use in Australia, when correctly specified and installed, this product provides the following compliance:

NCC 2019

- **Thermal** - Complies with NCC 2019 Volume 1 Amend. 1 Section J1.2(a), NCC 2019 Volume 2 Amend. 1 Section 3.12.1.1(a), and all state-prescribed variations. This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2019 Volume 1 Amend. 1 C1.9(a) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Specification C1.10 Clause 7.

NCC 2022

- **Thermal** - Complies with NCC 2022 Volume 1 J4D3(1) and ABCB Housing Provisions Standard 2022 13.2.2(1). This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2022 Volume 1 C2D10(1) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2022 Volume 1, S7C7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Table S7C7.

Conditions of Storage, Use & Maintenance

- Store in the original packaging in a cool, dry area, away from foodstuffs. Ensure packages are adequately labelled, protected from physical damage, and sealed when not in use. Avoid packaging being stored under UV light (direct sunlight) for long periods.

Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.

Specific Design or Installation Instructions

- Isolate power before installation.
- **Caution:** Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. In new build construction with electrical wiring in accordance with AS/NZS 3000: 2018 or later, wiring may be partially or completely surrounded for up to 400mm. If more than 400mm is surrounded, or for wiring pre AS/NZS 3000:2018, seek advice from a licenced electrician. Refer to legislation and referenced standards for full details or seek advice from an electrician if in doubt.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- Suitable for applications that specify non-combustible bulk insulation products - not suitable for exposed internal wall and ceiling lining applications that require a Group Number.
- Insulation should be installed so that it forms a continuous layer and abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member.
- Compensate for gaps as specified by the NCC 2019 Volume 2 Amend. 1, 3.12.1.2(e) and Table 3.12.1.1h, ABCB Housing Provisions Standard 2022 13.2.3(5) and Table 13.2.3w. It should be installed at nominal thickness, except where it crosses structures, services and fittings.
- Ceiling perimeter batts may be required to achieve compliance depending upon roof and exterior wall design.
- Suitable for applications where the product is protected from direct UV light, water and wind pressure during and after installation.

For general installation guidance refer to the product installation guide at Bradfordinsulation.com.au

Supplementary information - Additional installation guidance for this product can be found in AS3999.

Bradford Gold® & Gold® Hi-Performance

Limitations of Use

- **IMPORTANT:** Do Not Modify This Product: Compliance with the evidence of suitability data referenced in this document is only achieved by the product or configuration listed in this PTS.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- This product is not suitable for use as an exposed internal wall or ceiling lining in applications which require a Group Number in accordance with AS ISO 9705 and AS 5637.1 (NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 4, NCC 2022 Volume 1 S7C4).
- Unfaced Glasswool is not a water or vapour barrier and is not suitable for water or vapour control.
- Maximum service temperature is 300°C for Glasswool.
- Check the plasterboard, ceiling tile or ceiling grid manufacturer's weight limitations prior to increasing the recommended R-Values or densities to ensure the structure can support the additional weight of the insulation batts.

Evidence of Suitability

- Testing to AS/NZS 4859.1 across the following reports-
 - CSR Lab Report R-20004A
 - CSR Lab Report R-20005
 - CSR Lab Report R-20006
 - CSR Lab Report R-20007
 - CSR Lab Report R-20014
 - CSR Lab Report R-20015
 - CSR Lab Report R-20016
 - CSR Lab Report R-20017
 - CSR Lab Report R-20018
 - CSR Lab Report R-20019
 - CSR Lab Report R-20020
 - BRANZ Report DI11505-001
 - BRANZ Report DI11505-002
 - BRANZ Report DI12309-001
 - BRANZ Report DI13245-001
- Testing and Professional Assessment to AS 1530.1 across the following reports –
 - CSIRO Assessment FCO-2812.
 - CSIRO Report FNC-9694
 - CSR NATA Lab Report NR-17008
 - CSR NATA Lab Report NR-18006
 - CSR NATA Lab Report NR-18007
 - CSR NATA Lab Report NR-20003
 - CSR NATA Lab Report NR-20004
 - CSR NATA Lab Report NR-22102
 - CSR NATA Lab Report NR-22103
- Professional Assessment, AS/NZS 1530.3 –
 - Warringtonfire Assessment FAS200045

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Ceiling Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
R2.5	140	1160 x 430	16	8.0	9.0	7	111720
R2.5	140	1160 x 580	16	10.8	12.2	7	111719
R3.0	165	1160 x 430	16	8.0	9.0	6	15226
R3.0	165	1160 x 580	16	10.8	12.2	6	15256
R3.5	185	1160 x 430	16	8.0	9.0	5	15241
R3.5	185	1160 x 580	10	6.7	7.6	8	41895
R4.1	215	1160 x 430	10	5.0	5.6	7	111716
R4.1	215	1160 x 580	10	6.7	7.6	7	111715
#R5.0 (HP)	240	1160 x 430	8	4.0	4.5	5	105417#
R5.0 (HP)	240	1160 x 430	8	4.0	4.5	6	467911
#R5.0 (HP)	240	1160 x 580	8	5.4	6.1	5	105419#
R5.0 (HP)	240	1160 x 580	8	5.4	6.1	6	467912
#R6.0 (HP)	260	1160 x 430	6	3.0	3.4	5	77871#
R6.0 (HP)	260	1160 x 430	6	3.0	3.4	6	467949
#R6.0 (HP)	260	1160 x 580	6	4.0	4.5	5	77849#
R6.0 (HP)	260	1160 x 580	6	4.0	4.5	6	467960
#R7.0 (HP)	290	1160 x 430	4	2.0	2.3	5	122546#
R7.0 (HP)	290	1160 x 430	4	2.0	2.3	6	467961
#R7.0 (HP)	290	1160 x 580	4	2.7	3.0	5	122545#
R7.0 (HP)	290	1160 x 580	4	2.7	3.0	6	467962

Product discontinued December 2022.

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Wall Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
#R1.5	75	1160 x 430	22	11.0	12.5	7	111727#
#R1.5	75	1160 x 580	22	14.8	16.7	7	111726#
#R1.5 *	75	1200 x 450	22	11.8	11.8	7	127776#
#R1.5 *	75	1200 x 600	22	15.8	15.8	7	127781#
R2.0 (HP)	75	1160 x 420	12	5.8	7.0	6	152166
R2.0 (HP)	75	1160 x 570	12	7.9	9.1	6	152192
R2.0 (HP) *	75	1200 x 450	12	6.5	6.5	6	131367
R2.0 (HP) *	75	1200 x 600	12	8.6	8.6	6	131368
R2.0	90	1160 x 430	22	11.0	12.5	5	15250
R2.0	90	1160 x 580	18	12.1	13.6	6	15229
R2.0 *	90	1200 x 450	18	9.7	9.7	6	127777
R2.0 *	90	1200 x 600	18	12.9	12.9	6	127782
R2.2 (HP)	75	1160 x 420	6	2.9	3.5	6	152168
R2.2 (HP)	75	1160 x 570	6	4.0	4.5	6	152194
R2.2	90	1160 x 430	16	8.0	9.0	5	170351
R2.2	90	1160 x 580	16	10.8	12.2	5	170227
R2.5 (HP)	90	1160 x 420	9	4.4	5.0	6	181430^
R2.5 (HP)	90	1160 x 570	9	6.0	6.7	6	181471^
R2.5 (HP) *	90	1200 x 450	9	4.9	4.9	6	181412^
R2.5 (HP) *	90	1200 x 600	9	6.5	6.5	6	181433^
R2.7 (HP)	90	1160 x 420	5	2.4	2.8	5	152191^
R2.7 (HP)	90	1160 x 570	5	3.3	3.8	5	152197^
R2.7 (HP) *	90	1200 x 450	5	2.7	2.7	5	127780^
R2.7 (HP) *	90	1200 x 600	5	3.6	3.6	5	126512^
R4.0 (HP)	140	1160 x 420	5	2.4	2.8	6	181432^
R4.0 (HP)	140	1160 x 570	5	3.3	3.8	6	181416^

* Suitable for steel frame construction.

Product discontinued 31st July 2022.

^ AS/NZS 1530.3 Test Report available.

Bradford Gold® & Gold® Hi-Performance

Additional Product Data

Maximum Service Temperature		300°C (suitable where a long term surface operating temperature $\geq 90^{\circ}\text{C}$ is required for insulation around heat generating equipment.)
Fire Hazard Properties	When assessed in accordance with AS/NZS 1530 Part 3-1999	• Ignitability: 0 • Spread of flame: 0 • Heat Evolved: 0 • Smoke Developed: 1
Non-Combustibility	When assessed to AS 1530 Part 1	Non - Combustible
Sample Specification – Wall Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance having a material R-Value; $R_{m...}$ (specify R-Value) @ XXmm... (specify thickness).	
Sample Specification – Ceiling Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance Ceiling Batts R ____ $\text{m}^2 \text{K/W}$ (specify type) as manufactured by Bradford Insulation.	

Other Accreditation



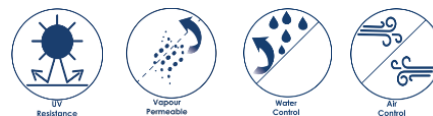
FBS-1 Glasswool - The fibre component of these products is listed by Safe Work Australia as Man-made Vitreous Fibre (Glasswool) of low bio persistence as specified under Note Q in the Australian Hazardous Substances Information System and in the Australian Approved Criteria documentation. In accordance with EU ATP 31 (2009) these fibres are not classified as an irritant, or as carcinogenic.
Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.



National Asthma Council Sensitive Choice

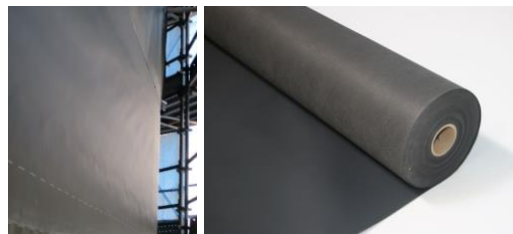
PROCTOR **PASSIVE** Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications



Product Description

ProctorPassive™ Rainscreen with Integrated Tape (RS-IT) is a two layer membrane consisting of a spun bonded polyester layer with a unique functional coating that offers improved resistance against UV and high temperatures up to 120°C. Developed primarily as a vapour permeable sarking for use in open joint rain screen applications, ProctorPassive RS-IT offers a combination of durability and high water holdout without compromising vapour permeance.



Applications

ProctorPassive RS-IT is suitable for installation in vertical wall constructions behind ventilated facades with regularly spaced open joints no greater than 30mm wide accounting for no more than 30% of total surface area. The rainscreen façade has to be ventilated according to the façade manufacturers installation instructions but a ventilation gap (min. 20mm) is necessary.

ProctorPassive RS-IT can also be used as a vapour permeable underlay in metal roof applications.

Long term UV resistance is dependent on the percentage of the cladding that is open, the size of openings, and the width of the cavity. Please contact Proctor Group Australia to seek assurances on the suitability of ProctorPassive RS-IT for the particular application.



Installation

ProctorPassive RS-IT should be installed in accordance with AS/NZS 4200.2 Pliable Building Membranes and Underlays, Part 2 Installation Requirements and in full accordance with the product installation guide. ProctorPassive RS-IT should be installed with the darker black "rubbery" surface facing outwards.

Integrated Tape

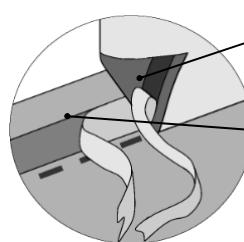
To improve the integrity of installation, ProctorPassive RS-IT is supplied with a factory applied integrated tape on the outer face of the lower course and the rear of the upper course of membrane.

Durability

Although ProctorPassive RS-IT can be used as temporary protection during construction, it can not be used as a fully exposed waterproofing membrane. The product may be damaged by careless handling, high winds or vandalism, and should not be left uncovered for longer than is absolutely necessary. Any damaged areas should be replaced before completion. To ensure maximum long term UV durability, ensure that ProctorPassive RS-IT is covered up by the primary cladding material as soon as possible, and not left exposed to UV for longer than 4 months, or 11 months when the cladding is closed joint.

Benefits

- ☐ High water resistance
- ☐ Suitable for use behind in open joint cladding
- ☐ High UV durability
- ☐ Highly vapour permeable
- ☐ Air barrier
- ☐ Supplied with integrated tape
- ☐ Fixing span tables available



45 mm wide clear integrated adhesive tape on the underside of the membrane.

80 mm wide clear integrated adhesive tape on the outside face of the membrane. The extra width permits some limited flexibility in positioning of the upper course of membrane.

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PROCTOR Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications

Technical Data

Criteria	Reference	Result
Duty Classification	Table 1 AS/NZS 4200.1:2017	Light
Vapour Permeance	ASTM E96	2.7800 µg/N.s
Vapour Resistance	ASTM E96	0.36MN.s/g
	EN 12572 (Sd value)	0.04 m (-0.02/+0.04) equates to 0.2 MNs/g
Vapour Control Classification	AS/NZS 4200.1:2017	Vapour Permeable - Class 4
Emittance	AS/NZS 4201.5	IR Non-reflective - NN
Air Permeability / Air Control Classification	EN 12114:2001	< 0.02 m³/(h.m².50Pa)
	AS/NZS 4200.1, ISO 5636-5	Air Barrier (≥ 0.1 MNs/m³)
Water Barrier	AS/NZS 4201.4	High
Resistance to Dry De-Lamination	AS/NZ 4201.1	Pass
Resistance to Wet De-Lamination	AS/NZ 4201.2	Pass
Shrinkage	AS/NZ 4201.3	Pass < ±0.5%
Folding endurance	AS/NZS 1301.423	Pass MD: ≥2.00 CD: ≥1.7 (log ₁₀ folds)
Flammability Index	AS/NZ 1530 Part 2	1 (Low ≤5)
Fire Characteristics	EN 13501-1 (Euroclass)	B
Thickness	EN 1849.2	0.5 mm
Burst Strength	AS 2001.2.19-1988	647N
Tensile Strength	AS 1301.448	MD: 8.9kN/m CD: 5.3kN/m
Edge Tear Resistance	TAPPI T470	MD: 389N CD: 264N
Electrical Conductivity Classification	AS/NZS 4200.1:2017, AS/NZS 3100-2017	Electrically Non-Conductive
Allowable UV exposure prior to completion of cladding		4 months

Health & Safety

Information on any known health risks on the material are listed in the Material Safety Data Sheets available from Proctor Group Australia. Follow all guidance and industry good practice guidelines. In particular pay attention to the disposal of the removed release liner, as this presents a slip hazard.

Product Performance

ProctorPassive RS-IT performs to specification in normal building applications when installed in accordance with the Product Installation Guide. The information herein is supplied in good faith and to the best of our knowledge was accurate at the time of publication. Users are advised to make their own determination as to the suitability of this information in relation to their particular purpose and specific requirements.

Sample Specification

Sarking should be ProctorPassive RS-IT vapour permeable membrane, tested to AS/NZS 4200.1:2017 standards, secured directly to the outside of the wall frame in accordance with the product installation guide. All laps and penetrations are sealed with ProctorPassive UV Tape. Breather foil does not comply with this specification.

- ☐ Vapour permeance: No less than 2.0µg/N.s (vapour resistance of no greater than 0.5MN.s/g)
- ☐ Burst Strength no less than 600N
- ☐ Duty classification: Light
- ☐ Water Barrier Classification: High
- ☐ Air Control Classification: Air Barrier

Dimensions and Accessories

Product Code	Width (mm)	Length (m)	Area (m²)	Coverage (m²)	Weight kg/roll	Rolls/pallet
ProctorPassive RS-IT	1,500	35	52.5	47.25	16.5	46/pallet
ProctorPassive UV Tape	60	25				10/carton



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A.B.N 43 006 014 106

1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400

TEST REPORT

Client : Proctor Group Australia
Unit 8, 171-175 Newton Road
Wetherill Park NSW 2164

Test Number : 20-005451
Issue Date : 5/11/2020
Print Date : 6/11/2020

Sample Description Clients Ref : "ProctorPassive Rainscreen RS-IT"
Vapour Permeable UV resistance construction membrane
Colour : Dark Grey/Black
End Use : Sarking/ Weather Resistive Barrier
Nominal Composition : Non-woven polyester with functional UV resistant coating
Nominal Mass per Unit Area/Density : 300g/m2
Nominal Thickness : 0.5mm

AS 1530.2-1993

Methods for Fire Tests on Building Materials, Components and Structures. Part 2: Test for Flammability of Materials

Date Tested	05/11/2020	
Flammability Index	1	
	Length	Width
Spread Factor	0	0
Heat Factor	1	1
Maximum height (d)		
Mean	3.2	3.1
Coefficient of Variation	8.2	6.6 %
Heat (a)		
Mean	1.5	1.5 °C.min
Coefficient of Variation	0.0	0.0 %
Number of Specimens Tested	6	6
Observation	Visible smoke.	
Comp ASNZS 4200.1-2017 Cl 5.3.6		Low

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APPROVED SIGNATORY



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

0204/11/06



Australian Wool Testing Authority Ltd - trading as AWTA Product Testing

A.B.N 43 006 014 106

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P.O Box 240, North Melbourne, Victoria 3051

Phone (03) 9371 2400

TEST REPORT

Client : Proctor Group Australia
Unit 8, 171-175 Newton Road
Wetherill Park NSW 2164

Test Number : 20-005451
Issue Date : 5/11/2020
Print Date : 6/11/2020

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test, and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

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APPROVED SIGNATORY



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

0204/11/06

PROCTOR **PASSIVE** UV Tape

UV Resistant Single Sided Tape



Product Description

ProctorPassive UV Tape is a single sided adhesive tape recommended for use with the ProctorPassive Rainscreen vapour permeable membrane.

The carrier of polyester spun bond with black functional coating offers long term UV resistance making the tape suitable for use in open joint rainscreen applications where used as directed. The pressure sensitive polyacrylate adhesive provides exceptionally high initial tack and permanent adhesion.

Applications

ProctorPassive UV Tape is designed for use with ProctorPassive Rainscreen (RS-IT) vapour permeable construction membrane for open joint facades, sealing around doors, windows and pipes.

Installation

Installation of ProctorPassive UV Tape must be in accordance with the installation guide.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure with a squeegee or roller on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +10°C + 30°C prior to application of the tape.

All mechanical load on membranes should be distributed to mechanical fasteners and the tape must not be applied under mechanical load. The use of adhesive tape is not a substitute for the required fixing of materials.

Benefits

- ☐ UV resistance
- ☐ Compatibility with ProctorPassive Rainscreen (RS-IT)
- ☐ Good initial tack
- ☐ Durable robust carrier
- ☐ Non reflective matt finish carrier
- ☐ Air and water tight



Properties	Nominal value
Adhesive Carrier	Spunbonded polyester with function UV resistant coating
Adhesive Type	Solvent free acrylic adhesive
Total thickness	0.6 mm (without liner)
Liner	Silicone Paper
Peel adhesion	≥ 25 N/25mm
Sheer Adhesion	500 g/625mm ²
Temperature range	-30 °C to +90°C
Application Temp.	+10 °C to +30 °C
UV Exposure	Open joint rainscreen: 4 months Face sealed façades: 9 months
Shelf life	1 year in original packing stored at room temperature of around 21°C & 50%RH, and protected from UV in a dry location.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton
All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.	

Ref: ProctorPassive UV Tape PDS Oct 2020 Page 1 of 1

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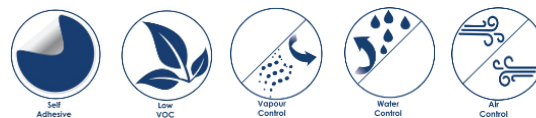
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PROCTOR **PASSIVE** YouByute Flexi Tape

Flexible Butyl Rubber Tape



Product Description

ProctorPassive YouByute Flexi Tape is a strong adhesion highly stretchable PE butyl rubber tape with lasting water and ageing resistance.

Applications

ProctorPassive YouByute Flexi Tape is used in roof and wall construction as a tape for permanent sealing of air barriers, roof underlays, building wraps and around doors, windows and pipes. The tape is suitable for sealing overlaps in edges and corners and locations that require a high degree of flexibility in the tape.

Installation

As with all pressure sensitive tapes, the YouByute Flexi Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure.

The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- ☐ Highly stretchable
- ☐ High tack
- ☐ Long term water resistance
- ☐ High ageing resistance
- ☐ Release liner with finger lift
- ☐ Compatibility with ProctorWrap Rainscreen (RS-IT)
- ☐ Air and water tight
- ☐ Low emission of VOC



Properties	Nominal value
Adhesive Carrier	0.2mm Transparent PE Film
Adhesive Type	Butyl rubber adhesive
Total thickness	2.0mm (uncompressed)
Liner	Silicone Paper - Finger lift
Peel adhesion	≥ 10 N/25mm
Tensile Strength	15 N/25mm
Elongation at break	> 300%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 10m 80mm x 10m
Packaging	50mm: 10 rolls per carton 80mm: 6 rolls per carton
All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.	

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PROCTOR **PASSIVE** YouByute Sealing Tape

Butyl Rubber Tape



Product Description

ProctorPassive YouByute Sealing Tape is a water resistant PE butyl rubber tape with high tack, very high ageing resistance, and high tear strength.

Applications

ProctorPassive YouByute Sealing Tape is used for diffusion tight and watertight sealing behind façades and around windows and doors where not exposed to long term UV. The tape is also used for improving nail and screw penetration sealing.

Installation

As with all pressure sensitive butyl tapes, the YouByute Sealing Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure. The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

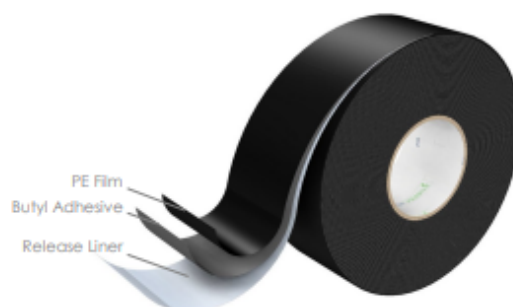
Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- High tack
- Long term water resistance
- High ageing resistance
- Compatibility with ProctorPassive Rainscreen (RS-IT) and ProctorPassive Wraptite SA/UV-SA membranes
- Air and water tight
- Ideal for improving the seal at nail and screw penetrations



Properties	Nominal value
Adhesive Carrier	0.17mm Black Film
Adhesive Type	Butyl rubber adhesive
Total thickness	1.2mm (uncompressed)
Liner	Silicone Paper
Peel adhesion	≥ 20 N/25mm
Tensile Strength	≥ 100 N/25mm
Elongation at break	≥ 250%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 20m
Packaging	12 rolls per carton

All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.

A wide number of factors will impact on the ability to seal around a nail, screw or fixing, such as the substrate, fixing type, exposure to water pressure and installation quality. Although YouByute Sealing Tape will improve sealability, we are unable to warrant or give absolute assurance that the tape will seal the fixing. We do not make claims that this product is "self sealing"

Ref: ProctorPassive YouByute Sealing Tape PDS May 2022 Page 1 of 1

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Product Description

ProctorWrap HighTack Tape is a single sided pressure sensitive adhesive tape, made with an aggressive, modified acrylate adhesive, designed primarily to seal overlaps, joints and repair vapour permeable and vapour and air barrier construction membranes.

Applications

ProctorWrap HighTack Tape is ideal for air-tight bonding and sealing of overlaps of air and vapour barriers and vapour permeable membranes. The tape is suitable for bonding of smooth and slightly rough surfaces and can be used to provide a bond between steel or timber framing and membranes prior to the immediate mechanical fixing of the membrane.

Installation

The tape can bond to polyolefin non-woven membranes, aluminium faced insulation boards, plastics, metals, timber, MDF and other manufactured timber sheathings.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

All mechanical load on membranes should be distributed to mechanical fasteners, the tape not being applied under mechanical load. The use of adhesive tape is not a substitute for the correct fixing of the materials.

As there are many factors beyond our control that can impact on the use, performance and suitability of the product, we suggest that users evaluate the product to determine suitability for the application.

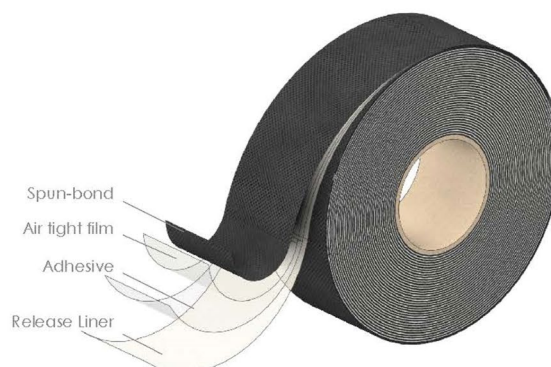
- High initial bond strength
- High initial tack adhesion
- Multiple substrate compatibility
- High strength spun-bonded carrier
- Low VOC



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Properties	Nominal value
Adhesive Type	Polyacrylate adhesive
Total thickness	Approx. 0.7mm (without liner)
Carrier	Non woven fabric with functional air tight film
Peel adhesion	≥ 35 N/25mm
Temperature range	-30 °C to +90 °C
Tensile strength	≥ 100 N / 25 mm
Application temp.	5 °C to 40 °C
Tack	Very High
Shelf life	1 year in original packing stored in a dry location protected from UV at around 50% RH and between 5°C to 25°C avoiding wide temperature fluctuations.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton

All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.

GALVABOND® steel

G2 / G2S

General description

GALVABOND® steel G2 is a hot-dipped zinc-coated commercial forming steel with a spangled surface, suitable for general manufacturing, widely available as distributor stock. Product is suitable for moderate drawing applications and is suitable for lockseaming up to 1.6mm thick.

GALVABOND® steel G2S is skinpassed to improve surface quality. Under normal storage conditions, free of fluting for 3 months after galvanising.

Typical uses

Partition walling systems, air conditioning ducts and panels, tube, meter boxes, trailers, cable trays, scaffolding planks, rendering mesh, feeder troughs.

Australian and International Standards

AS/NZS 1365:1996 (R2016)

AS 1397:2021

ISO 9001:2015 Quality System certified



Guaranteed properties of steel base

Mechanical properties	Guaranteed minimum
Elongation on 80mm ($\geq 0.60\text{mm}$) % (transverse tensile)	27
180° Transverse Bend (L axis)	0t
Pittsburgh lock-seam ($\leq 1.6\text{mm}$)	Pass

Chemical composition of steel base

Chemical properties	Guaranteed maximum %
Carbon – C	0.10
Manganese – Mn	0.45
Phosphorus – P	0.025
Sulphur – S	0.030

Metal coating adhesion – 180° bend test

Coating class	Result
Z100	0t
Z200	0t
Z275	0t
Z450	1t
Z600	2t

Where t = the diameter of mandrel in terms of thickness of product.

Dimensional capabilities

Thickness range (mm)	Max width (mm)
0.30 – 0.319	1000
0.32 – 0.349	1100
0.35 – 0.399	1220
0.40 – 0.419	1300
0.42 – 0.499	1390
0.45 – 0.500	1510
0.501 – 2.00	1530
2.01 – 3.20	1220 (G2 only)
3.201 – 3.50	1000 (G2 only)

Notes: Not every combination of thickness and width may be available. Supply conditions may be subject to dimensional restrictions and are subject to BlueScope Sales and Marketing confirmation. Slitting and shearing available on request from BlueScope Sales Offices. For requirements outside the standard product range please contact your local Sales Office. To determine maximum mill edge width available, subtract 30mm from the maximum width.

Fire hazard properties

Test & Evaluation Methods	Range	Result
Simultaneous determination of ignitability, flame propagation, heat release and smoke release (AS/NZS 1530.3:1999 (R2016)) *	Ignitability Index (0 – 20)	0
	Spread of Flame Index (0 – 10)	0
	Heat Evolved Index (0 – 10)	0
	Smoke Developed Index (0 – 10)	2
NCC non-combustible material (NCC 2022)	National Construction Code, Building Code of Australia 2022; Volume 1 Part C1, C2D10, (5)	Non-combustible
NCC non-combustible material concessions (NCC 2022; AS/NZS 1530.3:1999 (R2016)) *	National Construction Code, Building Code of Australia 2022: Volume 2: Section H, Part H3, H3D2, (1)(e)	May be used wherever a non-combustible material is required
	AS/NZS 1530.3:1999 (R2016)	
Combustibility test for materials (steel substrate) (AS 1530.1-1994 (R2016)) #	AS 1530.1-1994 (R2016)	Not deemed combustible (steel substrate)

* The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

Supply conditions

Attribute	Normal	Optional
Coating Class	Z275	Z100, Z200, (Z450 >0.35mm; Z600 by enquiry)
Surface Condition	Spangled	Minimised spangle
Surface Treatment	Passivated	Unpassivated (oiled)
Branding	Branded	-
Tolerance – Dimensions	Class A	B Class
Tolerance – Flatness	Class A	B Class

Important Notes: Optional supply conditions may be subject to dimensional restrictions.

Fabricating performance

Method	Rating
Bending	5
Drawing	3
Pressing	3
Rollforming	5
Lock Forming	5
Welding (design must allow for some strength reduction near welds)	5
Painting Pre-treatment	5

Where: 1 = Limited to 5 = Excellent or NR = Not Recommended

The ratings in this table are general indicators only, given as a guide to fabricating performance.

Important information

Material should be used promptly (within six months) to avoid the possibility of a storage related corrosion. For selection of the most appropriate metallic coated steel, please refer to Technical Bulletins TB1a, TB1b, CTB21 and CTB22. For storage, rollforming lubricants and other information please refer to the Technical Bulletins.

steel.com.au

To learn more about this product

1800 064 384

steeldirect@bluescopesteel.com

For more information contact Steel Direct



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STANDARDS & CODES

Relevant to Design and Performance of Systems

STANDARDS & CODES	CEILING					WALL			FINISHING SECTIONS		ACCESS PANELS	FASTENERS
	DUO	KEY-LOCK	XPRESS	WALK-ABOUT	STUD & TRACK	STUD & TRACK	MAXIFRAME	QUIET STUD	EXANGLE	EXANGLE RT	PANTHER	CERT-R-FIX
NCC 2019 - Building Code of Australia Volumes 1 & 2												
AS/NZS 1170.0:2002 Part 0: General Principles												
AS/NZS 1170.1:2002 Part 1: Permanent, imposed & other actions												
AS/NZS 1170.2:2011 Part 2: Wind actions												
AS 1170.4:2007 Part 4: Earthquake actions in Australia												
NZS 1170.5:2004 Part 5: Earthquake actions in New Zealand												
AS/NZS 4055:2012 Wind loads for housing												
AS 1191:2002 Acoustics - Method for laboratory measurement of airborne sound transmission insulation of building elements												
AS 1530.4:2014 Fire resistance tests for elements of construction												
AS 3566.1:2002 Self-drilling screws for the building and construction industries - General requirements and mechanical properties												
AS 3623:1993 Domestic Metal Framing												
AS 5216:2018 Design of post-installed and cast-in fastenings in concrete												
AS/NZS 1397:2011 Continuous hot-dip metallic coated steel sheet & strip - Coatings of zinc & zinc alloyed with aluminium & magnesium	*											
AS/NZS 1530.3:1999 Simultaneous determination of ignitability, flame propagation, heat release and smoke release												
AS/NZS 1657:2018 Fixed platforms, walkways, stairways & ladders. Design, construction & installation												
AS/NZS 1664.1:1997 Aluminium structures - Limit state design	●											
AS/NZS 1866:1997 Aluminium & aluminium alloys - Extruded rod, bar, solid & hollow shapes	●											
AS/NZS 2311:2017 Guide to the painting of buildings												

● APPLIES TO ALUMINIUM GRID ONLY

* EXCLUDES ALUMINIUM

STANDARDS & CODES

Relevant to Design and Performance of Systems (Continued)

STANDARDS & CODES	CEILINGS					WALLS			FINISHING SECTIONS		ACCESS PANELS	FASTENERS
	DUO	KEY-LOCK	XPRESS	WALK-ABOUT	STUD& TRACK	STUD& TRACK	MAXIFRAME	QUIET STUD	EXANGLE	EXANGLE RT	PANTHER	CERT-R-FIX
AS/NZS 2589:2017 Gypsum Linings - Application & finishing												
AS/NZS 2785:2020 Suspended Ceilings - Design & installation												
AS/NZS 4600:2018 Cold formed steel structures												
AS/NZS ISO 717-1:2004 Acoustics - Airborne sound insulation												
ASTM C635/C635M-17 Standard Specification for Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings												
NZBC - B1/VM1 NZ Building Code Verification Method B1/VM1 Clause 2												
NZBC - B2 Durability Rondo XPRESS® Drywall Grid System will have a minimum serviceable life of 15 years when installed in a dry, non- corrosive, interior installation.												
NZS 4219:2009 Seismic performance of engineering systems in buildings												

● APPLIES TO ALUMINIUM GRID ONLY

* EXCLUDES ALUMINIUM



Fire assessment report

CSR Gyprock plasterboard and CSR Cemintel fibre
cement products assessed with Group numbers

Client: CSR Gyprock

Product: plasterboard and fibre cement products

Project reference number: FAS190252 Report number: 45759 Revision: R11.1

Issue date: 26 May 2022 Expiry date: 31 August 2025

Quality Management

Version	Date	Description	Prepared by	Reviewed by
45759.1	13/08/2004	Initial issue	J P England	Leong Poon
45759.2	19/08/2004	Typographic correction	J P England	Leong Poon
45759.3	12/06/2009	Revised to include average specific extinction area.	J P England	J Richardson
45759.4	06/01/2010	Revised to include EC08 products	K Nicholls	M Kamal
45759.5	30/09/2013	Revised to include various fibre cement based products	K Nicholls	S Hu
45759.6	28/05/2014	Revised to include various fibre cement based products	K Nicholls	D Nicholson
45759.7	21/11/2014	Revised to include various plasterboard products	K Nicholls	D Nicholson
45759.8	06/09/2017	Revised to include various plasterboard products	O Saad	C McLean
45759.9	20/09/2018	Revised to extend the validity for five years and addition of new products	R Aldarwish	O Saad

Version	Date	Information about the report			
45759 R10.0	Issue: 12/11/2019	Reason for issue	Report issued to CSR Gyprock for review and comment		
		Name	Prepared by Hon Wong	Reviewed by Omar Saad	Authorised by Omar Saad
45759 R10.1	Issue: 15/11/2019	Reason for issue	Minor changes and amendments to client's comments		
		Name	Prepared by Hon Wong	Reviewed by Omar Saad	Authorised by Omar Saad
45759 R11.0	Issue: 11/08/2020	Reason for issue	Addition of new plasterboards including Gyprock Habito H and test data		
		Name	Prepared by Hon Wong	Reviewed by Mahmoud Akl	Authorised by Mahmoud Akl
45759 R11.1	Issue: 26/05/2022	Reason for issue	Revised to reference NCC 2019 Amendment 1		
	Expiry: 31/08/2025	Name	Prepared by Mohammed Mutafti	Reviewed by Omar Saad	Authorised by Omar Saad
		Signature			

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Executive summary

This assessment considers the performance of a range of CSR wall and ceiling linings when assessed against the criteria of Specification C1.10 of the National Construction Code of Australia (NCC) 2019 Amendment 1 and AS 5637.1:2015.

This report documents the findings of the assessment undertaken to determine the likely fire hazard properties of the CSR wall and ceiling lining products if tested in accordance with AS ISO 9705-2003 (R2016) and AS 5637.1:2015. The majority of the previously assessed products were based on data from tests conducted in accordance with AS 1530.3:1999 (R2016) and AS/NZS 3837:1998 (R2016). The sponsor had subsequent re-testing conducted on representative samples of the range of products to establish new baseline data in accordance with the current requirements to AS 5637.1:2015 and AS ISO 9705-2003 (R2016).

The analysis conducted in sections 5 to 6 of this report found that the proposed variations are likely to achieve group number and information on smoke production rates as shown in Table 1, if tested in accordance with AS ISO 9705-2003 (R2016) and AS 5637.1:2015. The variations and outcome of this assessment are subject to the limitations and requirements described in section 2, 4 and 7 of this report. The results of this report are valid until 31 August 2025.

Table 1 Variations and assessment outcome

Product	Reference test and assessment report	Assessment classification - group number
CSR Gyprock plasterboard products		
10-13 mm Gyprock Plus	RTF190098.1 and associated assessment report- FAS190127 R1.0	Group No. = 1 $SMOGR_{ARC} (in m^2 \cdot s^{-2} \times 1000) = 0.5$ In accordance with AS ISO 9705-2003 (R2016) and AS 5637.1:2015 for compliance with NCC 2019 Amendment 1 in Australia and Group No. =1-S Average smoke production rate (0 to 20 minutes) $= 0.16 m^2 \cdot s^{-1}$ In accordance with C/VM2 – Verification Method: Framework for Fire Safety Design (for applications in New Zealand).
10-13 mm Supaceil		
10-13 mm Sensitive		
10-16 mm Standard plasterboard		
10-13 mm Soundchek		
10-13 mm Aquachek		
Flexible- 6.5mm (used in two layers)		
Impactchek- 13mm		
Superchek- 10mm		
25 mm ShaftLiner MR panel		
25 mm ShaftLiner MP panel		
25 mm ShaftLiner panel		
13-16 mm Fyrchek		
13-16 mm Fyrchek MR		
13 mm EC08 Partition		
13-16 mm EC08 Complete		
13 mm EC08 Impact		
13 mm EC08 Impact MR		
Gyprock perforated plasterboard panels: - 13 mm perforated panel 6 mm Round - 12.5 mm Gyptone perforated ceiling panels- 12mm Square, 13 mm Square Minigrid, Slotted Minigrid - 12.5 mm Rigitone perforated ceiling panels- Matrix 8mm round, Astral, Matrix 12 mm Square, Galaxy		

Product	Reference test and assessment report	Assessment classification - group number
6.5 mm Gyptone perforated panels- Flexible 12 mm Square, Flexible Slotted Minigrid Gyptone Access Panels- Frame-600 mm x 600 mm Hatch- 510 mm x 510 mm		
Gyprock plasterboard tiles: - Supatone- 10 mm - Arctic White- 13 mm - Perforated Tile- 13 mm		
Gyprock Habito H plasterboard of 12.5 mm thickness	RTF200198 R1.0 and ASCRRTF200198 R1.0	Group No. = 1 Average Specific Extinction Area (ASEA) = 7.3 m ² /kg In accordance with AS/NZS 3837:1998 and AS 5637.1:2015
CSR Cemintel fibre cement products		
6~12 mm CeminSeal Wallboard	RTF190235.1	Group No. = 1 SMOGR _{avg} (ln m ² ·s ² × 1000) =0.2 In accordance with AS ISO 9705-2003(R2016) and AS 5637.1:2015 for compliance with NCC 2019 Amendment 1 in Australia and Group No. =1-S Average smoke production rate (0 to 20 minutes) = 0.1 m ² ·s ⁻¹ In accordance with C/VM2 – Verification Method: Framework for Fire Safety Design (for applications in New Zealand).
6~9 mm Rigid Air Barrier		
7.5~9 mm Texture Base Sheet		
8~12 mm Rendaline		
6 mm Cladding sheet		
9 mm Simpleline		
6 mm Eaves lining		
9~24 mm Compressed Sheet		
9~12 mm Expresspanel		
9~12 mm Barestone Exterior with colour options/ 9~12 mm Barestone Bark		
9~12 mm Barestone Interior with colour options/ 9~12 mm Barestone Bark		
8 mm Edge		
8 mm Mosaic		
7.5 mm Plank – Smooth and Woodgrain		
10 mm Headland Weatherboard		
12 mm and 16 mm Scarborough Weatherboard		
10 mm Endeavour Weatherboard		
16 mm Balmoral Weatherboard		
6 mm Soffitline		
18~22 mm Constructafloor Interior		
18~22 mm Constructafloor Exterior		
16 mm Territory		
8 mm Surround		

Product	Reference test and assessment report	Assessment classification - group number
Notes: 1. The perforated plasterboard panels may include acoustic fabric backing 2. The plasterboard panels with vinyl facings are not included in the assessment. 3. Mineral wool or glasswool panels are excluded from this assessment. 4. All fibre cement products shall have the same or similar % by weight composition of cellulosic fibres embedded in the cement base as the tested 6mm specimen.		

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1. Introduction

This assessment considers the performance of a range of CSR wall and ceiling linings when assessed against the criteria of Specification C1.10 of the National Construction Code of Australia (NCC) 2019 Amendment 1¹ and AS 5637.1:2015².

This report documents the findings of the assessment undertaken to determine the likely fire hazard properties of the CSR wall and ceiling lining products if tested in accordance with AS ISO 9705-2003 (R2016)³ and AS 5637.1:2015. The majority of the previously assessed products were based on data from tests conducted in accordance with AS 1530.3:1999 (R2016)⁴ and AS/NZS 3837:1998 (R2016)⁵. The sponsor had subsequent re-testing conducted on representative samples of the range of products to establish new baseline data in accordance with the current requirements to AS 5637.1:2015 and AS ISO 9705-2003 (R2016).

This assessment was carried out at the request of CSR Gyprock. The sponsor details are included in Table 2.

Table 2 Sponsor details

Sponsor	Address
CSR Gyprock	376 Victoria Street Wetherill Park NSW 2164 Australia

2. Framework for the assessment

An assessment is an opinion about the likely performance of a component or element of structure if it were subject to a standard fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. Therefore, we have followed the Guide to Undertaking Assessments In Lieu of Fire Tests prepared by the Passive Fire Protection Federation (PFPF) in the UK⁶.

This guide provides a framework to undertake assessments in the absence of specific fire test results. 'Some areas where assessments may be offered are:

- *Where a modification is made to a construction which has already been tested*
- *Interpolation or extrapolation of results of a series of fire resistance tests, or utilisation of a series of fire test results to evaluate a range of variables in a construction design or a product*
- *Where, for various reasons – eg size or configuration – it is not possible to subject a construction or a product to a fire test.'*

Assessments will vary from relatively simple judgements on small changes to a product or construction through to detailed and often complex engineering assessments of large or sophisticated constructions.

2.1 Limitations of assessment

The assessment is limited to products with no added facings such as, but not limited to, vinyl facings or combustible coatings other than those already tested and assessed.

¹ National Construction Code Volume One - Building Code of Australia 2019 including Amendments, Australian Building Codes Board, Australia

² Standards Australia, Determination of fire hazard properties Wall and ceiling linings, 2015

³ Standards Australia, Fire tests - Full-scale room test for surface products, 2003 (R2016)

⁴ Standards Australia, Methods for fire tests on building materials, components and structures Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999 (R2016)

⁵ Standards Australia, Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter, 1998 (R2016)

⁶ Guide to Undertaking Assessments In Lieu of Fire Test - The Passive Fire Protection Federation (PFPF), June 2000, UK.

2.2 Declaration

The guide to undertaking assessments in lieu of fire tests prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal dated 15 June 2020, CSR Gyprock confirmed that

- To their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the standard against which this assessment is being made.
- They agree to withdraw this assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which this assessment is being made and the results are not in agreement with this assessment.
- They are not aware of any information that could adversely affect the conclusions of this assessment and – if they subsequently become aware of any such information, they agree to ask the assessing authority to withdraw the assessment.

3. Description of the specimens and variations

3.1 Specimen description

There are two ranges of CSR specimens tested and assessed, namely:

- CSR Gyprock plasterboard wall and ceilings products and plasterboard ceiling tiles and access panels; and
- CSR Cemintel fibre cement products

As advised by the sponsor, the mineral fibre and glass fibre ceiling and wall tiles will be dropped from this assessment. Plasterboard with vinyl facing has also been dropped due to insufficient supporting test data.

3.2 Referenced test data

The assessment of the variations to the tested specimens and the determination of the likely performance is based on the results of the fire test/s documented in the reports summarised in Table 3. Further details of the tested system are described in Appendix A.

Table 3 Referenced test data

Report number	Test sponsor	Test date	Testing authority
RTF190235.1	CSR Gyprock	14/10/2019	Warringtonfire Australia
RTF190098.1 and associated assessment report- FAS190127 R1.0	CSR Gyprock	15/06/2019	Warringtonfire Australia
RTF200198 R1.0 and classification report ASCRRTF299198 R1.0	CSR Gyprock	25/06/2020	Warringtonfire Australia

3.3 Variations to tested specimens

An identical system has not been subject to a standard fire test. We have therefore assessed the products using baseline test information for similar products. The variations to the tested specimens, together with the referenced baseline standard fire tests – are described in Table 4.

Table 4 Variation to tested CSR Gyprock plasterboard specimens

Item and thickness	Item and thickness
10~13mm Gyprock Plus	25mm ShaftLiner MR panel
10~13mm Supacell	25mm ShaftLiner panel
10~13 mm Sensitive	25 mm ShaftLiner MP
10~16 mm Standard plasterboard	13~16 mm Fyrchek
10~13 mm Soundchek	13~16 mm Fyrchek MR
10~13 mm Aquachek	13 mm EC08 Partition
Flexible- 6.5 mm (used in two layers)	13~16mm EC08 Complete
Impactchek- 13 mm	13 mm EC08 Impact
Superchek- 10 mm	13 mm EC08 Impact MR
12.5 mm Habito H	
Gyprock perforated plasterboard panels: - 13 mm perforated panel 6mm Round - 12.5 mm Gyptone perforated ceiling panels- 12 mm Square, 13mm Square Minigrid, Slotted Minigrid - 12.5 mm Rigilone perforated ceiling panels- Matrix 8mm round, Astral, Matrix 12 mm Square, Galaxy - 6.5 mm Gyptone perforated panels- Flexible 12 mm Square, Flexible Slotted Minigrid - Gyptone Access Panels- Frame-600 mm x 600 mm Hatch- 510 mm x 510 mm	Gyprock plasterboard tiles: - Supatone- 10 mm - Arctic White- 13 mm - Perforated Tile- 13 mm
Notes: 1. The perforated plasterboard panels may include acoustic fabric backing 2. The plasterboard panels with vinyl facings are not included in the assessment.	

Table 5 Variation to tested CSR Cemintel fibre cement products

Item and description	Item and description
6~12 mm CeminSeal Wallboard	8 mm Edge
6~9 mm Rigid Air Barrier	8 mm Mosaic
7.5~9 mm Texture Base Sheet	7.5 mm Plank – Smooth and Woodgrain
8~12 mm Rendaline	10 mm Headland Weatherboard
6 mm Cladding sheet	12 mm & 16 mm Scarborough Weatherboard
9 mm Simpleline	10 mm Endeavour Weatherboard
6 mm Eaves lining	16 mm Balmoral Weatherboard
9~24 mm Compressed Sheet	6 mm Soffitline
9~12 mm Expresspanel	18~22mm Constructafloor Interior
9~12 mm Barestone Exterior with optional colour finishes in Ash, Lunar and Graphite	18~22mm Constructafloor Exterior
9~12 mm Barestone Interior with optional colour finishes in Ash, Lunar and Graphite	16mm Territory
9~12 mm Barestone Bark	8mm Surround

3.4 Purpose of the test

The test was performed in accordance with the requirements of AS ISO 9705:2003 (R2016) and AS 5637.1:2015 to determine the group number that may be assigned to the material using the classification schemes given in AS 5637.1:2015 and C/VM2 – Verification Method: Framework for Fire Safety Design

AS 5637.1:2015 sets out procedures for the assessment of internal wall and ceiling linings according to their tendency to ignite, release heat, cause flashover, release smoke and contribute to fire growth.

3.5 Requirements of NCC 2019 Amendment 1 - Specification C1.10 part 4. "Wall and ceiling linings"

Part 4 of Specification C1.10 in NCC 2019 Amendment 1 "Walls and ceiling linings" states that –

- a. A wall or ceiling lining system must comply with the group number specified in Table 3 and for buildings not fitted with a sprinkler system complying with Specification E1.5 have-
 - i a smoke growth rate index not more than 100; or
 - ii an average specific extinction area of less than 250 m²/kg.
- b. A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1:2015.

4. Scope, objective and assumptions

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 3.3.
- This report details the methods of construction, test conditions and assessed results that would have been expected if the specific elements of construction described here had been tested in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.
- The results of this assessment are applicable to plasterboard and fibre cement wall and ceiling lining, including plasterboard ceiling tiles.
- This report is only valid for the assessed products. Any changes with respect to size, construction details, loads, stresses, edge or end conditions, other than those identified in this report, may invalidate the findings of this assessment. If there are changes to the products, a reassessment will be needed to verify consistency with the assessment in this report.
- The data, methodologies, calculations and conclusions documented in this report specifically relate to the assessed system/s and must not be used for any other purpose.
- This report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of that information and will not be responsible for any errors or omissions that may be incorporated into this report as a result.

5. Assessment 1 – Assessment of CSR Gyprock plasterboard products

This revised assessment supersedes all previous discussion points with new test data based on test and assessment in accordance with AS 5637.1:2015 on representative product samples. All previous tests were conducted only in accordance with AS 1530.3 and are now deemed obsolete as there were no tests carried out in accordance with AS ISO 9705-2003 (R2016) to establish the baseline data. However, the old test data in accordance with AS 1530.3 has been retained for future reference on the combustibility of the products.

5.1 Description of variations

The group number of a material or a system is based on its 'time to flashover' in the AS ISO 9705-2003 (R2016) room burn test. A flashover usually occurs when the fire is fully developed and all combustible items in the room are involved in the fire. In AS 5637.1:2015, flashover is said to occur when the total heat release rate exceeds 1 MW (1000 kW). For example, the fire hazard properties of timber are dependent on multiple factors such as density, thickness, microstructure and chemical composition. For veneered timber materials, additional factors such as the type and thickness of the adhesive layer also contribute to the fire.

In accordance with the procedures and requirements in AS 5637:2015, the variations to the tested specimen plasterboard product will be mainly in the changes in thickness or size and minor variations in the material composition of the plasterboard products. Products with a combustible facing and with a different core material other than that of plasterboard are therefore removed from this report and may be reinstated when new supporting test data in accordance with AS 5637:2015 is available.

This assessment was undertaken to determine the likely performance of the CSR Gyprock plasterboard products, as outlined in Table 4. Based on the data from referenced test report RTF190098.1 and assessment report FAS190127 R1.0, with details provided in Appendix A.3.

Based on recent tests conducted in accordance with AS ISO 9705-2003 (R2016) fire test on standard gypsum plasterboard samples, there was sufficient evidence of correlation between the various plasterboard samples from CSR Gyprock. Therefore, the test conducted on the CSR Gyprock Habito H in accordance with AS/NZS 3837:1998 provided acceptable data for classification in accordance with AS 5637.1:2015.

5.2 Methodology

The approach and method of assessment used for this assessment is summarised in Table 6.

Table 6 Method of assessment

Assessment method	
Level of complexity	Simple assessment – based purely on analysing data provided in the referenced fire test and comparing the physical properties of products.
Type of assessment	Comparative

5.3 Assessment of variations to tested CSR Gyprock plasterboard specimen

In test RTF190098, the tested specimen in the AS ISO 9705-2003 (R2016) fire test, was perforated plasterboard with a cloth (polyester) backing on the unexposed side.

The tested plasterboard panel being perforated would be more onerous when exposed to fire compared with a solid plasterboard panel. It allowed oxygen and flames to infiltrate the back of the plasterboard, enabling both surfaces to burn simultaneously. It would have resulted in a higher peak heat release rate than if the panels were to be solid, with the front exposed surface burning through the paper lining and up to 10 minutes before the plasterboard back lining starts to combust.

It is noted from the test that:

- It appears that the paper lining of the perforated plasterboard, including the added fabric backing material, played only a small or insignificant part in the total heat release rate.
- The burning rate of the plasterboard specimen was measured by the subtraction of the burner's heat release rate from the total measured heat release rate. It represented no more than 25% of the total heat release rate, and the specimen burned at a steady rate without much spiking in the heat release. From the test data, the total heat release rate peaked at about 410 kW when the burner was rammed up to 300 kW.
- Smoke generation was minimal during the test.

The discussion in assessment report FAS190127 R1.0 concluded that the specimen plasterboard would perform similarly if the amount of free area in the perforations of the plasterboard were to be varied or if the plasterboard were to be decreased or increased in thickness. Since the perforated plasterboard tested was the most onerous, it is considered that solid plasterboard panels would perform equally or better if subjected to a fire test in accordance with AS ISO 9705:2003 (R2016) and would likely attain the same Group No.1.

The above assessment could be extended to cover all thicknesses plasterboard with the same fabric lining as that tested. The main constituents that contributed to combustion in the fire test were the paper facing of the plasterboard and the fabric backing for the perforated plasterboard panels. Increasing the thickness of the plasterboard does not lead to additional facing material. The thicker panels will likely perform similarly to the tested specimen and achieve the same group number in accordance with AS 5637:2015.

It would also extend to other plasterboard panels with a composition mix of the core material, which includes fire rated plasterboard. It was evident from the test observations that the core plasterboard material provided minimal combustion and any variation in the core mix would only have a marginal variance in the rate of combustion as the core is virtually non-combustible.

The 25 mm ShaftLiner MP plasterboard panel has the same core gypsum material composition as the tested standard 12 mm ShaftLiner plasterboard panel except for an added fungicide. The additive is of minimal contribution by mass to the overall core material and, based on tests on similar plasterboard samples, the ShaftLiner MP is expected to perform at the same level and be assigned a Group 1 rating along with the other plasterboard samples.

The above assessment does include lining materials such as vinyl, which would melt and combust at relatively low temperatures, and there is insufficient baseline test data to support the assessment. The same exclusion applies to mineral wool or glass fibre core materials where such panels have not been subjected to a fire test in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.

Following the above discussions and evidence from previous tests confirming minimal variance in performance between different mixes of plasterboards, the 12.5 mm Gyprock Habito H plasterboard specimen tested in RTF200198 in accordance with AS/NZS 3837:1998 and AS 5637.1:2015 is provided a Group 1 classification.

The list of plasterboard products positively assessed in FAS190127 R1.0 has been appended to the list of plasterboard products in Table 4.

5.4 Conclusion

This assessment demonstrates that the range of plasterboard products as listed in Table 4 is likely to achieve Group 1 classification if they were tested in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.

6. Assessment 2 – Assessment of CSR Cemintel fibre cement products

This revised assessment supersedes all previous discussion points with new test data based on test and assessment in accordance with AS 5637.1:2015 on representative product samples. All previous tests were conducted only in accordance with AS 1530.3 and are now deemed obsolete as there were no tests carried out in accordance with AS ISO 9705-2003 (R2016) to establish the baseline data. However, the old test data in accordance with AS 1530.3 has been retained for future reference on the combustibility of the products.

6.1 Description of variations

The group number of a material or a system is based on its 'time to flashover' in the AS ISO 9705-2003 (R2016) room burn test. A flashover usually occurs when the fire is fully developed and all combustible items in the room are involved in the fire. In AS 5637.1:2015, flashover is said to occur when the total heat release rate exceeds 1 MW (1000 kW). For example, the fire hazard properties of timber are dependent on multiple factors such as density, thickness, microstructure and chemical composition. For veneered timber materials, additional factors such as the type and thickness of the adhesive layer also contribute to the fire.

In accordance with the procedures and requirements in AS 5637:2015, the variations to the tested specimen fibre cement product will be mainly in the thickness and density, such as compressed fibre cement.

This assessment was undertaken to determine the likely performance of the CSR Cemintel fibre cement products, as outlined in Table 5, based on the data from referenced test report RTF190235.1 with CSR Cemintel fibre cement specimen panels and with details provided in the A.4.

6.2 Methodology

The approach and method of assessment used for this assessment is summarised in Table 7.

Table 7 Method of assessment

Assessment method	
Level of complexity	Simple assessment –based purely on analysing data provided in the referenced fire test and comparing the physical properties of products.
Type of assessment	Comparative

6.3 Assessment of CSR Cemintel fibre cement products based on tested fibre cement specimen

In test RTF190235, the tested specimen in the AS ISO 9705-2003 (R2016) fire test consisted of fibre cement panels mounted on a series of steel battens or an AFS Logicwall® system. The tested fibre cement panels would be considered more onerous compared with compressed fibre cement panels. The components that are likely to combust when tested are the embedded cellulose fibres. The fibres in the compressed fibre cement panels are harder to combust as the compressed cement would have a slightly higher thermal storage mass, less porous for air or oxygen ingress, hence it takes longer to heat up the fibres and combust.

The embedded fibres are relatively low compared to the total mass of the panel and hence contribute only minimal fuel for combustion in the test. From observation of the test data in RTF190235.1 with 6mm fibre cement sheets, there was virtually no combustion in the specimen fibre cement panels when the burner output was at 100 kW.

Ten minutes into the test, when the burner heat release rate was turned up to 300 kW, the total heat release rate was only averaging 350 kW, which equates to a contribution of a steady 50kW from the combustion of the fibre cement panels. The peak total heat release rate was below 400kW with no sharp peaks throughout the test duration.

It is noted from the test that:

- There was minimal burning of the fibre cement panels during the initial 10 minutes when the burner was on 100 kW output. There was no lateral flame spread.
- When the burner was ramped up to 300 kW, there was some lateral flame spread along the ceiling but minimal along the wall.
- Even though the fibre cement sheets cracked and fell off at the completion of the test, there was no continual burning of the debris.
- Smoke generation was minimal.

Based on the test data on a 6mm fibre cement sample, the contribution to the total heat release rate during the "high fire" of 300kW during the test, a thicker sample fibre cement panel will have a proportional increase in the total heat release rate with an increase in thickness. The deduction is based on the uniform nature of the combustion where the tested panels provided a flat heat release rate throughout the test. It can therefore be considered that if the panels were thicker in the test, the total heat release rate would be elevated in proportion to the thickness and at a steady combustion rate. It is assumed that the cellulosic fibres in the thicker panels would have been of the same concentration or percentage by weight. This has been confirmed in writing by the sponsor.

The thickest fibre cement panel provided by the sponsor is 24 mm, which is four times the thickness of the 6 mm tested specimen. If the 24 mm fibre cement panel were tested in accordance with AS ISO 9705:2003 (R2016), the equivalent contribution to the total heat release rate from the burning of the panels would be $4 \times 50\text{kW}$, or a total heat release rate of 500 kW (200 kW from specimen + 300 kW from burner), which would still be within the limits of 1 MW, ie. the specimen would unlikely cause a flashover for the full duration of the test.

The thickest fibre cement panel would likely achieve the same Group 1 rating in accordance with AS 5637:2015. Compressed fibre with the same percentage of cellulosic fibres embedded in the cement base would likely perform equally or better in that it would have a comparatively higher thermal storage mass than the normal fibre cement and, being denser, it would make it harder for oxygen to permeate the panels and hence, it would likely burn at a slower rate.

The Barestone weatherboard panels have been provided with additional colour finishes with the addition of trace carbon elements to the core material, namely 0.2% for Ash colour, 0.6% for Lunar and 2.0% for Graphite. The Barestone Bark weather panels, which are basically sanded samples of the basic Barestone weatherboard panels. The addition of the trace elements of carbon is unlikely to cause any variance in the performance of the original base fibre cement core material.

The above assessment could be extended to cover all fibre cement panels up to 24 mm thick, provided that there is minimal variance in the composition of the embedded cellulosic fibres.

6.4 Conclusion

This assessment demonstrates that the range of CSR Cemintel fibre cement products as outlined in Table 5 is likely to achieve Group 1 classification if it were tested in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.

7. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of this assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Due to the nature of fire testing and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement. It is therefore recommended that this report be reviewed on or, before, the stated expiry date.

This assessment represents our opinion about the performance likely to be demonstrated on a test in accordance with AS ISO 9705-2003 (R2016) and AS 5637.1:2015, based on the evidence referred to in this report.

This assessment is provided to the CSR Gyprock for its own purposes and we cannot express an opinion on whether it will be accepted by building certifiers or any other third parties for any purpose.

Appendix A Summary of supporting test data

A.1 Material properties for CSR products

Table 8 CSR Gyprock plasterboard products

Product	Thickness mm	Mass kg/m ²	AS 1530.3 indices			
			II	SOF	HE	SDI
CD Gyprock	10	6.5	13	0	1	2
	13	8.5				
Supacell	10	7.2	14	0	1	1
Soundchek	10	9.3	0	0	0	3
	13	13				
Aquachek	10	8	13	0	2	3
	13	10.4				
Flexible	6	4.3	13	0	1	2
Perforated	13	10	0	0	0	3
Fyrchek	13	10.5	0	0	0	3
	16	12.5				
Fyrechek MR	13	10.7	13	0	2	2
	16	13.5				
Shafteliner	25	19.8	0	0	0	3
Flamechek	10		13	0	2	2
Impactchek	10	8.0	0	0	0	3
	13	10.5				
Notes -						
1. Gyprock Plasterboard is machine made sheet composed of a gypsum core encased in heavy duty paper linerboard						
2. The linerboard face and back 170-180 gsm.						
3. Aquachek and Fyrchek MR contain Paraffin wax emulsion.						
4. The mesh in Impactchek is located adjacent to the back linerboard.						

Table 9 CSR fibre cement products

Product	Thickness mm	Mass kg/m ²	AS 1530.3 indices			
			II	SOF	HE	SDI
Fibre cement panel coated with polyurethane (GBKS 261)	10	1196	0	0	0	1

Table 10 Ceiling panels

Product description	Thickness mm	Mass kg/m ²	EFH AS 1530.3
10 mm Supacell Gyprock lay in panels with paint or vinyl facings	-	-	-
CSR Gyprock Freshstone Supatone (painted plasterboard)	10	7.3	0,0,0,4
CSR Gyprock Diamond White (Vinyl faced)			
CSR Gyprock Ultra Matt (Vinyl faced)			
Arctic White ceiling	10	65	

A.2 Test results for ceiling panels, Gyprock Giptone, Gyprock Rigitone and Gyprock Plus.

Table 11 Test results ceiling panels in general accordance with AS 5637.1:2015

Material	Test Reference	Group Number	Average Specific Extinction Area (m ² /kg)
Supacell 10 mm thick	136806	1	46
Aquachek 10 mm thick	136808	1	38
Supacell 10 mm thick faced with Vinyl Facing (Ultra matt)	136811	1	80
Cement-bonded fibrous wood particle panel- 16 mm thick	FNK 10457	1	41.3
Gyprock Perforated Plasterboard with Viledon fabric backing	FH 5549	1	10.1
Arctic white ceiling	18-002907	1	70.3
Notes -			
1. The above results have been superseded by new tests in accordance with AS 5637.1:2015 and are no longer valid.			
2. These results will be referenced for guidance on the combustibility of the materials as required.			

Table 12 Test results for Gyprock Giptone, Gyprock Rigitone and Gyprock Plus in accordance with AS 3837:1998

Material	Test Reference	Group Number	Average Specific Extinction Area (m ² /kg)
Giptone Big Quattro 41	15-005762	1	4.9
Gyprock Rigitone 10/23	15-005760	1	8.5
Gyprock Plus	16-002226	1	7.6

A.3 Test report – RTF190098.1 and summary of assessment report FAS190127 R1.0

Table 13 Information about test report

Item	Information about test report
Report sponsor	CSR Gyprock
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire resistance test was completed on 25/06/2019.
Test standards	The test was done in accordance with AS ISO 9705-2003 (R2016) and AS 5637.1:2015.
Variation to test standards	None
General description of tested specimen	The tested system consisted of a 28 mm thick metal framing, incorporating J-tracks, clips and furring channels, which was clad with a 12 mm Rigitone Matrix 12 Square acoustic panel. The panels were screw fixed to the furring channels using 25 mm plasterboard screws. The J-tracks were first screw fixed to the room walls and ceiling and the furring channels were slotted into the tracks. The furring channels were also secured in place using clips that were installed along the length of the channels. The panels were then screw fixed on to the furring channels. Panel to panel joints were sealed using Rigitone sealant.
Instrumentation	The test report states that the instrumentation was in accordance with AS ISO 9705-2003 (R2016).

The test specimen achieved the following result:

Table 14 Classification for AS ISO 9705-2003 (R2016) and AS 5637.1:2015 (for applications in Australia).

Criteria	Results
Group number	1
SMOGR _{ARC} (in m ² ·s ⁻² × 1000)	0.5

Table 15 Classification for C/VM2 – Verification Method: Framework for Fire Safety Design (for applications in New Zealand).

Criteria	Results
Group number	1-S
Average smoke production rate (0 to 20 minutes)	0.16 m ² ·s ⁻¹

Table 16 Assessment outcome from FAS190127 R1.0 to Australian Building Code requirements

Item	Panel thickness	Description of Variations	Assessed Classification for AS ISO 9705-2003 (R2016) and AS 5637.1:2015	
			Group No.	SMOGR _{ARC} (in m ² ·s ⁻² × 1000)
Gyprock Rigitone Matrix 12 mm Square	12.5 mm	As tested. Perforated plasterboard with 12 mm square holes at 23% total free open area and black fabric backing	1	0.5

Item	Panel thickness	Description of Variations	Assessed Classification for AS ISO 9705-2003 (R2016) and AS 5637.1:2015	
			Group No.	SMOGR _{ARC} (in m ² ·s ⁻² × 1000)
Gyprock Rigitone Matrix 8 mm Round	12.5 mm	8mm round holes with 15.5% total free open area		
Gyprock Rigitone Astral	12.5 mm	Staggered pattern 12 mm and 20 mm round holes with 16.6% total free open area		
Gyprock Rigitone Galaxy	12.5 mm	Scattered pattern 15 mm and 20 mm round holes with 10% total free open area.		
Gyprock Gyptone 12 mm Square	12.5 mm	12 mm square holes with 16.0% total free open area		
Gyprock Gyptone 12 mm Square Minigrid	12.5 mm	12 mm square holes with 6% total free open area in a mini grid layout		
Gyprock Gyptone Slotted Minigrid	12.5 mm	6 mm x 80 mm rectangular holes with 13% total free open area		
Gyprock Gyptone Flexible 12 mm Square	6.5 mm	12 mm square holes with 16.0% total free open area		
Gyprock Gyptone Flexible Slotted Minigrid	6.5 mm	6 mm x 80 mm rectangular holes with 13% total free open area		
Gyprock Gyptone Access Panels	-	Frame- 600mm x 600mm Hatch- 510mm x 510mm All of perforated plasterboard from one of 3 patterns from Gyprock Gyptone 12mm S, Gyprock Gyptone 12mm Square Minigrid and Gyprock Gyptone Slotted Minigrid		
Gyprock 6 m Round	13 mm	6 mm diameter holes of 8.3% total free open area		

Table 17 Assessment outcome from FAS190127 R1.0 to New Zealand Building Code requirements

Item	Panel thickness	Description of Variations
Gyprock Rigitone Matrix 12 mm Square	12.5 mm	As tested. Perforated plasterboard with 12 mm square holes at 23% total free open area and black fabric backing
Gyprock Rigitone Matrix 8 mm Round	12.5 mm	8 mm round holes with 15.5% total free open area
Gyprock Rigitone Astral	12.5 mm	Staggered pattern 12 mm and 20 mm round holes with 16.6% total free open area
Gyprock Rigitone Galaxy	12.5 mm	Scattered pattern 15 mm and 20 mm round holes with 10% total free open area.
Gyprock Gyptone 12 mm Square	12.5 mm	12 mm square holes with 16.0% total free open area
Gyprock Gyptone 12 mm Square Minigrid	12.5 mm	12 mm square holes with 6% total free open area in a mini grid layout
Gyprock Gyptone Slotted Minigrid	12.5 mm	6 mm x 80 mm rectangular holes with 13% total free open area
Gyprock Gyptone Flexible 12mm Square	6.5 mm	12 mm square holes with 16.0% total free open area
Gyprock Gyptone Flexible Slotted Minigrid	6.5 mm	6 mm x 80 mm rectangular holes with 13% total free open area

A.4 Test report – RTF190235.1

Table 18 Information about test report

Item	Information about test report
Report sponsor	CSR Gyprock
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire resistance test was completed on 14/10/2019.
Test standards	The test was done in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.
Variation to test standards	None
General description of tested specimen	The test specimen consisted of 6 mm fibre cement sheet panels that were fixed onto a steel framing system. The steel framing system lined the internal face of the test room walls and ceiling.
Instrumentation	The test report states that the instrumentation was in accordance with AS ISO 9705:2003 (R2016).

The test specimen achieved the following result:

Table 19 Classification for AS ISO 9705:2003 (R2016) and AS 5637.1:2015

Criteria	Results
Group number	1
SMOGR _{ARC} (ln m ² /s ² × 1000)	0.2

Table 20 Classification for C/VM2 – Verification Method: Framework for Fire Safety Design

Criteria	Results
Group number	1-S
Average smoke production rate (0 to 20 minutes) (in m ² /s)	0.1

A.5 Test report – RTF200198.1 (& classification report ASCRRTF 200198.1)

Table 21 Information about test report

Item	Information about test report
Report sponsor	CSR Gyprock
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire resistance test was completed on 25/06/2019.
Test standards	The test was done in accordance with AS/NZ 3837.1:1998.
Variation to test standards	None
General description of tested specimen	Three test samples of the specimen consisting of 12.6 mm (measured) plasterboard panels of gypsum plaster encased in paper liners. All specimens were wrapped in a single layer of aluminium foil, covering the sides and bottom prior to testing.
Instrumentation	The test report states that the instrumentation was in accordance with AS/NZ 3837.1:1998.

The test specimen achieved the following result:

Table 22 Classification for AS/NZS 3837:1998 and AS 5637.1:2015

Criteria	Results
Group number	1
Average Specific Extinction Area (ASEA)	7.3 m ² /kg

Bradford Gold® & Gold® Hi-Performance

Refer to product table below for applicable product codes covered by this document

Issue **G**

Product Type & Application

Bradford Gold® and Gold Hi-Performance (HP) are non-combustible Glasswool thermal insulation products. They are for use in external walls and ceilings to reduce heat transfer through the building envelope.

Compliance with the NCC

For use in Australia, when correctly specified and installed, this product provides the following compliance:

NCC 2019

- **Thermal** - Complies with NCC 2019 Volume 1 Amend. 1 Section J1.2(a), NCC 2019 Volume 2 Amend. 1 Section 3.12.1.1(a), and all state-prescribed variations. This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2019 Volume 1 Amend. 1 C1.9(a) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Specification C1.10 Clause 7.

NCC 2022

- **Thermal** - Complies with NCC 2022 Volume 1 J4D3(1) and ABCB Housing Provisions Standard 2022 13.2.2(1). This product meets the requirements of the NCC through compliance with AS/NZS 4859.1.
- **Non-Combustibility** - Meets the non-combustible requirements of NCC 2022 Volume 1 C2D10(1) when tested or assessed in accordance with AS 1530.1.
- **Fire Hazard Properties** - Meets the requirements of the NCC 2022 Volume 1, S7C7 for insulation materials. When assessed to AS/NZS 1530.3 this product does not exceed the 'Spread of Flame' or 'Smoke Developed' indices of Table S7C7.

Conditions of Storage, Use & Maintenance

- Store in the original packaging in a cool, dry area, away from foodstuffs. Ensure packages are adequately labelled, protected from physical damage, and sealed when not in use. Avoid packaging being stored under UV light (direct sunlight) for long periods.

Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.

Specific Design or Installation Instructions

- Isolate power before installation.
- **Caution:** Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. In new build construction with electrical wiring in accordance with AS/NZS 3000: 2018 or later, wiring may be partially or completely surrounded for up to 400mm. If more than 400mm is surrounded, or for wiring pre AS/NZS 3000:2018, seek advice from a licenced electrician. Refer to legislation and referenced standards for full details or seek advice from an electrician if in doubt.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- Suitable for applications that specify non-combustible bulk insulation products - not suitable for exposed internal wall and ceiling lining applications that require a Group Number.
- Insulation should be installed so that it forms a continuous layer and abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member.
- Compensate for gaps as specified by the NCC 2019 Volume 2 Amend. 1, 3.12.1.2(e) and Table 3.12.1.1h, ABCB Housing Provisions Standard 2022 13.2.3(5) and Table 13.2.3w. It should be installed at nominal thickness, except where it crosses structures, services and fittings.
- Ceiling perimeter batts may be required to achieve compliance depending upon roof and exterior wall design.
- Suitable for applications where the product is protected from direct UV light, water and wind pressure during and after installation.

For general installation guidance refer to the product installation guide at Bradfordinsulation.com.au

Supplementary information - Additional installation guidance for this product can be found in AS3999.

Bradford Gold® & Gold® Hi-Performance

Limitations of Use

- **IMPORTANT:** Do Not Modify This Product: Compliance with the evidence of suitability data referenced in this document is only achieved by the product or configuration listed in this PTS.
- **IMPORTANT:** R2.2 (HP), R2.5 (HP), R2.7 (HP) and R4.0 (HP) Wall Batts are high-density products that will not compress during installation and must be installed in a cavity of the correct size, with no obstructions. If installed in a cavity smaller than the product's nominal thickness, there is a risk of deformation or detachment of rigid wall lining materials.
- This product is not suitable for use as an exposed internal wall or ceiling lining in applications which require a Group Number in accordance with AS ISO 9705 and AS 5637.1 (NCC 2019 Volume 1 Amend. 1, Specification C1.10 Clause 4, NCC 2022 Volume 1 S7C4).
- Unfaced Glasswool is not a water or vapour barrier and is not suitable for water or vapour control.
- Maximum service temperature is 300°C for Glasswool.
- Check the plasterboard, ceiling tile or ceiling grid manufacturer's weight limitations prior to increasing the recommended R-Values or densities to ensure the structure can support the additional weight of the insulation batts.

Evidence of Suitability

- Testing to AS/NZS 4859.1 across the following reports-
 - CSR Lab Report R-20004A
 - CSR Lab Report R-20005
 - CSR Lab Report R-20006
 - CSR Lab Report R-20007
 - CSR Lab Report R-20014
 - CSR Lab Report R-20015
 - CSR Lab Report R-20016
 - CSR Lab Report R-20017
 - CSR Lab Report R-20018
 - CSR Lab Report R-20019
 - CSR Lab Report R-20020
 - BRANZ Report DI11505-001
 - BRANZ Report DI11505-002
 - BRANZ Report DI12309-001
 - BRANZ Report DI13245-001
- Testing and Professional Assessment to AS 1530.1 across the following reports –
 - CSIRO Assessment FCO-2812.
 - CSIRO Report FNC-9694
 - CSR NATA Lab Report NR-17008
 - CSR NATA Lab Report NR-18006
 - CSR NATA Lab Report NR-18007
 - CSR NATA Lab Report NR-20003
 - CSR NATA Lab Report NR-20004
 - CSR NATA Lab Report NR-22102
 - CSR NATA Lab Report NR-22103
- Professional Assessment, AS/NZS 1530.3 –
 - Warringtonfire Assessment FAS200045

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Ceiling Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
R2.5	140	1160 x 430	16	8.0	9.0	7	111720
R2.5	140	1160 x 580	16	10.8	12.2	7	111719
R3.0	165	1160 x 430	16	8.0	9.0	6	15226
R3.0	165	1160 x 580	16	10.8	12.2	6	15256
R3.5	185	1160 x 430	16	8.0	9.0	5	15241
R3.5	185	1160 x 580	10	6.7	7.6	8	41895
R4.1	215	1160 x 430	10	5.0	5.6	7	111716
R4.1	215	1160 x 580	10	6.7	7.6	7	111715
#R5.0 (HP)	240	1160 x 430	8	4.0	4.5	5	105417#
R5.0 (HP)	240	1160 x 430	8	4.0	4.5	6	467911
#R5.0 (HP)	240	1160 x 580	8	5.4	6.1	5	105419#
R5.0 (HP)	240	1160 x 580	8	5.4	6.1	6	467912
#R6.0 (HP)	260	1160 x 430	6	3.0	3.4	5	77871#
R6.0 (HP)	260	1160 x 430	6	3.0	3.4	6	467949
#R6.0 (HP)	260	1160 x 580	6	4.0	4.5	5	77849#
R6.0 (HP)	260	1160 x 580	6	4.0	4.5	6	467960
#R7.0 (HP)	290	1160 x 430	4	2.0	2.3	5	122546#
R7.0 (HP)	290	1160 x 430	4	2.0	2.3	6	467961
#R7.0 (HP)	290	1160 x 580	4	2.7	3.0	5	122545#
R7.0 (HP)	290	1160 x 580	4	2.7	3.0	6	467962

Product discontinued December 2022.

Bradford Gold® & Gold® Hi-Performance

Applicable Product Codes – Wall Products

R-VALUE (m ² K/W)	THICKNESS (mm)	STANDARD SIZE (mm)	PIECES PER PACK	m ² PER PACK	COVERAGE PER PACK (m ²)	PACKS PER MULTI	PRODUCT CODE
#R1.5	75	1160 x 430	22	11.0	12.5	7	111727#
#R1.5	75	1160 x 580	22	14.8	16.7	7	111726#
#R1.5 *	75	1200 x 450	22	11.8	11.8	7	127776#
#R1.5 *	75	1200 x 600	22	15.8	15.8	7	127781#
R2.0 (HP)	75	1160 x 420	12	5.8	7.0	6	152166
R2.0 (HP)	75	1160 x 570	12	7.9	9.1	6	152192
R2.0 (HP) *	75	1200 x 450	12	6.5	6.5	6	131367
R2.0 (HP) *	75	1200 x 600	12	8.6	8.6	6	131368
R2.0	90	1160 x 430	22	11.0	12.5	5	15250
R2.0	90	1160 x 580	18	12.1	13.6	6	15229
R2.0 *	90	1200 x 450	18	9.7	9.7	6	127777
R2.0 *	90	1200 x 600	18	12.9	12.9	6	127782
R2.2 (HP)	75	1160 x 420	6	2.9	3.5	6	152168
R2.2 (HP)	75	1160 x 570	6	4.0	4.5	6	152194
R2.2	90	1160 x 430	16	8.0	9.0	5	170351
R2.2	90	1160 x 580	16	10.8	12.2	5	170227
R2.5 (HP)	90	1160 x 420	9	4.4	5.0	6	181430^
R2.5 (HP)	90	1160 x 570	9	6.0	6.7	6	181471^
R2.5 (HP) *	90	1200 x 450	9	4.9	4.9	6	181412^
R2.5 (HP) *	90	1200 x 600	9	6.5	6.5	6	181433^
R2.7 (HP)	90	1160 x 420	5	2.4	2.8	5	152191^
R2.7 (HP)	90	1160 x 570	5	3.3	3.8	5	152197^
R2.7 (HP) *	90	1200 x 450	5	2.7	2.7	5	127780^
R2.7 (HP) *	90	1200 x 600	5	3.6	3.6	5	126512^
R4.0 (HP)	140	1160 x 420	5	2.4	2.8	6	181432^
R4.0 (HP)	140	1160 x 570	5	3.3	3.8	6	181416^

* Suitable for steel frame construction.

Product discontinued 31st July 2022.

^ AS/NZS 1530.3 Test Report available.

Bradford Gold® & Gold® Hi-Performance

Additional Product Data

Maximum Service Temperature		300°C (suitable where a long term surface operating temperature $\geq 90^{\circ}\text{C}$ is required for insulation around heat generating equipment.)
Fire Hazard Properties	When assessed in accordance with AS/NZS 1530 Part 3-1999	• Ignitability: 0 • Spread of flame: 0 • Heat Evolved: 0 • Smoke Developed: 1
Non-Combustibility	When assessed to AS 1530 Part 1	Non - Combustible
Sample Specification – Wall Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance having a material R-Value; $R_{m...}$ (specify R-Value) @ XXmm... (specify thickness).	
Sample Specification – Ceiling Products	The insulation material shall be Bradford Gold® or Bradford Gold® Hi-Performance Ceiling Batts R ____ $\text{m}^2 \text{K/W}$ (specify type) as manufactured by Bradford Insulation.	

Other Accreditation



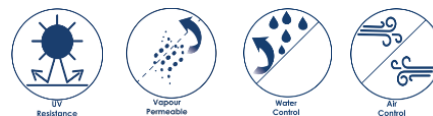
FBS-1 Glasswool - The fibre component of these products is listed by Safe Work Australia as Man-made Vitreous Fibre (Glasswool) of low bio persistence as specified under Note Q in the Australian Hazardous Substances Information System and in the Australian Approved Criteria documentation. In accordance with EU ATP 31 (2009) these fibres are not classified as an irritant, or as carcinogenic.
Refer to the product SUI/MSDS at Bradfordinsulation.com.au for more information.



National Asthma Council Sensitive Choice

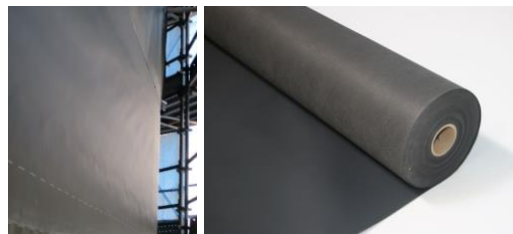
PROCTOR **PASSIVE** Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications



Product Description

ProctorPassive™ Rainscreen with Integrated Tape (RS-IT) is a two layer membrane consisting of a spun bonded polyester layer with a unique functional coating that offers improved resistance against UV and high temperatures up to 120°C. Developed primarily as a vapour permeable sarking for use in open joint rain screen applications, ProctorPassive RS-IT offers a combination of durability and high water holdout without compromising vapour permeance.



Applications

ProctorPassive RS-IT is suitable for installation in vertical wall constructions behind ventilated facades with regularly spaced open joints no greater than 30mm wide accounting for no more than 30% of total surface area. The rainscreen façade has to be ventilated according to the façade manufacturers installation instructions but a ventilation gap (min. 20mm) is necessary.

ProctorPassive RS-IT can also be used as a vapour permeable underlay in metal roof applications.

Long term UV resistance is dependent on the percentage of the cladding that is open, the size of openings, and the width of the cavity. Please contact Proctor Group Australia to seek assurances on the suitability of ProctorPassive RS-IT for the particular application.



Installation

ProctorPassive RS-IT should be installed in accordance with AS/NZS 4200.2 Pliable Building Membranes and Underlays, Part 2 Installation Requirements and in full accordance with the product installation guide. ProctorPassive RS-IT should be installed with the darker black "rubbery" surface facing outwards.

Integrated Tape

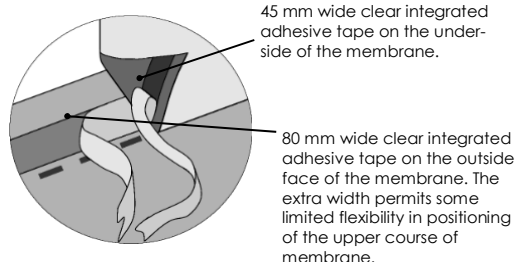
To improve the integrity of installation, ProctorPassive RS-IT is supplied with a factory applied integrated tape on the outer face of the lower course and the rear of the upper course of membrane.

Durability

Although ProctorPassive RS-IT can be used as temporary protection during construction, it can not be used as a fully exposed waterproofing membrane. The product may be damaged by careless handling, high winds or vandalism, and should not be left uncovered for longer than is absolutely necessary. Any damaged areas should be replaced before completion. To ensure maximum long term UV durability, ensure that ProctorPassive RS-IT is covered up by the primary cladding material as soon as possible, and not left exposed to UV for longer than 4 months, or 11 months when the cladding is closed joint.

Benefits

- ☐ High water resistance
- ☐ Suitable for use behind in open joint cladding
- ☐ High UV durability
- ☐ Highly vapour permeable
- ☐ Air barrier
- ☐ Supplied with integrated tape
- ☐ Fixing span tables available



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PROCTOR Rainscreen (RS-IT)

UV Resistant Vapour Permeable Sarking for Rainscreen Applications

Technical Data

Criteria	Reference	Result
Duty Classification	Table 1 AS/NZS 4200.1:2017	Light
Vapour Permeance	ASTM E96	2.7800 µg/N.s
Vapour Resistance	ASTM E96	0.36MN.s/g
	EN 12572 (Sd value)	0.04 m (-0.02/+0.04) equates to 0.2 MNs/g
Vapour Control Classification	AS/NZS 4200.1:2017	Vapour Permeable - Class 4
Emittance	AS/NZS 4201.5	IR Non-reflective - NN
Air Permeability / Air Control Classification	EN 12114:2001	< 0.02 m³/(h.m².50Pa)
	AS/NZS 4200.1, ISO 5636-5	Air Barrier (≥ 0.1 MNs/m³)
Water Barrier	AS/NZS 4201.4	High
Resistance to Dry De-Lamination	AS/NZ 4201.1	Pass
Resistance to Wet De-Lamination	AS/NZ 4201.2	Pass
Shrinkage	AS/NZ 4201.3	Pass < ±0.5%
Folding endurance	AS/NZS 1301.423	Pass MD: ≥2.00 CD: ≥1.7 (log ₁₀ folds)
Flammability Index	AS/NZ 1530 Part 2	1 (Low ≤5)
Fire Characteristics	EN 13501-1 (Euroclass)	B
Thickness	EN 1849.2	0.5 mm
Burst Strength	AS 2001.2.19-1988	647N
Tensile Strength	AS 1301.448	MD: 8.9kN/m CD: 5.3kN/m
Edge Tear Resistance	TAPPI T470	MD: 389N CD: 264N
Electrical Conductivity Classification	AS/NZS 4200.1:2017, AS/NZS 3100-2017	Electrically Non-Conductive
Allowable UV exposure prior to completion of cladding		4 months

Health & Safety

Information on any known health risks on the material are listed in the Material Safety Data Sheets available from Proctor Group Australia. Follow all guidance and industry good practice guidelines. In particular pay attention to the disposal of the removed release liner, as this presents a slip hazard.

Product Performance

ProctorPassive RS-IT performs to specification in normal building applications when installed in accordance with the Product Installation Guide. The information herein is supplied in good faith and to the best of our knowledge was accurate at the time of publication. Users are advised to make their own determination as to the suitability of this information in relation to their particular purpose and specific requirements.

Sample Specification

Sarking should be ProctorPassive RS-IT vapour permeable membrane, tested to AS/NZS 4200.1:2017 standards, secured directly to the outside of the wall frame in accordance with the product installation guide. All laps and penetrations are sealed with ProctorPassive UV Tape. Breather foil does not comply with this specification.

- ☐ Vapour permeance: No less than 2.0µg/N.s (vapour resistance of no greater than 0.5MN.s/g)
- ☐ Burst Strength no less than 600N
- ☐ Duty classification: Light
- ☐ Water Barrier Classification: High
- ☐ Air Control Classification: Air Barrier

Dimensions and Accessories

Product Code	Width (mm)	Length (m)	Area (m²)	Coverage (m²)	Weight kg/roll	Rolls/pallet
ProctorPassive RS-IT	1,500	35	52.5	47.25	16.5	46/pallet
ProctorPassive UV Tape	60	25				10/carton



Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106

1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400

TEST REPORT

Client : Proctor Group Australia
Unit 8, 171-175 Newton Road
Wetherill Park NSW 2164

Test Number : 20-005451
Issue Date : 5/11/2020
Print Date : 6/11/2020

Sample Description Clients Ref : "ProctorPassive Rainscreen RS-IT"
Vapour Permeable UV resistance construction membrane
Colour : Dark Grey/Black
End Use : Sarking/ Weather Resistive Barrier
Nominal Composition : Non-woven polyester with functional UV resistant coating
Nominal Mass per Unit Area/Density : 300g/m2
Nominal Thickness : 0.5mm

AS 1530.2-1993

Methods for Fire Tests on Building Materials, Components and Structures. Part 2: Test for Flammability of Materials

Date Tested	05/11/2020	
Flammability Index	1	
	Length	Width
Spread Factor	0	0
Heat Factor	1	1
Maximum height (d)		
Mean	3.2	3.1
Coefficient of Variation	8.2	6.6 %
Heat (a)		
Mean	1.5	1.5 °C.min
Coefficient of Variation	0.0	0.0 %
Number of Specimens Tested	6	6
Observation	Visible smoke.	
Comp ASNZS 4200.1-2017 Cl 5.3.6		Low

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APPROVED SIGNATORY



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

0204/11/06



Australian Wool Testing Authority Ltd - trading as AWTA Product Testing

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P.O Box 240, North Melbourne, Victoria 3051

Phone (03) 9371 2400

TEST REPORT

Client : Proctor Group Australia
Unit 8, 171-175 Newton Road
Wetherill Park NSW 2164

Test Number : 20-005451
Issue Date : 5/11/2020
Print Date : 6/11/2020

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test, and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

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

0204/11/06

PROCTOR **PASSIVE** UV Tape

UV Resistant Single Sided Tape



Product Description

ProctorPassive UV Tape is a single sided adhesive tape recommended for use with the ProctorPassive Rainscreen vapour permeable membrane.

The carrier of polyester spun bond with black functional coating offers long term UV resistance making the tape suitable for use in open joint rainscreen applications where used as directed. The pressure sensitive polyacrylate adhesive provides exceptionally high initial tack and permanent adhesion.

Applications

ProctorPassive UV Tape is designed for use with ProctorPassive Rainscreen (RS-IT) vapour permeable construction membrane for open joint facades, sealing around doors, windows and pipes.

Installation

Installation of ProctorPassive UV Tape must be in accordance with the installation guide.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure with a squeegee or roller on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +10°C + 30°C prior to application of the tape.

All mechanical load on membranes should be distributed to mechanical fasteners and the tape must not be applied under mechanical load. The use of adhesive tape is not a substitute for the required fixing of materials.

Benefits

- ☐ UV resistance
- ☐ Compatibility with ProctorPassive Rainscreen (RS-IT)
- ☐ Good initial tack
- ☐ Durable robust carrier
- ☐ Non reflective matt finish carrier
- ☐ Air and water tight



Properties	Nominal value
Adhesive Carrier	Spunbonded polyester with function UV resistant coating
Adhesive Type	Solvent free acrylic adhesive
Total thickness	0.6 mm (without liner)
Liner	Silicone Paper
Peel adhesion	≥ 25 N/25mm
Sheer Adhesion	500 g/625mm ²
Temperature range	-30 °C to +90°C
Application Temp.	+10 °C to +30 °C
UV Exposure	Open joint rainscreen: 4 months Face sealed façades: 9 months
Shelf life	1 year in original packing stored at room temperature of around 21°C & 50%RH, and protected from UV in a dry location.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton
All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.	

Ref: ProctorPassive UV Tape PDS Oct 2020 Page 1 of 1

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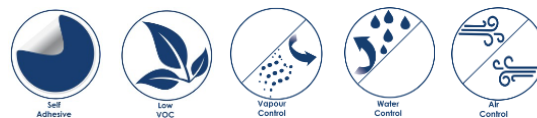
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PROCTOR **PASSIVE** YouByute Flexi Tape

Flexible Butyl Rubber Tape



Product Description

ProctorPassive YouByute Flexi Tape is a strong adhesion highly stretchable PE butyl rubber tape with lasting water and ageing resistance.

Applications

ProctorPassive YouByute Flexi Tape is used in roof and wall construction as a tape for permanent sealing of air barriers, roof underlays, building wraps and around doors, windows and pipes. The tape is suitable for sealing overlaps in edges and corners and locations that require a high degree of flexibility in the tape.

Installation

As with all pressure sensitive tapes, the YouByute Flexi Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure.

The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- ☐ Highly stretchable
- ☐ High tack
- ☐ Long term water resistance
- ☐ High ageing resistance
- ☐ Release liner with finger lift
- ☐ Compatibility with ProctorWrap Rainscreen (RS-IT)
- ☐ Air and water tight
- ☐ Low emission of VOC



Properties	Nominal value
Adhesive Carrier	0.2mm Transparent PE Film
Adhesive Type	Butyl rubber adhesive
Total thickness	2.0mm (uncompressed)
Liner	Silicone Paper - Finger lift
Peel adhesion	≥ 10 N/25mm
Tensile Strength	15 N/25mm
Elongation at break	> 300%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 10m 80mm x 10m
Packaging	50mm: 10 rolls per carton 80mm: 6 rolls per carton
All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.	

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PROCTOR **PASSIVE** YouByute Sealing Tape

Butyl Rubber Tape



Product Description

ProctorPassive YouByute Sealing Tape is a water resistant PE butyl rubber tape with high tack, very high ageing resistance, and high tear strength.

Applications

ProctorPassive YouByute Sealing Tape is used for diffusion tight and watertight sealing behind façades and around windows and doors where not exposed to long term UV. The tape is also used for improving nail and screw penetration sealing.

Installation

As with all pressure sensitive butyl tapes, the YouByute Sealing Tape should be bonded as tension-free as possible. In order to ensure a strong bond, apply pressure with a squeegee or roller when applying the tape. Adhesion can be improved by applying higher pressure. The tape must not to be used for bonding under mechanical load. The use of tape is not a substitute for any required fixing of materials.

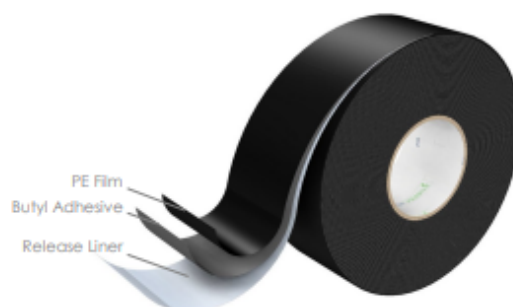
Surfaces being adhered must be dry and free of surfactants, tensides, release agents like grease or oil, and dirt or dust. The tape is resistant against oil and many organic solvents. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

It is recommended that porous or sandy surfaces being adhered to are preconditioned with a suitable primer.

Due to the risk of plasticizer migration, the product's suitability on plastics and rubber should be tested.

Benefits

- High tack
- Long term water resistance
- High ageing resistance
- Compatibility with ProctorPassive Rainscreen (RS-IT) and ProctorPassive Wraptite SA/UV-SA membranes
- Air and water tight
- Ideal for improving the seal at nail and screw penetrations



Properties	Nominal value
Adhesive Carrier	0.17mm Black Film
Adhesive Type	Butyl rubber adhesive
Total thickness	1.2mm (uncompressed)
Liner	Silicone Paper
Peel adhesion	≥ 20 N/25mm
Tensile Strength	≥ 100 N/25mm
Elongation at break	≥ 250%
Temperature range	-30 °C to +80°C
Application Temp.	+5 °C to +40 °C
Shelf life	1 year in original packing stored uncompressed protected from UV in a dry location at 5°C to 25°C.
Roll Dimensions	50mm x 20m
Packaging	12 rolls per carton

All the technical data are average values. We advise the user to test the products suitability for their own particular intended application.

A wide number of factors will impact on the ability to seal around a nail, screw or fixing, such as the substrate, fixing type, exposure to water pressure and installation quality. Although YouByute Sealing Tape will improve sealability, we are unable to warrant or give absolute assurance that the tape will seal the fixing. We do not make claims that this product is "self sealing"

Ref: ProctorPassive YouByute Sealing Tape PDS May 2022 Page 1 of 1

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Product Description

ProctorWrap HighTack Tape is a single sided pressure sensitive adhesive tape, made with an aggressive, modified acrylate adhesive, designed primarily to seal overlaps, joints and repair vapour permeable and vapour and air barrier construction membranes.

Applications

ProctorWrap HighTack Tape is ideal for air-tight bonding and sealing of overlaps of air and vapour barriers and vapour permeable membranes. The tape is suitable for bonding of smooth and slightly rough surfaces and can be used to provide a bond between steel or timber framing and membranes prior to the immediate mechanical fixing of the membrane.

Installation

The tape can bond to polyolefin non-woven membranes, aluminium faced insulation boards, plastics, metals, timber, MDF and other manufactured timber sheathings.

As with all pressure sensitive tapes, in order to ensure a strong bond, apply pressure on both sides of the material when applying the tape.

Surfaces being adhered must be dry and free of surfactants, release agents like grease or oil, and dirt or dust. Damp or cold surfaces may prove difficult to adhere to and should be allowed to dry and return to a temperature between +5°C + 40°C prior to application of tape.

All mechanical load on membranes should be distributed to mechanical fasteners, the tape not being applied under mechanical load. The use of adhesive tape is not a substitute for the correct fixing of the materials.

As there are many factors beyond our control that can impact on the use, performance and suitability of the product, we suggest that users evaluate the product to determine suitability for the application.

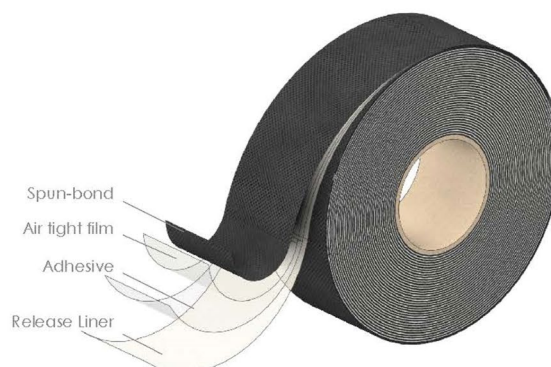
- High initial bond strength
- High initial tack adhesion
- Multiple substrate compatibility
- High strength spun-bonded carrier
- Low VOC



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Properties	Nominal value
Adhesive Type	Polyacrylate adhesive
Total thickness	Approx. 0.7mm (without liner)
Carrier	Non woven fabric with functional air tight film
Peel adhesion	≥ 35 N/25mm
Temperature range	-30 °C to +90 °C
Tensile strength	≥ 100 N / 25 mm
Application temp.	5 °C to 40 °C
Tack	Very High
Shelf life	1 year in original packing stored in a dry location protected from UV at around 50% RH and between 5°C to 25°C avoiding wide temperature fluctuations.
Roll Dimensions	60mm x 25m
Packaging	10 rolls per carton

All the technical data are average values. We advise the user to test with the material to ensure the suitability for intended application.