

PROFESSIONAL FIRE SAFETY ENGINEERS

t: (02) 6100 3900 | ABN: 24 160 047 325
mail@ignissolutions.com.au | www.ignissolutions.com.au
Unit 16 14 Lonsdale Street Braddon ACT 2612
PO Box 5174 Braddon ACT 2612

QT Panel Render Assessment

PRODUCT EVALUATION AND COMPLIANCE REPORT

IGNC-8030 I01 R00

Issued: 30.01.2020

Expiry: 29.01.2025



DOCUMENT REVISION HISTORY

Issue	Revision	Date	Purpose of Issue	Prepared by	Reviewed by
01	00	30.01.2020	Issued to Client	BHB	

Client

QT Systems
 PO Box 451 Acacia Ridge
 LPO QLD 4110

Written and Authorised by
Benjamin Hughes-Brown | FIEAust CPEng NER APEC Engineer IntPE(Aus)
 Chartered Professional Engineer
 CPEng, NER (Fire Safety / Mech) 2590091, CMEngNZ 1150772, RPEQ 11498, BPB-C10-1875, EF-39394
 MFireSafety (UWS), BEng (UTS), GradDipBushFire (UWS), DipEngPrac (UTS), DipEng (CIT)

Copyright ©

All rights reserved. No part of the content of this document may be reproduced, published, transmitted or adapted in any form or by any means without the written permission of the Ignis Solutions Pty Ltd.

Disclaimer

The information contained in this document is provided for the sole use of the recipient and no reliance should be placed on the information by any other person. In the event that the information is disclosed or furnished to any other person, Ignis Solutions Pty accepts no liability for any loss or damage incurred by that person whatsoever as a result of using the information.



CONDITIONS AND LIMITATIONS

This assessment report does not provide an endorsement by Ignis Solutions Pty Ltd of the actual product evaluated.

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 hazards under all conditions.

Because of 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.

The assessment can therefore relate only to the actual prototype test specimens, testing conditions and methodology described in the referenced documents, and does not imply any performance abilities of constructions of subsequent manufacture.

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 the subject of constant review and improvement and it is recommended that this report is reviewed on or, before, the stated expiry date.

This report is prepared in good faith and with due care for information purposes only, and should not be relied upon as providing any warranty or guarantee. In particular, attention is drawn to the nature of the inspection and investigations undertaken and the limitations these impose in determining with accuracy the state of the building, its services or equipment and life safety.

Ignis Solutions' involvement in the Project is limited to the role outlined in section 2 'Scope of Service' of the Letter. This report reflects that role. Any reliance on, or use of, this report for purposes outside the scope of service is at the user's own risk.

Ignis Solutions shall not be held liable for any loss or damage resulting from any defect of the building or its services or equipment or for any non compliance of the building or its services or equipment with any legislative or operational requirement, whether or not such defect or non-compliance is referred to or reported upon in this report, unless such defect or non-compliance should have been apparent to a competent engineer undertaking the evaluation of the type undertaken for the purpose of preparation of this report.

Ignis Solutions has carefully reviewed and applied to the best of our ability the requirements of local Legislation, the NCC and the International Fire Engineering Guidelines.



TABLE OF CONTENTS

CONDITIONS AND LIMITATIONS	III
1.1 General	5
1.2 Product Installation	5
1.3 System Variation	6
1.4 National Construction Code Compliance	8
1.5 Application	8
1.6 Limitations	8
1.7 Term of Validity	8



1.1 General

The purpose of this assessment is to report the applicable use and compliance of external wall cladding for use on the QT Conpolcrete Panel against the requirements of the National Construction Code – Volume One – Building Code of Australia 2019 (BCA).

The QT 50mm Conpolcrete panel was tested in accordance with BS 84142-2015 as modified by AS 5113-2016 and Amendment 1:2018 and documented by Ignis Labs in their report IGNL-3282-08 I01R01 dated 18 January 2020. The tested system included a 10mm cement TCS Render. An alternative render system is proposed to be evaluated for use on the QT Conpolcrete wall system. The alternative render is the Rockcote Quickntuff Armoured Flexi Tex Medium. This render has been tested in accordance with BS 84142-2015 as modified by AS 5113-2016 and Amendment 1:2018 and documented within the Ignis Labs report IGNL-2067-08-02 I01R00 dated 04 July 2019.

This report is issued by Benjamin Hughes-Brown, Chartered Professional Engineer of Ignis Solutions Pty Ltd, Suite 16, 14 Lonsdale Street, Braddon, ACT, 2612 for use under the Deemed-to-Satisfy requirements of the National Construction Code Volume One – Building Code of Australia 2019 (BCA). This engineering evaluation serves as a certificate from a professional engineer in accordance with Clause A5.2 (1)(e) of the National Construction Code Volume One Building Code of Australia 2019.






1.2 Product Installation

The proposed external wall system, being the 50mm Conpolcrete panel, is a cement based wall system with EPS beads mixed within the panel. The panel standard installation on an external walls includes a render.

The tested system included a 10mm TCS cement based render. The alternative render is proposed to be the Rockcote Quickntuff Armoured Flexi Tex Medium. The proposed system is made of the following products. In addition to the render products, the proposed system includes a fibreglass mesh which improves the systems integrity and durability. Based on the thin nature of the mesh system as well as the protection of the render application, it is not considered that the mesh will substantially contribute to the spread of fire.

FIGURE 1:

SUBJECT WALL RENDER SYSTEM

STEP 1	
<p>Quick Render PM100</p>  <p>Fully meshed.</p>	<p>Application Method: Trowel or Spray Spreading rate: 2m²/20kg @ 4mm build Dry Coating Thickness: 4 - 8mm Drying Time: 48-72 Hours</p>
STEP 2	
<p>Flexi Tex</p> 	<p>Application Method: Trowel Spreading rate: 9-10m²/20kg Dry Coating Thickness: 1.2mm Drying Time: 48 Hours</p>
STEP 3	
<p>Masonry Primer Hi Op</p> 	<p>Application Method: Brush or Long Nap Roller Spreading rate: 6m²/ltr Dry Coating Thickness: Drying Time: 2 Hours</p>
STEP 4	
<p>Armour</p> 	<p>Application Method: Brush, Roller or Spray Spreading rate: 4m²/ltr Dry Coating Thickness: 86 microns Drying Time: 4 Hours</p>
STEP 5	
<p>Armour</p> 	<p>Application Method: Brush, Roller or Spray Spreading rate: 4m²/ltr Dry Coating Thickness: 86 microns Drying Time: 4 Hours</p>



Two wall systems have been evaluated, the two wall systems and their make up is detailed below.

Test 1 being the TCS render over the QT Conpolcrete panel comprised the following components:

- 2 x 13mm Fire rated plasterboard | CSR Fyrecheck (fixed to test wall sub-frame)
- Steel Top hats 20x25x50x25x20 1.15BMT fixed to stud frame through the fire grade plasterboard at 450mm spacings.
- 50mm QT panel horizontally installed with QT Buttons and fixed with 12-14 x 50mm Metal hex screws.
- The vertical joint as well as the horizontal joint located at 2.4m above the combustion chamber were installed as control joints with a 10mm gap. Polyurethane backing rod was installed and the gap sealed with Bostic FireBan One to a depth of 10mm.
- 10mm concrete render was installed over the completed QT Conpolcrete wall system

Test 2 being the Rockcote installed over magnesium board comprised the following components:

- 10mm Gyprock plasterboard
- 25mm 10g plasterboard screws
- 90mm 1.15BMT Rondo @600mm ctr noggins 1000mm
- 15mm 8g button self tapping screws
- PIRMAX 75mm PIR insulation board with silver reflective surface
- Rescom 10mm Panel but jointed fixed directly to stud
- Non-corrosive 304 minimum stainless steel 10 gauge at 300mm centres and 450mm centrally within the board
- Rockcote Armour Flex Flexi Tex
 - Layer 1 – Keycote | 1.4-2mm thick
 - Layer 2 – Flexi Tex | 1.2mm thick
 - Layer 3 – Masonry Primer Hi Op
 - Layer 4 – Armour Flex | 160 microns
 - Layer 5 – Armour Flex | 160 microns

The primary focus of this evaluation is the performance of the render systems in the large scale external wall tests. The wall system of the QT Conpolcrete panel as well as the magnesium board have been subjected to independent testing including fire resistance testing as well as testing of the panels fire hazard properties.

1.3 System Variation

Two wall systems which include the two render systems have been evaluated. The first rendered wall system was the QT Conpolcrete wall system with the 10mm TCS Cement Render. The second is the Rockcote Quickntuff render where it was installed over a 10mm Magnesium Oxide board. The render installation of the two walls is detailed below.



FIGURE 2:
CEMENT RENDER INSTALLATION BEFORE TEST



QT Conpolcrete TCS Render



Magnesium Board Rockcote Quickntuff

The proposed Rockcote render system evaluated for the QT Conpolcrete wall system is that which has been applied to the Magnesium board installation. The conditions of the wall post test is detailed below.

FIGURE 3:

CEMENT RENDER INSTALLATION POST TEST



QT Conpolcrete TCS Render



Magnesium Board Rockcote Quickntuff

Both render systems did not contribute to the spread of fire. In addition, the base wall system being the QT Conpolcrete as well as the magnesium board were sustained during the fire test particularly after being exposed over the construction joints.



TABLE 1:
SPECIMEN RESULTS AND CLASSIFICATIONS

Classification Criteria	Related Classification Measure	Test 1 QT Conpolcrete TCS Render	Test 2 Magnesium Rockcote
5.4.5(a) T_{w5m}	$\leq 600^{\circ}\text{C}$	PASS	PASS
5.4.5(b) $T_{\text{Insulation}5m}$	$\leq 250^{\circ}\text{C}$	PASS	PASS
5.4.5(b) $T_{\text{Cavity}5m}$	$\leq 250^{\circ}\text{C}$	PASS	PASS
5.4.5(c) $T_{\text{unexposedside}0.9m}$	$\leq 180^{\circ}\text{C}$	PASS	Fail
5.4.5(d)flaming	No flaming	PASS	PASS
5.4.5(d)openings	No openings	PASS	PASS
5.4.5(e)spread	No spread beyond specimen	PASS	PASS
5.4.5(f)debris flaming	$\leq 20s$	PASS	PASS
5.4.5(g)debris mass	$\leq 2kg$	PASS	PASS
Classification		EW	-

The thermal transmission through the spandrel area of the wall system exceeded 180°C within the magnesium wall system due to the installation of the PIR insulation board. The board disintegrated during the test removing the walls insulation capacity and therefore allowing an increased temperature transmission greater than 180°C above ambient. Where a spandrel is required for compliance to the requirements of the Building Code of Australia, a compliant spandrel to achieve a fire resistance level of at least (60)/60/60 is required.

1.4 National Construction Code Compliance

The following clauses of the NCC-BCA (including all related State and Territory variations) have been evaluated and identified as being complied with:

- Performance Requirement CP2
 - CV3 Fire spread via external walls
 - Tested for external wall (EW)

The evaluated wall system complies with the following:

Wall Technologies super panel wall system	
Ignis Labs IGNU-3282-08 I01R01 dated 18.01.2020	
AS 5113 classification	EW
Ignis Labs IGNU-2068-08-02 I01R00 dated 04.07.2019	
AS 5113 classification	Pass – Fire Spread

1.5 Application

From the above testing and evaluation, the QT Conpolcrete wall panel can be installed with the 10mm TCS concrete render or the Rockcote Quickntuff Armoured Flexi Tex Medium.

Large scale testing of both render systems has demonstrated that both render systems do not contribute to the spread of fire over the wall.

1.6 Limitations

Any variations with respect to the size or construction detail other than those identified in this report may invalidate the conclusions drawn.

1.7 Term of Validity

This evaluation is valid for the National Construction Code of Australia – Volume One – Building Code of Australia 2019.



This page intentionally left blank
---- END OF REPORT ---