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Ref:/jobs/19082 Clicwall Unilin Panel NZBC Compliance Fire Assessment Rev A

Big River Group (NZ) Ltd (t/a Plytech)

23 Business Parade North

Highbrook Auckland

New Zealand

2013

Email: darren.r@plytech.co.nz

Attention: Darren Robson

SUBJECT: ASSESSMENT FOR INTERNAL SURFACE FINISHES REQUIREMENTS OF CLICWALL UNILIN PANEL FOR COMPLIANCE WITH NEW ZEALAND BUILDING CODE (NZBC).

Dear Darren,

Thank you for your request to provide advice on the internal surface finishes requirement of 10mm thick Fire Retardant (FR) MDF Clicwall Unilin Panels, for compliance with the New Zealand Building Code requirements.

Product Description

A Clicwall Unilin panel is a melamine faced medium density fibreboard (MDF) with unilic profile with an overall thickness of 10mm, which is used for wall linings. Each panel has tongue on one long side and a groove on the other long side, enabling them to click into one another.

According to Clicwall Brochure, there are various types of ClicWall panels available however our assessment is carried out only on 10mm thick Clicwall FR MDF panels.



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New Zealand Building Code Compliance

The building code C3.4a states

Provisions		Limit on application	
<p>PERFORMANCE</p> <p>C3.4 (a) materials used as internal surface linings in the following areas of <i>buildings</i> must meet the performance criteria specified below:</p>		<p>Clause C3.4 does not apply to <i>detached dwellings</i>, within <i>household units</i> in <i>multi-unit dwellings</i>, or <i>outbuildings</i> and <i>ancillary buildings</i>.</p>	
Area of building	Performance determined under conditions described in ISO 9705: 1993		
	Buildings not protected with an automatic fire sprinkler system	Buildings protected with an automatic fire sprinkler system	
Wall/ceiling materials in sleeping areas where care or detention is provided	Material Group Number 1-S	Material Group Number 1 or 2	
Wall/ceiling materials in exitways	Material Group Number 1-S	Material Group Number 1 or 2	
Wall/ceiling materials in all <i>occupied spaces</i> in importance level 4 <i>buildings</i>	Material Group Number 1-S	Material Group Number 1 or 2	
Internal surfaces of ducts for HVAC systems	Material Group Number 1-S	Material Group Number 1 or 2	
Ceiling materials in crowd and sleeping uses except <i>household units</i> and where care or detention is provided	Material Group Number 1-S or 2-S	Material Group Number 1 or 2	
Wall materials in crowd and sleeping uses except <i>household units</i> and where care or detention is provided	Material Group Number 1-S or 2-S	Material Group Number 1, 2, or 3	
Wall/ceiling materials in occupied spaces in all other locations in <i>buildings</i> , including <i>household units</i>	Material Group Number 1, 2, or 3	Material Group Number 1, 2, or 3	
External surfaces of ducts for HVAC systems	Material Group Number 1, 2, or 3	Material Group Number 1, 2, or 3	
Acoustic treatment and pipe insulation within airhandling plenums in sleeping uses	Material Group Number 1, 2, or 3	Material Group Number 1, 2, or 3	

The internal surface finishes for walls and ceilings are tested to assess the risk of the spread of flame across the surface using one of two methods which enables a material Group Number between 1 and 4 to be assigned to the material and demonstrate compliance with the Table above. A postscript “S” can also be provided which denotes that the smoke production also needs to be considered. The first method is the ISO9705 (full scale room corner-test) and assigned a Group Number between 1 to 4 (least to most combustible). The second method is using the ISO5660 (bench scale fire test on a small sample of material) with the input parameters and method of calculating the Material Group Number given in Appendix A of C/VM2.



There is also an overview provided by MBIE (Ministry of Business Innovation and Employment NZ) website for comparing Group numbers in New Zealand to Australian and European test standards.

<https://www.building.govt.nz/building-code-compliance/c-protection-from-fire/c-clauses-c1-c6/surface-finishes/overview/>

In Europe, the risk of the spread of flame across the surface finish of the materials are assessed using the methods specified in the EN13501-1:2007+A1:2009 standard. The classification levels are A1, A2, B, C, D, E and F, from least to most combustible.

The Single Burning Item (SBI) as described in EN 13501-1:2007+A1:2009 is a test method for determining the reaction to fire behaviour of building products when exposed to the thermal attack by a propane burner. The results of this test, using a Fire Growth Rate (FIGRA ratio) have been correlated by MBIE to the ISO 9705 Group Numbers and the requirements of NZBC Clause 3.4(a) in the same manner as the ISO 5660 cone calorimeter test.

Compliance can also be demonstrated using Table C1 of Acceptable Solution (C/ASx) for materials with Australian and European classification without the need for the further testing.

Table C1 Alternative test or classification standards for Group Numbers		
Requirements according to C/VM2 Appendix A using ISO 9705 or ISO 5660	Requirements according to NCC Specification C1.10 Clause 4 using AS ISO 9705	European Classification using EN 13501-1
Group Number 1- S	Group Number 1, and a smoke growth rate index not more than 100	Class A1, A2 or Class B and Smoke production rating s1 or s2
Group Number 1	Group Number 1	Class A1, A2 or B
Group Number 2- S	Group Number 2, and a smoke growth rate index not more than 100	Class C and Smoke production rating s1 or s2
Group Number 2	Group Number 2	Class C
Group Number 3	Group Number 3	Class D
Group Number 4	Group Number 4	Class E and F

Clicwall 10mm FR MDF Panel Testing Results and Discussion

The classification report defines the classification assigned to the products in accordance with the procedures given in the standard EN13501-1:2007+A1:2009: Fire Classification of Construction Products and Building Elements – Part 1: classification using data from reaction to fire tests.

Based on Test certificate (ref: 1161-CPR-1275), the classification of 10mm overall thickness Unilin Panel is ranked as Class **B** related to its behavior in case of fire and Class **s1** for smoke development. This corresponds to the most onerous requirement which is Group Number 1S (C/ASx Table C1) therefore this product complies with the Group Number **1S** requirements.

According to the classification report, this product is valid for the following end use conditions



- Backing: Euroclass A2-S1, d0 or better with nominal thickness of atleast 9mm and nominal density of atleast 652kg/m³
- With airgap
- With or without vertical and/or horizontal joints.

This product will need to be fixed onto plasterboard/concrete/fibre cement sheet or non-combustible product complying with Group Number 1S requirements, comprising nominal thickness of atleast 9mm and a nominal density of 652kg/m³.

Typical Location where this product can be used:

The internal surface finishes of walls and ceilings of the exitways shall have maximum permitted Group number of 1S (NZBC C3.4(a)). This product can be used on the fire rated linings of walls and ceilings of the safe path corridors/stairwells.

Conclusion

The spread of fire over internal surface finishes for walls consisting of 10mm overall thickness ClicWall Unipanel FR MDF panel with non-combustible backing complying with Group Number 1S requirements, comprising nominal thickness of atleast 9mm and nominal density of 652kg/m³, is Class **B** and Class **S1** for behavior in case of fire and smoke respectively based on the classification reports which corresponds to Group Number **1S** (C/ASx Table C1) therefore this products will comply with the building code C3.4a if the installation is carried out in accordance with the manufacturer's instructions.

DISCLAIMER

1. This report is based on the following documentation supplied by Plytech International Ltd.
 - Classification Report No. 16104C dated 11/07/2013
 - Certificate (1161-CPR-1275), dated 16/05/2014
2. This opinion represents the views of Origin Fire Consultants.
3. If a more authoritative opinion is required, then this would have to be obtained from a recognised testing laboratory.
4. This report does not relieve other designers and consenting authorities to assess the relevance of this report to the particular building project.

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