



Our ref: FCO-2402/CO4021

Machdev Pty Ltd  
U2/ 423 Bradman Street  
ACACIA RIDGE QLD 4110

Attention: Mr Wayne Borg  
Director

LIKELY FIRE PERFORMANCE OF ECOSEPARATE WALL SYSTEM  
Assessment Number FCO-2402  
Your e-mail of 5 July.

INTRODUCTION

We have re-examined the information referenced by you to determine the likely fire performance of your proposed external asymmetrical wall system. The information included

- our test report numbered FSV 0977 on the fire-resistance test numbered FS 3560/2462 on a lined prefabricated wall system tested on 12 March 2003;
- test data from our pilot-scale test numbered FS 3442/2256 on a single skinned Quik'n Tuff wall system rendered on the exposed face;
- test data from our test numbered FS 3685/2695 for a full-scale fire-resistance test conducted on a timber-framed wall system tested on 27 August 2004; and
- your drawings numbered QTEC-001 Rev A Detail AS-2.6 dated 11 February 2005, QTEC-001 Rev A Detail AS-2.5 dated 11 February 2005, QTEC-001 Rev A Detail AS-2.4 dated 11 February 2005; QTEC-001 Rev A Detail AS-2.3 dated 11 February 2005, QTEC-001 Rev A Detail AS-2.2 dated 11 February 2005, QTEC-001 Rev A Detail AS-2.1 dated 11 February 2005, QTEC-001 Rev A Detail AS-1.6 dated 11 February 2005, QTEC-001 Rev A Detail AS-1.5 dated 11 February 2005, QTEC-001 Rev A Detail AS-1.4 dated 11 February 2005, QTEC-001 Rev A Detail AS-1.3 dated 11 February 2005, QTEC-001 Rev A Detail AS-1.2 dated 11 February 2005 and QTEC-001 Rev A Detail AS-1.1 dated 11 February 2005;

We have retained this information

ANALYSIS

On 12 March 2003 this Division conducted a full-scale fire-resistance test on a plasterboard-lined prefabricated wall system comprising a double steel-stud wall system separated by a 90-mm wide cavity and lined on both sides with plasterboard. Both steel stud frames were insulated with rebated QT panels made from a blend of polystyrene bead materials and modified concrete, and stacked on top of each other in between the metal stud sections.

THIS ASSESSMENT SUPERSEDES ASSESSMENT NUMBERED FCO-2402 DATED 3 MARCH 2005.

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The panels were 450-mm long x 900-mm high x 50-mm thick and included two imbedded metal noggings. Each panel was then screw-fixed to the metal studs through each of its metal noggings. Both of the wall frames were insulated with the QT panels in the same manner, and were separated from each other by a 90-mm wide cavity. The external faces of the wall cavity wall system were lined with 13-mm Fyrchek Plasterboard, screw fixed to the studs at approximately 400-mm centres with the sheets lined horizontally. All the plasterboard joints formed in both external faces of the wall were then set using perforated paper tape and plaster. Any gaps along the perimeter were sealed using fire-caulk sealant and finished flush with the face. The wall system, as tested achieved a performance that equated to a fire-resistance level of -/120/120.

Subsequent to this, on 27 August 2004, this Division conducted a full-scale fire-resistance test on a wall system comprising a 90 x 35 m timber studs at approximately 495-mm centres. On the unexposed face the frame was lined with 10-mm thick standard grade plasterboard. On the fire exposed face Insulco 599 foil was fixed to the studs by means of 25 x 45 mm timber battens over which was sheeted 50-mm thick QT EcoSeries Wall Panels fixed to the battens with 75 x 3.75 mm Class 3 flat head nails that incorporated a QT Button disc as a washer under the head. The external face of the wall panel was finished off with a 5-8 mm reinforced polymer-modified cement render.

The system caused the cotton pad to ignite at 112 minutes and failed due to sustained flaming at 113 minutes. The average temperature on the unexposed face of the wall at the 115 minute termination time was 215°C. The temperature on the unexposed face of the QT EcoSeries Wall Panels was 97°C at 60 minutes and 441°C at 90 minutes. The average temperature at the same location exceeded 250°C, a temperature at which timber may begin to char, at 78 minutes.

The proposed wall systems are to be used as an external cladding of steel framed building and be either

- (a) Type 1: 50mm Conpolcrete panels fixed to tophats with a non combustible lining (i.e plasterboard, metal or fibre cement) to form the required cavity; or
- (b) Type 2: 50mm Conpolcrete panels fixed to Metal wall sheeting, with the wall sheeting creating the required cavity.

Both Type 1 and 2 can be finished on the external side with either render or metal wall sheeting as required. Otherwise all the fixing details for the 50mm Conpolcrete panels will be as per EcoSeries wall system which was tested by Full-scale Fire Test 3685/2695 (report FSV 1082).

As can be determined by the test data the Conpolcrete panels alone and suitable fixed will achieve somewhere in the order of 75 minutes for insulation but in excess of 90 minutes for integrity. The proposed system provides an external overlay of either the tested render system or a 0.42-mm BMT Trimdek steel wall sheeting (or equivalent) and an internal gap or cavity approximately 30-mm wide between the Conpolcrete panels and an non-combustible lining.

At every interface between different materials there is a significant temperature drop and together with the cavity and the observed performance of standard grade plasterboard (112 minutes) it is expected that the insulation criteria for the proposed systems would be satisfied for greater than 90 minutes.

OPINION/CONCLUSION

Based on the factors detailed above it is the opinion of the Division that the system as detailed in the attached drawings of the EcoClad wall system would be capable of achieving fire-resistance levels (FRL) of 90/90/90 for loadbearing walls (including the steel structural elements on the non-fire side of the wall system) if tested in accordance with AS 1530.4-1997

TERM OF VALIDITY

This opinion will lapse on 31 August 2016. Should you wish us to re-examine this opinion with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this opinion in the light of new knowledge.

Yours faithfully,



Garry E Collins  
Manager, Fire Testing and Assessment

19 August 2011