ASSESSMENT REVIEW

Review of assessment report BWA 23260-00 and Regulatory Information Report RIR 23260-00

The fire resistance performance of walls and floors penetrated by electrical cables protected by 3M "Pass Through" device if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005

EWFA Report No:
33598800

Report Sponsor:
3M Australia Pty Ltd
Building A, 1 Rivett Road
North Ryde, NSW 2113
Australia
DOCUMENT REVISION STATUS

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1 INTRODUCTION

The referenced assessment BWA 23260-00 and Regulatory Information Report (RIR) RIR 23260-00, dated 30th June 2009 and 23rd April 2011 respectively. They provide an assessment of the fire resistance performance of walls and floors penetrated by electrical cables protected by 3M “Pass Through” device if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005.

2 CONFIRMATION OF SPECIFICATION

The sponsor of referenced assessment BWA 23260-00 and reflected regulatory information report RIR 23260-00 and the sponsor of referenced test reports BWA 2243200, BWA 2243203, WF165863, WF165864/A and WF165878/A is 3M Australia Pty Ltd.

3M Australia Pty Ltd has stated in writing that there have been no changes to the design and material specifications of the protection systems or component since the issue of the original formal assessment BWA 23260-00 and reflected regulatory information report RIR 23260-00 which reference the test reports BWA 2243200, BWA 2243203, WF165863, WF165864/A and WF165878/A.

3 FORMAL OPINION SUMMARY

Since the issue of assessment report BWA 23260-00 and regulatory information report RIR 23260-00, there have been no changes to the testing experience that could affect the opinion expressed.

The procedures adopted for the original assessment have been re-examined and are similar to those currently in use.

The specification used for the original assessment has been re-examined and found to be satisfactory.

Therefore, with respect to the fire resistance performance of walls and floors penetrated by electrical cables protected by 3M “Pass Through” device if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005, referenced in assessment report BWA 23260-00 and reflected regulatory information report RIR 23260-00, it is confirmed that the assessed performance is considered valid subject to the requirements in Section 4.

4 VALIDITY

This assessment review does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products assessed.

This review 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 be reviewed on or before the stated expiry date.

This review remains valid until the expiry date stated in Section 5.5 subject to compliance with the applicant undertakings and conditions in the original assessment and this review.
5  AUTHORITY

5.1  APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance the applicant(s) confirms 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, and

• they agree to withdraw this assessment from circulation should the component or element of structure be 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, and

• 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, agree to ask the assessing authority to withdraw the assessment.

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5.3  AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:     Reviewed by:

S. Hu     K. G. Nicholls

5.4  DATE OF ISSUE

05/02/2015

5.5  EXPIRY DATE

28/02/2020
REGULATORY INFORMATION
ASSESSMENT REPORT

The fire resistance performance of walls and floors penetrated by electrical cables protected by 3M “Pass Through” device if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005

EWFA Report No:
RIR 23260-00

Report Sponsor:
3M Australia Pty Ltd
25-27 Bridge Street
Pymble, NSW 2073
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## DOCUMENT REVISION STATUS

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## CONTACT INFORMATION

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1 INTRODUCTION

This report contains the minimum information sufficient for regulatory compliance and refers to the Assessment report EWFA 23260-00.

The referenced report is an assessment of the fire resistance performance of walls and floors penetrated by electrical cables protected by 3M “Pass Through” devices if tested in accordance with AS1530.4-2005 and assessed in accordance with AS4072.1-2005 as described in Section 4 of this report.

The tested prototypes described in Section 2 of this report, when subject to the proposed variations described in Section 3, are to perform satisfactorily if tested in accordance with the referenced test method described in Section 4. The conclusions of the report are summarised in Section 5.

The validity of this assessment is conditional on compliance with Sections 7, 8 and 9 of this report.

2 TESTED PROTOTYPES

The referenced assessment report based on reference to test of 4” square Pass Through devices incorporating cables. Test BWA2243200 comprised a 116mm thick drywall partition and test BWA2243203 comprised a 120mm thick concrete floor.

Both tests were in accordance with AS1530.4-2005.

Supplementary reference is made to WF165863, WF165864/A, and WF165876 tested in accordance with EN1363-3: 2004.

WF165863 comprised a framed partition incorporating 4” and 2.5” square Pass Through devices that provided up to 120 minutes integrity, when containing EN cables.

WF 165864/A comprised a solid wall fitted with 4” and 2.5” square Pass Through devices that provided 240 minutes integrity, when containing EN cables.

WF 165876 comprised a concrete floor fitted with 4” and 2.5” square Pass Through devices that provided 240 minutes integrity, when containing EN cables.

3 VARIATION TO TESTED PROTOTYPES

3.1 FLOORS

The proposed floor construction is a concrete floor slab as tested in BWA2243203 incorporating the tested cable penetrations subject to the following variations:

- Performance of a 102mm (4”) square Pass Through, with a bundle of cables of maximum diameter 75mm in lieu of the 100% cable fill as tested.
- Performance of a 107mm (4”) diameter pass through, with a bundle of cables of maximum diameter 75mm.
- Performance of a 63mm (2.5”) square Pass Through with a bundle of cables of maximum diameter 48mm (1 7/8”) in lieu of the 100% cable fill as tested.
- Performance of a 50mm (2”) round Pass Through with a bundle of cables of maximum diameter 38mm (1.5”) in lieu of the 63mm square Pass Through device as tested.
- Modular arrangements of the square Pass Through devices including: single, double, triple, two by two or, two by three banked units
- Performance of the square and round Pass Through devices when empty.
- Variation of the concrete supporting floor: 120mm or thicker.
3.2 WALLS

The proposed assessment is for drywall as tested in BWA2243200 incorporating the tested cable penetrations subject to the following variations:

- Performance of a 102mm (4") square Pass Through, with a bundle of cables of maximum diameter 75mm in lieu of the 100% cable fill as tested.
- Performance of a 107mm (4") diameter Pass Through, with a bundle of cables of maximum diameter 75mm.
- Performance of 63mm (2.5") square Pass Through with a bundle of cables of maximum diameter 48mm in lieu of the 102mm device with 100% cable fill as tested.
- Performance of a 50mm (2") round Pass Through with bundle of cables of maximum diameter 38mm in lieu of the 63mm (2.5") square Pass Through device as tested.
- Modular arrangements of the square Pass Through devices including: single, double, triple, two by two or, two by three banked square units.
- Performance of the square and round Pass Through devices when empty.
- Variations of the supporting masonry construction: hollow block or concrete of 116mm or thicker.

4 REFERENCED TEST PROCEDURES

The referenced report is prepared with reference to the requirements of AS1530.4-2005 and AS4072.1-2005 for the determination of a FRL.

5 FORMAL ASSESSMENT SUMMARY

On the basis of the discussion presented in the referenced report it is the opinion of this testing authority that if the tested prototypes described in Section 2 had been varied as in Section 3, they would have been likely to achieve the fire resistance performances below if tested in accordance with the test method referenced in Section 4 and subject to the requirements of section 7.

5.1 GENERAL

The assessed construction incorporates various 3M Pass Through Devices that are similar in design concept. They have a body that is made of steel and incorporate a strip of intumescent material internally. The devices are 50mm and 107mm in diameter or, 63mm and 102mm square as shown below in Table 1.

Table 1 – Proposed Pass Through Device Sizes

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
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<tbody>
<tr>
<td>50mm x 50mm x 254mm</td>
<td><img src="50mm.png" alt="Diagram" /></td>
</tr>
<tr>
<td>63mm x 63mm x 254mm</td>
<td><img src="63mm.png" alt="Diagram" /></td>
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5.2 CABLE FILL

PVC insulated copper cables shall be arranged within 50mm and 102mm square and 63mm and 107mm round 3M Pass Through devices in such a manner as to not exceed bundle sizes of 38mm, 75mm, 48mm, and 75mm respectively. The bundle is assessed to be a collection of AS1530.4-2005 Appendix D, D1 and D2 cables. Examples of typical arrangements of cables within the 3m Pass through Devices are shown in Figure 1 and 2.

Figure 1 – Cable Arrangement within 63mm Square and 50mm Round 3M Pass Through Devices. 48mm and 38mm maximum cable bundle.

Figure 2 – Cable Arrangement within 102mm Square and 107mm round 3M Pass Through Devices. 75mm maximum cable bundle.
5.3 MODULAR ARRANGEMENT

The square Pass Through devices can be arranged in floor or wall construction in single, double, triple, 2x2 and 2x3 modules as shown in Figures 3 and 4. In the modular arrangement, the support shall be positioned at the external perimeter only.

Figure 3 – Modular Arrangement of 63mm square and 50mm round 3M Pass Through Devices

Figure 4 – Modular arrangement of 102mm square and the 107mm round 3M Pass Through Devices
5.4 FLOOR PENETRATIONS

The performance of Pass Through devices penetrating normal weight concrete floors are shown in Table 2. The Pass Through device shall be installed in accordance with Figures 1 to 4, and Tables 2 and 3, as appropriate.

Table 2 – Pass Through Performance for Cables Penetrating Floors

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Min. Slab Thickness</th>
<th>FRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>50mm Diameter x 254mm long</td>
<td>Maximum of 38mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td>-/120/-</td>
<td></td>
</tr>
<tr>
<td>Pass Through empty</td>
<td></td>
<td>-/240/30</td>
<td></td>
</tr>
<tr>
<td>63mm x 63mm x 254mm long</td>
<td>Maximum of 48mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td>-/120/-</td>
<td>120mm</td>
</tr>
<tr>
<td>Pass Through empty</td>
<td></td>
<td>-/240/30</td>
<td></td>
</tr>
<tr>
<td>102mm x 102mm x 254mm long</td>
<td>Maximum of 75mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td>-/120/-</td>
<td></td>
</tr>
<tr>
<td>Pass Through empty</td>
<td></td>
<td>-/240/-</td>
<td></td>
</tr>
<tr>
<td>107mm Diameter x 254mm long</td>
<td>Maximum of 75mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td>-/120/-</td>
<td></td>
</tr>
<tr>
<td>Pass Through empty</td>
<td></td>
<td>-/240/-</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 – Pass Through Performance for Cables Penetrating Floors

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3m Pass Through Device – 63mm, 102mm or 107mm round</td>
</tr>
<tr>
<td>2</td>
<td>Foam end plug which is part of device</td>
</tr>
<tr>
<td>3</td>
<td>Pass Through Device mounting bracket. 15mm x 15mm steel angle</td>
</tr>
<tr>
<td>4</td>
<td>3M IC15 WB+ Sealant in gap between wall and device. Maximum gap 10mm, minimum sealant depth 10mm</td>
</tr>
<tr>
<td>5</td>
<td>PVC insulated cables</td>
</tr>
<tr>
<td>6</td>
<td>Floor Slab – Normal weight concrete</td>
</tr>
<tr>
<td>7</td>
<td>Solid Masonry, hollow masonry or, solid concrete</td>
</tr>
<tr>
<td>8</td>
<td>Fire grade plasterboard linings</td>
</tr>
<tr>
<td>9</td>
<td>Solid Masonry, hollow masonry or, solid concrete</td>
</tr>
</tbody>
</table>
5.5 WALL PENETRATIONS

The performance of Pass Through devices penetrating light weight partition, solid masonry, hollow masonry or concrete construction is shown in Table 4. The Pass Through device shall be installed in accordance with Figures 1 to 4, 6 and 7, and Table 4, as appropriate.

Table 4 – Pass Through Performance for Cables Penetrating Walls

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Wall Thickness</th>
<th>FRL</th>
</tr>
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<tbody>
<tr>
<td>50mm Diameter x 254mm long</td>
<td>Maximum of 38mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td>116mm</td>
<td>-/120/-</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty</td>
<td></td>
<td>-/120/30</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty in masonry wall</td>
<td></td>
<td>-/240/30</td>
</tr>
<tr>
<td>63mm x 63mm x 254mm long</td>
<td>Maximum of 48mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td></td>
<td>-/120/-</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty</td>
<td>116mm</td>
<td>-/120/30</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty in masonry wall</td>
<td></td>
<td>-/240/30</td>
</tr>
<tr>
<td>102mm x 102mm x 254mm long</td>
<td>Maximum of 75mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td></td>
<td>-/120/-</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty</td>
<td></td>
<td>-/120/30</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty in masonry wall</td>
<td></td>
<td>-/240/30</td>
</tr>
<tr>
<td>107mm Diameter x 254mm long</td>
<td>Maximum of 75mm diameter bundle of AS1530.4-2005 D1 and D2 cables</td>
<td></td>
<td>-/120/30</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty</td>
<td></td>
<td>-/120/30</td>
</tr>
<tr>
<td></td>
<td>Pass Through empty in masonry wall</td>
<td></td>
<td>-/240/30</td>
</tr>
</tbody>
</table>
6 DIRECT FIELD OF APPLICATION

The application of the results of this assessment is to;
- Cables penetrating walls exposed to fire from both sides
- Cables penetrating floors exposed to fire from below only

Figure 6 - Installation of a 3M Pass Through Device in an aperture in a lightweight wall

Figure 7 - Installation of a 3M Pass Through Device through an aperture in a masonry concrete wall
7 REQUIREMENTS

This report details the methods of construction, test conditions and assessed results that would have been expected had the specific elements of construction described herein been tested in accordance with AS 1530.4-2005.

The supporting wall construction or concrete floor construction shall be capable of providing effective support of the proposed construction for the required fire resistance period (FRL).

Any further variations with respect to size, constructional details, loads, stresses, edge or end conditions, other than those identified in this report, may invalidate the conclusions drawn in this report.

8 VALIDITY

The referenced report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

The conclusions of the referenced report may be used to directly assess the fire resistance performance under such conditions, but it should be recognised that a single test method will not provide a full assessment of the fire hazard under all fire conditions.

Because of the nature of fire resistance 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, methods of construction and installation, may lead to variations in performance between elements of similar construction.

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

The referenced report 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 be reviewed on or before the stated expiry date.

The information contained in the referenced report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report.

All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.
9 AUTHORITY

9.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

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- they agree to withdraw this assessment from circulation should the component or element of structure be 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, and
- 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, agree to ask the assessing authority to withdraw the assessment.

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9.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:Reviewed by:

Mandeep KamalK. Nicholls

9.4 DATE OF ISSUE

23/04/11

9.5 EXPIRY DATE

30/06/14