



Fire assessment report




Laminex FR MDF panels in accordance with AS 5637.1:2015

Sponsor: Laminex Group Pty Ltd

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Quality management

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Executive summary

This report documents the findings of the assessment undertaken to determine the expected fire hazard properties of Laminex solid FR MDF panels if tested in accordance with AS ISO 9705:2003 and classified in accordance with AS 5637.1:2015.

The assessed panels are described to be fire retardant treated medium density fibreboards and are proposed to be used as internal wall and ceiling lining in commercial and residential buildings.

The analysis in section 5 of this report found that the proposed systems together with the described variations are expected to achieve group numbers as shown in Table 1, if tested in accordance with AS ISO 9705:2003 and classified in accordance with AS 5637.1:2015.

Table 1 Variations and assessment outcome

Referenced test	Product name	Core	Thickness	Laminate	Group number	SMOGR _{ARC} (in m ² s ⁻² × 1000)
RTF200371, RTF210023, RTF200372 EWFA 39410500.1	Trade Essentials Fireguard® Raw MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	N/A	2	<100
	Laminex Fireguard® Decorated MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	Melamine impregnated decorative paper	2	<100
	<ul style="list-style-type: none"> The panels must be fixed to the internal studwork using plasterboard screws (8g × 65 mm). The minimum density of the panel should not be less than 720 kg/m³. FR loading (%) must remain unchanged from the tested system. Panels achieving group number 2 are assessed as group number 2-S according to the requirement of C/VM2- Verification Method: Framework for fire safety design. 					

The variations and outcome of this assessment are subject to the limitations and requirements described in sections 2, 3 and 6 of this report. The results of this report are valid until 30 April 2026.

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1. Introduction

This report documents the findings of the assessment undertaken to determine the expected fire hazard properties of Laminex Grey solid FR MDF panels if tested in accordance with AS ISO 9705:2003¹ and classified in accordance with AS 5637.1:2015².

This assessment was carried out at the request of Laminex Group Pty Ltd. The sponsor details are included in Table 2.

Table 2 Sponsor details

Sponsor	Address
Laminex Group Pty Ltd	22 Trewin St Wendouree VIC 3355 Australia

2. Framework for the assessment

2.1 Assessment approach

An assessment is an opinion about the expected performance of a component or element of structure if it was subject to a fire test.

The assessed performance of the system variations documented within this assessment report has been determined by assessing the performance of the tested systems against the expected impact of each variation. The system details tested in accordance with AS ISO 9705:2003 and detailed within Appendix A, are generally considered to be representative of a more onerous or comparable condition than the listed system variations which are generally expected to yield a performance equivalent to the tested systems.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. We have therefore followed the 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the Passive Fire Protection Forum (PFPF) in the UK in 2019³.

This guide provides a framework for undertaking 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
- The 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.

This assessment uses established empirical methods and our experience of fire testing similar products to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire hazard properties if the elements were to be tested in accordance with AS ISO 9705:2003.

¹ Standards Australia, 2003, Fire tests - Full-scale room test for surface products (Reconfirmed 2016), AS ISO 9705:2003 (R2016), Standards Australia, NSW.

² Standards Australia, 2015, Determination of fire hazard properties – Wall and ceiling linings, AS 5637.1:2015, Standards Australia, NSW.

³ Passive Fire Protection Forum (PFPF), 2019, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.

This assessment has been written using appropriate test evidence generated at accredited laboratories to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's stated design.

2.2 Compliance with the National Construction Code

This assessment report has been prepared to meet the evidence of suitability requirements of the National Construction Code Volumes One and Two – Building Code of Australia (NCC) 2019 including Amendments⁴ under A5.2 (1) (d).

This assessment has been written in accordance with the general principles outlined in EN 15725:2010⁵ for extended application reports on the fire performance of construction products and building elements. It also references test evidence for meeting a performance requirement or deemed to satisfy (DTS) provisions of the NCC under A5.5 for reaction to fire as applicable to the assessed systems.

This assessment report may also be used to demonstrate compliance with the requirements for evidence of suitability under NCC 2016 including Amendments⁶.

2.3 Declaration

The 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the PFPF in the UK requires a declaration from the report sponsor. By accepting our fee proposal on 15 September 2020, Laminex Group Pty Ltd 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. Limitations of this assessment

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 4.3.
- This report details the methods of construction, test conditions and assessed results that are expected if the systems were tested in accordance with AS ISO 9705:2003.
- This report is only valid for the assessed systems and must not be used for any other purpose. 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 system, a reassessment will need to be done by an Accredited Testing Laboratory (ATL).
- The documentation that forms the basis for this report is listed in Appendix A.
- 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.

⁴ National Construction Code Volumes One and Two - Building Code of Australia 2019 including Amendments, Australian Building Codes Board, Australia

⁵ European Committee for Standardization, 2010, Extended application reports on the fire performance of construction products and building elements, EN 15725:2010, European Committee for Standardization, Brussels, Belgium.

⁶ National Construction Code Volumes One and Two - Building Code of Australia 2016 including Amendments, Australian Building Codes Board, Australia

- This assessment is based on the proposed systems being constructed under comprehensive quality control practices and following appropriate industry regulations and Australian Standards on quality of materials, design of structures, guidance on workmanship and the expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of this report.

4. Description of the specimen and variations

4.1 System description

The proposed system consists of Laminex Grey FR MDF panels which are proposed be used as internal wall and ceiling lining. The panels could be either raw or laminated with melamine impregnated decorative paper. The raw panel will be known as Trade Essentials Fireguard® Raw MR E1 MDF and the laminated panel will be known as Laminex Fireguard® Decorated MR E1 MDF for commercial purposes.

4.2 Referenced test data

The assessment of the variation to the tested system and the determination of the expected performance is based on the results of the fire tests documented in the reports summarised in Table 3. Further details of the tested system are included in Appendix A.

Table 3 Referenced test data

Report number	Test sponsor	Test date	Testing authority
EWFA 39410500.1	Laminex Group Pty Ltd	22 April 2016	Warringtonfire Australia
RTF200372		27 October 2020	
RTF200371		29 October 2020	
RTF210023		12 March 2021	

4.3 Variations to the tested systems

An identical system has not been subject to a standard fire test. We have therefore assessed the systems using baseline test information for similar system. The variations to the tested systems – together with the referenced fire tests – are described in Table 4.

Table 4 Variations to tested systems

Item	Reference test	Tested system	Variations
Panel type	RTF200371, RTF210023	The tested system included raw Green FR MDF and routed Grey FR MDF panels	It is proposed that the assessed system will be solid raw Grey FR MDF.
Thickness		The Green FR MDF was 9 mm thick while the routed Grey FR MDF was 12 mm thick.	It is proposed that the thickness of the solid raw Grey FR MDF will vary from 9 mm to 18 mm.
Lamination	RTF200372, EWFA 39410500.1	18 mm and 16 mm FR MDF panels were tested with melamine impregnated decorative paper laminated on both sides.	It is proposed that the solid Grey FR MDF panel will be laminated with melamine impregnated decorative paper.

4.4 Purpose of the test

AS ISO 9705:2003 (R2016) stipulates full room burn testing techniques for surface products.

AS 5637.1:2015 sets out procedures for assessing internal wall and ceiling linings according to their tendency to ignite, release heat, cause flashover, release smoke and contribute to fire growth.

4.5 Schedule of components

Figure 1 shows a representative panel configuration as tested in RTF200371. Panel construction details are found in the referenced test reports and summarised in Appendix A.

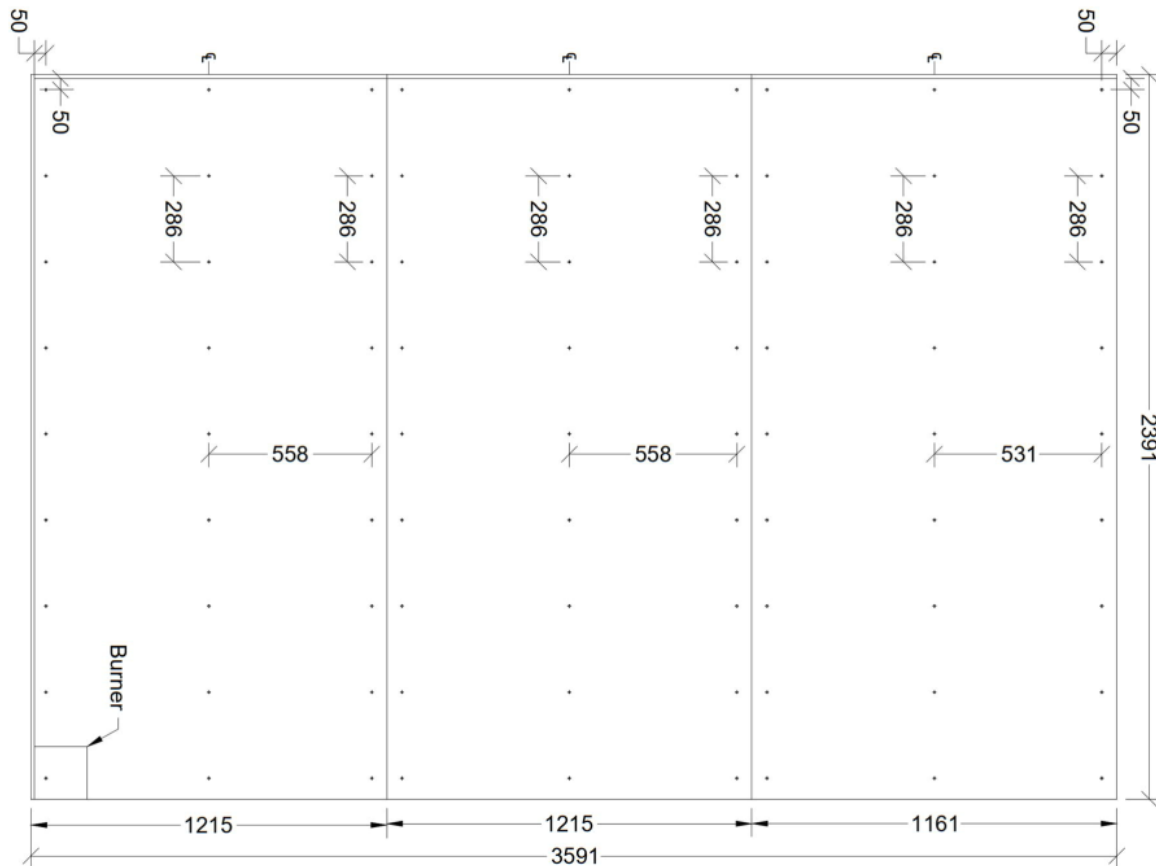


Figure 1 Illustration of tested system in RTF200371 (right side wall, image reproduced)

5. Assessment- Grey solid FR MDF panels

5.1 Description of variation

Laminex FR MDF panels are fire retardant treated medium density fibreboards and are proposed to be used as internal wall and ceiling lining in buildings. The Green and Grey FR MDF panels were tested in accordance with AS ISO 9705:2003. Additionally, melamine impregnated decorative paper laminated FR MDF panels were also tested in accordance with AS ISO 9705:2003. Based on the test data, it is proposed that the applicable group number of solid raw and laminated Grey FR MDF is assessed. It is also proposed that the thickness of the panel will be varied from 9 mm to 18 mm.

5.2 Methodology

The method of assessment used is summarised in Table 5.

Table 5 Method of assessment

Assessment method	
Level of complexity	Intermediate assessment
Type of assessment	Qualitative – interpolation/Comparative

5.3 Grey solid FR MDF

In test RTF200371, 9 mm thick Green FR MDF panels were tested in accordance with AS ISO 9705:2003. The panel density was recorded to be 806 kg/m³. The panels were fixed to the studwork using plasterboard screws (8g x 65 mm). This construction achieved group number 2 and a SMOGRA_{RC} of 12.0 (in m²s⁻² x 1000).

In test RTF210023, 12 mm routed Grey FR MDF panels were tested in accordance with AS ISO 9705:2003. The surface density was recorded as 783.34 kg/m². The panel was fixed to the walls and ceiling with plasterboard screws (8g x 65 mm). This construction achieved group number 2 and a SMOGRA_{RC} of 8.1 (in m²s⁻² x 1000).

It is proposed that the Grey solid FR MDF is assessed for a group number. This product will be known as "Trade Essentials Fireguard® Raw MR E1 MDF" for commercial purposes. The core material of Green and Grey FR MDF are nearly identical with the exception of a minor variation in dye colour. As such, the test data obtained for 9 mm Green FR MDF can be representative of Grey FR MDF. This is demonstrated in the time to flashover as both panels reached 1MW heat release between 16 and 17 minutes albeit minor variations in regard to thickness and routing.

As the 9 mm Green FR MDF and 12 mm routed Grey FR MDF both achieved group number 2, it is reasonable to estimate that the 9 mm Grey solid FR MDF will also achieve group number 2 if tested in accordance with AS ISO 9705:2003. This conclusion was reached based on the following:

- The 9 mm Green FR MDF demonstrated its ability to achieve group number 2 with a considerable margin of safety. It is understood that the results of Green core FR MDF are applicable to Grey core FR MDF.
- The Grey FR MDF (12 mm) was tested in routed profile. The routed profile contributes to faster spread of flames due to increase in the exposed surface area and hence is considered more onerous. As the more onerous routed configuration has also demonstrated its ability to achieve group 2 with similar margin of safety, it is expected that the solid Grey panels will also achieve group number 2.

Considering the low SMOGRA_{RC} value of 12.0 and 8.1 recorded in RTF200371 and RTF210023, the SMOGRA_{RC} for FR Grey MDF is conservatively assessed to remain below 100 (in m²s⁻² x 1000).

It is further proposed that the thickness of the panel will be increased up to 18 mm. It is understood that the increase in thickness will result in higher temperature gradient between the exposed and the unexposed side which will cause slower heat conduction. This is expected to lead to slower combustion of materials and should result in better performance. Based on the above the proposed increase in thickness is positively assessed. The assessment outcome is listed in Table 6.

Table 6 Assessed grey solid FR MDF

Product name	Core	Thickness	Laminate	Group number	SMOGRA _{RC} (in m ² s ⁻² x 1000)
Trade Essentials Fireguard® Raw MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	N/A	2	<100

5.4 Grey laminated solid FR MDF

It is proposed that grey FR MDF will be laminated with 0.1 mm melamine impregnated decorative paper and will be known as "Laminex Fireguard® Decorated MR E1 MDF". The proposed laminate was tested in RTF200372 and EWFA 39410500.1.

In test RTF200372, 18 mm FR MDF panel laminated with melamine impregnated decorative paper was tested in accordance with AS ISO 9705:2003. This construction achieved group number 2 and a SMOGRA_{RC} of 4.4 (in m²s⁻² x 1000). Additionally, in test EWFA 39410500.1, 16 mm FR MDF panel laminated with melamine impregnated decorative paper was tested in accordance with AS ISO 9705:2003. This construction achieved group number 2 and a SMOGRA_{RC} of 20.3 (in m²s⁻² x 1000).

The performance of the laminate was closely observed from test RTF200372 and EWFA 39410500.1. It was noted that, the laminate remains largely non-reactive for the first 10 minutes under 100 kW exposure. It is reflected in the observations, test images and the heat release rate recorded during test (heat release rate remains below 200 kw for the first 10 minutes). It is expected that the laminate will behave similarly if applied on top of the grey solid FR MDF. As the panels are only required to resist flashover for first 10 minutes under 100 kw exposure for a group number 2 rating and considering the laminate is expected to remain non-reactive for the first 10 minutes, its inclusion on grey FR MDF is not estimated to prejudice a group 2 rating. Based on the above discussion, grey laminated solid FR MDF is positively assessed for a group number 2. The SMOGRA_{RC} is conservatively assessed to remain below 100 (in m²s⁻² × 1000). The assessment outcome is listed in Table 7.

Table 7 Assessed grey laminated solid FR MDF

Product name	Core	Thickness	Laminate	Group number	SMOGRA _{RC} (in m ² s ⁻² × 1000)
Laminex Fireguard® Decorated MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	Melamine impregnated decorative paper	2	<100

5.5 Conclusion

Based on the above discussion, it is the opinion of this testing laboratory that the grey solid FR MDF panels listed in Table 8 are expected achieve the group numbers and SMOGRA_{RC} listed in Table 8 if tested in accordance with AS ISO 9705:2003 and classified in accordance with AS 5637.1:2015.

Table 8 Conclusion of assessment

Referenced test	Product name	Core	Thickness	Laminate	Group number	SMOGRA _{RC} (in m ² s ⁻² × 1000)
RTF200371, RTF210023, RTF200372 EWFA 39410500.1	Trade Essentials Fireguard® Raw MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	N/A	2	<100
	Laminex Fireguard® Decorated MR E1 MDF	Grey solid FR MDF	9 mm – 18 mm	Melamine impregnated decorative paper	2	<100
<ul style="list-style-type: none"> The panels must be fixed to the internal studwork using plasterboard screws (8g × 65 mm). The minimum density of the panel should not be less than 720 kg/m³. FR loading (%) must remain unchanged from the tested system. Panels achieving group number 2 are assessed as group number 2-S according to the requirement of C/VM2- Verification Method: Framework for fire safety design. 						

6. 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 expected to be demonstrated in a test in accordance with AS ISO 9705:2003, based on the evidence referred to in this report.

This assessment is provided to Laminex Group Pty Ltd for their own specific purposes. This report may be used as Evidence of Suitability in accordance with the requirements of the relevant National Construction Code. Building certifiers and other third parties are responsible for deciding if systems listed within this assessment are accepted for a particular installation.

Appendix A Summary of supporting test data

A.1 Test report – RTF200371

Table 9 Information about test report

Item	Information about test report
Report sponsor	Laminex Group Pty Ltd
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire test was completed on 29 October 2020.
Test standards	The test was done in accordance with AS ISO 9705:2003.
Variation to test standards	Smoke obscuration measurements were made using a helium-neon laser smoke photometer, as outlined in Annex H of ISO 9705-1:2016.
General description of tested specimen	9 mm thick Green FR MDF panels were tested in accordance with AS ISO 9705:2003. The panel density was recorded to be 806 kg/m ³ . The panels were fixed to the studwork using plasterboard screws.
Instrumentation	The test report states that the instrumentation was in accordance with AS ISO 9705:2003.

The test specimen achieved the following results – see Table 10.

Table 10 Results summary for this test report

Panel	Group number	SMOGR _{ARC} (in m ² s ⁻² × 1000).
9 mm thick Green FR MDF	2	12.0

A.2 Test report – RTF210023

Table 11 Information about test report

Item	Information about test report
Report sponsor	Laminex Group Pty Ltd
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire test was completed on 12 March 2021.
Test standards	The test was done in accordance with AS ISO 9705:2003.
Variation to test standards	<ul style="list-style-type: none"> Smoke obscuration measurements were made using a helium-neon laser smoke photometer, as outlined in annex H of ISO 9705-1:2016. The temperature in the area surrounding the fire test room, from the completion of installation until the start of the test, did not remain between 10 to 30 °C. It was between 1 and 3 °C above during the 2.5 hours immediately prior of the start of the test. Such minor variation is not expected to impact the test results.
General description of tested specimen	12 mm routed Grey FR MDF panels were tested in accordance with AS ISO 9705:2003. The panel mass per linear metre was recorded as 9.4 kg/m. The panel was fixed to the walls and ceiling with plasterboard screws (8g × 65 mm).
Instrumentation	The test report states that the instrumentation was in accordance with AS ISO 9705:2003.

The test specimen achieved the following results – see Table 12 .

Table 12 Results summary for this test report

Panel	Group number	SMOGR _{RC} (in m ² s ⁻² × 1000).
12 mm thick Grey routed FR MDF	2	8.1

A.3 Test report – RTF200372

Table 13 Information about test report

Item	Information about test report
Report sponsor	Laminex Group Pty Ltd
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire test was completed on 27 October 2020.
Test standards	The test was done in accordance with AS ISO 9705:2003.
Variation to test standards	Smoke obscuration measurements were made using a helium-neon laser smoke photometer, as outlined in Annex H of ISO 9705-1:2016
General description of tested specimen	18 mm thick laminated FR MDF panel was tested accordance with AS ISO 9705:2003. The core was sandwiched between two layers of melamine impregnated decorative papers. The panel was fixed to the stud work using plasterboard screws.
Instrumentation	The test report states that the instrumentation was in accordance with AS ISO 9705:2003.

The test specimen achieved the following results – see Table 14 .

Table 14 Results summary for this test report

Panel	Group number	SMOGR _{RC} (in m ² s ⁻² × 1000).
18 mm thick laminated FR MDF	2	4.4

A.4 Test report – EWFA 39410500.1

Table 15 Information about test report

Item	Information about test report
Report sponsor	Laminex Group Pty Ltd
Test laboratory	Warringtonfire Australia, Unit 2, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.
Test date	The fire test was completed on 22 April 2016.
Test standards	The test was done in accordance with AS ISO 9705:2003.
Variation to test standards	None
General description of tested specimen	16 mm thick FR MDF panels were tested in accordance with AS ISO 9705:2003. The panels were factory bonded with melamine impregnated decorative paper on both sides.
Instrumentation	The test report states that the instrumentation was in accordance with ISO 9705:2003.

The test specimen achieved the following results – see Table 16 .

Table 16 Results summary for this test report

Panel	Group number	SMOGR _{RC} (in m ² s ⁻² × 1000).
16 mm thick laminated FR MDF	2	20.3

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