



FIRE Technical Opinion

FAR4686-01-2

FIRE RESISTANCE OF GIB FLOOR/CEILING SYSTEMS WITH INTEGRA LIGHTWEIGHT CONCRETE FLOORING SYSTEM

CLIENT

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ASSESSMENT OBJECTIVE

To assess, in terms of fire resistance, the following GIB® fire rated floor systems in accordance with AS 1530.4-2005:

GBFC 15, GBSJ 30, GBFC45, GBCJ 30, GBCJ 45, GBFC 60, GBSJ 60, GBCJ 60, GBFC 90, GBFC 120, GBSC 30, GBSC 60a, GBSC 60b, GBSC 90, GBUC 15, GBUC 30, GBUC 45, GBUC 60, GBUC 90, GBUC 120.

The report is based on the primary test evidence of Winstones GIB® fire rated floor/ceiling systems and the construction details are contained in the GIB® “Fire Rated Systems” manual (CBI 5113) dated October 2012. This assessment report considers replacing the 20 mm thick particle board floor, as tested and assessed in these systems, with Resene Construction Systems INTEGRA Lightweight Concrete Flooring System.

CONCLUSION

It is considered the Winstones GIB® fire rated floor/ceiling systems contained in the GIB® “Fire Rated Systems” manual (CBI 5113) dated January 2012 with flooring of INTEGRA Lightweight Concrete Flooring System would not be prejudiced subject to the following conditions:

- The maximum joist spacing is limited to 600 mm centres; and
- The floor design must take into account any additional loading to the floor/ceiling system by the INTEGRA panels: and
- Meets the structural requirements of the New Zealand Building Code.
- If the building design is within the scope of NZ 3604, then the joist span tables given in the Resene Construction Systems TradeSpec™ installation manual dated September 2015, may be used without adjustment.

LIMITATION

This report is subject to the accuracy and completeness of the information supplied.

BRANZ reserves the right to amend or withdraw this assessment if information becomes available which indicates the stated fire performance may not be achieved.

This assessment report may only be quoted or reproduced in full.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in BRANZ Services Agreement for this work.

The results reported here relate only to the item/s described in this report.



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SIGNATORIES



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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	REVIEW DATE	DESCRIPTION
01	22 May 2017	22 May 2022	Initial Issue
02	3 June 2022	3 June 2027	Re-issue for a further 5 years Project Ref: FC16058



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1. INTRODUCTION

This report gives BRANZ's assessment on the fire resistance in accordance with AS 153.4-2005 and 2014, of the following GIB® fire rated floor systems with INTEGRA Lightweight Concrete Flooring System:

GBFC 15, GBSJ 30, GBFC45, GBCJ 30, GBCJ 45, GBFC 60, GBSJ 60, GBCJ 60, GBFC 90, GBFC 120, GBSC 30, GBSC 60a, GBSC 60b, GBSC 90, GBUC 15, GBUC 30, GBUC 45, GBUC 60, GBUC 90, GBUC 120.

The report is based on the primary test evidence of Winstones GIB® fire rated floor/ceiling systems and the construction details are contained in the GIB® "Fire Rated Systems" manual (CBI 5113) dated October 2012. This assessment report considers replacing the 20 mm thick particle board floor, as tested and assessed in these systems, with Resene Construction Systems INTEGRA Lightweight Concrete Flooring System.

2. BACKGROUND

In BRANZ fire assessment report FAR 3959 the Winstone Wallboards GIB® Fire Rated Systems Book (CBI 5113) dated October 2012 for the Fire Resistance Rating (FRR) was reviewed and it was determined that the systems would achieve the stated FRR based on the test evidence available at the time. The manual includes fire rated floor/ceiling systems for which the test data has been reviewed for this assessment.

3. DISCUSSION

3.1 Test methods

The range of test reports as discussed in section 2 were tested in accordance with the following standards - AS1530.4-1975, AS1530.4-1985, AS1530.4-1990, AS1530.4-1997 and ISO 834-1975.

The furnace conditions of the mentioned test standards maintain a similar time/temperature curve and are considered not to be significantly different from each other in terms of fire exposure. The current standard is AS 1530.4-2005, against which this assessment is made.

BRANZ has compared the insulation and integrity failure criteria of the different test standards mentioned and considered if tested to AS1530.4-2005 would achieve a similar result.

3.2 INTEGRA Lightweight Concrete Flooring System

The INTEGRA lightweight concrete floor panels are 1,800 mm long x 600 mm wide x 75 mm thick and include two layers of steel mesh reinforcing. The panels have a density of 520 kg/m³ and a compressive strength of 4 MPa. The panels are installed and screw fixed over timber joists, and solid blocking where required, in accordance with the Resene Construction Systems TradeSpec™ installation manual dated September 2015.



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3.3 Winstones GIB® fire rated floor/ceiling systems

The fire resistance of the floor/ceiling systems listed in the Winstones GIB® fire rated systems specification and installation manual dated October 2012 are based on tests and assessments. The supporting data relating to the specific systems listed have been reviewed and because the Resene INTEGRA panels are constructed of non-combustible lightweight concrete it is considered that if the 20 mm thick particle board or 17 mm thick structural plywood flooring was substituted with the Resene INTEGRA panels it would not prejudice the established fire resistance before that stated in the manual subject to following:

- The maximum joist spacing is limited to 600 mm centres.
- The floor design must take into account any additional loading to the floor/ceiling system by the INTEGRA lightweight concrete flooring system.
- The floor design must comply with the requirements of the New Zealand Building Code.
- If the building design is within the scope of NZ 3604, then the joist span tables given in the Resene Construction Systems TradeSpec™ installation manual dated September 2015, may be used without adjustment.

It is considered the following Winstone GIB® fire rated floor/ceiling systems would achieve the fire resistance ratings as stated in the October 2012 manual and reproduced in Table 1.

Table 1: GIB® fire rated floor/ceiling systems

GIB® System	GIB® FRR
GBFC 15	15/15/15
GBSJ 30	30/30/30
GBFC 45	45/45/45
GBCJ 30	30/30/30
GBCJ 45	45/45/45
GBFC 60	60/60/60
GBSJ 60	60/60/60
GBSJ 60	60/60/60
GBFC 90	90/90/90
GBFC 120	120/120/120
GBSC 30	30/30/30
GBSC 60A	60/60/60
GBSC 60B	60/60/60
GBSC90	90/90/90



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GIB® System	GIB® FRR
GBUC 15	(15)/15/15
GBUC 30	(30)/30/30
GBUC 45	(45)/45/45
GBUC 60	(60)/60/60
GBUC 90	(90)/90/90
GBUC 120	(120)/120/120

4. CONCLUSION

It is considered the Winstones GIB® fire rated floor/ceiling systems contained in the GIB® “Fire Rated Systems” manual (CBI 5113) dated January 2012 with flooring of Resene INTEGRA Lightweight Concrete Flooring System would not be prejudiced subject to the following conditions:

- The maximum joist spacing is limited to 600 mm centres; and
- The floor design must take into account any additional loading to the floor/ceiling system by the INTEGRA panels: and
- Meets the structural requirements of the New Zealand Building Code.
- If the building design is within the scope of NZ 3604, then the joist span tables given in the Resene Construction Systems TradeSpec™ installation manual dated September 2015, may be used without adjustment.



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Technical Opinion Summary



This is to certify that the specimen described below has been examined by BRANZ on behalf of the sponsor.

Sponsor

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Middleton
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Reference BRANZ Reports FAR4686-01-2

Referenced Standard AS 1530.4-2005

Specimen Name: INTEGRA Lightweight Concrete Flooring System

Specimen Description: Loadbearing timber framed floor system with Integra Panels as a flooring, as below.

Orientation: Exposure from the underside


The assessed results were as follows

Table 1: GIB® fire rated floor/ceiling systems

GIB® System	GIB® FRR	GIB® System	GIB® FRR
GBFC 15	15/15/15	GBSC 30	30/30/30
GBSJ 30	30/30/30	GBSC 60A	60/60/60
GBFC 45	45/45/45	GBSC 60B	60/60/60
GBCJ 30	30/30/30	GBSC90	90/90/90
GBCJ 45	45/45/45	GBUC 15	(15)/15/15
GBFC 60	60/60/60	GBUC 30	(30)/30/30
GBSJ 60	60/60/60	GBUC 45	(45)/45/45
GBSJ 60	60/60/60	GBUC 60	(60)/60/60
GBFC 90	90/90/90	GBUC 90	(90)/90/90
GBFC 120	120/120/120	GBUC 120	(120)/120/120

The systems will comply with NZS 3604 for the span tables given in the Resene Construction Systems TradeSpec™ installation manual dated September 2015.

Issued by


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Reviewed by


E. Soja
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Regulatory authorities are advised to examine test reports before approving any product.

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