



BRANZ Appraised
Appraisal No.289 [2006]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
CERTIFICATE
No. 289 (2006)**

This Certificate replaces Appraisal
Certificate No. 289 (2002) issued 1
December 2001.

**GIB® FIRE RATED
SYSTEMS**

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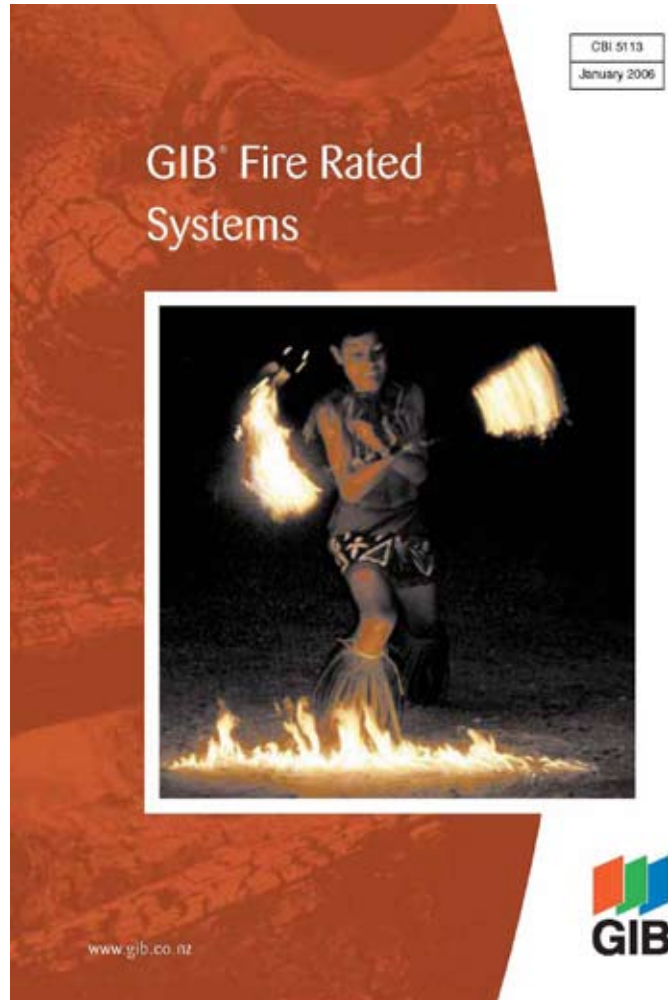
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Product

1.1 GIB® Fire Rated Systems are a range of fire-rated constructions based on the use of GIB® plasterboards. The range consists of timber and steel framed wall, floor/ceiling and ceiling systems as well as steel beams, steel columns, risers, shafts and ducts.



Scope

2.1 GIB® Fire Rated Systems have been appraised for use as fire-rated load bearing and non-load bearing framed construction elements in buildings.

Building Regulations

3.1 New Zealand Building Code (NZBC)

In the opinion of BRANZ, the GIB® Fire Rated Systems, if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB® Fire Rated Systems meet the requirements for loads arising from self-weight and impact [i.e. B1.3.3 (a) and (j)]. See Paragraphs 10.1 and 10.2.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.1 (c) 5 years. GIB® Fire Rated Systems meet the requirements. See Paragraphs 11.1 and 11.2.

Clause C3 SPREAD OF FIRE: Performance C3.3.1, C3.3.2, and C3.3.5. GIB® Fire Rated Systems meet the requirements by providing passive fire and smoke protection. See Paragraph 13.1 - 13.6.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB® Fire Rated Systems meet this requirement and will not present a health hazard to people.

3.2 This Certificate appraises an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

General

4.1 GIB® Fire Rated Systems are primarily based on two types of GIB® plasterboards GIB® Standard Plasterboard and GIB Fyrelite®. Other GIB® plasterboards may be substituted as follows:

10 mm GIB Braceline®, 10 mm GIB Noiseline®, 10 mm GIB Ultralite® and 10 mm GIB Aqualite® may be substituted for 10 mm GIB Fyrelite®. Similarly 13 mm GIB Noiseline®, 13 mm GIB Toughline® and 13 mm GIB Aqualite® may be substituted for 13 mm GIB Fyrelite®.

GIB® Plasterboards

• GIB Fyrelite®

4.2 GIB Fyrelite® is a paper-bound gypsum-plaster core sheet lining material. Glass fibre and other additives are added to the core during manufacture. The sheets have a taper on the two long sheet edges. GIB Fyrelite® is available in thicknesses of 10 mm, 13 mm, 16 mm and 19 mm with a sheet width of 1200 mm. Sheet thicknesses of 10 mm and 13 mm are available in standard lengths between 2400 mm and 3600 mm and sheet thicknesses of 16 mm and 19 mm are available in standard lengths between 2400 mm and 3000 mm. The nominal weight is 7 kg/m², 9.7 kg/m², 13.9 kg/m², and 16.6 kg/m² for 10 mm, 13 mm, 16 mm and 19 mm thick sheet respectively. GIB Fyrelite® face paper is pink in colour.

• GIB® Standard plasterboard

4.3 GIB® Standard plasterboard is a paper-bound gypsum-plaster core sheet lining material. GIB® Standard plasterboard is available in 10 mm and 13 mm thicknesses and a sheet width of 1200 mm and 1350 mm (GIB® Wideline). The sheets have a taper on the two long sheet edges. The 10 mm thick sheets are also available with a square edge. Sheets are available in various lengths from 2400 mm to 6000 mm. The nominal weights are 7 kg/m² and 8.7 kg/m² for 10 mm and 13 mm thick sheets respectively. GIB® Standard plasterboard face paper is a light buff colour.

Fastenings

- GIB® Grabber® High Thread Drywall screws for fixing to timber:
6g x 25, 32, 41 mm and 7g x 51, 57 mm.
- GIB® Grabber® Self Tapping Drywall Screws for fixing to light gauge steel:
6g x 25, 32, 41 mm; 7g x 51 mm and 8g x 63, 76 mm.
- GIB® Nail annular threaded shank:
30 x 2.87 mm and 40 x 2.87 mm.

Ceiling Suspension Systems

- USG Donn® ScrewFix® Suspension System.
- USG Drywall Grid Suspension System.
- Rondo® Key-Lock™ steel frame suspension system.

Beam/Column Clips

- Rondo® FurringTrack, Clips and Angle.

Accessories and Compounds

4.4 A combination of GIB® Paper Tape, GIB-Cove®, Trims and compounds are used. The requirements are specified in the GIB® Fire Rated Systems Technical Literature and details of the products and installation are found in the GIB® Site Guide Technical Literature.

Handling and Storage

5.1 The best results are achieved when GIB® plasterboards are treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights see the GIB® Site Guide. Sheets must be carried on edge and not dragged.

5.2 All accessories must be kept dry.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for GIB® Fire Rated Systems. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

General

7.1 The GIB® Fire Rated Systems Technical Literature contains solutions for the passive fire protection of loadbearing and non-load bearing, timber or steel-framed elements, wall, floor/ceiling and ceiling systems, riser, shaft and ducts, columns and beams.

7.2 GIB® Fire Rated Systems are used where a Fire Resistance Rating (FRR) is required and as part of the total GIB® lining system or specific fire partitioning design.

7.3 GIB® plasterboards must not be exposed to temperatures of 52°C or greater for prolonged periods. Refer to appliance and fitting manufacturers for installation details.

Control Joints

8.1 Where control joints are required, the joints must be specifically designed to maintain the integrity of the fire rated system.

'GIB® Fire Rated Systems'

9.1 The GIB® Fire Rated Systems Technical Literature describes a range of design options for the construction of loadbearing and non-loadbearing fire resistant construction elements. All FRRs are given in minutes for stability, integrity and insulation up to a maximum of 240 minutes. The following systems are addressed:

Section 2 - Fire Rated Wall Systems

- 2.1 Two way FRR - Timber Frame
- 2.2 Two way FRR - Steel Frame

2.3 One way FRR (Universal Walls) - Timber or Steel Frame

Section 3 - Fire Rated Floor/Ceiling Systems and Ceilings, Suspended Ceilings, and Steel Columns and Beams

3.1 Floor*/Ceiling Systems - Timber or Steel Frame

3.2 Suspended Grid Floor*, Ceiling Systems

3.3 Universal Ceilings

3.4 Columns and Beams

* Note: Proprietary floor joist systems, suspended ceiling systems, metal supports, and flooring have not been assessed for other than fire and sound properties and are otherwise outside the scope of this Certificate.

Section 4 - Risers, Shafts and Ducts

Describes the construction requirements and detailing.

Section 5 - Junction Details for Fire and Smoke Separations and Chase Walls

Describes the construction requirements at wall-to-wall, wall-to-ceiling, wall-to-floor, wall-to-floor/ceiling and drywall-to-masonry/concrete junctions of fire separations. Describes chase wall construction details and control joints. Construction in accordance with these details will preserve the FRR of the fire rated elements and prevent the passage of smoke.

Structure

Framing

10.1 Supporting framing must comprise one of the following subject to the minimum sizes, dwang centres and all other frame requirements of GIB® Fire Rated Systems Technical Literature:

- Timber framing must be designed and constructed in accordance with NZS 3604, or to a specific design using NZS 3603 and NZS 4203 (AS/NZS 1170).
- Steel framing must be designed to withstand loads in accordance with NZS 4203 (AS/NZS 1170).

Impact Resistance

10.2 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commercial applications.

Durability

11.1 The ability of the systems to maintain their FRR for at least 50 years is dependent on their regular maintenance and remaining dry in service.

11.2 Framing and cladding systems must have durabilities which meet the performance requirements of NZBC B2. The integrity of fire rated sealants and packing must be maintained. These have not been assessed and are outside the scope of this Certificate.

Maintenance

11.3 Lining systems must be protected from internal and external moisture in accordance with NZBC E2 and E3.

11.4 Any cracks or damage which may occur as a result of events such as exposure to excessive moisture or flooding, local outbreak of fire, wind or earthquake, timber shrinkage, or excessive impact, must be repaired immediately. Repair will include the replacement of any damaged sheets, materials or components.

11.5 Fire rated sealants must be regularly inspected, at least annually, and maintained in accordance with the instructions of the sealant manufacturer. Sealant joints must be repaired or replaced as necessary.

Outbreak of Fire

12.1 Separation or protection must be provided to GIB® Systems from heat sources such as stoves, heaters, flues and chimneys.

12.2 NZBC Acceptable Solution C/AS1, Part 9 and Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Spread of Fire

13.1 In order to satisfy the requirements of NZBC C4 Structural Stability during Fire, designers must ensure that fire rated elements are supported by building elements having at least the same FRR as the fire rated element they are supporting.

NZBC Acceptable Solutions

13.2 GIB® Fire Rated Systems will comply with C3.3.1 when used within the limits of the Spread of Flame Index (SFI) and Smoke Developed Index (SDI) and for locations as defined in Table 6.2 of Acceptable Solution C/AS1.

13.3 Table 1 shows the AS 1530: Part 3 surface finish properties for GIB® plasterboards without applied paint or wallpaper finishes.

Table 1. Surface Finish Properties

Product	Spread of Flame Index	Smoke Developed Index
GIB Fyreline®	0	4
GIB Braceline®	0	4
GIB® Standard	0	5
GIB Aqualine®	0	5
GIB Ultraline®	0	5

13.4 When an applied finish is used over GIB® Plasterboards, the SFI and SDI must be obtained from the manufacturer of the finish product or system.

13.5 GIB® Fire Rated Systems will comply with C3.3.2 for fire separation when used to provide a FRR that meets the requirements of Acceptable Solution C/AS1.

13.6 GIB® Fire Rated Systems will comply with C3.3.5 when used to provide a FRR that meets the requirements of Acceptable Solution C/AS1 Part 7.10.

Flame Barrier

13.7 Where flame barriers are required by Acceptable Solution C/AS1 Table 6.3, GIB® plasterboard not less than 10 mm thick is a suitable material to provide a 10 minute flame barrier, provided all sheet joints are formed over framing, or backblocked with GIB® plasterboard.

Internal Moisture

14.1 GIB® plasterboards are intended for use in dry internal situations and must not be used where they are likely to be exposed to liquid water or be installed where extended exposures to humidities above 90% RH can reasonably be expected.

Airborne and Impact sound

15.1 The GIB® Fire Rated Systems Technical Literature gives sound properties for the fire rated systems. Refer to GIB® Noise Control Systems for further information.

Installation

Installation Skill Level Requirement

16.1 Installation must be carried out by contractors experienced in Drywall construction and the principles of fire rated construction.

General

17.1 GIB® Fire Rated Systems must be installed in accordance with the specifications contained in the GIB® Fire Rated Systems and the GIB® Site Guide Technical Literature. For inspection reference must be made to the Technical Literature.

Cutting Sheets

17.2 GIB® plasterboard sheets are cut by scoring the paper face with a sharp, short-bladed trimming knife. The plasterboard must then be snapped away from the cut face and the back paper cut. Cutouts for switch boxes and other penetrations should be made using a keyhole saw.

Health and Safety

17.3 Dust resulting from the sanding of boards, jointing or finishing compounds may be a respiratory irritant, therefore the use of a suitable face mask is recommended. Where sealants, insulation and other materials are used, the instructions of the manufacturer must be followed.

Wall Framing

17.5 Construction details for the framing, in particular type, dimensions and spacings, must be strictly in accordance with the specifications outlined in GIB® Fire Rated Systems and the specific design documentation for the building project.

17.6 All framing must be plumb, level and in true alignment.

17.7 The GIB® Site Guide specifies timber framing with a moisture content less than 18% at the time interior linings are installed. The use of kiln-dried timber is recommended.

Fixing

17.8 The GIB® Fire Rated Systems Technical Literature includes options for the orientation of linings (e.g. horizontal or vertical fixing). The installer must ensure that the specifications for these options are strictly adhered to. All joints must be made over framing.

17.9 The length and spacing of GIB® Nails or drywall screws for the fixing of GIB® plasterboard linings to framing must be strictly in accordance with the specifications.

17.10 Options are included for nail and screw fixing. Care must be taken to ensure that fastener heads only indent the paper liner surface and do not damage the paper itself.

Jointings and Finishing

17.11 All joints in single or outer layers of multiple layer linings must be paper-tape reinforced. A minimum of two layers of bedding compound are required to achieve the stated fire resistance rating (or FRR). Inner sheet joints of multiple layer linings do not require stopping.

Basis of Appraisal

The following is a summary of the technical investigations carried out.

Tests

18.1 The following tests have been carried out by BRANZ:

- Testing to determine the surface spread of fire properties of GIB® plasterboards and to determine the FRR of a range of wall and floor/ceiling systems, penetrations and closures.
- Fire Resistance Tests in accordance with AS 1530.4 to determine the FRR of construction elements.
- Early Fire Hazard Tests in accordance with AS 1530.3 to determine the Spread of Flame Index and Smoke Developed Index.

Other Investigations

19.1 The GIB® Fire Rated Systems and GIB® Site Guide Technical Literature has been examined by BRANZ and found to be satisfactory.

19.2 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.

19.3 Opinions on the fire resistance of variations to systems tested in accordance with AS 1530.4 were given by BRANZ experts.

19.4 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

19.5 Winstone Wallboards Limited GIB® plasterboards have been assessed for the following properties: MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, Hunter hardness, inspection for fungal spores, hard and soft body impact tests.

Quality

20.1 Winstone Wallboards Limited's manufacturing process and details of the quality composition of the materials, have been examined by BRANZ and found to be satisfactory.

20.2 The quality management systems of Winstone Wallboards Limited have been assessed and registered with TELARC as meeting the requirements of ISO 9001, Registration No. 581.

20.3 Winstone Wallboards Ltd is responsible for the quality of the product supplied.

20.4 The quality of the application and finish on site is the responsibility of the installation and stopping contractors.

20.5 Designers are responsible for the design of buildings.

20.6 Building owners are responsible for the maintenance in accordance with the instructions of Winstone Wallboards Limited.

Sources of Information

- AS 1530: 1999 Part 3 Simultaneous determination of ignitability, flame propagation, heat release and smoke release.
- AS 1530: 1997 Part 4 Fire resistance tests on elements of construction.
- AS 1530: 2005 Part 4 Fire resistance tests on elements of construction.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2588: 1998 Gypsum Plasterboard.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4203: 1992 Code of practice for general structural design and design loadings of buildings.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to and including October 2004 Amendment.



In the opinion of BRANZ, GIB® Fire Rated Systems are fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided they are used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Winstone Wallboards Limited, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. The Certificate Holder:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

P Robertson
Chief Executive

Date of issue: 22 November 2006