fischer Test Report

Fixing Tests for
Glasroc MultiBoard and Gyproc Boards

British Gypsum

fischer
FIXING SYSTEMS

Testing on a selection of British Gypsum boards

1. Introduction

Test Parameters
Board Information

2. Fixing Products Tested

PD 10
HM 5x52
UX 8x50R
KD 6 Gravity toggle

3. Results

12.5mm Glasroc MultiBoard
12.5mm Gyproc WallBoard
15mm Gyproc SoundBloc
15mm Gyproc Duraline
2 off 12.5 Glasroc Multiboard
2 off 15mm Gyproc SoundBloc
15mm Gyproc FireLine

4. Results Summary

5. Conclusion

Test Parameters

Various fixings were tested into British Gypsum boards. The fixings were installed and tested in a wall configuration.

The tests were carried out at:

British Gypsum Limited
East Leake
Loughborough
Leicestershire
LE12 6JT

All tests were carried out using a calibrated 2.5kN and 5.0kN Hydrajaws tensile tester.

Board information

November 2004 Issue 2

GLASROC

THE **WHITE BOOK** Technical Data Series

Glasroc MultiBoard

DESCRIPTION

Glasroc MultiBoard is a high quality, paperless, glass reinforced gypsum building board. The non-combustibility of gypsum and the reinforcement of glass fibre combine to produce a strong and resilient product, which has resistance to sag and offers excellent fire protection. It offers good impact resistance without being prone to cracking or shattering. Glasroc MultiBoard has an exceptionally smooth, water repellent plaster surface.

Glasroc MultiBoard can be used in both wall and partition linings where impact resistance is of prime concern. This includes linings in industrial buildings, sports halls and high traffic areas. Glasroc MultiBoard may further be used in semi-exposed situations such as roof eaves, canopies, car ports and floor underlinings where perimeters are open to the elements, however, it should not be used for external perimeters for any other purpose. The inherent flexibility of Glasroc MultiBoard makes it ideal for curved surfaces both convex and concave, an example application being barrel vault ceilings or bulkheads. Glasroc MultiBoard is ideal for decorative finishes, such as shopping centres and malls, foyers and atriums, as well as in shop fitting.

Glasroc MultiBoard is ideal for many applications in domestic and commercial buildings, both new build and refurbishment, including ceilings, timber joist floors, cavity barriers and beam and column encasements.

Glasroc MultiBoard is manufactured by a unique continuous process, developed and patented by British Gypsum.

Standards
Glasroc MultiBoard is the subject of the British Board of Agrement Certificate number 90/2541. It is further protected by a British patent and worldwide patents and applications.

All British Gypsum management systems have been independently audited and certified as conforming with *ISO 9001: 2000*.

PERFORMANCE

Fire protection
Glasroc MultiBoard is non-combustible when tested to *BS 476: Part 4: 1970 (1984)* and therefore satisfies the requirements for Class 0 surfaces as defined in the national Building Regulations.

Fire resistance
Please refer to the appropriate White Book product or systems section for information on the fire resistance of building elements lined with Glasroc MultiBoard.

EFFECT OF TEMPERATURE, THERMAL PROPERTIES AND SOUND INSULATION

Effect of temperature
Glasroc MultiBoard is unsuitable for use in areas subject to continuously damp or humid conditions and must not be used to isolate dampness. Plasterboards are not suitable for use in temperatures above 49°C, but can be subjected to freezing conditions without risk of damage.

Thermal Conductivity / Resistance
Glasroc MultiBoard

Conductivity (λ)		= 0.286W/mK.
Resistance (R)	(6mm board thickness)	= 0.02m²K/W.
	(10mm board thickness)	= 0.03m²K/W.
	(12.5mm board thickness)	= 0.04m²K/W.

Sound Insulation
Glasroc MultiBoard can be used to contribute to the sound insulation of many constructional elements. Please refer to relevant systems sections of the White Book.

British Gypsum
PURE INNOVATION

Gyproc WallBoard

DESCRIPTION

Gyproc WallBoard can be used to contribute to fire resistance, for sound insulation of building elements, lining ceilings, roofs and walls, for building partitions and for encasing steel columns and beams. It is suitable for direct decoration or a gypsum plaster finish.

Gyproc WallBoard consists of an aerated gypsum core encased in, and firmly bonded to strong paper liners. Gyproc WallBoard is a plasterboard that is suitable for dry lining internal surfaces. It is a standard board suitable for most applications.

Standards

Gyproc WallBoard conforms to:
BS 1230: Part 1: 1985 Specification for plasterboard excluding materials submitted to secondary operation.

All British Gypsum boards and plasters are manufactured under *BS EN ISO 9002*, a quality assurance system approved by the BSI.

Safety Data Sheets are available for all British Gypsum products. Please contact the British Gypsum Drywall Academy Advice Centre for guidance.

PERFORMANCE

Fire protection

Plasterboard linings provide good fire protection owing to the unique behaviour of the non-combustible gypsum core when subjected to high temperatures. For the purposes of the national Building Regulations, plasterboard is designated a 'material of limited combustibility' (Approved Document B).

The surfaces of Gyproc WallBoard are designated Class 0 (for the purposes of national Building Regulations). Please refer to Table 1.

Fire resistance

Please refer to the appropriate White Book Application section, or the relevant product or systems section, for information on the fire resistance of building elements lined with Gyproc WallBoard.

Table 1 - Reaction to fire test performance

Test	Performance
BS 476: Part 6: 1989 Method of test for fire propagation for products.	Index of performance (I) not exceeding 12 and a sub-index (i_1) not exceeding 6.
BS 476: Part 7: 1997 Surface spread of flame tests for materials.	Class 1 (both sides).

EFFECT OF TEMPERATURE, THERMAL PROPERTIES AND SOUND INSULATION

Effect of temperature

Gyproc WallBoard is unsuitable for use in areas subject to continuously damp or humid conditions and must not be used to isolate dampness. Plasterboards are not suitable for use in temperatures above 49°C, but can be subjected to freezing conditions without risk of damage.

Thermal conductivity / resistance

Conductivity (λ)
Gyproc WallBoard = 0.19 w/mk.

Resistance (R) 9.5mm (board thickness) = 0.05m²K/W.
12.5mm (board thickness) = 0.07m²K/W.

Thermal transmittance

'U' values for a wide range of external wall constructions incorporating Gyproc WallBoard are given in the White Book Section b01 - Introduction - Dry linings.

Sound insulation

The sound insulation performances of various constructions using Gyproc WallBoard are given in White Book Section a01 - Introduction - Partitions and walls and in sections dealing with individual systems.

HEALTH AND SAFETY

Please refer to White Book Section 14 - Health and Safety before specifying, handling or installing any British Gypsum products and systems covered in this publication.

British Gypsum fully accepts its responsibilities as a supplier of building materials and systems as required by Section 6 of the Health and Safety Work Act: 1974. The designer should take full account of relevant regulations and guidance. Please refer to Section 14 - Health and Safety, for further details.

Safety Data Sheets for all British Gypsum products, and additional copies of Section 14 - Health and Safety are available to download from our website: www.british-gypsum.bpb.com, or via the British Gypsum Drywall Academy Advice Centre.

When cutting boards, power and hand tools should be used with care and in accordance with manufacturers' recommendations. Appropriate personal protective equipment should be used.

British Gypsum
PURE INNOVATION

fischer
FIXING SYSTEMS

Gyproc SoundBloc & SoundBloc RAPID

INTRODUCTION

Gyproc SoundBloc is a gypsum plasterboard with a higher density core. It is designed for use in British Gypsum wall and partition systems where greater levels of sound insulation are required.

Gyproc SoundBloc RAPID is a gypsum plasterboard with a higher density core in a special dimensional configuration, for use in the GypWall RAPID system, a quick to erect, high performance internal wall system for housing applications.

APPEARANCE

Gyproc SoundBloc boards are denoted by a pale blue face-paper.

STANDARDS

Gyproc SoundBloc / SoundBloc RAPID conform to:
BS 1230: Part 1: 1985 Specification for plasterboard excluding materials submitted to secondary operation.

All British Gypsum management systems have been independently audited and certified as conforming with *ISO 9001: 2000.*

ENVIRONMENTAL

Effect of temperature

Gyproc SoundBloc / SoundBloc RAPID are unsuitable for use in areas subject to continuously damp or humid conditions and must not be used to isolate dampness. Plasterboards are not suitable for use in temperatures above 49°C, but can be subjected to freezing conditions without risk of damage.

Thermal Conductivity / Resistance

Conductivity (λ) = 0.25 W/mK.
Resistance (R) 12.5mm (board thickness) = 0.05m²K/W.
15.0mm (board thickness) = 0.06m²K/W.

Sound Insulation

The sound insulation performances of various constructions using Gyproc SoundBloc are given in the White Book.

Water vapour resistance and condensation

Please refer to White Book Section 2.3, Thermal insulation and condensation for guidance.

HEALTH AND SAFETY

Please refer to White Book section 2.8, Health and Safety, before specifying, handling or installing any British Gypsum products and systems covered in this publication.

British Gypsum fully accepts its responsibilities as a supplier of building materials and systems as required by Section 6 of the Health and Safety Work Act: 1974. The designer should take full account of relevant regulations and guidance. Please refer to *White Book section 2.8, Health and Safety,* for further details.

Safety Data Sheets for all British Gypsum products, and additional copies of *White Book section 2.8, Health and Safety* are available to download from our website: www.british-gypsum.com, or via the British Gypsum Drywall Academy Advice Centre.

When cutting boards, power and hand tools should be used with care and in accordance with manufacturers' recommendations. Appropriate personal protective equipment should be used.

PERFORMANCE

Fire protection

Plasterboard linings provide good fire protection owing to the unique behaviour of the non-combustible gypsum core when subjected to high temperatures. For the purposes of the national Building Regulations, plasterboard is designated a 'material of limited combustibility' (Approved Document B).

The surfaces of Gyproc SoundBloc / SoundBloc RAPID are designated Class 0 (for the purposes of national Building Regulations). Please refer to Table 1.

Fire resistance

Please refer to the appropriate White Book application section, or the relevant product or systems section, for information on the fire resistance of building elements lined with Gyproc SoundBloc / SoundBloc RAPID.

Table 1 - Reaction to fire test performance

Test	Performance
BS 476: Part 6: 1989 Method of test for fire propagation for products.	Index of performance (I) not exceeding 12 and a sub-index (i_1) not exceeding 6.
BS 476: Part 7: 1997 Surface spread of flame tests for materials.	Class 1 (both sides).

British Gypsum

fischer FIXING SYSTEMS

DuraLine and DuraLine SEVERE

DESCRIPTION

Gyproc DuraLine is a high impact resistant gypsum board for internal dry lining of buildings where a more durable surface is required. It can be used in applications such as schools and recreational buildings, hospitals and other institutional buildings, public circulation areas of commercial buildings, hotels and industrial premises.

Gyproc DuraLine's gypsum core, incorporating glass fibre and other fire protective additives, is encased in, and firmly bonded to, strong ivory coloured paper liners.

Gyproc DuraLine SEVERE has a special polyester film bonded to the back face to resist hard body impact penetration and achieve a severe duty rating in a single boarded partition system.

Standards

Gyproc DuraLine SEVERE further conforms to:
BS 5234: Parts 1 & 2: 1992 with regard to heavy / severe duty rating of partitions.

All British Gypsum boards and plasters are manufactured under *BS EN ISO 9002*, a quality assurance system approved by the BSI.

Safety Data Sheets are available for all British Gypsum products. Please contact the British Gypsum Drywall Academy Advice Centre for guidance.

PERFORMANCE

Fire protection

Plasterboard linings provide good fire protection owing to the unique behaviour of the non-combustible gypsum core when subjected to high temperatures. Please refer to White Book Section X10 - Fire protection measures for further guidance.

For the purposes of the national Building Regulations, plasterboard is designated a 'material of limited combustibility' (Approved Document B).

Gyproc DuraLine and DuraLine SEVERE satisfy the Class 0 surface requirements for the purposes of national Building Regulations. Please refer to Table 1.

Table 1 - Reaction to fire test performance

Test	Performance
BS 476: Part 6: 1989 Method of test for fire propagation for products.	Index of performance (I) not exceeding 12 and a sub-index (I_s) not exceeding 6.
BS 476: Part 7: 1997 Surface spread of flame tests for materials.	Class 1.

EFFECT OF TEMPERATURE, THERMAL PROPERTIES AND SOUND INSULATION

Effect of temperature

Gyproc DuraLine and DuraLine SEVERE are unsuitable for use in areas subject to continuously damp or humid conditions and must not be used to isolate dampness. Plasterboards are not suitable for use in temperatures above 49°C, but can be subjected to freezing conditions without risk of damage.

Thermal Conductivity / Resistance

Conductivity (λ) = 0.24 W/mK.
Resistance (R) = 0.05m²K/W.

Sound Insulation

For laboratory sound insulation testing, please refer to Table 2.

HEALTH AND SAFETY

Please refer to White Book Section 14 - Health and Safety before specifying, handling or installing any British Gypsum products and systems covered in this publication.

British Gypsum fully accepts its responsibilities as a supplier of building materials and systems as required by Section 6 of the Health and Safety Work Act: 1974. The designer should take full account of relevant regulations and guidance. Please refer to Section 14 - Health and Safety, for further details.

Safety Data Sheets for all British Gypsum products, and additional copies of Section 14 - Health and Safety are available to download from our website: www.british-gypsum.bpb.com, or via the British Gypsum Drywall Academy Advice Centre.

When cutting boards, power and hand tools should be used with care and in accordance with manufacturers' recommendations. Appropriate personal protective equipment should be used.

British Gypsum
PURE INNOVATION

Gyproc FireLine

DESCRIPTION

Gyproc FireLine is a gypsum plasterboard with glass fibre and other additives in the core to improve the cohesive properties of the board at high temperatures, enabling superior fire protection performances to be achieved.

Gyproc FireLine can be screw or nail-fixed in British Gypsum wall linings systems, the SHaftWall system, GypWall partitions, and to timber joist floors to increase their fire resistance. Gyproc FireLine can also be used in a suspended ceiling to contribute to the fire resistance of timber and concrete floor constructions. Gyproc FireLine can be used for lining steel beams, columns and the external walls of industrial buildings.

Standards

Gyproc FireLine conforms to:
BS 1230: Part 1: 1985 Specification for plasterboard excluding materials submitted to secondary operations. Gyproc FireLine is classified as Type S (Gypsum WallBoard F) under this standard.

All British Gypsum boards and plasters are manufactured under *BS EN ISO 9002*, a quality assurance system approved by BSI.

Safety Data Sheets are available for all British Gypsum products. Please contact the British Gypsum Drywall Academy Advice Centre for guidance.

PERFORMANCE

Fire protection

Plasterboard linings provide good fire protection owing to the unique behaviour of the non-combustible gypsum core when subjected to high temperatures. The inclusion of glass fibre and other additives in the core of Gyproc FireLine improves its fire protective properties when compared with standard plasterboard. For the purposes of the national Building Regulations 1991, plasterboard is designated a 'material of limited combustibility' (Approved Document B).

Gyproc FireLine satisfies Class 0 surface requirements for the purposes of national Building Regulations. Please refer to Table 1.

Fire resistance

The fire resistances of various building elements incorporating Gyproc FireLine are given in the 'APPLICATION' sections, and in the individual system sections of the White Book.

Table 1 - Reaction to fire test performance

Test	Performance
BS 476: Part 6: 1989 Method of test for fire propagation for products.	Index of performance (I) not exceeding 12 and a sub-index (I_s) not exceeding 6.
BS 476: Part 7: 1997 Surface spread of flame tests for materials.	Class 1 (both sides).

EFFECT OF TEMPERATURE, THERMAL PROPERTIES AND SOUND INSULATION

Effect of temperature

Gyproc FireLine is unsuitable for use in areas subject to continuously damp or humid conditions and must not be used to isolate dampness. Plasterboards are not suitable for use in temperatures above 49°C, but can be subjected to freezing conditions without risk of damage.

Thermal conductivity / resistance

Conductivity (λ) = 0.24 W/mK.
Resistance (R) 12.5mm (board thickness) = 0.05m²K/W.
15mm (board thickness) = 0.06m²K/W.

Sound insulation

The sound insulation performances of various building elements incorporating Gyproc FireLine are given in the 'APPLICATION' sections, and in the individual system sections of the White Book.

HEALTH AND SAFETY

Please refer to White Book Section 14 - Health and Safety before specifying, handling or installing any British Gypsum products and systems covered in this publication.

British Gypsum fully accepts its responsibilities as a supplier of building materials and systems as required by Section 6 of the Health and Safety Work Act: 1974. The designer should take full account of relevant regulations and guidance. Please refer to Section 14 - Health and Safety, for further details.

Safety Data Sheets for all British Gypsum products, and additional copies of Section 14 - Health and Safety are available to download from our website: www.british-gypsum.bpb.com, or via the British Gypsum Drywall Academy Advice Centre.

When cutting boards, power and hand tools should be used with care and in accordance with manufacturers' recommendations. Appropriate personal protective equipment should be used.

British Gypsum
PURE INNOVATION

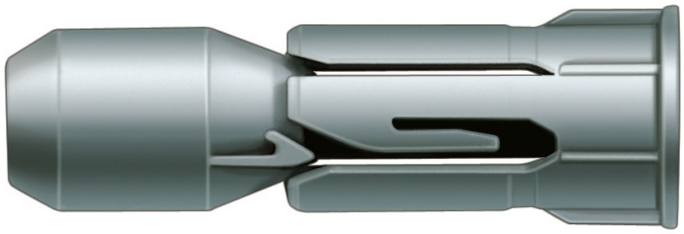
fischer
FIXING SYSTEMS

2. Fixing Products Tested

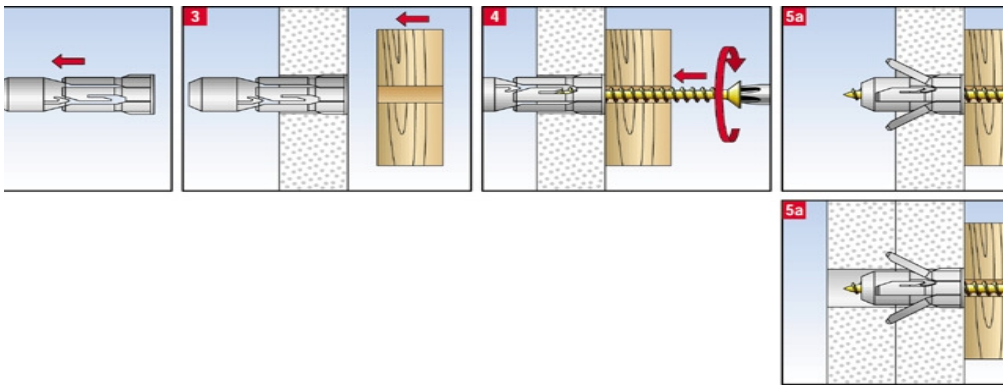
2.1 fischer PD Board Fixing

Material: Plug- Nylon (Polyamide 6)
Screw-Steel grade 5.8

Range: 8, 10 & 12



The fischer PD Board Fixing is the latest development in board and cavity fixings. This unique fixing offers ultimate load bearing capability for a simple but effective lightweight anchor.
The anchor has an extra short expansion zone allowing minimal space required in boards and short embedment depth in solid materials, another feature of this fixing is the 'lock-in mechanism' allowing the screw to be installed and un-installed several times. There are several longitudinal ribs to prevent the anchor from turning on installation and a small rim prevents the anchor from falling through the hole, all in all this is a good performance anchor.



2.2 fischer HM Metal Cavity Fixing

Material: Steel, Zinc plated

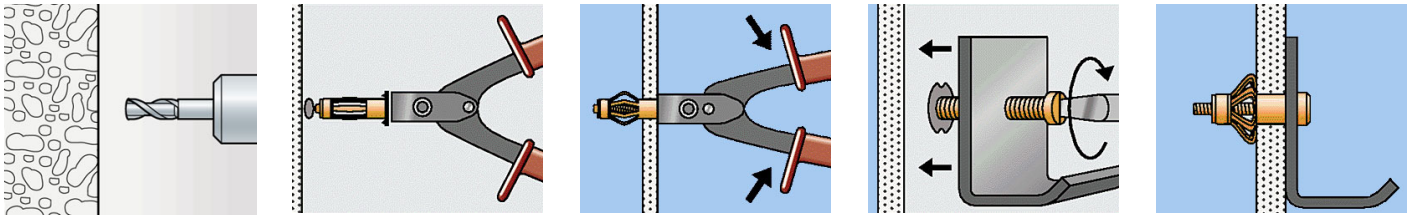
Range: M4-M8

32-80 mm Long

The fischer HM Metal Cavity Fixing is a practical cavity fastening system for metric screws. Its simple but effective system allows ease of installation for high load bearing applications, for fixing into a wide range of cavity materials. The fixing will accommodate materials from 3mm to 50mm thick and comes with a wide range of head finishes from hook to eyelet. There is an installation tool available for this product HM Z1 for large applications

Material: Zinc Plated.

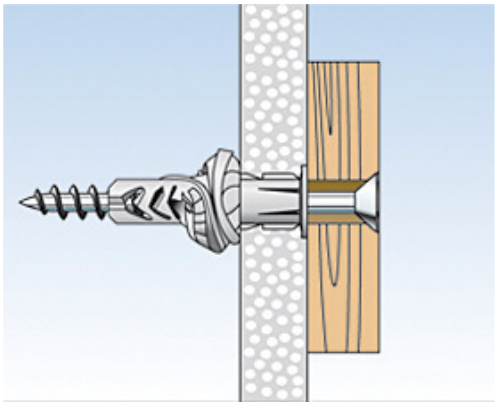
Range: M6 with various head types



2.3 fischer UX plug

Material:	Plug:	Nylon (Polyamide 6)
	Screw:	Metal Grade 6.8
Range:	6mm - 14mm	

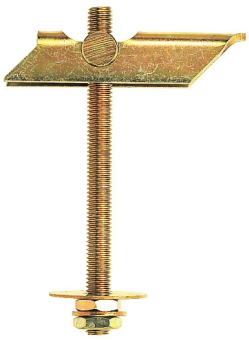
The fischer UX expands, anchors itself and knots itself into most substrates. Concrete, aircrete, solid plaster panel or plasterboard, solid brick or perforated brick – the UX will always get a grip



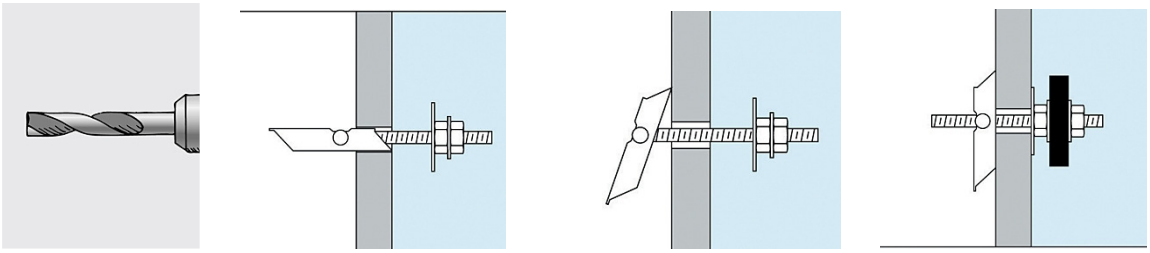
2.4 fischer KD8 Gravity Toggle

Material: Fixing-Steel, Zinc plated pasivate

Range: M3-M8



The fischer KD Toggle is the versatile cavity fixing. This fixing can be used in most every kinds of substrate providing it has a cavity, it ranges from m3 to m8 and comes in varying lengths, it is made from mild steel grade 5.8 and is zinc pasivate. The installation procedure is simple and produces very high loads. Smaller versions of the KD toggle come with spring loaded toggle fixing and a selection of threaded attachments from hooks to eyelets.



3. Test Results

British Gypsum 12.5mm Glasroc MultiBoard

12.5mm Glasroc MultiBoard

TEST NO.	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10	0.6	BOARD FAILURE
2	PD10	1	BOARD FAILURE
3	PD10	0.95	BOARD FAILURE
4	PD10	1	BOARD FAILURE
5	HM5X52	0.8	BOARD FAILURE
6	HM5X52	1	BOARD FAILURE
7	HM5X52	0.9	BOARD FAILURE
8	HM5X52	0.9	BOARD FAILURE
9	UX8x50R	1.25	BOARD FAILURE
10	UX8x50R	1.1	BOARD FAILURE
11	UX8x50R	1	BOARD FAILURE
12	UX8x50R	1.1	BOARD FAILURE
13	KD6 TOGGLE	1.2	BOARD FAILURE
14	KD6 TOGGLE	1.5	BOARD FAILURE
15	KD6 TOGGLE	1.3	BOARD FAILURE

COMMENTS

For this type of soft single board, board failure is the limiting factor Loads are very similar for the fixings, with the KD6 Gravity Toggle giving best performance, as it requires a greater area of the board to fail.

3.2 British Gypsum 12.5mm Gyproc WallBoard

12.5mm Gyproc WallBoard

TEST NO.	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10	0.5	BOARD FAILURE
2	PD10	0.4	BOARD FAILURE
3	PD10	0.5	BOARD FAILURE
4	PD10	0.5	BOARD FAILURE
5	HM5X52	0.5	BOARD FAILURE
6	HM5X52	0.6	BOARD FAILURE
7	HM5X52	0.6	BOARD FAILURE
8	HM5X52	0.6	BOARD FAILURE

COMMENTS

For this type of soft single board, board failure is the limiting factor

We were unable to fix UX8 due to the fixing rotating.

Due to board degrading through drilling action a 9mm hole was drilled for the PD10, in place of the 10mm diameter stated in our literature.

3.3 British Gypsum 15mm Gyproc SoundBloc

15MM Gyproc SoundBloc

TEST NO	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10	0.75	BOARD FAILURE
2	PD10		UNABLE TO LOAD
3	PD10	0.7	BOARD FAILURE
4	PD10		UNABLE TO LOAD
5	HM5X52	0.7	BOARD FAILURE
6	HM5X52	0.8	BOARD FAILURE
7	HM5X52	0.8	BOARD FAILURE
8	HM5X52	0.7	BOARD FAILURE
9	HM8X55	0.6	BOARD FAILURE
10	HM8X55	0.8	BOARD FAILURE
11	HM8X55	0.8	BOARD FAILURE
12	HM8X55		
13	UX8X50R	0.8	BOARD FAILURE
14	UX8X50R	0.9	BOARD FAILURE
15	UX8X50R	0.8	BOARD FAILURE
16	UX8X50R	0.8	BOARD FAILURE
17	KD6 GRAVITY TOGGLE	1	BOARD FAILURE
18	KD6 GRAVITY TOGGLE	1	BOARD FAILURE
19	KD6 GRAVITY TOGGLE	1	BOARD FAILURE

COMMENTS

Soft type board, board failure decisive. Unable to load PD fixings due to fixing rotating.

3.4 British Gypsum 15mm Gyproc DuraLine

15mm Gyproc DuraLine

TEST NO	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10	0.7	BOARD FAILURE
2	PD10	0.7	BOARD FAILURE
3	PD10	1	BOARD FAILURE
4	PD10	0.8	BOARD FAILURE
5	HM5X52	0.8	BOARD FAILURE
6	HM5X52	0.85	BOARD FAILURE
7	HM5X52	0.9	BOARD FAILURE
8	HM5X52	0.9	BOARD FAILURE
9	HM8X55	0.9	BOARD FAILURE
10	HM8X55	0.9	BOARD FAILURE
11	HM8X55	0.9	BOARD FAILURE
12	HM8X55	0.9	BOARD FAILURE
13	UX8X50R	0.9	BOARD FAILURE
14	UX8X50R	1	BOARD FAILURE
15	UX8X50R	0.8	BOARD FAILURE
16	UX8X50R	0.95	BOARD FAILURE
17	KD6 GRAVITY TOGGLES	1.1	BOARD FAILURE
18	KD6 GRAVITY TOGGLES	1.2	BOARD FAILURE
19	KD6 GRAVITY TOGGLES	1.2	BOARD FAILURE

COMMENTS

Soft type single board, board failure decisive factor.

3.5 British Gypsum Double layer of 12.5mm Glasroc MultiBoard

Double layer of 12.5mm Glasroc MultiBoard

TEST NO	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10		UNABLE TO LOAD FIXING
2	PD10		UNABLE TO LOAD FIXING
3	PD10		UNABLE TO LOAD FIXING
4	PD10		UNABLE TO LOAD FIXING
5	HM5X65	0.8	TENSILE SLIP
6	HM5X65	0.8	TENSILE SLIP
7	HM5X65	0.7	TENSILE SLIP
8	HM5X65	0.9	TENSILE SLIP
9	UX8X50R	0.7	BOARD FAILURE
10	UX8X50R	0.7	BOARD FAILURE
11	UX8X50R	0.7	BOARD FAILURE
12	UX8X50R	0.7	BOARD FAILURE
13	KD6 GRAVITY TOGGLE	1.4	BOARD FAILURE
14	KD6 GRAVITY TOGGLE	1.4	BOARD FAILURE

COMMENTS

HM fixings pull into back board, causing fixing to pull through. No improvement using larger HM8. Material does not offer enough resistance for PD fixing to load.

3.6 British Gypsum Double layer of 15mm Gyproc SoundBloc

Double layer of15mm Gyproc SoundBloc

TEST NO	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10		UNABLE TO LOAD
2	PD10	0.8	PULL THROUGH
3	PD10		UNABLE TO LOAD
4	PD10		UNABLE TO LOAD
5	HM5X65	1.2	TENSILE PULL
6	HM5X65	1.2	TENSILE PULL
7	HM5X65	1	TENSILE PULL
8			
9	UX8X50R	1.2	PULL THROUGH
10	UX8X50R	1.3	PULL THROUGH
11	UX8X50R	1.2	PULL THROUGH
12	UX8X50R	1.3	PULL THROUGH
13	KD6 GRAVITY TOGGLE	2.4	BOARD FAILURE
14	KD6 GRAVITY TOGGLE	2.5	BOARD FAILURE

COMMENTS

HM fixings start to collapse without failing board. UX plugs pull through softer substrate before board failure occurs. Unable to load PD10 due to fixing rotating.

3.7 British Gypsum 15mm Gyproc FireLine

15mm Gyproc FireLine

TEST NO	FIXING TYPE	LOAD (kN)	FAILURE MODE
1	PD10	0.7	BOARD FAILURE
2	PD10	0.7	BOARD FAILURE
3	PD10	0.7	BOARD FAILURE
4	PD10	0.6	BOARD FAILURE
5	HM5X52	1.1	TENSILE SLIP
6	HM5X52	1	TENSILE SLIP
7	HM5X52	1	TENSILE SLIP
8	HM5X52	1.2	TENSILE SLIP
9	UX8X50R	0.9	BOARD FAILURE
10	UX8X50R	0.8	BOARD FAILURE
11	UX8X50R	0.7	BOARD FAILURE
12	UX8X50R	0.7	BOARD FAILURE
13	KD6 GRAVITY TOGGLE	1.7	BOARD FAILURE
14	KD6 GRAVITY TOGGLE	1.8	BOARD FAILURE
15	KD6 GRAVITY TOGGLE	1.7	BOARD FAILURE

COMMENTS

Board failure for HM5 almost the same as tensile load, approx 1.25kN average.

4. Summary

British Gypsum 12.5mm Glasroc MultiBoard		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
PD 10	**0.89 kN**	**0.12 kN**
HM5x52	**0.9 kN**	**0.22 kN**
UX8x50 R	**1.11 kN**	**0.16 kN**
KD6 Gravity toggle	**1.3 kN**	**0.33 kN**

British Gypsum 12.5mm Gyproc WallBoard		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
PD 10	**0.47 kN**	**0.07 kN**
HM5x52	**0.57 kN**	**0.14 kN**

British Gypsum 15mm Gyproc SoundBloc		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
PD 10	**0.75 kN**	**0.19 kN**
HM5x52	**0.73 kN**	**0.18 kN**
HM8x55	**0.73 kN**	**0.18 kN**
UX8x50 R	**0.82 kN**	**0.12 kN**
KD6 Gravity toggle	**1.0 kN**	**0.25 kN**

British Gypsum 15mm Gyproc DuraLine		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
PD 10	**0.8 kN**	**0.11 kN**
HM5x52	**0.86 kN**	**0.21 kN**
HM8x55	**0.9 kN**	**0.23 kN**
UX8x50 R	**0.91 kN**	**0.13 kN**
KD6 Gravity toggle	**1.17 kN**	**0.29 kN**

British Gypsum Double layer of 15mm Glasroc MultiBoard		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
HM5x65	**0.8 kN**	**0.20 kN**
UX8x50 R	**0.7 kN**	**0.10 kN**
KD6 Gravity toggle	**1.4 kN**	**0.35 kN**

British Gypsum Double layer of 15mm Gyproc SoundBloc		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
HM5x65	**1.3 kN**	**0.28 kN**
UX8x50 R	**1.25 kN**	**0.18 kN**
KD6 Gravity toggle	**2.45 kN**	**0.61 kN**

British Gypsum 15mm Gyproc FireLine		
fischer Products Tested	**Average Ultimate Load**	**Safe Working Load**
PD 10	**0.67 kN**	**0.09 kN**
HM5x52	**1.07 kN**	**0.27 kN**
UX8x50 R	**0.78 kN**	**0.11 kN**
KD6 Gravity toggle	**1.73 kN**	**0.43 kN**

5. Conclusion

This range of boards and configurations provided consistent results.

The metal and Nylon fixings tested reflect typical needs. Inclusion of high performance nylon fixings allow safe anchoring of lightweight applications.

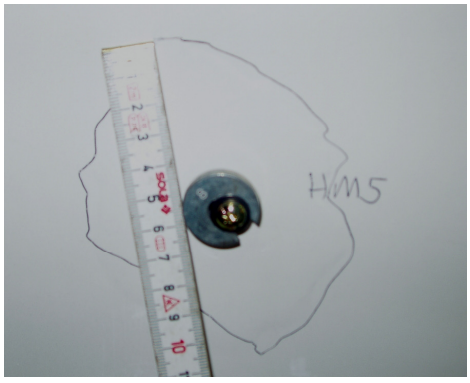
The tests were carried out on purpose built sample walls, randomly fixed, to ensure that the tests reflected typical use on site.

Doubling the board thickness, improved the load on the fixings.

According to the Construction Fixings Association guidelines; “Ultimate load tests should be carried out and admissible loads (Safe Working Loads) determined according to the manufacturers technical policy.” For fischer this requires a safety factor of 4 for steel fixings and a safety factor of 7 for Nylon fixings.

Test wall

Typical test



Typical board failure

6. Further information

For further fixings technical information contact:-

fischer fixings UK Limited
Whitely Road
Hithercroft Industrial Estate
Wallingford
Oxon
OX10 9AT

☎ 0044 (0)1491 827 920

0044 (0)1491 827 950

technical@fischer.co.uk

www.fischer.co.uk

For further board technical information contact:-

British Gypsum Limited
Drywall Academy Technical Advice Centre
East Leake
Loughborough
Leicestershire
LE12 6NP

Telephone: 08705 456123

Fax: 08705 456356

Email: bgtechnical.enquiries@bpb.com

Training Enquiries: 08702 406040

www.british-gypsum.co.uk