

# Rigidur H for off-site applications

## Product Data Sheet

### Introduction

Rigidur H can be used in partition and ceiling systems to give increased rigidity and durability, with excellent acoustic performance, fire resistance and tolerance to moisture. Designed for timber or steel frame and pre-fabricated applications, Rigidur H characteristics are particularly suited

to off-site manufacturing (OSM), where strength and durability of factory-made panels are of high importance. Rigidur H is available in sheet sizes up to 6m x 2.5m, enabling complete wall panels to be constructed from a single board, without the need for jointing.

### Rigidur H physical characteristics

Data (nominal values)	Performance
<b>Dimensional tolerances at constant humidity</b>	
Length	-1mm/+0mm
Width	-1mm/+0mm
Diagonal difference	±2mm
Thickness	±0.3mm
Taper width tolerances	35mm ± 10mm
<b>Nominal density and strength</b>	
Nominal density	1200kg/m <sup>3</sup>
Flexural strength (value after drying at 40°C)	≥6.7N/mm <sup>2</sup>
<b>Certified tensile values according to DIN 1052 (Permit No: Z-9.1-434)</b>	
Bending perpendicular to the board surface	1.1N/mm <sup>2</sup> (12.5mm) 1.0N/mm <sup>2</sup> (15mm)
Bending in board surface	0.9N/mm <sup>2</sup>
Tension in board surface	0.4N/mm <sup>2</sup>
Pressure in board surface	1.8N/mm <sup>2</sup>
Shearing perpendicular to the board surface	0.5N/mm <sup>2</sup>
<b>Modulus calculations (Permit No: Z-9.1-434)</b>	
E-modulus perpendicular to the board surface	4500N/mm <sup>2</sup>
E-modulus parallel to the board surface	3500 N/mm <sup>2</sup>
E-modulus tension	4500N/mm <sup>2</sup> (12.5mm) 2500N/mm <sup>2</sup> (15mm)
E-modulus compression	4500N/mm <sup>2</sup> (12.5mm) 3500N/mm <sup>2</sup> (15mm)
Shearing modulus G perpendicular to the board surface	1300N/mm <sup>2</sup>
<b>Additional data</b>	
Vapour permeability in accordance with DIN 526155	19m
Thermal conductivity λ	0.20W/mK
Brinell surface hardness	35N/mm <sup>2</sup>
Swelling after 24 hours saturation	2%
Co-efficient of thermal expansion	15x10 <sup>-6</sup> K <sup>-1</sup>
Expansion / shrinkage due to changing of the relative humidity of 30% (at 20°C)	0.25mm/m
Moisture content at 65% relative air humidity and 20°C air temperature	1%
Classification in accordance with BS EN 13501-1: 2002	A2 - S1, d0

### Product range

Rigidur H is a gypsum fibreboard which combines gypsum, cellulose fibres from recycled paper and water, to form a dense sheet material that has superior rigidity, durability and mechanical strength.

The unique surface of Rigidur H protects the boards from scratches and damage, yet is smooth enough to decorate direct without the need for surface treatments. The tough surface is a result of its special production process. By holding the boards in a continuous rolling process, they are compressed to the exact thickness required and no sanding of the surface takes place.

Both the Rigidur H product and the manufacturing process have been awarded sustainability certificates by The Rosenheim Institute of Construction Biology and Ecology in Germany.



## Board performance

### Fire protection

Rigidur H achieves an A2 Euroclass reaction to fire rating.  
Rigidur H achieves Class 0 reaction to fire rating in accordance with Approved Document B of the national Building Regulations.

### Fire resistance

Performances achieved with Rigidur H will depend on the board type and thickness, number of layers, stud centres and type, fixing centres and type, and choice of cavity insulation. Two example specifications tested by British Gypsum are given below:

Board specification	Stud size mm	Cavity insulation mm	Fire resistance mins	Cavity insulation kN
Single layer of 15mm Rigidur H	72 x 45 x 1.2 (steel)	None	30	10.0
Inner layer of 12.5mm Rigidur H and an outer layer of 15mm Rigidur H	72 x 45 x 1.2 (steel)	75mm rock mineral wool (32kg/m <sup>3</sup> )	60	10.0

The performances given above are based on tests conducted in accordance with BS 476: Part 21: 1987.

### Sound insulation

The mass and sound absorbing qualities of Rigidur H enables high acoustic performance to be achieved. Performances will depend on the board type and thickness, number of layers, stud centres

and type, fixing centres and choice of cavity insulation. Four example specifications tested by British Gypsum are given below:

Board specification	Stud size mm	Cavity insulation mm	Sound insulation (R <sub>w</sub> ) dB
Single layer of 12.5mm Rigidur H	63 x 38 (timber stud)	None	41
Single layer of 12.5mm Rigidur H	63 x 38 (timber stud)	25mm Isover Acoustic Partition Roll (APR 1200)	43
Single layer of 12.5mm Rigidur H	Gypframe 70 S 60 'C' Stud	None	44
Single layer of 15mm Rigidur H	Gypframe 70 S 60 'C' Stud	50mm Isover Acoustic Partition Roll (APR 1200)	52

### Board colour

- Beige face paper
- Beige reverse side paper

### Board printing

Face - none.

Edge - none.

Reverse - product name, board thickness and standards.

### Option available

#### Rigidur H

A high density, homogeneous board designed for racking strength applications in loadbearing constructions.

#### Rigidur H with ACTIVair technology

The existing benefits of standard Rigidur H combined with ACTIVair technology. ACTIVair captures harmful formaldehyde and converts it into inert compounds. This removes 70% of the formaldehyde concentration in the indoor air without compromising the product performance.

Rigidur H is available to special order in bespoke board sizes up to 6m x 2.5m in 10mm, 12.5mm and 15mm thicknesses.

### Q-Mark

British Gypsum has been awarded the prestigious Q-Mark, the UK Timber Frame Association's new quality assurance scheme for suppliers to the timber frame industry.



### Board range

Width mm	Length mm	Edge type
<b>10mm Rigidur H<sup>1</sup></b> 1200	2400, 2700, 3000	Kg/m <sup>2</sup> = <b>12.0</b> R (m <sup>2</sup> K/W) = <b>0.05</b> S/E
<b>12.5mm Rigidur H<sup>1</sup></b> 1200	2400, 2700, 3000	Kg/m <sup>2</sup> = <b>15.0</b> R (m <sup>2</sup> K/W) = <b>0.06</b> S/E or T/E
<b>15mm Rigidur H<sup>1</sup></b> 1200	2400, 2700, 3000	Kg/m <sup>2</sup> = <b>18.0</b> R (m <sup>2</sup> K/W) = <b>0.07</b> S/E or T/E
<b>18mm Rigidur H<sup>1</sup></b> 1200	2400, 2700, 3000	Kg/m <sup>2</sup> = <b>22.0</b> R (m <sup>2</sup> K/W) = <b>0.09</b> S/E

S/E = Tapered Edge

T/E = Tapered Edge

<sup>1</sup> Available with ACTIVair option

## Board performance

### Racking resistance

The mechanical strength of Rigidur H makes it approved for use in racking-resistant applications in timber frame construction according to the German Institute for Construction Technology in Berlin. A copy of the General Certificate of Approval is available on request.

### Moisture resistance

The surface of Rigidur H has been treated to prevent the ingress of moisture. Tests have shown that it will increase less than 2% in thickness after immersion in water for 24 hours. Therefore it is a product considered suitable for use in 'intermittently damp' areas, e.g. kitchens and bathrooms.

Rigidur H is suitable for internal applications only. If the boards become wet during construction they should be thoroughly dried out before finishing. If the boards become completely saturated, it may be necessary to replace the boards.

### Thermal conductivity

Rigidur H - 0.20W/mK.

### Surface hardness

Brinell hardness  $\geq 35\text{N/mm}^2$ , compared with standard gypsum plasterboard at typically  $18\text{N/mm}^2$ .

### Limitations of use

Rigidur H is unsuitable for use in areas subject to continuously damp conditions and must not be used to isolate dampness. Rigidur H is not suitable for use in temperatures above 49°C.

### Effect of condensation

The thermal insulation and ventilation requirements of national Building Regulations aim to reduce the risk of condensation and mould growth in new buildings. However, designers should take care to eliminate all possibility of problems caused by condensation, particularly in refurbishment projects.

### ACTIVair technology

Though we don't notice them, impurities such as volatile organic compounds (VOCs) are often present in the air we breathe - emitted from furniture, carpets and building materials. Long-term exposure to these can potentially cause health problems and reduce general well-being.

Clean air, on the other hand, can speed up patient recovery in hospitals, reduce absence at work, and increase pupils' concentration at school.

ACTIVair is our latest technology designed specifically to convert formaldehyde, a common VOC, into non-harmful inert compounds, removing 70% of the formaldehyde concentration in the indoor air. This clever technology continues to work over 50 years, and whilst alternative solutions absorb formaldehyde, they don't decompose like ACTIVair risking re-emission at a later date.

## Application and installation

### General

Rigidur H should be stored on a firm, flat and level surface.

If the boards are temporarily stored outside they should be kept clear of the ground and securely covered with an anchored polythene sheet or tarpaulin to protect from dampness and inclement weather.

### Cutting

Due to the high density and hardness of Rigidur H, it is not as easy to score and snap with a knife as Gyproc plasterboards. Best practice is to use a circular saw with suitable dust extraction. Use a fine saw blade with a high ratio of teeth. Always use a suitable dust collection system, and follow the manufacturers' guidance when using electrical tools. For complex details i.e. doors and socket details, it is recommended that a jigsaw or router is used. Curves can be achieved using a fret saw.

### Handling

Individual boards can be transported for short periods stood on end, although storage on end is not recommended as boards could become permanently warped. Avoid carrying individual 10mm Rigidur H boards horizontally.

### Fixing

Rigidur H can be fixed with screws, staples or ballistic nails. Fixings should be located no closer than 13mm from the board edges.

### Board types

T/E - Tapered Edge Finish with Gyproc jointing materials for taped and filled joints, or Thistle plasters.

S/E - Square Edge Finish with Thistle plasters.

### Jointing

Gyproc jointing materials, together with Gyproc Joint Tape, produce a durable joint reinforcement and a smooth, continuous, crack-free surface ready for priming with Gyproc Drywall Primer and final decoration.

When jointing Rigidur H by hand, use Gyproc Easi-Fill. The joints can be finished using the 10" & 12" Flat Finishers (quick release versions) if desired.

When jointing using the Automatic Taper, use Gyproc ProMix ure for the best results (Gyproc Joint Cement can be considered, but care needs to be taken to mix to the correct consistency). Due to the nature of the joints on tapered edge Rigidur H, the Gyproc Joint Tape will need to be bedded down with a 50mm wide taping knife to flatten the tape back onto the joint. Take care to leave sufficient jointing material behind the tape to ensure good adhesion. The joints can then be finished using the 10" & 12" Flat Finishers (quick release versions).

# Application and installation

## Plastering

Rigidur H can be skim-finished using Thistle MultiFinish, Thistle BoardFinish or Thistle DuraFinish. The board surface may need to be treated with a coat of Thistle GypPrime prior to skimming, to control the suction.

For finishing Rigidur H it is recommended that Thistle DuraFinish or Gyproc jointing materials be used where optimum impact and abrasion resistance is required.

### Fixing recommendations of Rigidur H to loadbearing steel framing using ballistic pins or nails:

Board thickness mm	Minimum fixing length mm	Maximum fixing spacing mm	Maximum stud spacing mm
1 x 10mm Rigidur H	20	250	500
1 x 12.5mm Rigidur H	25	250	600
1 x 15mm Rigidur H	25	250	600
2 x 10mm Rigidur H	20 and 30	250	600
2 x 12.5mm Rigidur H	25 and 35	250	600
2 x 15mm Rigidur H	25 and 40	250	600

### Fixing recommendations of Rigidur H to timber framing using staples:

Board thickness mm	Minimum fixing length mm	Maximum fixing spacing mm	Maximum stud spacing mm
1 x 10mm Rigidur H	30	225	500
1 x 12.5mm Rigidur H	35	225	600
1 x 15mm Rigidur H	44	225	600
2 x 10mm Rigidur H	30 and 44	225	600
2 x 12.5mm Rigidur H	35 and 50	225	600
2 x 15mm Rigidur H	44 and 50	225	600

### Fixing recommendations of Rigidur H to timber framing using Glasroc F FIRECASE screws:

Board thickness mm	Minimum fixing length mm	Maximum fixing spacing mm	Maximum stud spacing mm
1 x 10mm Rigidur H	40	300	500
1 x 12.5mm Rigidur H	40	300	600
1 x 15mm Rigidur H	40	300	600
2 x 10mm Rigidur H	40 and 50	300	600
2 x 12.5mm Rigidur H	40 and 50	300	600
2 x 15mm Rigidur H	40 and 58	300	600

## Decoration

Due to the smooth, hard surface, Rigidur H is suitable for all types of surface coverings, such as paint and wallpaper. The boards and their joints must be clean, dry and free from dust. Depending on the requirements of the decoration, ensure that all joints have been suitably sanded.

When painting Rigidur H, it is recommended that a base coat of Gyproc Drywall Primer is used before finishing with two coats of good quality trade emulsion.

Ceramic and synthetic tiles (up to 300mm x 300mm) are suitable for application to Rigidur H. Please follow manufacturers' recommendations regarding any surface preparation and adhesive that should be used. Please refer to

Site Book, section 10 – Finishing systems and decorative effects, for guidance regarding tile weight, and follow guidance for Gyproc plasterboard.

Mineral-based paints, e.g. lime, silicone, are not suitable for use with Rigidur H.

### Heavy, semi-rigid or impermeable wallcoverings

The use of these wallcoverings may involve specialist adhesives or techniques which may not be compatible with Gyproc Drywall Primer. Consult the wallcovering and / or adhesive manufacturer for a specific recommendation.

# Application and installation

## Attaching loads

### Flat loads

Lightweight flat objects, e.g. pictures and mirrors can be simply hung with picture hooks or wood screws fixed directly into the board, without the need for support noggings (see main table below for loadbearing capacity). When fixing flat loads, any two points of attachment must have a minimum distance of 150mm from each other. Failure to do so will result in the halving of the weight of the load able to be supported.

### Cantilever loads




Shelves and hanging cupboards can be attached with suitable cavity fixings. The choice of attachment method is dependent upon the weight, distance of the weight from the fixing, and

dimensions of the object. When fixing cantilever loads, any two points of attachment must have a minimum distance of 150mm from each other. Failure to do so will result in the halving of the weight of the load able to be supported. Contact the fixing manufacturer for guidance when calculating cantilever loads.

### Heavy loads

Heavy loads, e.g. wash basins, sanitary units and radiators, should be fixed to the structural framework.

Examples of the pull-out capacity of various fixings in Rigidur H are given in the table below:

Board lining	Fixing type	Safe working load per fixing <sup>1</sup>	
		Pull down	Pull out
Single layer Rigidur H	Single picture hook and masonry nail 	12.5mm = 17kg 15mm = 18kg	
Single layer Rigidur H	Number 10 wood screw 		12.5mm = 15kg 15mm = 15kg
Single layer Rigidur H	'Fischer PD' nylon plug & screw 		12.5mm = 20kg 15mm = 20kg
Single layer Rigidur H	'Fischer UX (8 x 50)' nylon plug & screw 		12.5mm = 21kg 15mm = 27kg
Single layer Rigidur H	'Fischer HM8 x 55' steel cavity fixing 		15mm = 49kg
Single layer Rigidur H	'Fischer KD6' steel cavity fixing 		12.5mm = 58kg 15mm = 74kg

<sup>1</sup> Safe working loads were calculated using a safety factor of x4 for metal fixings and x7 for plastic fixings as per Construction Fixings Association guidance. Please refer to the fixing manufacturers' recommendations when mounting and fixing.

## Product standards

EN Standard is *EN 15283-2 Gypsum boards with fibrous reinforcement. Part 2: Gypsum fibre boards.*

## Maintenance

### Repair

**Minor damage** - lightly sand the surface to remove burrs and fill flush with two applications of Gyproc Joint Cement.

Deep indents resulting from impact - check the board core to ensure that it is not shattered. If intact, apply a coat of Gyproc Joint Filler followed by the procedure for repairing minor damage as outlined above, once set / dry.

**Extensive damage** - when the damage is more extensive, it may be necessary to replace that area of board. It is important that the replacement board is of the same type as specified and installed. Cut out the affected area back to the nearest framing member. Replace the board, accurately cutting and screw fixing the same type and thickness of board. Fill edge joints, then tape and finish in the recommended way. Redecorate as required.

**NB** It is essential that repairs are made 'like for like'. If the finish is skim plaster, jointing materials must not be used in the repair.

Date of previous version: February 2014.

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**Telephone: 0844 800 1991**

**Fax: 0844 561 8816**

**Email: [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com)**

**Training enquiries: 0844 561 8810**

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