

# Rigidur H for commercial applications

## Product Data Sheet

### Introduction

Rigidur H is the outer board component in GypWall EXTREME, offering a British Gypsum system with increased rigidity and durability.

GypWall EXTREME is specifically suited to the varied requirements of large school and hospital projects, offering a solution with superior durability for the most demanding high traffic areas of the building.

GypWall EXTREME also offers excellent acoustic performance, which is a key consideration in health and education building design.

GypWall EXTREME is covered by the British Gypsum SpecSure® lifetime system warranty and is fully compatible with GypWall ROBUST, as well as other British Gypsum SpecSure® approved systems. This gives you the opportunity to design the most cost-effective construction solution, both in terms of construction cost and whole life / maintenance costing for the project.

### Rigidur H physical characteristics

Data (nominal values)	Rigidur H
<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	19μ
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
Specific heat capacity	1.1 KJ/KgK

### 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, yet smooth, 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 a certificate for sustainability 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	Cavity insulation	Fire resistance (EN) mins	Max. partition height (mm) BS EN	Partition duty <sup>1</sup>	System reference
Single layer of 15mm Rigidur <b>H</b>	Gypframe 70 S 60 'C' Stud	None	30	4000 4000	Severe	X606001
Outer layer of 12.5mm Rigidur <b>H</b> with an inner layer of 15mm Gyproc WallBoard	Gypframe 70 AS 50 AcouStud	None	60	4700 4000	Severe	X606A005

## Sound insulation

The mass and sound absorbing qualities of Rigidur **H** enable 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	Cavity insulation	Sound insulation (R <sub>w</sub> ) mins	Partition duty <sup>1</sup>	System reference
Single layer of 15mm Rigidur <b>H</b>	Gypframe 70 S 60 'C' Stud	None	45	Severe	X606001
Single layer of 15mm Rigidur <b>H</b>	Gypframe 70 S 60 'C' Stud	50mm Isover Acoustic Partition Roll (APR 1200)	52	Severe	X606003
Outer layer of 12.5mm Rigidur <b>H</b> with an inner layer of 15mm Gyproc WallBoard	Gypframe 70 AS 50 AcouStud	None	54	Severe	X606A005
Outer layer of 12.5mm Rigidur <b>H</b> with an inner layer of 15mm Gyproc SoundBloc	Gypframe 70 AS 50 AcouStud	25mm Isover Acoustic Partition Roll (APR 1200)	58	Severe	X606A007

<sup>1</sup> The resistance to impact of Rigidur **H** is higher than the most severe criteria set out in BS 5234: Part 2: 1992. British Gypsum has conducted a number of additional structural performance and durability tests above and beyond Severe Duty to better reflect actual use in high traffic areas. Please contact the Saint Gobain Technical Academy for more information.

## Board colour

Beige - Face.  Beige - Reverse.

## Board printing

Face - None. Edge - None.  
Reverse - Product name, board thickness and standards.

## Board range

Width mm	Length mm	Edge type
<b>12.5mm board<sup>2</sup></b>		Kg/m <sup>2</sup> = $\frac{15.0}{0.0125}$ R (m <sup>2</sup> K/W) = $\frac{0.04}{0.0125}$
1200	2400	T/E
1200	2800	T/E
1200	3000	T/E
<b>15mm board<sup>2</sup></b>		Kg/m <sup>2</sup> = $\frac{18.0}{0.015}$ R (m <sup>2</sup> K/W) = $\frac{0.04}{0.015}$
1200	2400	T/E
1200	2800	T/E
1200	3000	T/E

<sup>2</sup> Available with ACTIVair option

## Board types

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

## 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, and is therefore 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 VOC emissions into non-harmful inert compounds, making the air around you up to 70% cleaner. This clever technology continues to work over 50 years, and whilst alternative solutions absorb VOCs, they don't decompose them like **ACTIVair** technology risking re-emission at a later date.

## Application and installation

### General

Additional time should be allowed for the cutting, handling and fixing of Rigidur **H** compared to standard Gyproc plasterboard.

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 hand held circular saw with suitable dust extraction. Use a fine saw blade with a high ratio of teeth. Always use a suitable dust collection system. Always follow the manufacturers' guidance when using electrical tools.

For complex details (i.e. doors and socket details), it is recommended that a jigsaw 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.

### Fixing

Rigidur **H** is fixed using 40mm Rigidur screws, at 300mm centres around the perimeter of the board and at the intermediate stud positions, at least 13mm from the edge of the board.

When using Rigidur **H**, always fix from the bottom of the partition upwards, as per best practice. Single layer Rigidur **H** should be fixed to Gypframe 70 S 60 'C' Studs. Double layers should be fixed to Gypframe 70 AS 50 AcouStuds or Gypframe 146 AS 50 AcouStuds.

Due to the length of Rigidur screws, care must be taken when fixing in close proximity to services. Rigidur screws have a smaller head than standard British Gypsum Drywall screws, allowing them to be counter-sunk into the tough Rigidur surface. Removing the depth adapter on the screw gun may reduce burring around the edge of the screw.

Note that, due to the high density and hardness of Rigidur **H** that gives it excellent impact resistance, some burring around the screw heads can be expected. Additional time should be allowed for cleaning off, before finishing with a small surform (or sand paper).

Inner layers of Gyproc plasterboards should be fixed with 25mm British Gypsum Drywall screws around the perimeter of the board at 300mm centres, and at the intermediate stud at 600mm centres.

For wall lining applications, it is recommended that Rigidur **H** is installed using the **GypLyner UNIVERSAL** system, however,

12.5mm Rigidur **H** can be fixed using the **Drilyner BASIC** system, where dot and dab is a requirement. Due to the length of Rigidur screws (40mm), care must be taken when fixing to Gypframe GL1 Lining Channel. A minimum cavity of 30mm will be required to ensure against thermal bridging to the external wall.

### 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" Gyproc Speed Tape Finishers (quick release versions) if desired. When jointing using the Gyproc Speed Tape Automatic Taper, use Gyproc ProMix **LITE** 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" and 12" Gyproc Speed Tape Finishers (quick release versions).

### Plastering

Rigidur **H** can be skim-finished using Thistle Multi-Finish, Thistle Board Finish or Thistle Durafinish. The board surface may need to be treated with a coat of Thistle GypPrime prior to skimming, to control the suction.

Rigidur **H**, it is recommended that Thistle Durafinish or Gyproc jointing materials be used where optimum impact and abrasion resistance is required.

### Decoration

Due to its 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.

## 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 Gypframe metal framing. Examples of the pull out capacity of various fixings in Rigidur H are given in the table below:

Board lining	Fixing type	Image	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	No. 10 woodscrew			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.

 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.

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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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