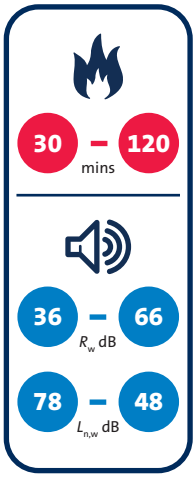
Loadbearing timber joist floors

Internal and separating floor systems

Loadbearing timber joist floors

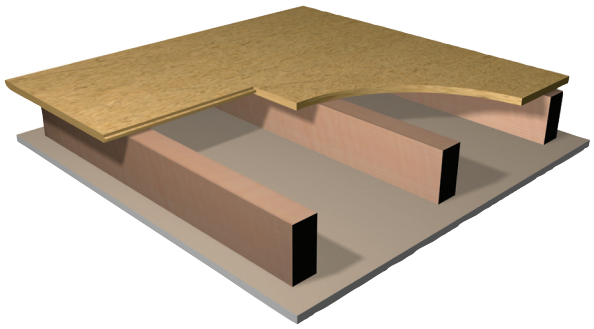


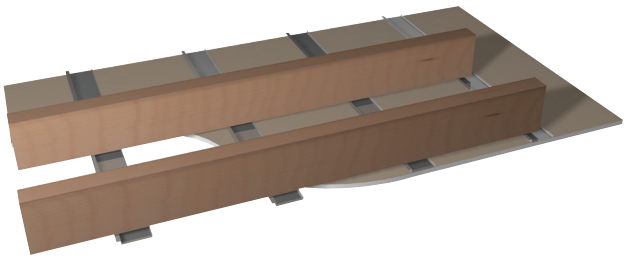
Timber joists are widely used within internal floor and separating floor construction, both in residential and commercial applications.

Our range of timber joist floor solutions include cavity insulation, high-performance Gyproc plasterboards and Gypframe sound insulating bars. Our solutions maximise acoustic and fire performance, to both meet, and significantly exceed, the requirements of Building Regulations, for new build and refurbishment projects.

Key benefits

- When Gyproc plasterboards are directly fixed, defects are minimised using Gyproc Drywall Screws
- Nail popping is eliminated through the use of Gypframe RB1 Resilient Bar
- Significantly enhanced acoustic performance is achieved when Gypframe RB1 Resilient Bar is specified alongside Gyproc SoundBloc plasterboard linings





You may also be interested in...

CasoLine MF

A suspended ceiling system, capable of providing up to 120 minutes fire resistance. Suitable for internal drylining application to timber joist floors. The fully concealed grid and ceiling lining can be used in conjunction with Gyproc plasterboards and Gyptone or Rigitone acoustic ceiling boards to create a seamless, monolithic appearance.

▶ Refer to C06. S02. P355 – **CasoLine MF**.

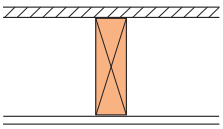
Loadbearing timber joist floors performance

Ceiling directly fixed to new or existing solid timber joist floors

For details of when to specify fire resistance using EN
▶ Refer to **C02. S01. P18**

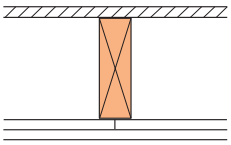
Table 1a - Solutions to satisfy requirements of *BS EN 1365-2: 2000*

1



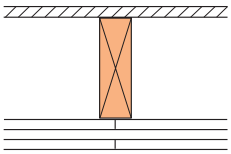
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Noggings and linings as in table.

2



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Noggings and linings as in table.

3



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres (maximum). Noggings and linings as in table.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Noggings required	Maximum loadbearing ratio	Sound insulation		System reference
						Airborne R_w dB	Impact $L_{n,w}$ dB	
30 minutes fire resistance EN								
1	227	Glasroc F MULTIBOARD	1 x 10	Yes[2]	100%	-	-	G106036
1	232	Gyproc WallBoard	1 x 15	Yes[3]	100%	40	-	C106029
60 minutes fire resistance EN								
2	237	Glasroc F MULTIBOARD	2 x 10	Yes[2]	100%	-	-	G106022
2	242	Gyproc FireLine	2 x 12.5	Yes[2]	100%	40	76	C016009
2	245	Gyproc WallBoard (inner layer) + Gyproc FireLine (outer layer)	1 x 12.5 + 1 x 15	Yes[3]	100%	40	76	C016008
90 minutes fire resistance EN								
3	255	Gyproc FireLine	3 x 12.5	Yes[2]	100%	40	-	C016012

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.
[2] At ceiling perimeter and to support outer layer ceiling board joints (38mm x 38mm minimum).
[3] At ceiling perimeter only.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

NB The maximum substantiated span on the above solid timber joist systems is 4000mm. For any spans greater than this please contact our Technical Department.

Handy hint

For further information regarding Building Regulations acoustic performance requirements.

▶ Refer to C02. S01. P21 – Building acoustics

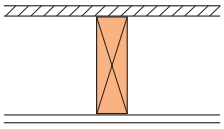
Loadbearing timber joist floors performance (continued)

Ceiling directly fixed to new or existing solid timber joist floors

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

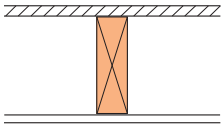
Table 1b - Solutions to satisfy the requirements of *BS 476: Part 21: 1987*

1



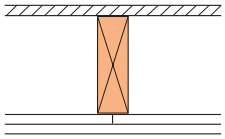
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Noggings and linings as in table.

2



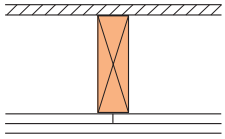
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 450mm centres. Noggings and linings as in table.

3



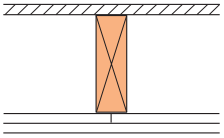
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Noggings and linings as in table.

4



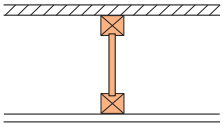
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 450mm centres. Noggings and linings as in table.

5



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 50mm timber joists at 450mm centres. Noggings and linings as in table.

6



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 241mm timber 'I' joists at 600mm centres. Noggings and linings as in table.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Noggings required	Maximum loadbearing ratio	Sound insulation		System reference
						Airborne R_w dB	Impact $L_{n,w}$ dB	
30 minutes fire resistance BS								
2	230	Gyproc WallBoard	1 x 12.5	Yes[2]	60%	36	-	C014003
1	230	Gyproc FireLine	1 x 12.5	Yes[3]	60%	38	-	C016004
1	232	Gyproc WallBoard	1 x 15	Yes[2]	100%	40	-	C106029
6	278	Gyproc WallBoard	1 x 15	Yes[2]	60%[4]	41	-	C206015
60 minutes fire resistance BS								
3	242	Gyproc FireLine	2 x 12.5	Yes[3]	100%	40	76	C016009
4	245	Gyproc WallBoard (inner layer) + Gyproc FireLine (outer layer)	1 x 12.5 + 1 x 15	Yes[2]	100%	40	76	C016008
5	247	Gyproc WallBoard	2 x 15	Yes[3]	60%	40	76	C016006
5	249	Gyproc Plank (inner layer) + Gyproc WallBoard (outer layer)	1 x 19 + 1 x 12.5	Yes[2]	60%	40	75	C016007
90 minutes fire resistance BS								
5	247	Gyproc FireLine	2 x 15	Yes[3]	60%	40	78	C014011

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.
[2] At ceiling perimeter only.
[3] At ceiling perimeter and to support outer layer ceiling board joints.
[4] This value is based on a test with a typical 'I' joist. Consult manufacturers directly for information on specific 'I' joists.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

NB All the 30 and 60 minute specifications in table 1b can be used on the underside of an existing lath and plaster ceiling provided the existing ceiling is supported by chicken wire securely fixed to the joists and counter battened with minimum 38mm x 38mm timber at 600mm centres, with noggings to support the long edges of the outer layer board.

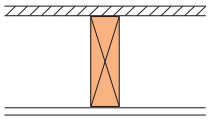
Loadbearing timber joist floors performance (continued)

Non-combustible ceiling linings directly fixed to new or existing solid timber joist floors

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

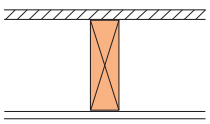
Table 2 – Solutions to satisfy the requirements of *BS 476: Part 21: 1987*

1



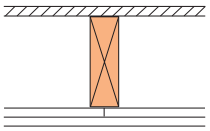
18mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 450mm centres with suitable noggings between joists to support board edges. Linings as in table.

2



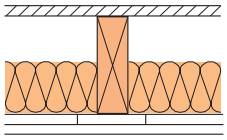
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres with suitable noggings between joists to support board edges. Linings as in table.

3



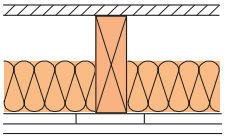
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 47mm timber joists at 600mm centres with suitable noggings between joists to support board edges. Linings as in table.

4



18mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 50mm timber joists at 400mm centres. 30mm stone mineral wool (64kg/m³) in the cavity. Linings as in table.

5



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 50mm timber joists at 600mm centres with suitable noggings between joists to support board edges. 60mm stone mineral wool (23kg/m³) in the cavity. Linings as in table.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Noggings required	System reference
30 minutes fire resistance BS					
1	219	Glasroc F MULTIBOARD	1 x 6	Yes[3]	G104019
2	227	Glasroc F MULTIBOARD	1 x 10	Yes[3]	G106036
2	230	Glasroc F MULTIBOARD	1 x 12.5	Yes[3]	G106021
60 minutes fire resistance BS					
2	232	Glasroc F FIRECASE (screw-fixed)[2]	1 x 15	Yes[3]	G106025
4	233	80mm wide Glasroc F MULTIBOARD strip + Glasroc F MULTIBOARD	1 x 10 + 1 x 10	No	G104024
3	237	Glasroc F MULTIBOARD	2 x 10	Yes[3]	G106022
5	237	80mm wide Glasroc F MULTIBOARD strip + Glasroc F MULTIBOARD	1 x 10 + 1 x 10	Yes[3]	G106046

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.
[2] Use 58mm Glasroc F FIRECASE Screws at 150mm centres, and increase the width of the timber joists at the location of board ends using 25mm x 25mm timber battens.
[3] At ceiling perimeter and to support outer layer ceiling board joints (38mm x 38mm minimum).

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

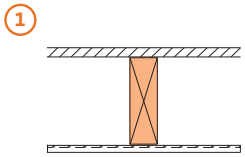
NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

Loadbearing timber joist floors performance (continued)

New or replacement ceilings to solid timber joists

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

Table 3 – Solutions to satisfy the requirements of *BS 476: Part 21: 1987*



21mm t&g (softwood or chipboard) floor boarding over timber joists at 600mm centres with suitable timber noggings between joists to support metal lathing. Plaster to metal lathing as in table.

Detail	Ceiling specification	Joist centres	Joist width (minimum) mm	System reference
60 minutes fire resistance BS				
1	Ribbed metal lath[1] with 13mm Gyproc Bonding Coat and 2mm Gyproc Finish Plaster	600	44	C016016
120 minutes fire resistance BS				
1	Ribbed metal lath[1] with 19mm Gyproc Bonding Coat and 2mm Gyproc Finish Plaster	600	48	C016045

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] Where plaster is applied to ribbed metal lath, the plaster thickness is measured from the face of the lath, and the lath should be installed in accordance with the manufacturers' recommendations. With 120 minutes fire resistance construction, the metal lath is independently fixed with wire supports from the joist sides. Refer to C07. S02. P438 – Plaster systems, design, How to apply plaster to metal lath.

NB Gyproc plaster is classified A1 in accordance with *BS EN 13501-1: 2002*.

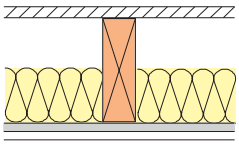
Loadbearing timber joist floors performance (continued)

Ceiling indirectly fixed to new or existing solid timber joist floors

For details of when to specify fire resistance using EN
▶ Refer to **C02. S01. P18**

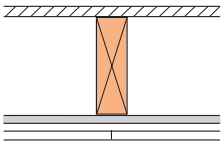
Table 4a - Solutions to satisfy the requirements of *BS EN 1365-2: 2000*

1



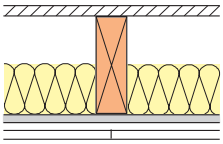
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only. 100mm Isover Acoustic Roll in the cavity.

2



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only.

3



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only. 100mm Isover Spacesaver Ready-Cut in the cavity.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Maximum loadbearing ratio	Sound insulation		System reference
					Airborne R_w dB	Impact $L_{n,w}$ dB	
30 minutes fire resistance EN							
1	240	Gyproc WallBoard	1 x 12.5	100%	41	76	C206006
60 minutes fire resistance EN							
2	258	Gyproc FireLine	2 x 12.5	100%	45	72	C016031
3	263	Gyproc SoundBloc	2 x 15	100%	54	60	C206009

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

NB The maximum substantiated span on the above solid timber joist systems is 4000mm. For any spans greater than this please contact our Technical Department.

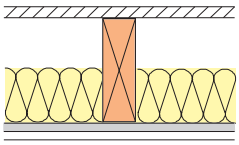
Loadbearing timber joist floors performance (continued)

Ceiling indirectly fixed to new or existing solid timber joist floors

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

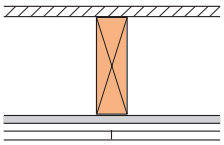
Table 4b - Solutions to satisfy requirements of *BS 476: Part 21: 1987*

1



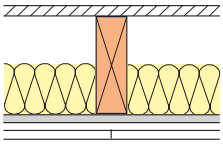
22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only. 100mm Isover Acoustic Roll in the cavity.

2



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only.

3



22mm t&g[1] (softwood or chipboard) floor boarding over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling linings as in table fixed into the bars only. 100mm Isover Spacesaver Ready-Cut in the cavity.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Maximum loadbearing ratio	Sound insulation		System reference
					Airborne R_w dB	Impact $L_{n,w}$ dB	
30 minutes fire resistance BS							
1	240	Gyproc WallBoard	1 x 12.5	100%	41	76	C206006
60 minutes fire resistance BS							
2	258	Gyproc FireLine	2 x 12.5	100%	45	72	C016031
3	263	Gyproc SoundBloc	2 x 15	100%	54	60	C206009

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

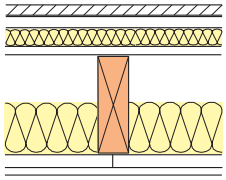
Loadbearing timber joist floors performance (continued)

Compartment / separating solid timber joist and sub-joist floors

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

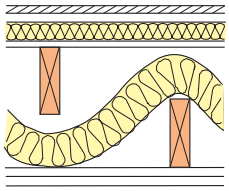
Table 5 - Solutions to satisfy requirements of *BS 476: Part 21: 1987*

1



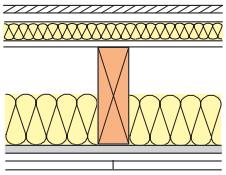
Typical platform floor construction (comprising walking surface of 18mm t&g[1] wood board flooring, spot-bonded with Gyproc Sealant at 300mm centres to a substrate of Gyproc Plank laid on 25mm Isover Sound Deadening Floor Slab, laid on a minimum of 12mm wood-based sheet sub-deck nailed to the joists) over 195mm x 44mm timber joists at 600mm centres. 100mm Isover Acoustic Roll between the joists. Linings as in table.

2



Separating sub-joist floor comprising of a platform floor construction (comprising walking surface of 18mm t&g[1] wood board flooring, spot-bonded with Gyproc Sealant at 300mm centres to a substrate of Gyproc Plank laid on 25mm Isover Sound Deadening Floor Slab, laid on a minimum of 12mm wood-based sheet sub-deck nailed to the joists) over minimum 47mm wide timber floor joists at 600mm centres. 100mm Isover Acoustic Roll in the cavity. Independent minimum 47mm wide ceiling joists. Linings as in table.

3



Typical platform floor construction (comprising walking surface of 18mm t&g[1] wood board flooring, spot-bonded with Gyproc Sealant at 300mm centres to a substrate of Gyproc Plank laid on 25mm Isover Sound Deadening Floor Slab, laid on a minimum of 12mm wood-based sheet sub-deck nailed to the joists) over minimum 195mm x 38mm timber joists at 600mm centres. Gypframe RB1 Resilient Bars fixed to underside of joists at 450mm centres and at perimeter with ceiling. Linings as in table fixed into the bars only. 100mm Isover Spacesaver Ready-Cut in the cavity.

Detail	Nominal floor depth mm	Board type	Ceiling lining thickness mm	Maximum loadbearing ratio	Sound insulation		System reference
					Airborne R_w (R_w + Ctr) dB	Impact $L_{n,w}$ dB	
60 minutes fire resistance BS							
1	301	Gyproc Plank (inner layer) + Gyproc SoundBloc (outer layer)	1 x 19 + 1 x 12.5	100%	62 (50)	56	C016038
3	315	Gyproc SoundBloc	2 x 15	100%	64 (53)[2]	54	C016040
2	320	Gyproc SoundBloc	2 x 15	100%	66 (55)[2]	48	C106050

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] For non t&g floors, overlay with 6mm plywood and ensure all joints are staggered.
[2] These Gyproc Approved Systems are designed to achieve minimum D_{nTw} + C_{tr} 45dB and $L'_{nT,w}$ 62dB subject to Pre-Completion Testing.

NB Separating floors require both a suitable isolating floor and a suitable isolating ceiling.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

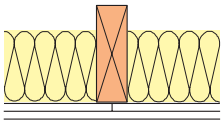
Loadbearing timber joist floors performance (continued)

Non-loadbearing ceiling directly fixed to joists

For details of when to specify fire resistance using EN
▶ Refer to **C02. S01. P18**

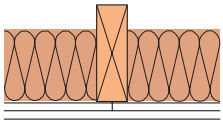
Table 6a - Solutions to satisfy the requirements of *BS EN 1364-2: 1999*

1



150mm x 38mm (minimum) joists (not roof trusses) at 600mm (maximum) centres. Insulation and ceiling linings as in table.

2



150mm x 38mm (minimum) joists (not roof trusses) at 600mm (maximum) centres. Insulation and ceiling linings as in table.

ROI Building Regulation guidance for new build dwellings requires fire rated solutions for truss rafters to be substantiated as load-bearing constructions.

Please contact our Technical Department on 1800 744480 for further assistance.

Detail	Board type	Ceiling lining thickness mm	Noggings required	Insulation type	System reference
30 minutes fire resistance EN					
1	Gyproc WallBoard	2 x 15	Yes[1]	150mm Isover Spacesaver Ready-Cut	C106052
1	Gyproc FireLine	2 x 12.5	Yes[1]	150mm stone mineral wool (24kg/m³)	C106048
60 minutes fire resistance EN					
2	Gyproc FireLine	2 x 15	Yes[1]	150mm stone mineral wool (24kg/m³)	C106059

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] At ceiling perimeter and to support outer layer ceiling board joints.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

NB Timber Frame Circular No. 3 issued by the Building Standards (May 2020) requires that fire tests for fire rated trusses be undertaken on loaded construction, please contact the Technical Department for further information.

NB The maximum substantiated span on the above solid timber joist systems in 4000mm. For any spans greater than this please contact our Technical Department.

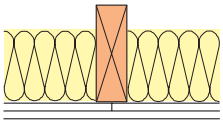
Loadbearing timber joist floors performance (continued)

Non-loadbearing ceiling directly fixed to joists

For details of when to specify fire resistance using BS
▶ Refer to **C02. S01. P18**

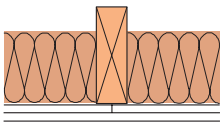
Table 6b - Solutions to satisfy requirements of *BS 476: Part 22: 1987*

1



38mm (minimum) timber joists at 600mm centres, with suitable timber noggings between joists to support board edges. Insulation laid between joists (see table). Linings as in table.

2



38mm (minimum) timber joists at 600mm centres, with suitable timber noggings between joists to support board edges. Insulation laid between joists (see table). Linings as in table.

Detail	Board type	Ceiling lining thickness mm	Noggings required	Insulation type	System reference
30 minutes fire resistance BS					
1	Gyproc WallBoard	2 x 12.5	Yes[1]	150mm Isover Spacesaver Ready-Cut	C106049
2	Gyproc FireLine	2 x 12.5	Yes[1]	150mm stone mineral wool (24kg/m³)	C106048
60 minutes fire resistance BS					
1	Glasroc F MULTIBOARD	2 x 10	Yes[1]	150mm Isover Spacesaver Ready-Cut	G106042
2	Gyproc FireLine	2 x 15	Yes[1]	150mm stone mineral wool (24kg/m³)	C106059

▶ For further assistance in choosing the right solution for your project, try our System Selector; an online tool that enables quick and easy filtering by performance criteria. It provides system specific information downloads including BIM (Revit) objects. Go to gyproc.ie

[1] At ceiling perimeter and to support outer layer ceiling board joints.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to Gyproc's recommendations. The quoted performances are achieved only if Gyproc and Isover components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with Gyproc.

NB Where boards are fixed direct to timber joists, Gyproc Drywall Screws should be used as opposed to nail-fixing to minimise the risk of fixing defects occurring.

NB Timber Frame Circular No. 3 issued by the Building Standards (May 2020) requires that fire tests for fire rated trusses be undertaken on loaded construction, please contact the Technical Department for further information.

Loadbearing timber joist floors design

Planning – key factors

To minimise the risk of ceiling finish defects occurring, seasoned timber with a moisture content not exceeding that recommended in *BS 5268: Part 2: 2002* should be used. The contractor should ensure that timber supports are accurately spaced, aligned, and levelled. Gyproc Drywall Screws are the preferred method of fixing.

Handy hint

For further information regarding Building Regulations acoustic performance requirements.

▶ Refer to C02. S01. P21 – Building acoustics.

Cavity fire barriers

Cavity fire barriers may be required to satisfy the requirements of the Building Regulations.

▶ Refer to C06. S06. P422 – Cavity fire barriers.

Strength and robustness

Timber should be aligned and level, and should meet the requirements of *BS 5268: Part 2: 2002*. The dimensions and assembly of timber supports should be sufficient to allow positive fixing of plasterboard without bounce or undue deflection because of screwing or other applied force. When the above fixing conditions cannot be met, a timber batten should be securely fixed to the side of the timber supports where ceiling boards butt, in order to increase the bearing surface.

Where boards are fixed at maximum centres in adverse conditions, the standard of lining can be affected. Adverse conditions can generally be described as conditions where high humidity occurs, principally in the cold, damp, autumn / winter period. They also refer to buildings under construction over this period, where both the structure and wet applications such as plastering and screeding are subject to slow drying conditions. In these adverse conditions there is a risk of the plasterboard bowing and therefore additional plasterboard support framing should be incorporated.

Water vapour control

Where a vapour control layer is included in the ceiling construction in conditions described previously, condensation can form on the vapour control surface. This can result in plasterboard becoming unduly damp, and affecting the standard of acceptability of the lining and any applied plaster or textured coating. In these circumstances increased ventilation or dehumidification is recommended.

Where there is a requirement for a vapour control layer, DUPLEX grade Gyproc plasterboards should be specified as the face layer, i.e. the second layer in double layer linings. Isover Vario membranes will also provide vapour control.

Timber noggings should always be incorporated when fixing boards offering a vapour control layer, irrespective of joist spacing, e.g. DUPLEX grade Gyproc plasterboard and thermal laminates providing vapour control.

Acoustic performance

Airtightness is essential for optimum sound insulation. While most junctions will be sealed with standard finishing materials, gaps at the perimeter of the floor and ceiling, and other small air paths, can be sealed using Gyproc Sealant. The performance of the floor in practice will generally be governed by flanking transmission.

▶ Refer to section C02. S01. P21 – Building acoustics.

Important information

Impact sound insulation, $L_{n,w}$ is a measurement of the amount of sound energy transmitted through the floor when tested under laboratory conditions. Therefore, the lower the figure, the better the performance.

Imposed loads

The designer should ensure that the floor construction is suitable to support any imposed loads.

Timber noggings within timber floors (direct fix applications)

Suitable timber noggings, typically 38mm x 38mm or 50mm x 50mm, may be required between joists and at the ceiling perimeter to support the edges / ends of the board. The provision of noggings depends on several factors; the thickness of the board, spacing of the timber joists and any technical performance requirements, e.g. vapour resistance and fire resistance performance. Table 7 below provides information on the general requirement of noggings. However, reference must also be made to the relevant technical performance tables (1 - 6b) on the previous pages to establish the need for noggings in fire-rated situations.

Table 7 – Provision of timber noggings within timber floors

Board thickness	Maximum joist centres	
	with noggings mm	without noggings mm
6mm Glasroc F MULTIBOARD	450	400
10mm Glasroc F MULTIBOARD	600	450
12.5mm Gyproc plasterboard / Glasroc F MULTIBOARD	600	450
15mm & 19mm Gyproc plasterboard	600	600

NB Perimeter noggings are required if the floor is required to provide fire resistance.

Loadbearing timber joist floors design (continued)

Important information

Timber noggings are always required around the ceiling perimeter, except when using 15mm Gyproc WallBoard and 19mm Gyproc Plank in non fire-rated situations. In multi-layer plasterboard ceilings, the provision for noggings relates to the outer layer board only (unless otherwise stated).

Joist width

Where the joist width is less than the minimum stated in tables 1 - 6b, the system may not meet its specified performance.

Minimum truss dimensions must be achieved per relevant test evidence, however, in addition where minimum fixing tolerances cannot be met, e.g. the inadequate bearing surface afforded by 35mm width trussed rafters, 50mm x 25mm timber battens should be screw-fixed to the side of the joists where ceiling boards abut in order to extend the bearing surface.

▶ Refer to construction detail 6.

Nail popping

Loosening of nails in timber can occur through timber shrinkage, or as a result of fixing boards to misaligned or twisted framing. To reduce the risks, boards should be fixed tight to framing members using Gyproc Drywall Screws penetrating minimum 25mm into the timber. Alternatively, fix Gypframe RB1 Resilient Bar to the underside of timber joists to provide a positive ground for screw-fixing the ceiling linings. In tests where joists warped and twisted under drying shrinkage, Gypframe RB1 Resilient Bar was successful in providing a sound base for plasterboard fixing, resulting in no fixing defects. Gypframe RB1 Resilient Bar also contributes to the sound insulation of a timber joist floor.

Fixing to super-dried timber and engineered timber 'I' beams

Test results show that Gyproc Drywall Screws are the preferred solution for fixing to standard softwood, super-dried timber (approximately 12% moisture content) and engineered timber 'I' beams.

Existing lath and plaster ceilings

Acoustically, lath and plaster provides similar performance to 2 layers of 15mm Gyproc SoundBloc or inner layer 19mm Gyproc Plank and outer layer 12.5mm Gyproc SoundBloc. In the event of fire it is critical that the lath and plaster remain in place. Due to their variable nature, it is not possible to provide a fire resistance.

In order to ensure the required fire resistance of a floor is achieved, it is recommended to under-draw the lath and plaster with chicken wire (fixed in accordance with manufacturer recommendations). A cavity should then be formed with minimum 38 x 38mm timber battens or **GypLyner**.

Services

The installation of electrical services should be carried out in accordance with *BS 7671*. Electrical and other small service runs can be routed within the floor cavity. Concealed cables may need earthed metallic covering, or to be enclosed in earthed conduit, trunking, or ducting to satisfy *BS 7671*.

Fixtures

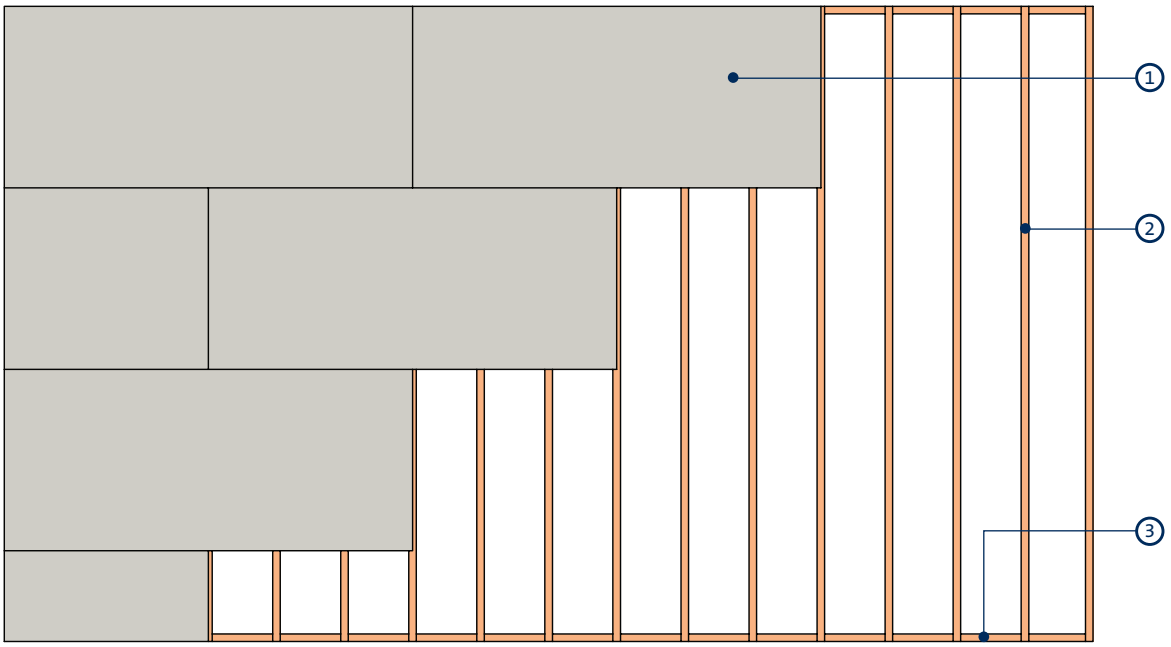
Fixtures should be made into joists, or to supplementary timber. Care must be taken not to bridge Gypframe RB1 Resilient Bar.

Board finish

▶ Refer to C08. S01. P483 – Finishes.

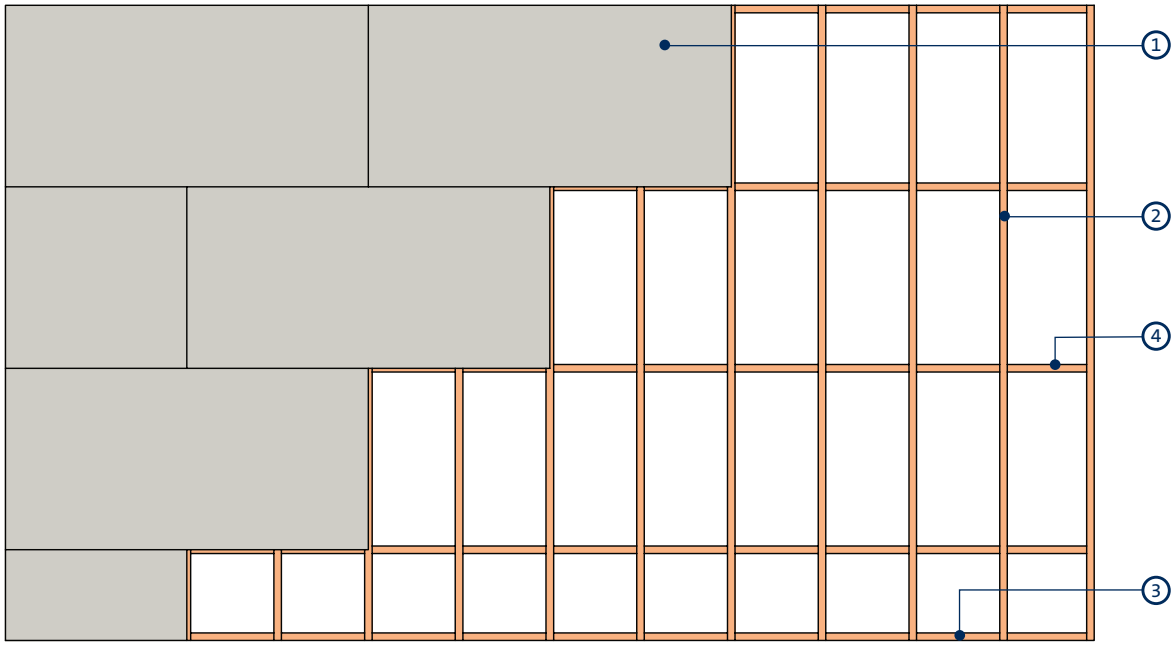
Loadbearing timber joist floors construction details

1



Reflected ceiling plan - single layer. 12.5mm plasterboard with joists at maximum 450mm centres
(or 15mm plasterboard with joists at maximum 600mm centres)

2



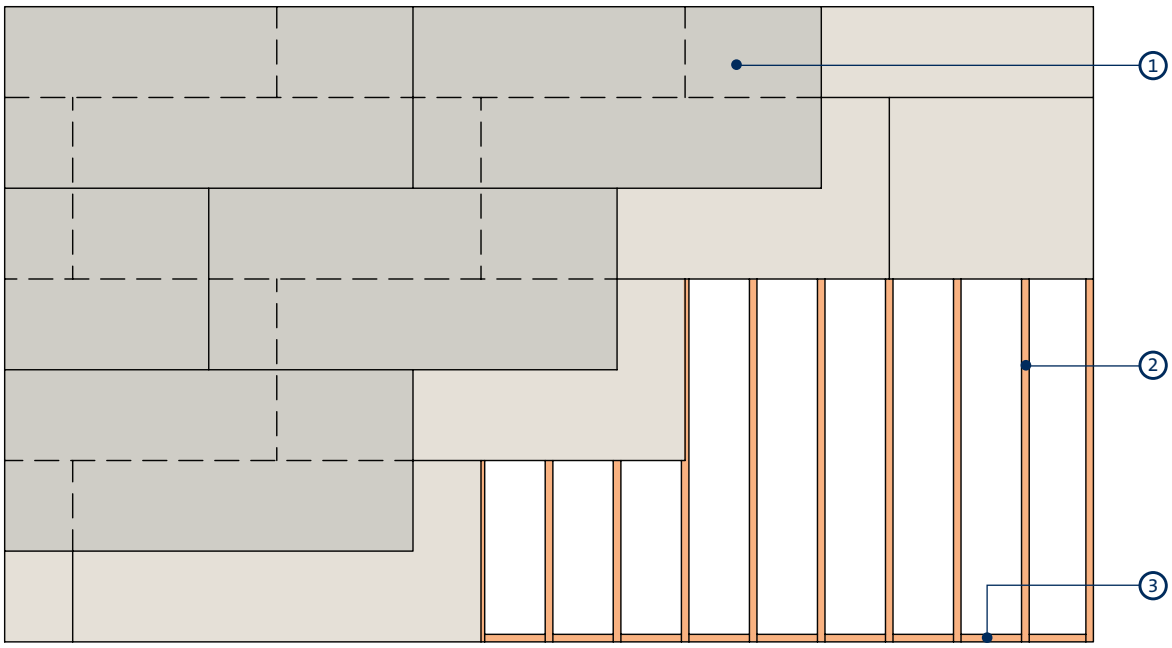
Reflected ceiling plan single layer - 12.5mm plasterboard with Gypframe RB1 Resilient Bars at maximum 450mm centres

1 Gyproc plasterboard
2 Timber joist
3 Timber noggings to provide support at the perimeter
4 Timber noggings to provide support board edges

NB Refer to C06. S05. P413 - table 7 for the provision of timber noggings.

Loadbearing timber joist floors construction details (continued)

3



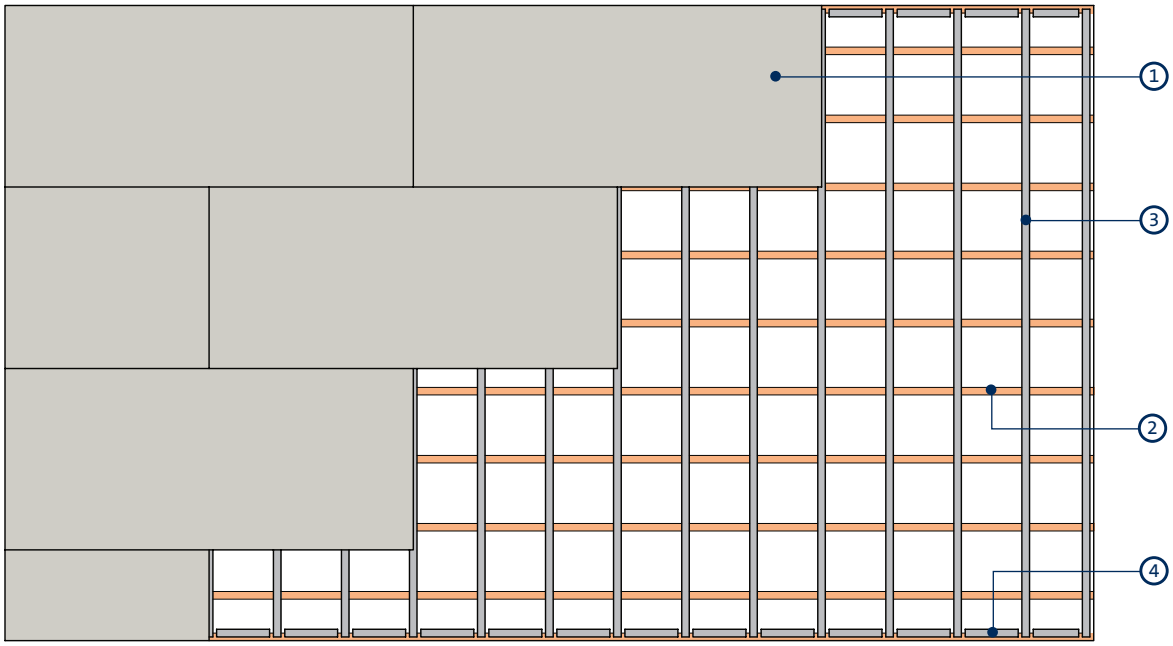
Reflected ceiling plan double layer - 12.5mm plasterboard with joists at maximum 450mm centres
(noggings may be required to support long edges of board of outer layer if fire-rated)

1 Gyproc plasterboard
2 Timber joist
3 Noggings to provide support at the perimeter

NB Refer to C06. S05. P413 - table 7 for the provision of timber noggings.

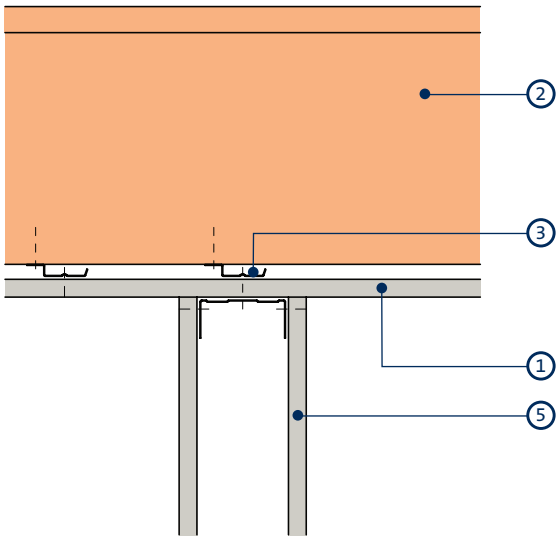
Loadbearing timber joist floors construction details (continued)

4



Reflected ceiling plan single layer - 12.5mm plasterboard with Gypframe RB1 Bars at maximum 450mm centres

5

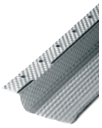


Partition head fixing to ceiling with Gypframe RB1 Resilient Bar

1 Gyproc plasterboard
2 Timber joist
3 Gypframe RB1 Resilient Bar
4 Gypframe RB1 Resilient Bar noggings at perimeter
5 **GypWall**

Loadbearing timber joist floors components

Gypframe metal components



Gypframe RB1 Resilient Bar
Acoustically engineered channel to separate board fixing from timber joist and to overcome nail popping. Fixed to underside of joists.

Board products

Gyproc WallBoard[1]
Standard gypsum plasterboard.

Gyproc FireLine[1 2]
Gypsum plasterboard with fire resistant additives.

Gyproc Moisture Resistant
Gypsum plasterboard with moisture resistant additives in the core and special green lining paper for easy recognition. To receive tape and joint finish.

Glasroc F MULTIBOARD
Non-combustible glass-reinforced gypsum board.

Gyproc Plank
Standard gypsum plasterboard located as an inner layer.

Glasroc F FIRECASE
Non-combustible glass-reinforced gypsum board.

Gyproc SoundBloc[1 2]
Gypsum plasterboard with a high density core for enhanced sound insulation performance.

[1] Also available in DUPLEX grades where vapour control is required.

[2] Also available in Moisture Resistant (MR) version. MR boards are specified in intermittent wet use areas

Fixing products

Gyproc Drywall Screws
Corrosion resistant self-tapping steel screws for fixing board-to-timber and board-to-metal framing less than 0.8mm thick.

Gyproc Collated Drywall Screws
Corrosion resistant self-tapping steel screws for fixing board-to-timber and board-to-metal framing less than 0.8mm thick.

Glasroc F FIRECASE Screws
Corrosion resistant self-tapping steel screws with unique head design that countersinks itself for fixing Glasroc F firecase boards to timber joists at 150mm centres.

Loadbearing timber joist floors components (continued)

Plasterboard accessories

Gyproc Jointing Materials
Jointing compounds, ready mixes and adhesives for reinforcement and finishing of board joints.

Gyproc Sealant
Used to seal air paths for optimum sound insulation.

Gyproc Drywall Primer
Used to prepare for painting.
Tub contents 10 litre.

Gyproc Paper Joint Tape
A paper tape designed for reinforcement of flat joints or internal angles.

Plaster products

Gyproc Skimcoat
To provide a plaster skim finish on most common backgrounds including undercoat plasters and plasterboard. Can provide enhanced acoustic performance.

Gyproc Carlite Finish
To provide a plaster skim finish on most common backgrounds including undercoat plasters and plasterboard. Can provide enhanced acoustic performance.

Gyproc Carlite Ultra Finish
Offers all the benefits of Gyproc Skimcoat and Gyproc Carlite Finish with a reduced set time of 90-120mins, making it ideal for smaller jobs.

Plaster accessories
Designed for the reinforcement and finishing of board joints before plaster skimming.

Gyproc Bonding Coat
A lightweight undercoat plaster for use over smooth or medium suction backgrounds. Applied at a depth of 10mm on walls or 8mm on ceilings. Bonding Coat Short Set also available with a reduced set time of 90-120 mins making it ideal for smaller jobs.

Insulation products

Isover Spacesaver Ready-Cut
Glass mineral wool for enhanced acoustic and thermal performance.

Isover Acoustic Roll
Glass mineral wool for enhanced thermal performance.

Isover Sound Deadening Floor Slab
Glass mineral wool for enhanced acoustic performance.

Stone Mineral Wool
(24kg/m³ and 45kg/m³, by others)

Loadbearing timber joist floors installation overview

This is intended to be a basic description of how the system is built.
For detailed installation guidance refer to the **Gyproc Installation Guide.**

Gyproc plasterboards can be fixed directly to the underside of timber joists. Timber noggings are fitted, where required, between joists at room perimeters to support board edges. Noggings may also be required to support board edges in the field of the boards. Plasterboards are fixed to timber supports using Gyproc Drywall Screws.

Alternatively, Gypframe RB1 Resilient Bars are fixed through the single fixing flange to the underside of timber joists (at 90˚ to them) using Gyproc Drywall Screws. The first and last rows of Gypframe RB1 Resilient Bars are located at all wall perimeters.

Where bars are not long enough to span the ceiling, ends are butted together directly under a joist and screw-fixed through the flange of both ends.

Gyproc plasterboards are fixed to the underside of Gypframe RB1 Resilient Bars with Gyproc Drywall Screws.

When fixing boards, care must be taken to ensure that the plasterboard fixing screws do not make contact with the joists.

Additional information

For full installation details, refer to the **Gyproc Installation Guide**, available to download from gyproc.ie