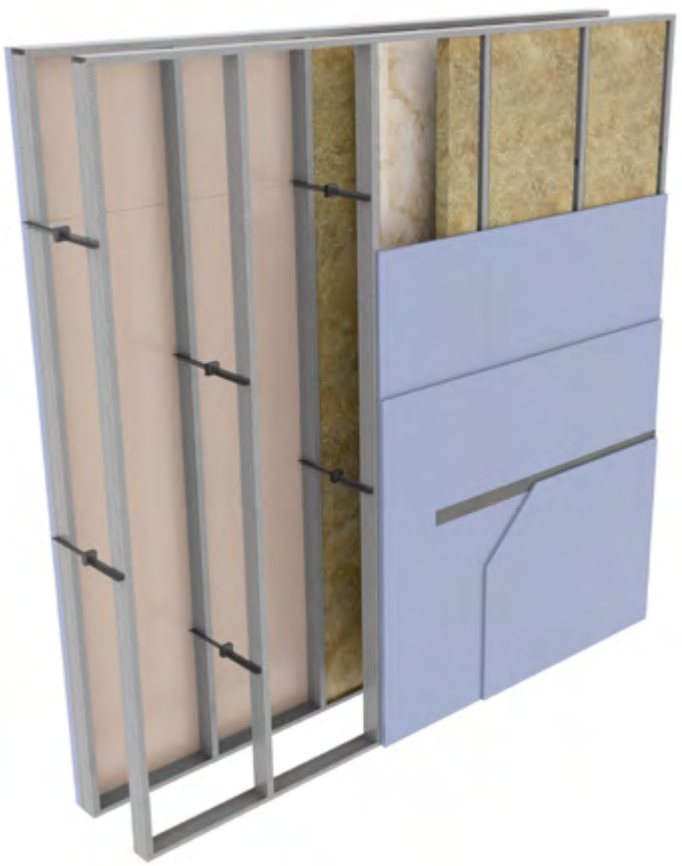
GypWall™
AUDIO

The ultimate cinema wall system

Vox Cinemas
Oman

GypWall AUDIO

GypWall AUDIO is a non-loadbearing, twin-frame high performance wall system that provides exceptionally high levels of sound insulation. It is used to separate multi-screen cinemas & multi-use facilities, such as theatres, music rooms, exhibition halls, conference centres, and leisure facilities.



90 - 180 mins

69 - 79 R_w dB

71 - 79 STC dB

Key Benefits

- Exceptionally high levels of sound insulation across a broad frequency spectrum
- The lightweight system combines high levels of performance and a smaller footprint, compared with masonry alternatives
- Designed to satisfy sound insulation requirements for cinemas equipped with high performance sound systems
- Up to 180 minutes fire resistance
- Provides Severe Duty rating in accordance with BS 5234: Parts 1 & 2: 1992
- Can provide fire protection to structural steel within the partition cavity

Eligible for the SpecSure warranty from Gyproc

System components

Gypframe metal components

Gypframe 'C' Studs
(92 S 10)
Vertical stud providing acoustic and structural performances designed to receive fixing of board

Gypframe Standard Floor & Ceiling Channels
(94 C 50)
Standard floor and ceiling channels for retaining the Gypframe studs at floor and ceiling junctions and around openings to heights not exceeding 4200mm

Gypframe Deep Flange Floor & Ceiling Channels
(94 DC 60)
Floor and ceiling channels with deep flanges for retaining the Gypframe studs at floor and ceiling junctions for partitions 4200mm to 8000mm high. Also used around openings and in deflection heads (maximum 30mm deflection)

Gypframe Extra Deep Flange Floor & Ceiling Channels
(94 EDC 80)
Floor and ceiling channels with extra deep flanges for retaining the Gypframe studs at floor and ceiling junctions for partitions over 8000mm high. Also used around openings and in deflection heads (maximum 50mm deflection)

Gypframe GAB3 Acoustic Brace
To cross brace two rows of Gypframe studs for optimum acoustic performance

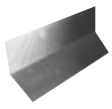
Gypframe 103 FC 50 Fixing Channel
A versatile metal fixing channel used to support medium weight fixtures on walls.

Gypframe 103 FC 90 Fixing Channel
A versatile metal fixing channel used to support heavy weight fixtures on walls

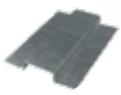
Gypframe GFS1 Fixing Strap
Used to support horizontal board joints and within deflection head details

Gypframe GA1 Steel Angle
Used as a fixing mechanism to hold ISOVER Eco APR insulation in place.

Gypframe GA4 Steel Angle
Widely used in framed construction to provide support, fixing and additional strength to wall ceiling and encasement framing. Also used as an angle to improve the fire performance at deflection heads.



Gypframe GA6 Splayed Angle
Steel angle providing framing stability and board support



Gypframe Service Support Plate
For installation of 18mm plywood within a partition cavity to support medium to heavyweight fixtures

System components (continued)

Board products

Gyproc SoundBloc[1, 2]
(12.5, 15mm)
Gypsum plasterboard with a high density core for enhanced sound insulation performance

Glasroc X[2]
(12.5mm)
Glasroc X is a high performance board with a glass-mat liner on both surfaces and a mold & moisture resistant (M2TECH) gypsum core

[1] Moisture resistant (MR) versions of the above boards are specified in intermittent wet use areas, e.g. shower cubicles

[2] Available with Activ'Air technology

ACTIV air

M2TECH MOISTURE & MOLD RESISTANT

Fixing products

Gyproc Jack-Point Screws
Corrosion resistant self-drilling steel screws for fixing boards to Gypframe metal framing 0.8mm thick or greater and all 'I' studs

Gyproc Waferhead Jack-Point Screws
Corrosion resistant self-drilling steel screws for fixing metal to metal framing 0.8mm thick or greater and all 'I' studs

Gyproc Wedge Anchor
Corrosion resistant anchor used for fixing fire rated partition and ceiling systems into masonry

Gyproc Hammer Fix
Corrosion resistant nail, screw engaged in a nylon plug, suitable for fixing non fire rated partition systems and ceiling perimeters into masonry

Plasterboard accessories

Gyproc Jointing Compound
Air-drying, asbestos free, ready mixed compound for filling and finishing plasterboard joints and corner beads

Gyproc Paper Tape
Designed for reinforcing flat joints when finishing plasterboard joints providing improved resistance against cracking

Gyproc FireStrip
Soft extruded linear gap seal for use within fire rated Gyproc system deflection head details

Gyproc Fibre Tape
Suitable for flat joint reinforcement

Gyproc Sealant
Used for sealing air paths to reduce air-leakage and optimise sound insulation performance

Glasroc X Tape
Suitable for internal and semi-exposed applications when used in conjunction with Glasroc X, MR and M2TECH range of boards

System components (continued)

Corners

Habito Flex 83
Adjustable and superior corner reinforcement that uses structural laminate technology for ultimate impact protection

Levelline Flex
Adjustable corner reinforcement that flexes to any angle and gives high levels of impact protection

Gyproc Drywall Corner Bead
Provides corner reinforcement and protection to plasterboards and plasters

Gyproc Drywall Metal Edge Bead
A galvanised steel channel used to protect plasterboard edges and to form a defined edge commonly used around window reveals

Insulation products

ISOVER Eco
Acoustic Partition Roll (APR)
(100mm)*
Non-combustible glass mineral wool roll for sound insulation in partitions, linings and ceiling systems

Minimum density: 16 kg/m³

KIMMCO ISOVER
Stone mineral wool
(100mm)*
For fire stopping, where required

Minimum density: 60 kg/m³

* Available in other thickness and density

Installation overview

Two rows of Gypframe Floor & Ceiling channels, set out to required dimensions, ensuring a gap between channel, are fixed to the concrete substrate using Gyproc Wedge Anchors (for fire rated systems) or Gyproc Hammer Fix (for non-fire rated systems)

Gypframe 'C' studs are suitably fixed to abutments.

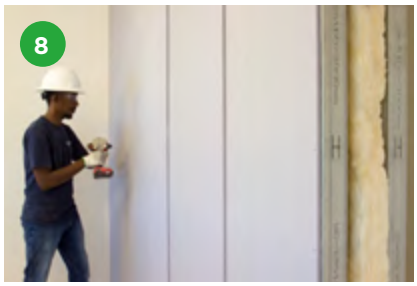
The perimeter of each frame is then sealed with Gyproc Sealant to seal airpaths and to provide optimum acoustic performance.

Gypframe 'C' studs are fitted vertically to a friction fit within the channel sections to form the framework. Studs are fitted to all face the same way.

Stud pairs are braced together using a Gypframe GAB3 Acoustic Brace at the specified centres. The brace is twice fixed to each stud with Gyproc Waferhead Jack-Point Screws and should be staggered at alternate stud pairs.

ISOVER Eco APR is held in place using a Gypframe GA1 Steel Angle suitably fixed to the soffit.

KIMMCO ISOVER Stone Mineral Wool is tightly packed between adjacent studs.

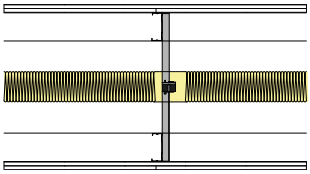


Gyproc plasterboards are fixed with Gyproc Jack-Point Screws to Gypframe studs. Ensure board joints are staggered between board layers

Gypframe GFS1 Fixing Strap to support horizontal board joints in the face layer board

Table 1 - GypWall AUDIO 92mm Gypframe 'C' Stud (92 S 10). Solutions to satisfy the requirements of BS 476: Part 22: 1987, ASTM E119 and ANSI / UL 263

1



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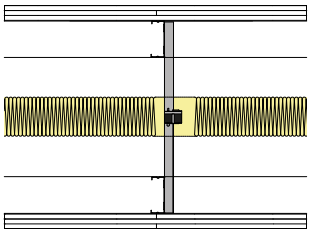

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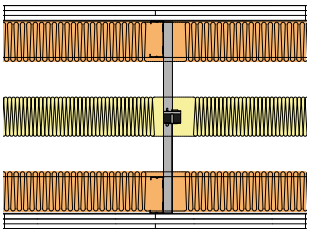

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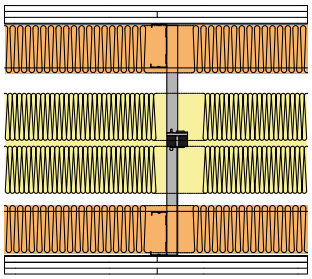


Two frames of Gypframe 92 S 10 'C' Studs spaced at 600mm centres with Gypframe GAB3 at 3300mm centres. Linings and insulation as in table.

Detail	Partition thickness	Board type[1,2]	Lining thickness	Maximum partition height				Acoustic Partition Roll	Sound insulation		Duty rating	Approx. weight
				Fixing Channels braces at 3600mm centres		GAB3 Acoustic braces at 3300mm centres						
	mm	mm	mm	L/240 mm	L/125[3] mm	L/240 mm	L/125[3] mm	mm	$R_w(R_w + C_{tr})$ dB	STC dB		kg/m²
90 minutes fire resistance												
1	300	SoundBloc	2 x 12.5	8000	9500	8000	10000	100	69 (57)	71	Severe	49
120 minutes fire resistance												
1	300	SoundBloc	2 x 15	8000	9500	8000	10000	100	71 (59)	71	Severe	57
180 minutes fire resistance												
2	450	SoundBloc	3 x 15	8200	10500	8300	10700	100	72 (64)	72	Severe	85
3	450	SoundBloc	3 x 15	8200	10500	8300	10700	1 x 100 + 2 x 100 stone mineral wool	76 (67)	76	Severe	87
4	570	SoundBloc	3 x 15	9000	11500	9500	11500	2 x 100 + 2 x 100 stone mineral wool	79 (68)	79	Severe	88

[1] For improved durability and impact resistance, the outer layer plasterboard can be replaced with a layer of Gyproc DuraLine or equivalent thickness Gyproc Habito (also for increased fixing capability).

[2] The boards listed and the performances shown include MR, M2TECH & Activ'Air versions.

[3] Refer to deflection criteria, in design section. L/125 heights shown only suitable for systems with a fire resistance rating of upto 120 minutes.

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

NB For heights between 4200mm and 8000mm, Gypframe Deep Channel should be used at the base and at head (subject to deflection criteria). For heights over 8000mm, Gypframe Extra Deep Channels should be used at head and base

NB Where tiling, refer to 'Tiling section' on page 304

Table 2 - GypWall AUDIO fire protection to structural steel.
Solutions to satisfy the requirements of ENV 13381-2: 2002 and BS 476: Part 1987: 21

Board type[1]	Minimum Lining thickness mm	Fire resistance mins	Section factor[2] A/V (Hp/A) m^{-1}
Gyproc SoundBloc	2 x 12.5	30	Up to 300
Gyproc SoundBloc	2 x 15	60	Up to 300
Gyproc SoundBloc	3 x 15	120	Up to 300

[1] For improved durability, impact resistance and high levels of fixing capability, the outer layer Gyproc SoundBloc can be replaced with the equivalent thickness of Gyproc Habito

[2] Based on four-sided exposure, with no vertical joints aligning with the column, and boards not fixed to the column to maintain air space.

Design

Planning – key factors
GypWall AUDIO comprises twin rows of Gypframe 'C' Studs installed at 600mm centres within Gypframe Floor & Ceiling Channels. The position of services and heavy fixtures should be pre-determined and their installation planned into the frame erection stage.

Designers and site management should give full consideration to the potential exposure of GypWall AUDIO to differential pressures, such as wind loadings during installation.

Fixing floor and ceiling channels
Gypframe Floor & Ceiling Channels must be securely fixed with two rows of staggered fixings, each row at 600mm centres and each fixing 25mm in from the flange. If the floor is uneven, a 38mm thick timber sole plate equal to the width of the channels should be used.

If the concrete or screeded floor is new and still damp, consideration should be given to the installation of a damp-proof membrane between the floor surface and the channel or sole plate.

Splicing
To extend studs, overlap by 600mm (minimum) and fix together using Gyproc Waferhead Jack-Point Screws. Refer to GypWall CLASSIC - construction details 17, 18 and 19 on page 85.

Partition to structural steelwork junctions
When designing the layout of rooms requiring separation by sound insulating walls abutting structural steelwork, consideration should be given to the potential loss of sound insulation performance through the steelwork. Refer to Building acoustics for further information.

Door openings
Any openings will require careful detailing if the acoustic performance is to be maintained. Specialist heavy acoustic door sets may require additional support.

Specialist advice should be sought from door manufacturers and Acoustic Consultants to ensure the required acoustic performance is achieved. This becomes more important as acoustic requirements increase.

Framing surround for openings
Where services such as horizontal ducts, fire dampers and access panels are required to penetrate the wall, their position should be pre-determined in order that a framed opening can be provided. The openings should be constructed using established metal stud procedures. Refer to GypWall CLASSIC - construction details 33 to 35 on page 91-92.

Cavity barriers
Minimum 12.5mm Gyproc plasterboard, screw-fixed into the web of perimeter channels or vertical studs, will provide a satisfactory closure to flame or smoke.

Control joints
Control joints may be required in the partition to relieve stresses induced by expansion and contraction of the structure. Refer to construction detail 15 - GypWall CLASSIC on page 84. They should coincide with movement joints within the surrounding structure.

Deflection heads
Partition head deflection designs may be necessary to accommodate deflections in the supporting floor. Deflection heads may also be required to the underside of roof structures subjected to positive and negative pressures. Refer to construction details 3 and 4. Designers should pay specific attention to potential loss of acoustic performance through deflection detailing, service penetrations and flanking across the roofing or structural soffit at the head of the partition. Ceilings, sometimes referred to as mass barrier ceilings, should be considered to help reduce any acoustic loss at the head of the partition and maintain the sound attenuation expected onsite between spaces.

Deflection criteria
Our normal recommendation is to build to a deflection criteria of L/240 at 200 Pa, however it is common for this system to be built to L/125 at 200 Pa. Partitions built to a maximum height based on L/125 at 200 Pa will exhibit greater deflection compared to partitions built to a maximum height based on L/240 at 200 Pa. Partitions with deflection characteristics outside the standard L/240 criteria will exhibit more flex during installation and in general use, and therefore we recommend you verify the acceptability of the deflections with the relevant interested parties before specifying / installing partitions based on L/125 criteria.

Cross bracing
Laboratory tests were carried out on walls without bracing. The results, however, are a realistic representation of site conditions in which Gypframe 103 FC 50 Fixing Channel cross-braces are fitted at the recommended 3600mm maximum centres, provided that appropriate measures are taken on site to eliminate flanking sound transmission. All braces must be staggered by half distance of the brace centres. Test evidence is provided by British Gypsum Report ATR 1299, where a site test on a large multi-screen cinema wall achieved comparable performance to the equivalent specification tested in the laboratory without bracing.

Acoustic designers may prefer the option of a resilient acoustic brace. The Gypframe GAB3 Acoustic Brace has been shown in tests not to downgrade acoustic performance in laboratory conditions. However, as a result of the mechanics of this brace fixing centres should be reduced from 3600mm to 3300mm, staggered by half distance of brace centres. Maximum recommended wall heights will vary.

Refer to Table 1 within this section.

The minimum and maximum wall widths for which Gypframe GAB3 Acoustic Brace can be used without modification are 300mm and 600mm respectively. Likewise, the minimum and maximum cavity width between the two stud frames for which Gypframe GAB3 Acoustic Brace can be used without modification are 100mm and 400mm respectively.

Design (continued)

The Gypframe GAB3 Acoustic Brace may be cut using a hacksaw or powertool. If required, the Gypframe GAB3 Acoustic Brace can be extended by fixing a short length of Gypframe 92 S 10 'C' Stud to one side of the brace with four Gyproc Waferhead Jack-Point Screws (ensure a 75mm minimum overlap with no contact to board lining). The short length of stud is also then fixed to the vertical studs with four Gyproc Waferhead Jack-Point Screws.

Care should be taken to ensure Gypframe GAB3 Acoustic Braces are correctly and fully engaged and not mis-aligned.

Each pair of studs must be braced at least once, staggered to the adjacent pairs, irrespective of the partition height or specified bracing centres.

Where partition heights are specified based on lateral restraint from a suitable Gyproc MF ceiling, either this ceiling should be in place at the time of installation or temporary restraint should be used.

Board fixing
In common with good building practice, the twin frame wall should be boarded progressively from each side of the partition. This will help prevent differential loadings on the framework.

Services

Penetrations
Penetrations of fire-resistant or sound-insulating constructions for services need careful consideration to ensure that the performance of the element is not downgraded. Consideration also needs to be given to the services themselves so they do not act as the mechanism of fire spread or sound transmission. Refer to Service installations for further information.

Electrical
The installation of electrical services should be carried out in accordance with BS 7671 or other equivalent international standard. The service cut-outs in the studs can be used for routing electrical and other small services. Refer to Service Installations. Cables should be protected by conduit, or other suitable precautions taken to prevent abrasion when they pass through the metal frame. Service cut-outs should be aligned to allow easy installation of service. If studs require cutting, cut from the same end of each stud to ensure cut-out alignment. Switch boxes and socket outlets can be supported from Gypframe 103 FC 50 Fixing Channel fixed horizontally between studs, or a high performance socket box detail can be used where higher acoustic performance is required. Where extreme levels of acoustic performance are required, such as auditoria to auditoria partitions in cinemas, electrical conduits and services should be surface mounted to the face of the partition prior to any surface mounted acoustic fabric panelling (or similar) in order to avoid penetrations.

Independent support
When designing for the installation of services such as fire dampers and associated ductwork through a GypWall partition, consideration should be given to the size and weight of the damper - this will determine whether it can be supported directly from the partition or needs to be independently supported from the structure. Refer to GypWall CLASSIC - construction details 33-35 on pages 91-92.

Fixtures
Lightweight fixtures can be made directly to the partition board linings. Medium weight fixtures can be made to Gypframe 103 FC 50 Fixing Channel. Heavyweight fixtures (to BS 5234: Part 2: 1992) such as wash basins and wall cupboards, can be fixed using plywood secured by Gypframe Service Support Plates. Refer to Service installations for further information.

Where it is not possible to predetermine the exact location of fixtures, or where additional fixtures may be added or moved around the room in the future, Gyproc Habito board should be considered as the lining board where medium and/or heavy weight fixtures are to be included. Refer to GypWall HABITO on page 118 for further information.

Board finishing
Refer to Finishing systems on page 298.

Tiling
Tiles up to 32 kg/m^2 can be applied to the surface of Gyproc plasterboard systems. Tiles up to 60 kg/m^2 can be applied when using Glasroc X or Aquaroc FC board. Refer to Tiling on page 304 for further information.

Mold & moisture protection
Where additional protection against moisture is required, for example in a bathroom, kitchen or other area subject to intermittent humidity, then the moisture resistant grade of the required board type should be specified – for example SoundBloc MR. Similarly, if protection against mold spores forming is required then M2TECH (mold & moisture technology) versions of the boards should be specified – for example Gyproc SoundBloc M2TECH.

Using MR or M2TECH versions of any of the plasterboard linings listed in the performance tables, will not affect the fire, acoustic, height or robustness performances listed.

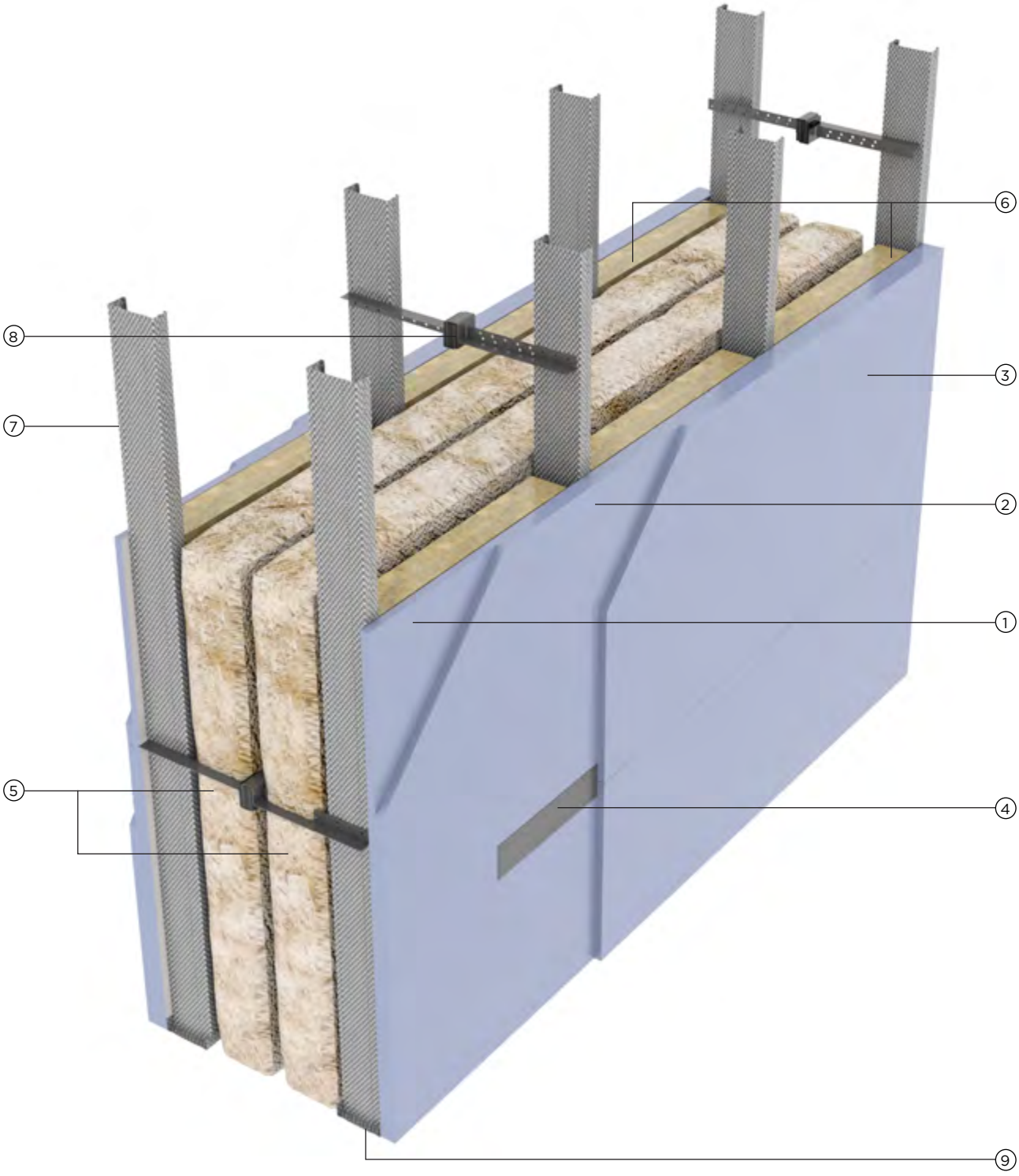
Air quality
Consideration should be given to specifying plasterboard linings that, in addition to the performances listed in the preceding Table 1 (covering fire, acoustic, duty rating etc), actively absorb harmful volatile organic compounds (VOC's) such as formaldehyde, from the atmosphere. Where additional protection against VOC's is required, then Activ'Air versions of the boards listed in these pages should be specified – for example Gyproc SoundBloc Activ'Air.

Using Activ'Air versions of any of the plasterboard linings listed in the performance tables, will not affect the fire, acoustic, height or robustness performances listed.

Construction details
For GypWall AUDIO construction details, refer to the construction details shown on pages 170 to 174. For more typical or example details, please contact the Gyproc Technical Team.

Construction details

1

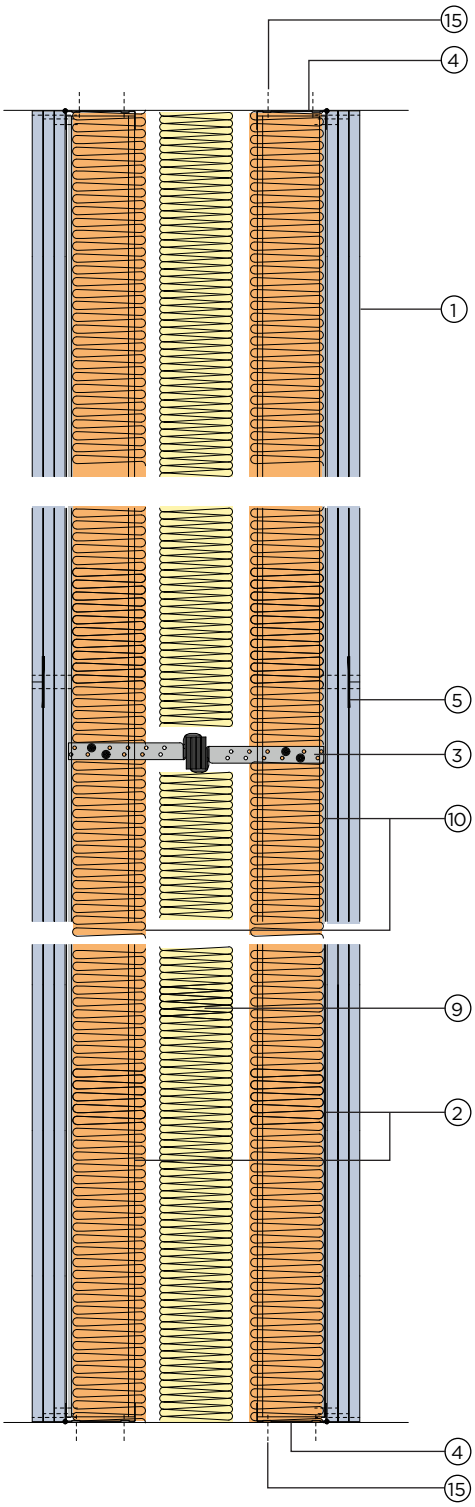


Splicing and bracing detail between stud pairs.

1. Inner layer of Gyproc SoundBloc
2. Middle Layer of Gyproc SoundBloc
3. Outer layer of Gyproc SoundBloc
4. Gypframe GFS1 Fixing Strap
5. ISOVER Eco APR
6. Stone mineral wool (by KIMMCO ISOVER)
7. Gypframe 'C' stud
8. Gypframe GAB3 Acoustic Brace
9. Gypframe Channel

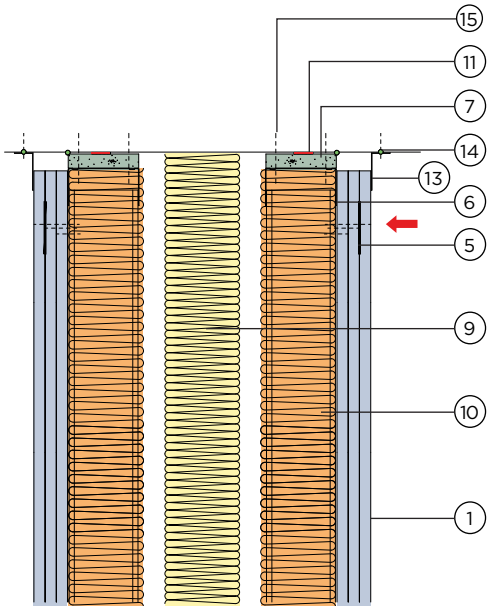
Construction details (continued)

2



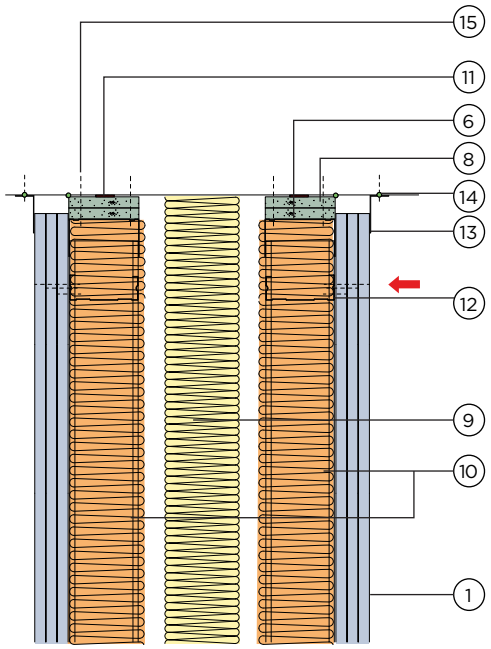
Head and base detail

3



15mm downward deflection detail - 90 mins

4



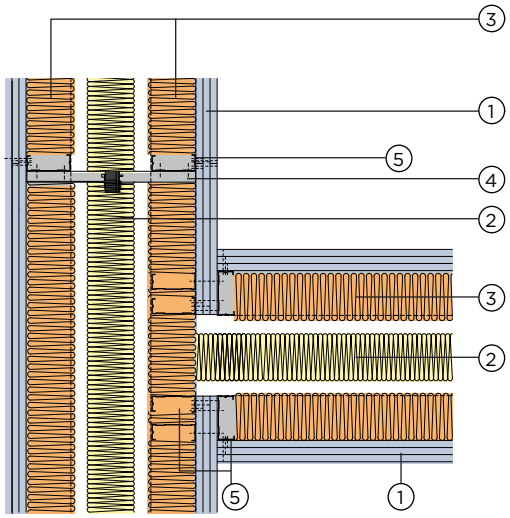
25mm downward deflection detail - 120 mins

1. Gyproc SoundBloc
2. Gypframe 'C' Stud
3. Gypframe GAB3 Acoustic Brace
4. Gypframe Floor & Ceiling Channel
5. Gypframe GFS1 Fixing strap
6. Gypframe Deep Channel
7. Gyproc CoreBoard
8. Two strips of 15mm Gyproc FireStop
9. ISOVER Eco APR
10. Stone mineral wool (by KIMMCO ISOVER)
11. Gyproc FireStrip
12. Nogging cut from Gypframe 'C' Stud
13. Gypframe GA4 Steel Angle
14. Gyproc Sealant
15. Gyproc Wedge Anchor for fire rated partitions or Gyproc Hammer Fix for non-fire rated partitions

NB No fixings should be made through the boards into the flanges of the head channel. The arrow (⬅) denotes the position of the uppermost board fixing, which should be made into Gypframe GFS1 Fixing Strap. Continuous Firestrip must be installed as shown to maintain fire performance.

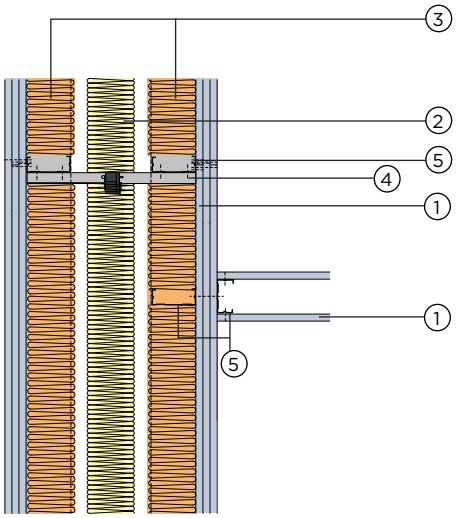
Construction details (continued)

5



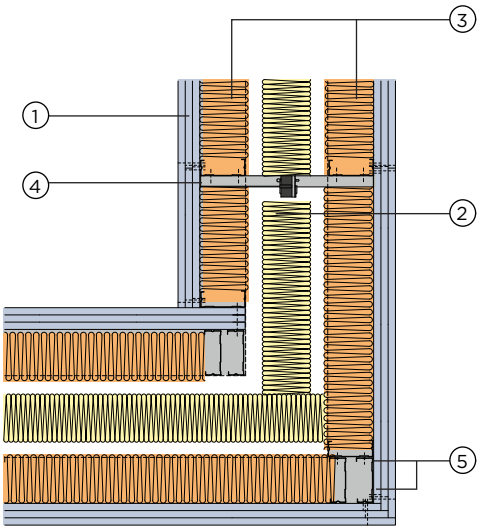
'T' junction detail

6



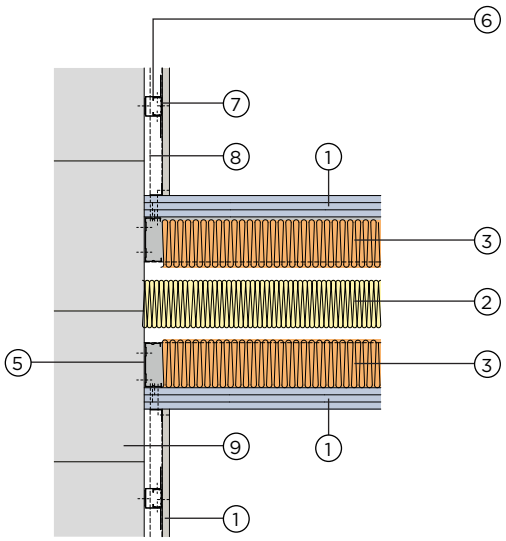
'T' junction detail with CLASSIC partition

7



Internal/External corner detail

8

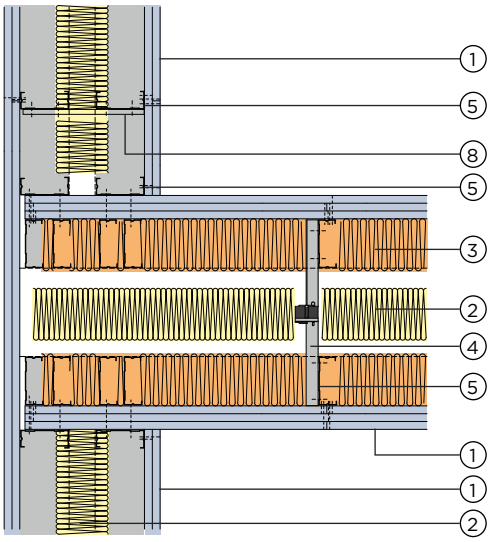


'T' junction abutment with masonry + wall liner - detail

1. Gyproc SoundBloc
2. ISOVER Eco APR
3. Stone mineral wool (by KIMMCO ISOVER)
4. Gypframe GAB3 Acoustic Brace
5. Gypframe 'C' Stud
6. Gypframe GLB85/135 Fixing Bracket
7. Gypframe GL1 Stud
8. Gypframe GA1 Steel Angle
9. Wall structure

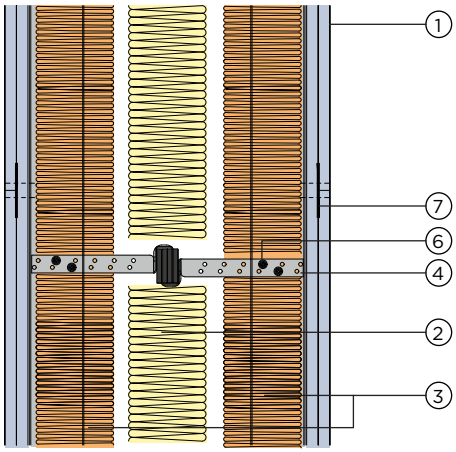
Construction details (continued)

9



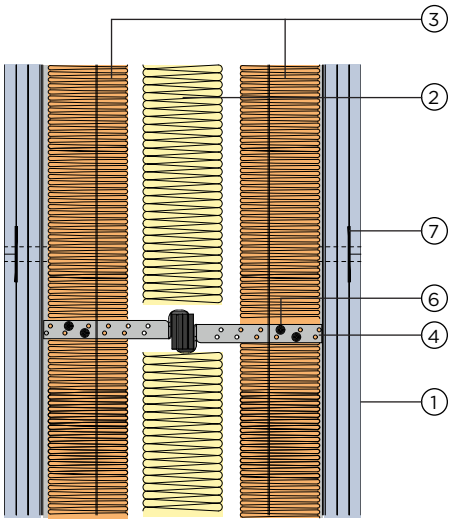
'T' junction high abuting detail

10



Horizontal board joint detail - double layer

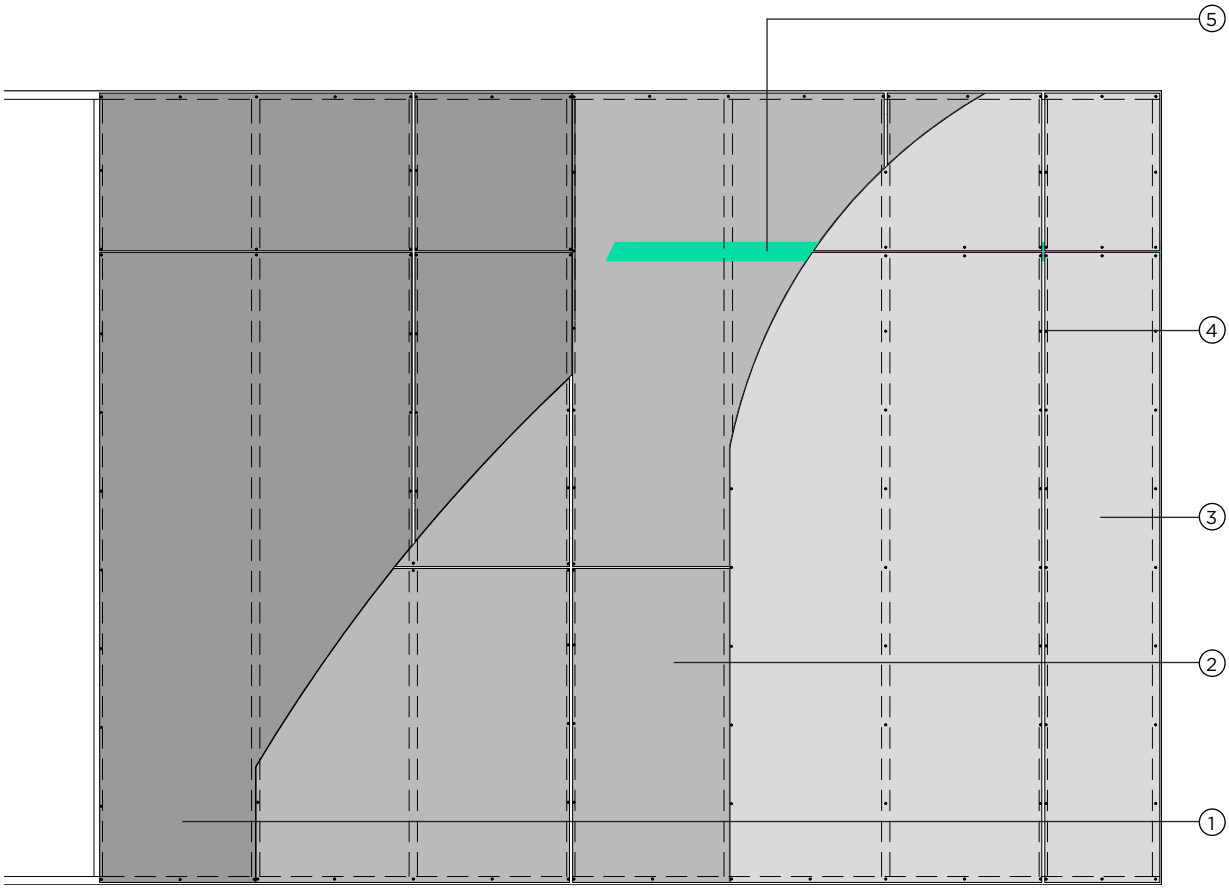
11



Horizontal board joint detail - triple layer

1. Gyproc SoundBloc
2. ISOVER Eco APR
3. Stone mineral wool (by KIMMCO ISOVER)
4. Gypframe GAB3 Acoustic Brace
5. Gypframe 'C' Stud
6. Gyproc Waferhead Screws
7. Gypframe GFS1 Fixing strap
8. Gypframe 103 FC 50 Fixing Channel

12



Elevation of typical board layout - Studs installed at 600mm centres

1. Inner layer of Gyproc SoundBloc
2. Middle layer of Gyproc SoundBloc
3. Outer layer of Gyproc SoundBloc
4. Gypframe 'C' stud
5. Gypframe GFS1 Fixing Strap

Notes