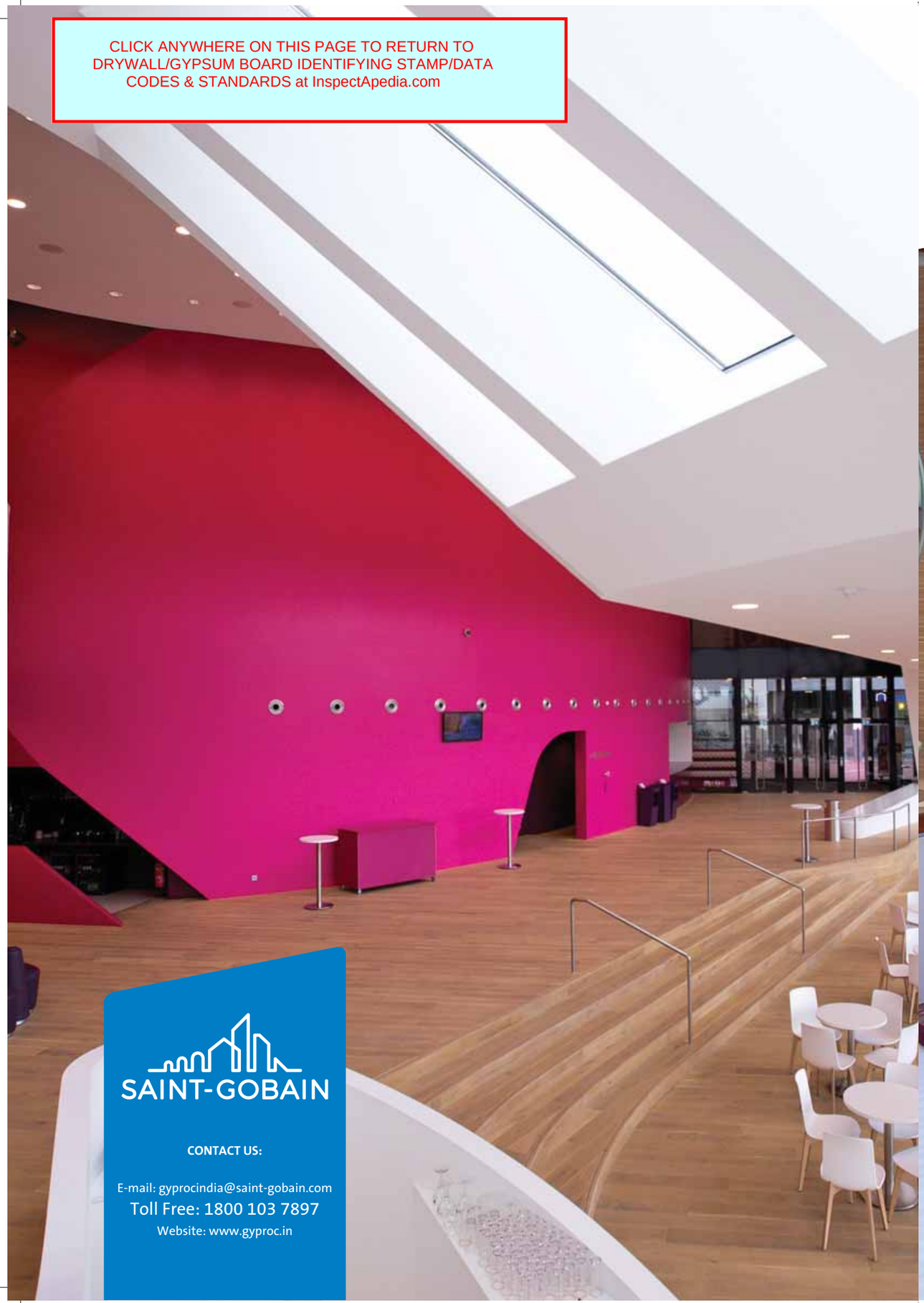

SAINT-GOBAIN

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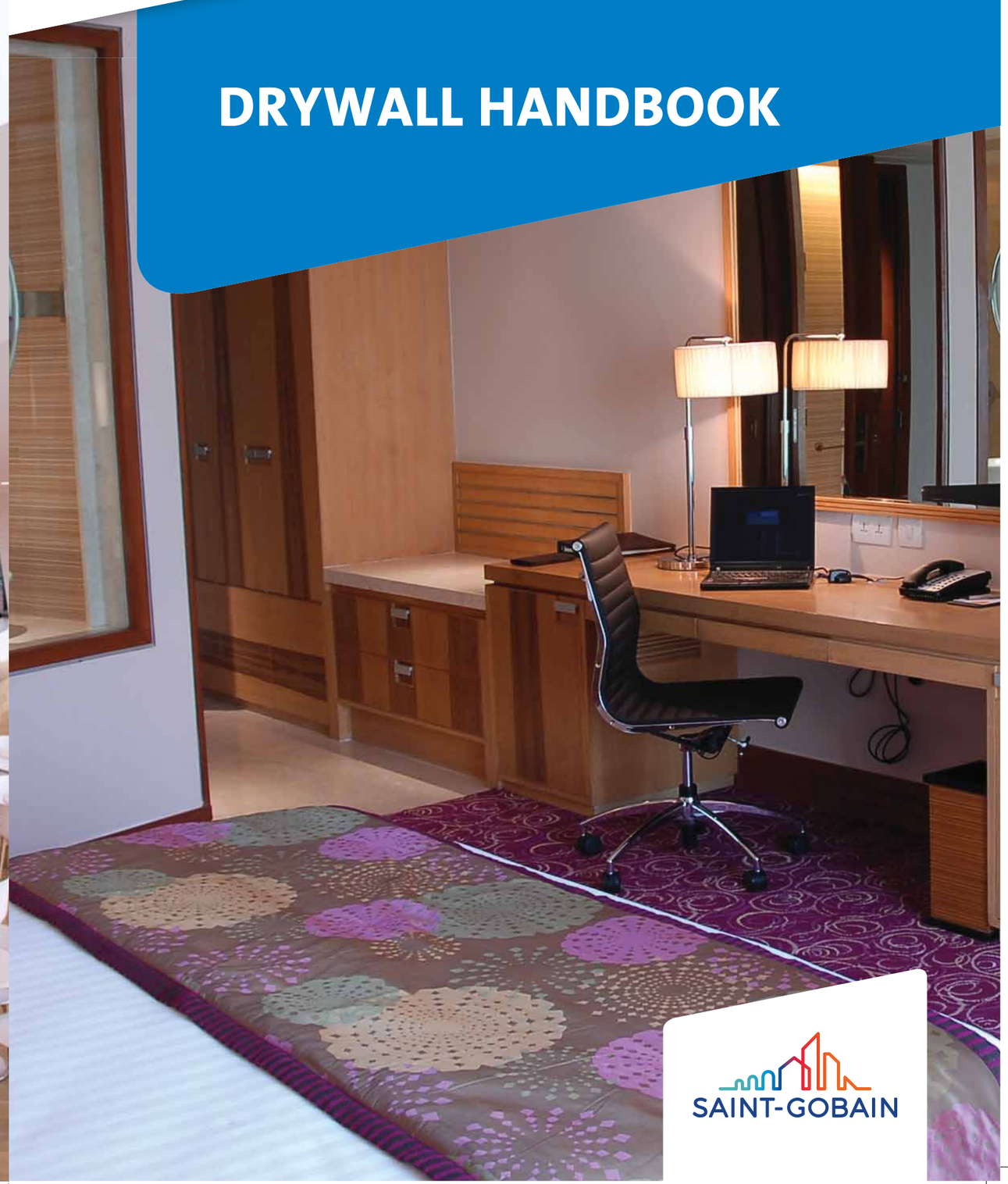
Website: www.gyproc.in

Gyproc
SAINT-GOBAIN

DRYWALL HANDBOOK



SAINT-GOBAIN

INTRODUCTION

Saint-Gobain India Pvt. Ltd. - Gyproc business is a pioneer and market leader in offering drywall and ceiling solutions in India

To meet the challenges of modern day construction and to develop a better understanding as well as adoption of dry & light weight construction technology we are pleased to bring to you "The Drywall Hand Book"a comprehensive compendium of internal lining and encasement solutions compiled by a team of experts based on experience and knowledge in all aspects of building construction.

Whenever you specify from "The Drywall Hand Book" you can be sure of premium quality solutions and the combined expertise of Gyproc India technical experts and on-site team to support you from initial design right through to installation and beyond.

To support the adoption of dry construction technology Gyproc India has also established the Gyproc Solution Centre. The function of the Gyproc Solution Centre is to provide value added services like

- Drywall Design support
- Quantity estimation
- On-site technical support during execution

CONTENTS

ABOUT SAINT-GOBAIN

A world leader in habitat and construction market, Saint-Gobain designs, manufactures and distributes high-performance building materials providing innovative solutions to the challenges of growth, energy-efficiency and environmental protection. In 2015, Saint-Gobain celebrated its 350th anniversary - 350 reasons to believe in the future. With 2016 sales of €39.1 billion, Saint-Gobain operates in 67 countries and has more than 170,000 employees.

SAINT-GOBAIN INDIA PVT. LTD. – GYPROC BUSINESS

Gyproc is a market leader in the light weight interior construction space in India for more than 30 years. Our product range includes gypsum plasterboard systems for false ceilings and drywall partition applications, acoustical ceiling tiles (gypsum, mineral fibre, metal & glass wool) and gypsum plastering solutions plus a complementary range of metal framings, along with jointing & finishing products. At Gyproc, we are committed to contribute to a sustainable habitat and in this regard we have initiated to monitor the environmental impact of our products during its life cycle. Our products are certified by leading green organisations like IGBC & GRIHA.

PRODUCT AND SERVICES

Our Gyproc business provides a comprehensive range of plasterboards; including Fireline (fire resistant), Sound Bloc (acoustics), MR (moisture resistant) and Fiber cement boards for wet area applications.

Our offering includes an all-encompassing grid ceiling range of Gypsum tiles, Mineral fiber tiles, Acoustic Big Boards and Metal tiles. We also provide a complete range of metal components & accessories, jointing & finishing products and plastering solutions for walls and ceilings.

MANUFACTURING FACILITIES

Gyproc has Four Manufacturing facilities in India, At Wada (Near Mumbai), Jind (Haryana) , Bengaluru & Jhagadia (Gujarat). We are fully equipped with competent technical capability to cater to the needs of different stake holders.

PRESENCE
67 IN MORE THAN **COUNTRIES**

170 000
EMPLOYEES

8 RESEARCH CENTERS

3 ACTIVITIES HUBS

- Innovative Materials
- Construction Products
- Building Distribution

1

ABOUT GYPROC

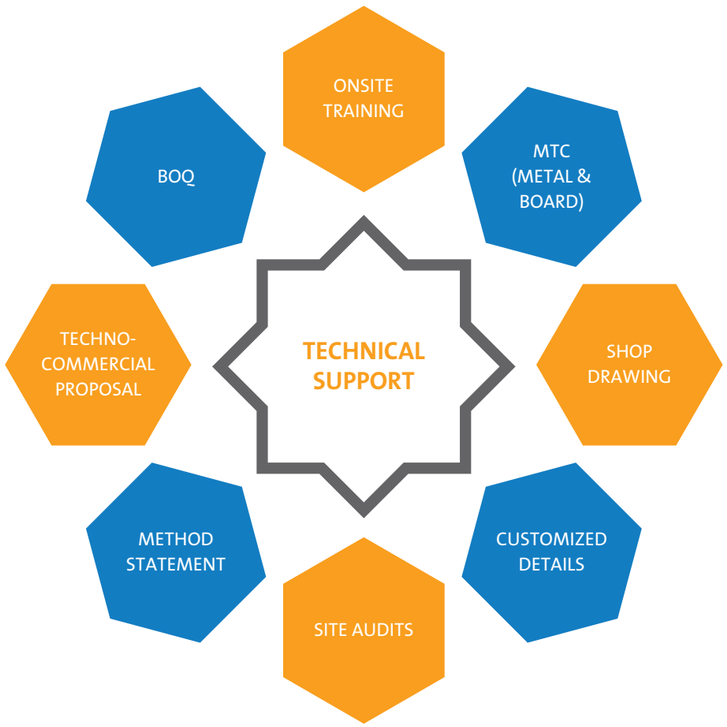
COMMITMENT TOWARDS ENVIRONMENT AND QUALITY

The world of Gyproc is about providing innovative building solutions to meet the demands of customer for sustainable performance solutions. Sustainability is the core of Saint-Gobain Gyproc India's strategy and the entire product range fulfills Green Building norms laid down by CII-IGBC (LEED rating).

END TO END
PROJECT SOLUTIONS BY GYPROC

Gyproc, a part of the Saint-Gobain group, is a world leader in offering light-weight construction solutions, and a pioneer in establishing drywall solutions in India.

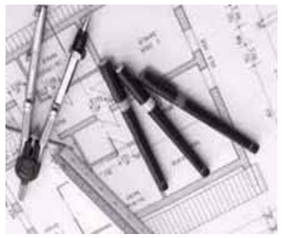
We provide end to end solutions for all your project requirements:



ONSITE TRAINING

TECHNO-COMMERCIAL PROPOSAL

SITE AUDITS



SHOP DRAWING

SKILL DEVELOPMENT

As market leaders, Saint-Gobain Gyproc India started the Skill Building initiative to create opportunities for the unskilled manpower working in Gypsum Industry to learn and earn their livelihood. Through training programs, this initiative has been helping our manpower to become more competent and efficient, resulting in improved quality of execution across projects, and enhanced customer satisfaction.

NAC, Hyderabad

Lucknow

GMRVF, Hyderabad

ITI, Aara Chhatisgarh

Vijaywada

For outstanding contribution towards Skill Development Initiative, Gyproc India has been awarded by distinguished institutions.

INITIATIVES TO DRIVE GROWTH THROUGH LEADERSHIP.

Smart Green Summit & Awards

The Smart Green Summit is a part of Saint-Gobain's 'SHAPING THE FUTURE' initiative that focuses on Well-being in Living Spaces, presented in partnership with The Economic Times.The summit focuses on bringing to lime light, the innovative initiatives in the area of tomorrow's sustainable habitat by recognizing people or organizations behind them.

Gyproc Trophy

Gyproc Trophy - a part of an International Gypsum trophy, is a platform to showcase innovative projects and excellent contracting skills using modern plasterboard systems and gypsum plastering. Held once in two years, it started in 1998 and India received the President's Prize for the J W Marriott Mumbai Project at the 10th International Gypsum Trophy in 2016.

1st Gyproc Trophy, Goa
35 CONTRACTORS | 101 PROJECTS

2nd Gyproc Trophy, Udaipur
48 CONTRACTORS | 134 PROJECTS

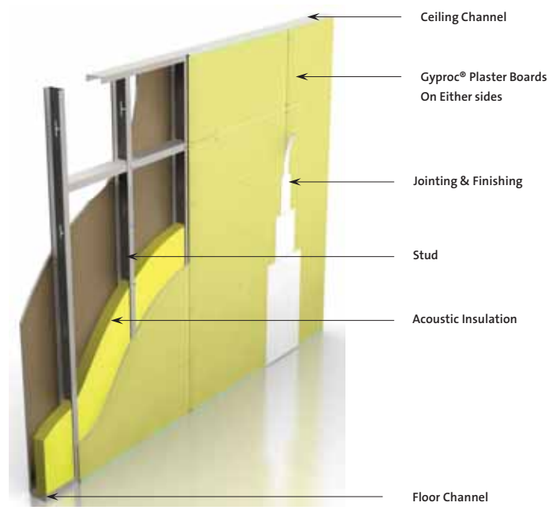
3rd gyproc Trophy, Aamby Valley
43 CONTRACTORS | 134 PROJECTS

4th Gyproc Trophy, Kovalam.
51 CONTRACTORS | 156 PROJECTS

2
ABOUT DRYWALL

What is Drywall?

Drywall is a high performance light-weight partition system consisting of GI steel frame encased with gypsum plasterboards on either side attached through self drilling drywall screws. The joints are then taped and finished with gypsum jointing compound.



Benefits of Drywall

SPEED OF INSTALLATION

3 to 4 times faster than masonry construction

DRY CONSTRUCTION

Clean and dust free work environment

LIGHT WEIGHT

8 to 10 times lighter than masonry systems

FLEXIBILITY

In creating and dividing spaces according to your needs

AESTHETIC APPEAL

Seamless and crack free surfaces, allowing ease of decoration via paint, tiles or wall papers

EXCELLENT PERFORMANCE

In terms of fire protection and sound insulation

VERSATILITY

The systems enable use in all internal areas of your home and commercial areas

ENVIRONMENT FRIENDLY

Green product which is recyclable and is made of environment friendly material

Comparison with Brick Wall

Drywall is a high performance light weight partition system consisting of GI steel frame encased with gypsum plasterboards on either side attached through self drilling drywall screws. The joints are then taped and finished with gypsum jointing compounds.

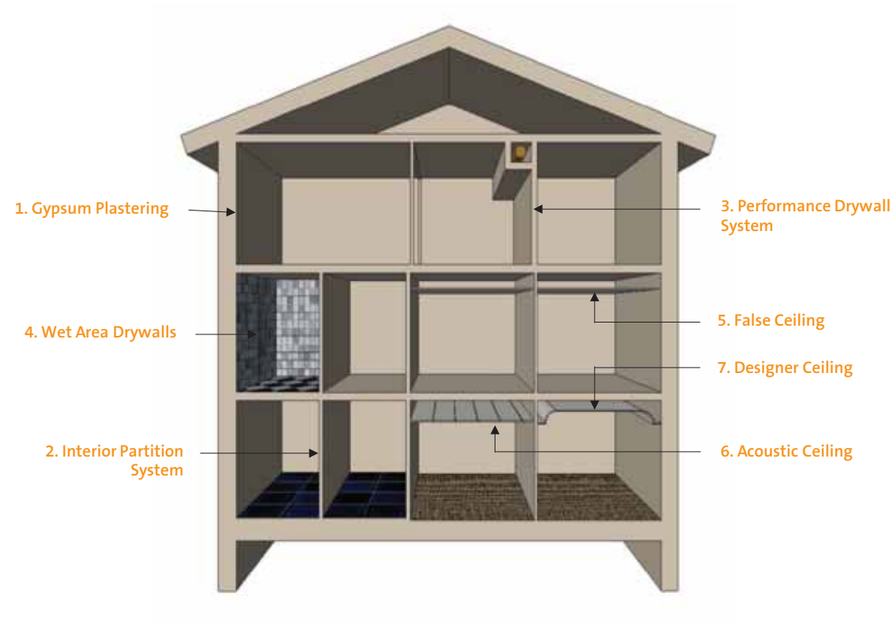
Drywall construction

Brick Wall construction

Parameters	Drywall	Brick wall
Speed of installation*	40-50m²/day	10m²/day
Water saving	Yes	No
Weight	Lightest - 19Kg/m² (non load bearing)	230Kg/m² (load bearing)
Fire Rating	Can be designed to provide stability, integrity and insulation	Weak in terms of insulation
Usage in Wet Areas	Yes	Yes
Wall Surface	Smooth and crack free surfaces	Difficult to get very smooth surfaces even with skilled labour
Sound insulation	Upto 65dB possible with insulation	35-40dB
Heat insulation	Four times less heat convection K=0.16W/m K	High heat convection, K=0.81W/m K
Quality of Material	Standard quality, supply from single source	Difficult to control, various sources of
Quality of Wall	Standard installation, easy to control	Depending on labour skills
Services	Easy through cavity	Chasing in wall is required

* 1 mason + 1 helper

Different types of Drywall



1. Dry Lining Systems:

- Suited specially for lining of interior of exterior walls.
- Less or no background prepration like plasters is required as this system contains adjustable brackets.
- Improved thermal, sound and fire insulation of masonry walls.

2. Interior Partition Systems:

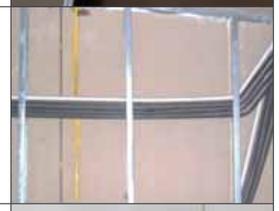
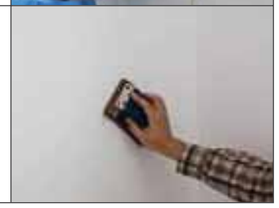
- These systems basically used for partitioning in commercial offices (cabin to cabin).
- The thickness varies from 75mm to 100mm.
- Provide acoustics upto 45dB and passive fire protection from 30mins to 60 mins.
- Light weight partition (varies from 20kg/m² to 30kg/m²).
- Flexible and easy to install.
- High Quality of interior finish.

3. Performance partition Systems:

- These systems are used for hotels, hospitals, residential, entertainment (cinema wall) and industrial sector.
- High level of acoustics (50dB to 70dB) can be achieved.
- Provides passive fire protection (1hr to 4hr).
- Flexible and easy to install.
- High Quality of interior finish.
- Various types of loading (TV, Head Board, Heavy Fixtures) can be done.

How to Build a Drywall?

Installation

1• Line marking		2• Fixing of floor channel	
3• Fixing of ceiling channel		4• Fixing of starter stud	
5• Placing of studs		6• Creating opening for door & windows	
7• Crimping of studs		8• Fixing of Noggin channel	
9• Provision for planned loading		10• Passing of services	
11• Insulation inside cavity		12• Boarding	
13• Complete Jointing Finishing by using Compound & Tape		14• Remove excess Jointing Compound before surface coating	

Drywall Tools

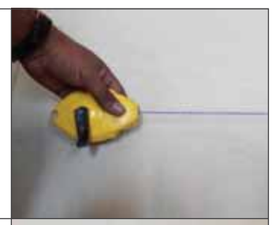
Fixing Tools

Name	Tools	Usage	Application
Gas Gun		To Fix metal sections on structure	
Hammer Drill Machine		To drill a hole in to the structure	
Battery Drill Machine		To fix Gypsum board on metal frame with drywall screws	
Crimping Tool		To fix stud to Floor Channel	
Stapler		To fix angle bead at external corner of Drywall & step ceiling	
Drill Bit Holder		For fixing of drywall screws on Gypsum board	
Drywall Bit		To stop screw from deep penetration| inside board	

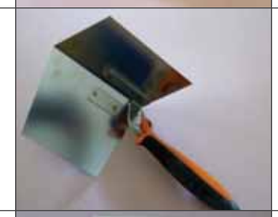
Cutting Tools

Name	Tools	Usage	Application
Metal Cutter		To Cut metal section	
Crocoplac		To cut board for switch box opening	
5 Hole saw set		To make hole in gypsum board dia upto 100mm	
5 Hole saw set		To create additional round cut out in stud	
HSS step Drill		To make Circle in Gypsum board for light opening	

Marking Tools

Chalk Line		Marking of reference Line on structure	
Laser level Marker		Marking levels for ceiling and position on Channel / stud	

Finishing tools

Name	Tools	Usage	Application
Board Sander		Sanding of cut edges of Board	
Corner Tool		To Finish Internal Corner of Drywall & ceiling	
Taping Knife		To embed tape on board joints	
Applicator		To spread the jointing compound on board joints	

Lifting Tools

Transplac		To carry one board	
Duoplac		To carry two or more boards	
Footplac		To lift board from floor while fixing	

3

BASIC PRINCIPLES TO DESIGN A DRYWALL

A. Key Design Criteria

B. Height

C. Thermal Insulation

D. Fire Safety

E. Acoustics

F. Robustness

Key Design Criteria

a) Height of the wall - The height can be increased by using boxed stud or decreasing the stud spacing to 407mm/305mm.The height of drywall depends upon the thickness of Drywall & the spacing of studs. Drywall can be built for height upto 17m and more.

b) Fire rating required - Fire rating criteria is governed by the National Building Code. The fire rating is calculated on the basis of 3 parameters i.e. stability, integrity and insulation.

- **Stability** - The Load bearing element must support its design load for the duration of the test.
- **Integrity** - The separating element must resist collapse, the occurrence of holes, gaps or fissures through which flames and hot gases can pass and sustain flaming on unexposed face.
- **Insulation** - A separating element must restrict the temperature rise of the unexposed face below specified levels (140° C min temperature to 180° C max temperature). Drywall solutions can be designed to give fire rating of 4 hours of stability, integrity and insulation.

c) Duty Rating required - All Drywall partition systems have duty rating as defined under BS 5234, part 2. The duty rating may vary from Light to Medium to Heavy to Severe. This rating relates to the strength and robustness characteristics of the partition system against specific end use

d) Acoustic requirements - The acoustic requirements of a Drywall system is measured in terms of STC or Rw.

- The Sound Transmission Class (STC) or Rw is a single-number rating of a material's or assembly's barrier effect.
- Higher the STC / Rw values, higher will be the sound insulation of drywall.
  This rating assesses the airborne sound transmission performance at a range of frequencies from 100 Hz to 4000 Hz.
- A partition is rated by measuring the sound transmission loss over a range of 16 different frequencies between 100-4000 Hz.
  Apart from this all services requirements (electrical, plumbing etc), planned and unplanned loading requirements need to be detailed.

e) Moisture - The drywall system varies with the level of moisture present in the application area. For wet area application, Moisture resistant (MR Board) /GlassRoc H board/Cement Fibre boards are preffered.

Height

Maximum partition heights

Maximum partition height of the drywall is based on the level of lateral deflection under a given uniformly distributed load (UDL). The criterion is that the maximum lateral deflection of the partition should not exceed L/240 criteria (where L is the partition height) when the partition is uniformly loaded to 200 Pa of wind pressure level. This methodology is followed for arriving at maximum partition height.

Different types of Drywall

Stud Size	Stud Thickness	Boarding each side	610 mm centres	610 mm boxed	407 mm centres	407 mm boxed	305 mm centres	305 mm boxed
48 mm c stud	0.5 mm	1x12.5mm	2500	2800	2900	3200	3100	3500
		1x15mm	2800	3000	3100	3300	3300	3600
		2x12.5mm	3400	3600	3600	3800	3800	4000
		2x15mm	3700	3800	3900	4000	4000	4200
70 mm C stud	0.5 mm	1x12.5mm	3600	3900	4000	4300	4300	4700
		1x15mm	3800	4100	4200	4500	4500	4900
		2x12.5mm	4600	4800	4900	5100	5100	5400
		2x15mm	4900	5100	5100	5300	5300	5600
70 mm Acou stud	0.5 mm	1x12.5mm	3800	4200	4300	4700	4600	5100
		1x15mm	4000	4400	4500	4800	4700	5200
		2x12.5mm	4700	5000	5000	5300	5300	5700
92 mm C stud	0.5 mm	2x15mm	5000	5200	5300	5600	5500	5900
		1x12.5mm	4500	4800	4900	5400	5300	5800
		1x15mm	4700	5100	5200	5600	5500	6000
92 mm Acou stud	0.5 mm	2x12.5mm	5700	5900	6000	6300	6200	6600
		2x15mm	5900	6100	6200	6500	6400	6800
		1x12.5mm	4700	5100	5200	5700	5700	6200
		1x15mm	4900	5300	5400	5700	5800	6400
146 mm C stud	0.5mm	2x12.5mm	5800	6100	6200	6500	6500	6900
		2x15mm	6000	6300	6400	6700	6700	7000
		1x12.5mm	6200	6800	6900	7600	7500	8300
146 mm Acou stud	0.5mm	1x15mm	6500	7000	7200	7800	7700	8400
		2x12.5mm	7600	8000	8100	8600	8500	9100
		2x15mm	7900	8200	8300	8800	8700	9300
		1x12.5mm	6600	7100	7300	8000	8000	8800
		1x15mm	6800	7400	7600	8200	8200	8900
		2x12.5mm	7800	8200	8400	8900	8900	9500
		2x15mm	8100	8500	8600	9100	9100	9700

Thermal Insulation

A building that is thermally efficient reduces the amount of energy required to maintain a comfortable living/working environment. Any building with an internal temperature higher than external temperature will loose heat. Thermal Insulation Reduces heat loss and therefore conserves energy.

The term thermal insulation can refer either to materials used to reduce the rate of heat transfer, or the methods and processes used to reduce heat transfer. Thermal insulation can keep an enclosed area such as a building warm.

In home or office insulation, the U-value is an indication of complete system's (wall) ability to transfer heat under static conditions including air space.

Lower the U value, better the thermal insulation of systems.

Optimum level of thermal insulation can be achieved by using cavity construction using Gypsum wall and right insulation. It helps in maintaining an effective ambient temperature. Generally dense material has higher thermal conductivity which leads to ineffective thermal insulation. Light weight material has lower thermal conductivity and better thermal insulation properties.

The thermal insulation depends upon:

- K- Value of the material
- U- Value of the system(wall)

Thermal conductivity (K): It is a measure of a material's ability to transmit heat, and is expressed as heat flow in watts per meter thickness of material for a temperature gradient of one degree Kelvin (K). It is expressed as W/mK.

Thermal Resistance(R): It is the measure of the resistance to the passage of heat offered by the thickness of a material and is expressed as m^2K/W.
$R = t/k$
Where t = thickness in meter and
k = thermal conductivity (W/mK)

The U- Value (U = 1/R) of the system varies with the thickness of the wall i.e. its value decreases with the increasing thickness of the wall.

The K- value (plasterboard) is 0.16W/mK K-value of brick wall is 0.818W/mK.

Lower K-value (conductivity)==> better for thermal resistance (R)==> Leads for Effective Insulation (U)

Hence, drywall provides better thermal insulation as compared to brickwall.

Benefits of effective thermal insulation make building:

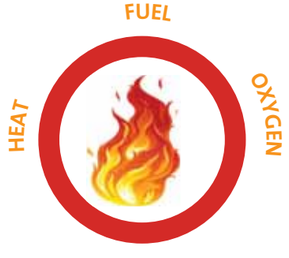
- Energy-efficient, thus saving the owner's money.
- Provides more uniform temperatures throughout the space. Thus, producing a more comfortable occupant environment when outside temperatures are either extremely cold or extremely hot.
- Has minimal recurring expense. Unlike heating and cooling equipment, insulation is permanent and does not require maintenance, upkeep, or adjustment.

Maintaining acceptable temperatures in buildings (by heating and cooling) uses a large proportion of global energy consumption. Effective thermal insulation can lead to sustainable construction by reduction inthe consumption of energy.

Fire Safety

Fire Protection

Fire starts when a flammable and/or a COMBUSTIBLE MATERIAL along with adequate supply of OXYGEN or another oxidizer are subjected to enough HEAT



- Fire will sustain only if there is a supply of Heat-Oxygen-Fuel forming the Fire Triangle
- Removing any one component from the triangle will prevent a fire from starting or will douse it Fire protection is achieved by 2 measures:

  - Active measure

  - Passive measures

Active Measures

These are the measures which are directly involved in controlling the fire directly.
Examples:

- Smoke Alarms; Sprinklers; dry risers
- Automatic opening ventilation
- Automatic communication to fire station

Passive Measures

These are the measures which control the spreading of the fire from one side of the surface to the other .

How is Passive Fire Protection achieved?

- Compartmentalisation of fire through the use of walls and their components that bear a prescribed fire resistance
- Structured to facilitate emergency evacuations and protection.
- Protect the structure of a building and lives of occupants by reducing or preventing internal or external fire spread.
- Provide easy access for fire fighting personnel to the affected buildings

  Examples:

  - Elements of construction which provide fire resistance

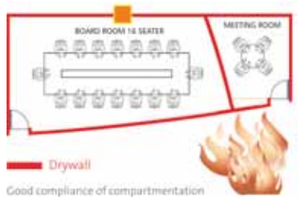
  - Compartmentation

  - Limiting external fire spread

Compartmentation

The spread of fire within a building can be restricted by sub-diving it into compartments separated from one another by walls and/or floors of fire resisting construction. The objective is twofold :

- To prevent rapid fire spread, which could trap occupants in the building.
- To reduce the chance of fires becoming large, which is more dangerous-not only to occupants and fire service personnel, but also to people in the vicinity of the building.



Gypsum plasterboards are all designated materials of limited combustibility.

Surface spread of flame
The spread of flames over wall and ceiling surfaces is controlled by providing materials that are either non-combustible or materials of limited combustibility. Combustible materials (or certain materials of limited combustibility that are composite products) when tested to the standards below, are classified Class 1, 2, 3 or 4.

BS 476: Part 7: 1997 Surface spread of flame tests for materials
“or”
BS 476: Part 7: 1987 Method for the classification of the surface spread of flame of products.

Based on the rate of spread of flame, surfacing material shall be considered as divided into four classes which are-

- Class 1 - Surface of very low flame spread.
- Class 2 - Surface of low flame spread.
- Class 3 - Surface of medium flame spread.
- Class 4 - Surface of rapid flame spread.

Class 1 provides the greatest resistance to surface spread of flame. Gypsum Plasterboards are classified as Class1.

Surface spread of flame test

How Gyproc® plasterboard is good in resisting fire?

- Provides good fire protection due to the unique behaviour of gypsum when exposed to fire.
- $CaSO_4.2H_2O$(gypsum) is composed of:
  - 21% chemically combined water
  - 79% calcium sulphate, which is inert below a temperature of 1200°C.
- Absorbs the heat and gradually releases water vapour
- Calcination starts at the surface exposed to the fire and then gradually through the gypsum layer.
- Calcined gypsum formed on the exposed faces and further retards the hydration process, through the thickness of the board.

Principles of building acoustics

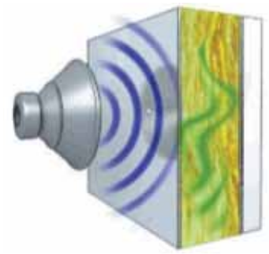
Building acoustics is the science of controlling noise in buildings, including the minimisation of noise transmission from one space to another and the control of noise levels and characteristics within a space. Noise can be defined as sound that is undesirable, but this can be subjective and depends on the reactions of the individual. When a noise is troublesome, it can reduce comfort and efficiency. If a person is subjected to noise for long periods, it can result in physical discomfort or mental distress. The best defence against noise is to ensure that proper precautions are taken at the design stage and during construction of the building. The correct acoustic climate must be provided in each space and noise transmission levels should be compatible with usage.

The acoustics can be achieved by:

- Sound absorption
- Sound insulation

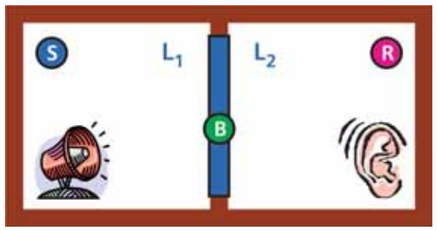
Sound absorption

Sound absorption is the term given to the loss of sound energy on interaction with a surface. Sound absorbent surfaces are used to provide the correct acoustic environment within a room or space. By converting some of the sound energy into heat, sound absorbing material also helps sound insulation because less noise is transmitted to other rooms.



Sound insulation

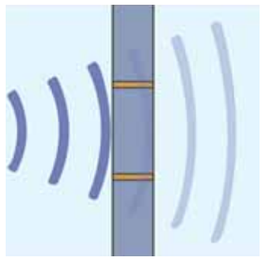
Sound insulation is the term describing the reduction of sound that passes between two spaces separated by a dividing element. In transmission between two spaces, the sound energy may pass through the dividing element (direct transmission) and through the surrounding structure (indirect or flanking transmission). In designing for sound insulation, it is important to consider both ways of transmission. The walls or floors, which flank the dividing element, constitute the main paths for flanking transmission.

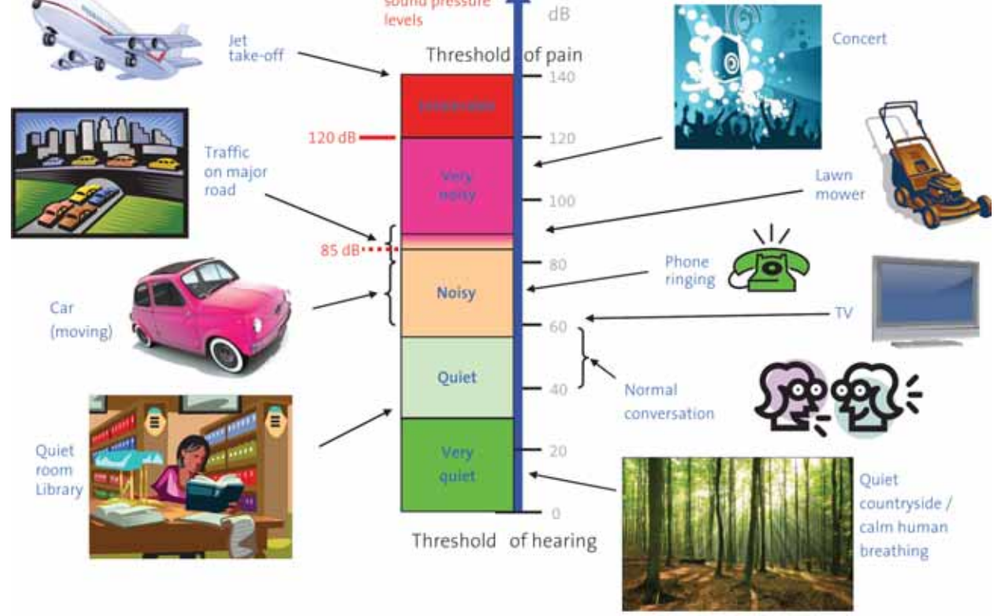


Sound Insulation of separating construction
S = Source room
R = Receiving room
B = Building element

Sound Insulation
of separating construction

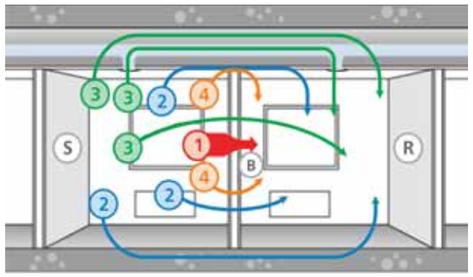
Sound Insulation in room 1 (L1)
- Sound level in room 2 (L2)





Indirect paths (flanking transmission)

Flanking sound is defined as sound from a source room that is not transmitted via separating building element. It is transmitted indirectly via paths such as windows, external walls and internal corridors. Reduction in flanking transmission will help in achieving good room acoustics.

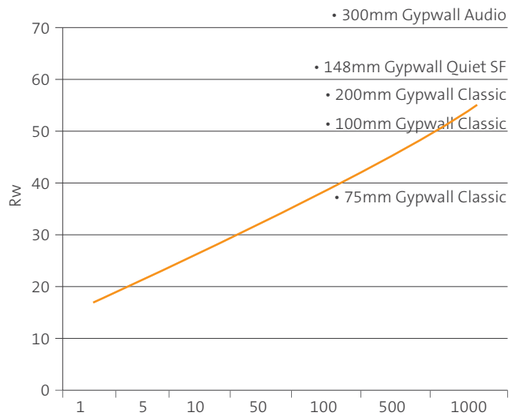


Indirect Paths (Flanking Transmission)

1) Direct transmission
2) Flanking transmission via adjacent constructions (floor, wall and ceiling)
3) Transmission via ceiling void, windows and ventilation ducts etc.
4) Leakage
   S = Source room
   R = Receiving room
   B = Separating building element - Drywall Partition

How Gypwall™ construction is better than traditional construction

Typically the average sound insulation of a material forming a solid partition is governed by its mass. The heavier the material, the greater its resistance to sound transmission. To increase the sound insulation of a solid partition by about 4 db, the mass must be doubled.
This is known as the empirical mass law.



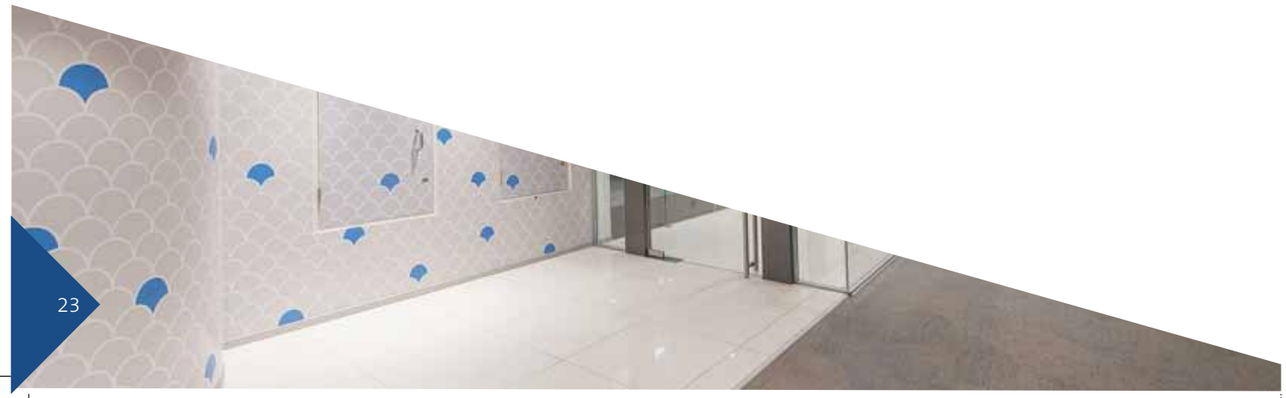
Light weight systems versus Mass law

Lightweight systems versus the mass law shows how lightweight systems consistently exceed mass law predictions. This demonstrates that adding mass is not always the best method when satisfying acoustic design requirements and that lightweight systems, if correctly designed, can provide very effective acoustic solutions.

The use of two completely separate stud frames can produce even better results. In this case, the maximum transmission of energy is through the cavity between the plasterboard linings. The air in the cavity can be considered as a spring connecting the linings, which allows the passage of energy. The spring will have some inherent damping, which can be significantly increased by the introduction of a sound absorbing material, such as glasswool, positioned in the cavity.

Air-spring coupling becomes less significant as the cavity width increases. In practice, cavities should be as wide as possible to insulate against low frequency sounds.

Two important effects, resonance and coincidence, occur in partitions and walls. These are governed by such physical properties as density, thickness and bending stiffness, whereby a reduction in sound insulation occurs at certain frequencies. In lightweight cavity constructions these effects can be decreased by the use of two or more board layers. A simple way of increasing the sound insulation performance of a single layer metal stud partition is, therefore, to add an additional layer of plasterboard to one or both sides.



Robustness

Robustness is an ability of a system to resist change when physical pressure is applied.

Principles of robust design

Partition Duty ratings
All Gyproc® partition systems have a duty rating established in accordance with all the full requirements of BS 5234. This rating relates to the strength and robustness characteristics of the partition system against specific end-use applications.

Table below gives details of the four duty categories.

Duty Ratings

Partition Duty	Category	Examples
Light	Adjacent space only accessible to persons with high incentive to exercise care. Small chance of accident occuring or misuse.	Domestic accommodation spaces
Medium	Adjacent space moderately used, primarily by persons with some incentive to exercise care. Some chance of accident occuring or misuse.	Office accommodation spaces
Heavy	Adjacent space frequently used by the public and others with little incentive to exercise care. Chance of accident occuring or misuse.	Public circulation areas, industrial areas
Severe	Adjacent space intensively used by the public and others with little incentive to exercise care. Prone to vandalism and abnormally rough use.	Major circulation areas, heavy industrial areas

Tests within BS 5234 include:

- Partition stiffness
- Resistance to damage from a small hard body impactor
- Resistance to damage from a large soft body impactor
- Resistance to perforation from a small hard body impactor
- Resistance to structural damage from a large soft body impactor
- Resistance to damage from door slamming BS 5234 does not identify specific points of contact on a partition that should be impacted. However, Gyproc® understands there are limiting points in terms of impact resistance. These are then subjected to the impact tests to ensure that the most onerous situation are assessed.

Optional tests are also detailed within the standard, but these are not used in the partition grading.
These include:

- Resistance to damage from a crowd pressure load
- Lightweight anchorages pull down
- Lightweight anchorages pull out
- Heavyweight anchorages wall cupboard
- Heavyweight anchorages wash basin

STIFFNESS TEST

500N static horizontal point loint load at 1500mm height.
(500N = 50kg)

SMALL HARD BODY IMPACT TEST

Small hard body impact test (Surface Damage):A3 kg impactor, with its head being a 50 mm diameter steel sphere, is swung 10 times againts the face of the partition. Tested to determine suface damage and perforatin. Carried out as far surface damage (10 impacts) but with higher impact energy .

DOOR SLAM TEST

Door leaf weights and number of impacts:
Light & medium duty
35kg = 20 impacts
Heavy & severe duty
60kg = 100 impacts

CROWD PRESSURE TEST

The loads applied to the beam:
0.75kn/m(75kg = 3 bags plaster/m)
1.5kn /m (150kg = 6 bags plaster/m)

LIGHT WEIGHT ANCHORAGE TEST

Lightweight anchorage pull out test :
100N (10kg) load at 900 to the partition surface applied through a bracket secured with a single fixing device with a 1mm thick stainless steel shim plate positioned between the bracket and the partition.

lightweight anchorage pull down test:
150N (15kg) load parallel to the partition surface applied through a bracket secured with a single fixing device with a 1mm thick stainless steel shim plate positioned between the bracket and partition.

HEAVY WEIGHT ANCHORAGE TEST

Wash Basin: 500N (50KG) load representing the basin weight + 1000N (100kg) or 1250N (125kg) or 1500N (150kg) representing additional loads , Applied between the brackets and the partition,
Cupboard - 2000N (200 Kg) or
4000 N (400 Kg)
Applied through a pair of linked brackets with 1mm stainless steel shim plates postitioned between the brackets and the partition.

4

COMPONENTS OF DRYWALL

A. Metal Framing and Accessories

B. Boards

C. Jointing and Finishing

D. Associated Products

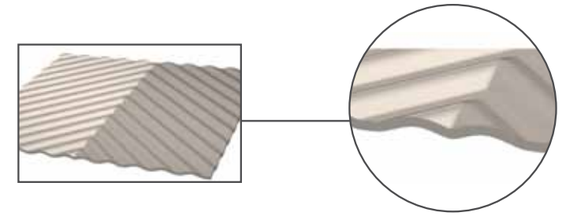
GypSerra™ Metal Framing System

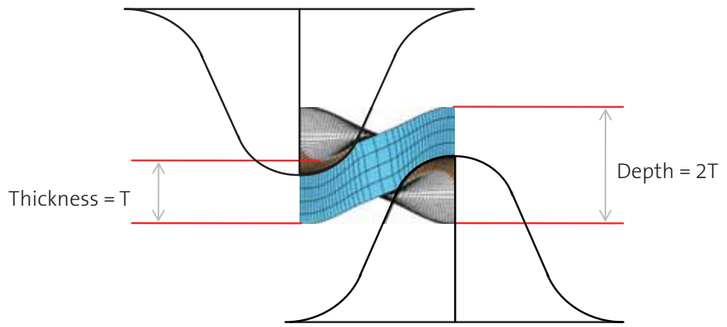
GypSerra™ metal profiles are produced with an innovative & Patent Applied Serration process which produces a unique serrated pattern across the surface of the material ; Which results in to:

- Increased Surface Area (8% more than plain sheet)
- Doubled Surface Thickness (than plain sheet)
- Stronger Surface due to work hardening
- Increased load carrying capacity (10% higher than Knurled Sections)

The GypSerra™ Process

- Effective thickness improvement during production (2x depth)
- Base material gauge (T)
- Effective thickness after production (2T)

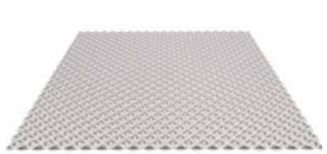




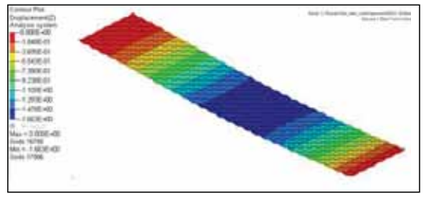
Finished product - Unique & Superior with complete serrated surface With unique “embossing” of Gyproc logo on every section

* Patent Application No:201741018271

Value Additions of Serration Sheet Capacity

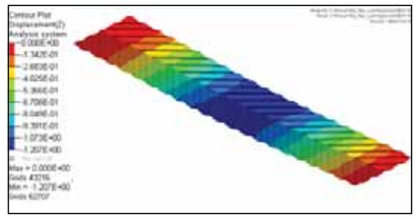


Knurled Sheet



Deflection : 1.663

Serrated Sheet

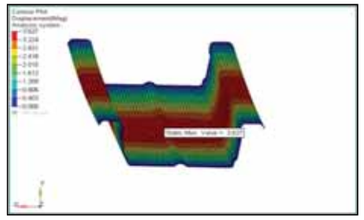


Deflection : 1.207

Improved Sheet Capacity & lower Sheet Deflection than Knurled Sheet **27%**

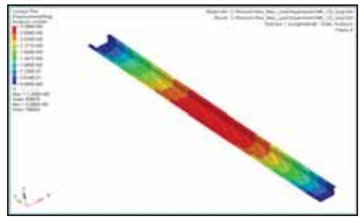
Load Bearing Capacity of Ceiling

Knurled Ceiling Section



Deflection : 3.627mm

Serrated Ceiling Section

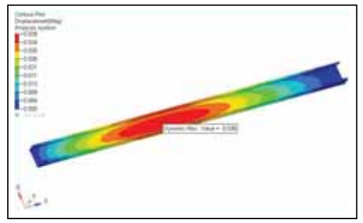


Deflection : 3.25mm

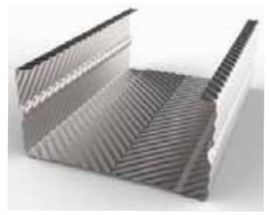
Improved Load bearing capacity for Ceiling **10%**

Deflection due to Self Weight in studs

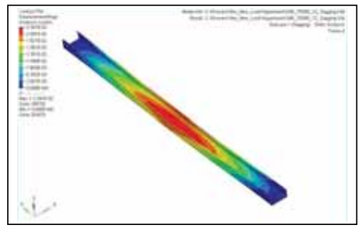
Knurled C-Stud



Deflection : 0.038mm



Serrated C-Stud

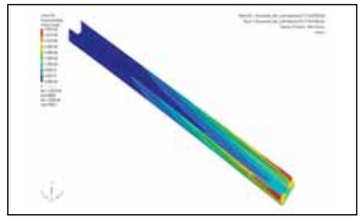


Deflection : 0.035mm

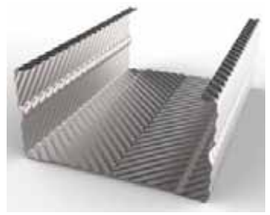
8% less deflection due self weight than Knurled Sections **8%**

Resistance to Twist in Studs

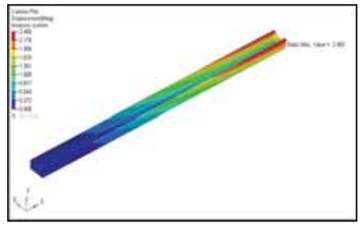
Knurled C-Stud



Deflection : 3.61mm



Serrated C-Stud



Deflection : 2.45mm

30% higher Twist Resistance than Knurled Sections **30%**

GypSerra™ Partition Framing System

All components in GypSerraTM Partition Framing System are with Al-Zn coating of 150 gsm which provides superior corrosion resistance (upto 5 times than Zn 120 gsm)

Floor and Ceiling Channel

- Application
  Fixed to floor and ceiling for securing

Dimension in mm
50 x 32 x 32 x 3660
94 x 32 x 32 x 3660
72 x 32 x 32 x 3660
148 x 32 x 32 x 3660

'C' Stud

- Application
  Used as the vertical supporting wall framing

Dimension in mm
48 x 34 x 36 x 3050/3660
92 x 34 x 36 x 3050/3660
70 x 34 x 36 x 3050/3660
146 x 34 x 36 x 3050/3660

AcouStud

- Application
  Used as the vertical support in wall framing. This is a specialist stud which will give high acoustic performance

Dimension in mm
70 x 41 x 44 x 3050/3660
92 x 41 x 44 x 3050/3660
146 x 41 x 44 x 3050/3660

Noggin Channel

- Application
  Used for horizontal support

Dimension in mm
48 x 40 x 0.5 x 390/492/695
92 x 40 x 0.5 x 390/492/695
70 x 40 x 0.5 x 390/492/695

Length - 695/492/390

I Stud

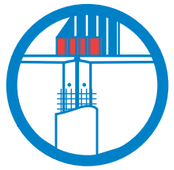
- Application
  For shaftwall

Dimension in mm
48 x 38 x 3050/3660
92 x 38 x 3050/3660
70 x 38 x 3050/3660
146 x 38 x 3050/3660

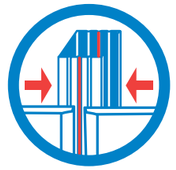
Metal Thickness: 0.5mm (48mm stud), 0.7mm (70/92/146 mm studs), 0.9mm (92/146 mm studs) Retaining channel and starter channel of suitable sizes are also available for fixing of I Stud

GypSerra™ Advantages

Longer Life, High Performance,
Higher Safety & User Friendly Systems with
GypSerra™

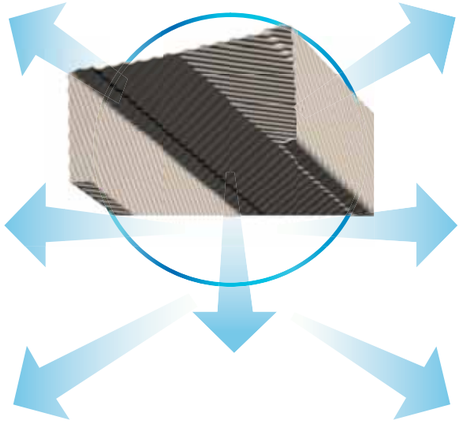


Achieve significant flatness on wall and reduction in the risk of developing cracks in joints

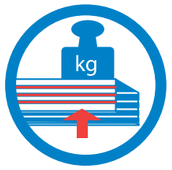


Center of GypSerra™ can be easily identified for conveniently screwing the plasterboards

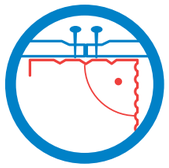
The longitucfral ribs provide stiffness and help in getting the proper alignment



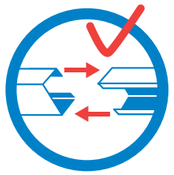
Easy to cut onsite for faster implementation and overlapping



High stiffness makes GypSerra™ more secure and capable of taking the plasterboard load



Screws do not slip and hence does not damage the plaster boards during installation on GypSerra™



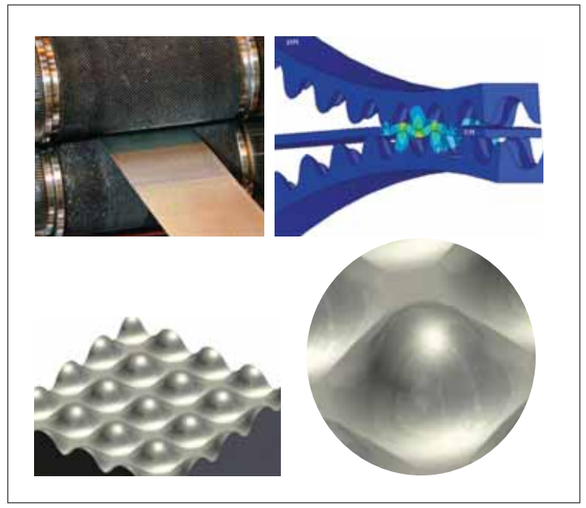
Easy to boxing of studs due to accuracy in dimensions and correct placement of ribs

Gypsteel ULTRA® Metal Framing System

What Is Gypsteel ULTRA®

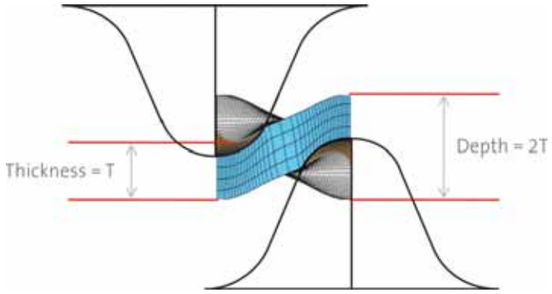
A cold rolled pre-forming process that locally work hardens the base material

- The steel is driven between two mating rolls to create a dimpled surface & ribbing effect across the surface.



The Gypsteel ULTRA Process

- Effective thickness improvement during production (2 x depth)
- Base material gauge (T)
- Effective thickness after production (2T)

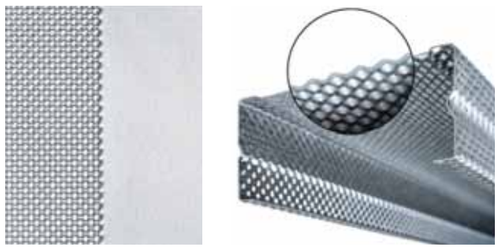


Gypsteel ULTRA® is manufactured under license by Saint-Gobain Gyproc® India Ltd. using the Ultrasteel process and is protected by UK and International Patents granted and pending together with design registration. Ultrasteel is a trademark of Hadley Industries Overseas Holdings Limited.

Gypsteel ULTRA® metal framing is an integral part of our tested ceilings, partitions, linings and encasement systems.

Gypsteel ULTRA® frame work is specially designed making it stronger, lighter and easier to use. It provides adequate resistance against rusting, warping or twisting, giving you better finished results. Key features include,

a) Galvanization with zinc coating of 120 GSM both sides for ultra-sections and 150 GSM for Ultra plus AZ sections, inclusive which gives it a guaranteed improvement in service life
b) High yield strength.
c) Greater load carrying capacity.
d) Improved acoustic performance and fire resistance.
e) Enhanced screw retention.
f) Virtually no screw stripping and screw riding.
g) Slight lines on flanges for more precise joints.
h) Overall improved productivity.

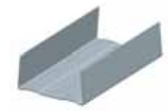


Finished product - Unique appearance completely ribbed surface

Metal Framing & Accessories - Gypsteel ULTRA®- Partitions

DRYWALL

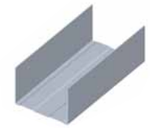
Floor and Ceiling Channel



- Application
  Designed for securing wall studs at floor and ceiling junctions. Fixed to floor and ceiling to accommodate Gypsteel ULTRA™ studs

Dimension in mm
50 x 32 x 32 x 0.5 x 3660
62 x 32 x 32 x 0.5 x 3660
72 x 32 x 32 x 0.5 x 3660
94 x 32 x 32 x 0.5 x 3660
148 x 32 x 32 x 0.5 x 3660

Deep ceiling Channel



- Application
  Use to control deflection more than 10mm in drywall system

Dimension in mm
50 x 50 x 50X 0.5x3660
62 x 50 x 50X 0.5x3660
72 x 50 x 50x 0.5x3660
94 x 50 x 50x 0.5x3660
148 x 50 x 50x 0.5x3660

'C' Stud

- Application
  Used as the vertical support in wall framing.

Dimension in mm
48 x 34 x 36 x 0.5 x 2440
48 x 34 x 36 x 0.5 x 2745
48 x 34 x 36 x 0.5 x 3050
48 x 34 x 36 x 0.5 x 3660
70 x 34 x 36 x 0.5 x 3050
70 x 34 x 36 x 0.5 x 3660
92 x 34 x 36 x 0.5 x 3050
92 x 34 x 36 x 0.5 x 3660
146 x 34 x 36 x 0.5 x 3660

AcouStud

- Application
  Used as the vertical support in wall framing. This is a specialist stud which will give high acoustic performance

Dimension in mm
70 x 41 x 44 x 0.5 x 3660
92 x 41 x 44 x 0.5 x 3660
146 x 41 x 44 x 0.5 x 3660

Noggin Channel

- Application
  Designed for horizontal support between the C-stud, helps in electrical switch fitting, fire rated partitions for preventing spreading of fire.

Dimension in mm
48 x 40 x 40 x 0.5
70 x 40 x 40 x 0.5
92 x 40 x 40 x 0.5
Length - 390/492/695

Resilient Bar

- Application
  Used to improve sound insulation of drywall system, placed at 610mm c/c horizontally, fix on stud using metal to metal screws

Dimension in mm
45 x 16 x 21 x0.5 x 3000

SHAFT WALL

I Stud

- Application
  Used for shaftwall applications, industrial partitions, independent wall lining.

Dimension in mm
48 x 38 x 0.5 x 3660
60 x 38 x 0.7 x 3660
60 x 38 x 0.9 x 3660
70 x 38 x 0.5 x 3660
70 x 38 x 0.7 x 3660
92 x 38 x 0.7 x 3660
92 x 38 x 0.9 x 3660
146 x 38 x 0.7 x 3660
146 x 38 x 0.9 x 3660

Starter channel

- Application
  Fix at starting point, end point and at junction of shaft wall system

Dimension in mm
60 x 30 x 30 x 0.7
70 x 30 x 30 x 0.7
92 x 30 x 30 x 0.7
146 x 30 x 30 x 0.7

Retaining Channel

- Application
  Used with I-stud for fixing the core board on other side. Thus there is no requirement of screwing the board with the stud.

Dimension in mm
29 x 15 x 0.5 x 3600

Fixing strap

- Application
  Designed for horizontal support to board joints specially with I stud system

Dimension in mm
74 x 0.5 x 2400

Closed stud

- Application
  Used as the vertical support in drywall system, Replacement of Aluminum section.

Dimension in mm
48 x 34 x 34 x 0.6 x 3660
70 x 34 x 34 x 0.6 x 3660

L-Angle

- Application
  Used to fix horizontal support in closed stud drywall system

Dimension in mm
45 x 30 x 30 x 1

ACCESSORIES

Angle Bead

- Application
  Perforated galvanized metal bead for reinforcing external 90° angles where maximum protection is required

Dimension in mm
25 x 25 x 0.5 x 2440

Edge Bead

- Application
  Galvanized metal bead, having an asymmetric profile with one perforated leg to accommodate jointing material. It is used to protect the exposed and unsupported edges of plasterboard. Also used to form perimeter detail to cover the edges of plasterboard

Dimension in mm
25 x 12 x 9.5 x 0.5 x 2440
25 x 12 x 12.5 x 0.5 x 2440
25 x 12 x 15 x 0.5 x 2440

Shadowline Stopping Bead

- Application
  Shadowline Stopping bead is a semi perforated galvanized section used for minimizing the appearance of non-aligned walls and ceilings by giving a clean, straight, shadow edge on installation and finishing. They are suitable for ceiling perimeters, door jambs, windows, etc.

Dimension in mm
10 x 9 x 28 x 0.5

Glass wool Holding clip

- Application
  For holding insulator material Like Glass wool /Rockwool inside the cavity of Stud

Dimension in mm
178 x 50 x 0.5

Rawl plug

- Application
  Used to secure metal sections & components with the structure

Dimension in mm
M8 x 45
M8 x 60
M8 x 80

Drywall Screw

- Application
  Self tapping trumpet head screw with case hardened Grey phosphate coating.
  To fix plasterboard to metal framework

Dimension in mm
ø 3.5 x 25
ø 3.5 x 35
ø 3.5 x 50

Metal to Metal Screws

- Application
  Used to connect two metal sections together. Zinc plated metal screw with wafer cross head and self drilling point.

Dimension in mm
ø 4.2 x 13

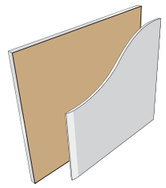
Boards

Gyproc® Plasterboard

Gyproc® plasterboards are the ultimate wall and ceiling solution for today's buildings, providing highlevels of performance in terms of fire rating, acoustic insulation, thermal insulation and moisture resistance to create modern internal environments that offer comfort and safety for occupants. They offer superior solutions for walls, ceilings, lift shafts, stairwells and corridors in buildings as diverse as residential, schools, hospitals, offices, cinemas and hotels. Gyproc® is the brand of specialist high performance boards with special boards for applications like fire, acoustics, moisture, impact and thermal resistance.

Gypboard® Plain

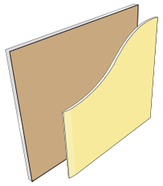
- **Characteristics**
  Standard board product
- **Application**
  Suitable mainly for false ceilings
- **Board colour**
  Face: Grey paper
  Reverse: Brown paper
- **Standards and certification**
  IS 2095 - Part I, 2011
  λ Thermal Conductivity: 0.16 (W/mK)



Width (mm)	Length (mm)	Edge type
9.5mm board, Kg/m² = 7.4, R = 0.059		
1219	1829	T/E S/E
12.5mm board, Kg/m² = 8.0, R = 0.078		
1219	1829	T/E S/E
1219	2438	T/E S/E
1219	3048	T/E S/E
15mm board, Kg/m² = 10.49, R = 0.093		
1219	1829	T/E S/E
1219	2438	T/E S/E
1219	3048	T/E S/E

Gyproc® Duraline

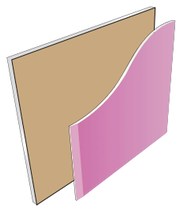
- **Characteristics**
  Higher density core with glass fibre and other additives
- **Application**
  Suitable for application where high level of acoustics and impact levels are specified
- **Board colour**
  Face: Yellow paper
  Reverse: Brown paper
- **Standards and certification**
  EN 520: 2004, Type D, F, I & R
  λ Thermal Conductivity: 0.25 (W/mK)



Width (mm)	Length (mm)	Edge type
13mm board, Kg/m² = 11.50, R = 0.054		
1220	2440	T/E S/E

Gyproc® Fireline / Gyproc® Firestop

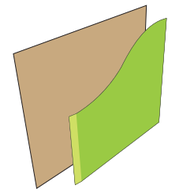
- **Characteristics**
  Gypsum plasterboard with glass fibre and other additives
- **Application**
  Suitable for application where high level of fire protection is required
- **Board colour**
  Face: Pink paper
  Reverse: Brown paper
- **Standards and certification**
  EN 520: 2004 Type F
  ASTM C 1396 Type X
  λ Thermal Conductivity: 0.24 (W/mK)



Width (mm)	Length (mm)	Edge type
12.5mm board, Kg/m² = 9.4, R = 0.052		
1220	1830	T/E S/E
1220	2440	T/E S/E
15mm board, Kg/m² = 10.9, R = 0.062		
1220	1830	T/E S/E
1220	2440	T/E S/E

Gyproc® Moisture Resistant (MR)

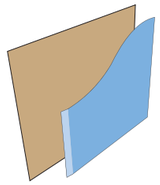
- **Characteristics**
  Gypsum plasterboard with waterpoint additives in the core firmly bonded with strong paper cliners.
- **Application** Suitable as a base for tiling in wet use areas. Also used for external soffits in sheltered positions
- **Board colour**
  Face: Green paper
  Reverse: Brown paper / Green paper
- **Standards and certification**
  EN 520: 2004 Type A, H1
  λ Thermal Conductivity: 0.19 (W/mK)



Width (mm)	Length (mm)	Edge type
9.5mm board, Kg/m² = 7.4, R = 0.052		
1220	1830	T/E S/E
12.5mm board, Kg/m² = 9.5, R = 0.078		
1220	1830	T/E S/E
1220	2440	T/E S/E
15mm board, Kg/m² = 11.5, R = 0.093		
1220	1830	T/E S/E
1220	2440	T/E S/E

Gyproc® Sound Bloc

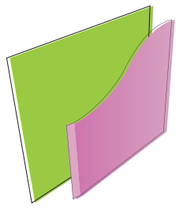
- **Characteristics**
  Gyproc Sound Bloc consists of an aerated gypsum core encased in, and firmly bonded to strong paperliners.
- **Application**
  Designed for use in walls and partition systems where greater levels of sound insulation are required
- **Board colour**
  Face: Blue face paper
  Reverse: Brown paper
- **Standards and certification**
  EN 520: 2004, Type D
  λ Thermal Conductivity: 0.25 (W/mK)



Width (mm)	Length (mm)	Edge type
12.5mm board, Kg/m² = 10.6, R = 0.052		
1200	1830	T/E S/E
1200	2440	T/E S/E
15mm board, Kg/m² = 12.6, R = 0.062		
1200	1830	T/E S/E
1200	2440	T/E S/E

Gyproc® FR MR / Gyproc® Firestop MR

- **Characteristics**
  Gyproc Fireline with water repellent additives in the core. It consists of an aerated gypsum core with glass fibre, water repellent and other additives encased in, and firmly bonded to strong paper liners.
- **Application**
  Used in applications where increased fire protection and moisture resistance are required. Also used for protection of structural steel.
- **Board colour**
  Face: Pink paper
  Reverse: Green paper
- **Standards and certification**
  ASTM C 1396 Type X
  λ Thermal Conductivity: 0.24 (W/mK)

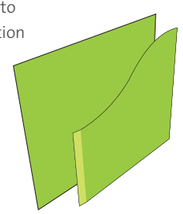


Width (mm)	Length (mm)	Edge type
12.5mm board, Kg/m² = 9.8, R = 0.05		
1220	1830	T/E S/E
1220	2440	T/E S/E
15mm board, Kg/m² = 11.8 R = 0.06		
1220	1830	T/E S/E
1220	2440	T/E S/E

Gyproc® - Core Board

Width (mm)	Length (mm)	Edge type
19mm board, Kg/m² = 16.0, R = 0.08		
598	3000	S/E

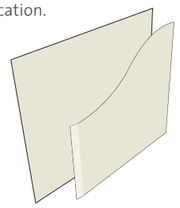
- **Characteristics**
  A 19mm thick version of Gyproc FR MR Board, it consists of an aerated gypsum core with glass fibre, water repellent and other additives firmly bonded to moisture resistant paper liners.
- **Application**
  Used as the main board in the GyprocShaftWall system to provide fire protection with temporary moisture protection during construction.
- **Board colour**
  Green face paper Green reverse side paper
- **Standards and certification**
  EN 520: 2004, Type D, F, H1
  λ Thermal Conductivity 0.24 (W/mK)



Gyproc® - Fibre Cement Board

Width (mm)	Length (mm)	Edge type
6.0mm board Kg/m² = 8.96		
595	595	S/E
1220	2440	S/E
8.0mm board Kg/m² = 11.95		
1220	2440	S/E
10.0mm board Kg/m² = 14.93		
1220	2440	S/E
12.0mm board Kg/m² = 17.92		
1220	2440	S/E

- **Characteristics**
  Gyproc Fibre Cement Board is a smooth surfaced, light colored, asbestos-free, cellulose fibre reinforced cement board. It is a major breakthrough in asbestos-free board technology.
- **Application**
  It is tough and flexible, and is the ideal choice for many general building purposes, for both internal and external application.
- **Board colour**
  Greyish white smooth surface
  Greyish white rough surface
- **Standards and certification**
  IS 14862: 2000
  λ Thermal Conductivity: 0.21 (W/mK)



Gyproc HABITO™

Width (mm)	Length (mm)	Edge type
12.5 mm board ,Kg /m²= 12R= 0.05		
1220	2440	T/E S/E

- **Characteristics**
  Calcium Sulphate Dihydrate encased in paper liners, with glass fibers and other additives.
- **Application**
  An area where solution for high impact resistant ,planned & unplanned loading combined with acoustics is required.
- **Board colour**
  Ivoryface paper Brown reverse side paper
- **Standards and certification**
  EN 520: 2004, A1: 2009 Gypsum plaster boards, definations, requirements and test methods.
  Type A, D, R, I: Gypsum plasterboard
  λ Thermal Conductivity: 0.24 (W/mK)

Gyproc Activ'Air™

Width (mm)	Length (mm)	Edge type
12.5 mm board, Kg /m²= 7.4 R= 0.078		
1220	1830	T/E S/E

- **Characteristics**
  Gyproc Activ'Air board is a high-performance board consisting of an aerated gypsum core with special additives encased in, and firmly bonded to, strong paper liners . Gyprc Activ'Air boards improve indoor air quality by taking Formaldehyde out of the air and converting them into safe, inert compounds that, once captured in the board, cannot be released back into the air.
- **Application**
  Suitable for most ceiling and drywall partition applications.
- **Board colour**
  Grey face paper Brown reverse side paper
- **Standards and certification**
  IS 2095-Part ! , 2011, ISO 16000-23:2009 IAO
  λ Thermal Conductivity : 0.16 (W/mK)

Gyproc Glasroc H

Width (mm)	Length (mm)	Edge type
12.5 mm board, Kg /m²= 10.5 R= 0.04		
1220	1830	T/E
1220	2440	T/E

- **Characteristics**
  Gyproc Glasroc H is a paperless Gypsum Board which combines & incorporates Mold & Moisture resistant Gypsum core reinforced with glass fibers & Pre-coated glass mats on the surface of the board. The surface of the board is covered with an inorganic acrylic coating which is again mold and water resistant.
- **Application**
  Suitable for Wet Area Drywalls with tile/Marble fixing or any other desired finish Also suitable for humid to very humid area ceilings
- **Board colour**
  Front: Blue colored face Glassmat
  Reverse: Blue colored face Glassmat
- **Applicable Standards:**
  EN15283 – 1 : Gypsum board with mat reinforcement, fire resistant with reduced water absorption rate
  ASTM D3273 : Mold resistance
  λ Thermal Conductivity : 0.3 (W/mK) as per EN 12664

Jointing and Finishing

Jointing & Finishing materials produce a smooth, continuous, crack-free lining surface ready for priming and final decoration. A range of jointing specifications is available to suit the board type, method of application, and site preference. The jointing process normally has three application stages - embedding the tape and bulk filling the joint, secondary filling to take up the shrinkage, and finishing. Jointing materials provide durable joint reinforcement and sealing which is a pre-requisite if the building element is to achieve its specified levels of fire resistance and sound insulation.

Gyproc® Pro-Fill

Weight
10 Kg.
25 Kg.

- **Application**
  A polymer based powdered air-drying jointing material. Provides excellent workability, bond strength, smooth finish with minimum/zero wastage.

Gyproc® Easi - Fill

Weight
10 Kg.
20 Kg.

- **Application**
  A Gypsum based powdered jointing material with 90-120 minutes working time. Allows quick finishing and drying of Gypsum board joints.

Gyproc® Pro-Top Ready Mix Jointing Compound

Weight
5 Kg.
20 Kg.
30 Kg.

- **Application**
  A polymer based ready to work air-drying product. Eliminates on-site mixing of water. Provides excellent finish & workability with minimum/zero wastage

Gyproc® Joint paper tape

Length	Width
90 metre roll	50mm

- **Application**
  Paper tape with center crease, chamfered edges and spark perforations, for easy use in internal angle joints. Provides excellent crack-resistance. Designed for reinforcing flat joints and internal angles manually

Gyproc® Fiber tape

Length	Width
90 metre roll	50mm

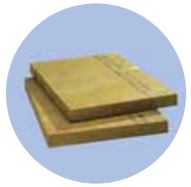
- **Application**
  Pre-glued perforated tape designed to eliminate the need for pre bedding coat of jointing compound. It creates smooth finish without blisters and bubbles.

Associated Products

Insulation

Insulation provides thermal and acoustic insulation for drywall partitions and is tested and recommended for use in Gyproc India systems. This high quality roll and slab fulfill the specific performance criteria cost-effectively. Their natural mineral base, very high percentage use of recycled material and lack of damaging gases either in the products or their manufacturing process ensures excellent environmental credentials, in addition to their energy-saving properties.

Rockwool



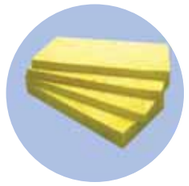
Size:
Length - 900mm
Width - 600mm
Thickness - 50mm

Insulation can be of two types:

- Glasswool - 20kg/m³ density
- Rockwool - 50kg/m³ density

- **Application:**
  In fill in Metal stud partitions and wall linings

Glasswool



Size:
Length - 900mm
Width - 600mm
Thickness - 25 / 50mm

Fire & Acoustic sealants

Sealants are acrylic-based firestop material that offers movement capabilities and excellent acoustic rating in fire rated joints and seals through-penetration applications. Sealants help you achieve all of the test-verified ratings that your partition assembly can deliver by sound-sealing and fire proofing partitions at gaps, electrical box cutouts, and all abutting dissimilar materials on both sides of partitions.

- **Applications**
- Junctions between fire-resistance rated wall or floor assemblies
- Connection joints in drywall

Drywall construction in wet areas requires special moisture resistant boards or fibre cement boards to be used along with membrane water proofing treatment. Membrane waterproofing provides high resistance to the effect of long term weathering in these wet areas.

Membrane water proofing

- **Applications**
- Wet areas like shower cubicles and toilets

Note- For more details, kindly get in touch with Gyproc team

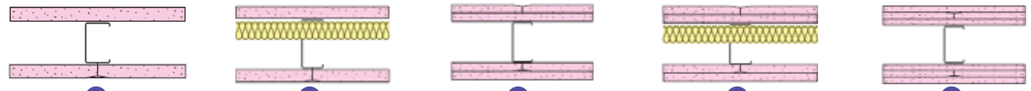
5

DRYWALL SYSTEM SELECTOR

Parameters

- Max Height (mm)
- Acosutics (Rw) as per ISO 140-3/ASTM E-90
- Fire Rating (Mins) As per BS 476 part 22
- Total Weight Kg/m2
- Duty Rating as per BS 5234 part 2

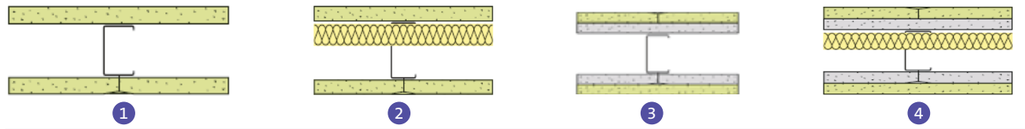
Gypwall Fire Resist



1	2	3	4	5
One layer of board on either side of stud centre at 610mm c/c	One layer of board on either side of stud centre at 610mm c/c with 50mm Insulation	Two layer of board on either side of stud centre at 610mm c/c	Two layer of board on either side of stud centre at 610mm c/c with 50mm insulation	Three layer of boardon either side of stud centre at 610mm c/c

Details	Thickness	Stud size	Board type	Max Height	Acoustic	Duty rating	Weight
60 Minutes fire resistance							
1	80mm	48mm	1 x 15mm	2800	36	Heavy	25
1	102mm	70mm	1 x 15mm	3800	37	Heavy	25
2	102mm	70mm	1 x 15mm	3800	43	Heavy	26
120 Minutes fire resistance							
3	100mm	48mm	2 x 12.5mm	3400	47	Severe	41
4	100mm	48mm	2 x 12.5mm	3400	49	Severe	42
3	122mm	70mm	2 x 12.5mm	4600	46	Severe	41
4	122mm	70mm	2 x 12.5mm	4600	50	Severe	42
3	132mm	70mm	2 x 15mm	4900	46	Severe	47
4	132mm	70mm	2 x 15mm	4900	51	Severe	48
3	198mm	146mm	2 x 12.5mm	7600	50	Severe	42
4	198mm	146mm	2 x 12.5mm	7600	53	Severe	43
180 Minutes fire resistance							
5	162mm	70mm	3 x 15mm	4900	46	Severe	68
5	240mm	146mm	3 x 15mm	7900	50	Severe	70

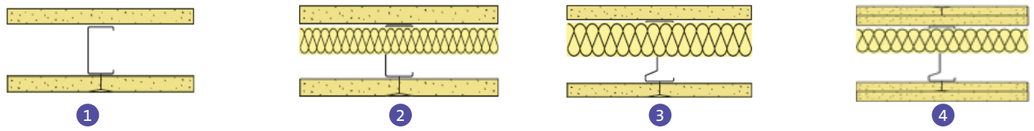
Gypwall Hydro



1	2	3	4
One layer of board on either side of stud centre at 610mm c/c	One layer of board on either side of stud centre at 610mm c/c with 50mm Insulation	One layer of plain board inside & MR outer side on either side of stud centre at 610mm c/c	One layer of plain board inside & MR outer side on either side of stud centre at 610mm c/c with 50mm insulation

Details	Thickness	Stud size	Board type	Max Height	Acoustic	Duty rating	Weight
30 Minutes fire resistance							
1	75mm	48mm	1 x 12.5mm	2500	34	Medium	19.5
1	97mm	70mm	1 x 12.5mm	3600	36	Medium	19.5
2	97mm	70mm	1 x 12.5mm	3600	42	Medium	19.5
1	102mm	70mm	1 x 15mm	3800	38	Medium	19.5
60 Minutes fire resistance							
3	100mm	48mm	2 x 12.5mm	3400	47	Severe	43
4	100mm	48mm	2 x 12.5mm	3400	50	Severe	43
3	122mm	70mm	2 x 12.5mm	4600	50	Severe	43
4	122mm	70mm	2 x 12.5mm	4600	53	Severe	41

Gypwall Robust



One layer of board on either side of C stud centre at 610mm c/c	One layer of board on either side of C stud centre at 610mm c/c with 50mm Insulation	one layer of board on either side of acou stud centre at 610mm c/c with 50mm Insulation	Two layer of board on either side of Acou stud centre at 610mm c/c with 50mm insulation

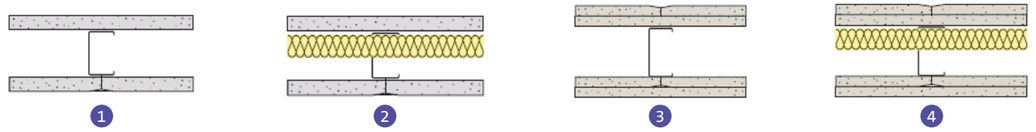
Details	Thickness	Stud size	Board type	Max Height	Acoustic	Duty rating	Weight
30 Minutes fire resistance							
1	76mm	48mm	1 x 13mm	2500	38	Severe	23.5
2	76mm	48mm	1 x 13mm	2500	42	Severe	23.5
1	98mm	70mm	1 x 13mm	3600	40	Severe	24
1	120mm	92mm	1 x 13mm	4500	42	Severe	24
60 Minutes fire resistance							
2	98mm	70mm	1 x 13mm	3600	44	Severe	25
3	98mm	70mm	1 x 13mm	3600	48	Severe	25
2	120mm	92mm	1 x 13mm	4500	50	Severe	25
3	120mm	92mm	1 x 13mm	4700	52	Severe	25
4	124mm	70mm	2 x 13mm	4700	55	Severe	48
2	174mm	146mm	1 x 13mm	6200	51	Severe	24

Gypwall Quiet

One layer of board on either side of C stud centre at 610mm c/c with 25mm Insulation	Two layer of board on either side of C stud centre at 610mm c/c with 25 mm Insulation	Two layer of board on either side of Acou stud centre at 610mm c/c	Two layer of board on either side of Acou stud centre at 610mm c/c with 50mm insulation

Details	Thickness	Stud size	Board type	Max Height	Acoustic	Duty rating	Weight
30 Minutes fire resistance							
1	75mm	48mm	1 x 12.5mm	2500	43	Medium	23
1	80mm	48mm	1 x 15mm	2800	44	Medium	26
4	97mm	70mm	1 x 12.5mm	3800	49	Medium	22
1	102mm	70mm	1 x 15mm	3800	49	Heavy	26
1	124mm	92mm	1 x 15mm	4700	51	Heavy	27
60 Minutes fire resistance							
2	100mm	48mm	2 x 12.5mm	3400	51	Severe	43
3	122mm	70mm	2 x 12.5mm	4700	53	Severe	43
4	122mm	70mm	2 x 12.5mm	4700	57	Severe	43
4	144mm	92mm	2 x 12.5mm	5800	58	Severe	47
90 Minutes Fire resistance							
2	110mm	48mm	2 x 15mm	3700	53	Severe	51
3	132mm	70mm	2 x 15mm	5000	54	Severe	51
3	208mm	146mm	2 x 15mm	8100	59	Severe	51
4	208mm	146mm	2 x 15mm	8100	61	Severe	52

Gypwall Classic



One layer of board on either side of C stud centre at 610mm c/c	One layer of board on either side of C stud centre at 610mm c/c with 50mm Insulation	One layer of board on either side of C stud centre at 610mm c/c	Two layer of board on either side of C stud centre at 610mm c/c with 50mm insulation

Details	Thickness	Stud size	Board type	Max Height	Acoustic	Duty rating	Weight
30 Minutes fire resistance							
1	75mm	48mm	1 x 12.5mm	2500	34	Medium	19
2	75mm	48mm	1 x 12.5mm	2500	40	Medium	20
1	80mm	48mm	1 x 15mm	2800	36	Medium	22
2	120mm	48mm	1 x 15mm	2800	42	Medium	23
1	97mm	70mm	1 x 12.5mm	3600	36	Medium	19
2	97mm	70mm	1 x 12.5mm	3600	42	Medium	20
1	102mm	70mm	1 x 15mm	3800	38	Medium	23
2	102mm	70mm	1 x 15mm	3800	48	Medium	24
60 Minutes fire resistance							
3	100mm	48mm	2 x 12.5mm	3400	47	Severe	38
4	100mm	48mm	2 x 12.5mm	3400	50	Severe	38
3	122mm	70mm	2 x 12.5mm	4600	47	Severe	38
4	122mm	70mm	2 x 12.5mm	4600	51	Severe	38
3	198mm	146mm	2 x 12.5mm	7600	50	Severe	38
4	198mm	146mm	2 x 12.5mm	7600	52	Severe	38
90 Minutes fire resistance							
3	110mm	48mm	2 x 15mm	3700	45	Severe	44
4	110mm	48mm	2 x 15mm	3700	49	Severe	44
3	132mm	70mm	2 x 15mm	4900	46	Severe	45
4	132mm	70mm	2 x 15mm	4900	56	Severe	46
3	208mm	146mm	2 x 15mm	7900	50	Severe	45
4	208mm	146mm	2 x 15mm	7900	52	Severe	45

6

CONSTRUCTION DETAILS OF DRYWALL

A. Overview

B. Boarding Details

C. Junction Details

D. Loading Details

E. Door/Window Opening Details

F. Service Management

G. Wet Area Details

H. Jointing and Finishing Details

Overview

Drywalls are the future of interior construction and are superior to masonry construction using bricks or blocks.

To be able to achieve best performance from this innovative construction technology, certain guidelines and best practices are suggested in this section of the handbook.

This section is intended to provide guidance to the specifier on system design i.e. how the drylined building element interacts with the associated structure.

This section illustrates key areas like staggering of boards and framing of basic structure which ultimately contributes towards the performance of the drywalls. Also, some common queries for managing corners, junctions, loadings (planned and unplanned), the structure for facilitating the frames for doors and windows and electrical fittings have been included.

Loadings constitute a very important part in constructing a drywall which varies from planned to unplanned. Unplanned loading is done through light weight fixtures which are mounted directly on the finished drywall using specially designed fasteners. Planned loading is done through heavy weight fixtures which are planned during the design of drywall and depend on the weight per linear meter.

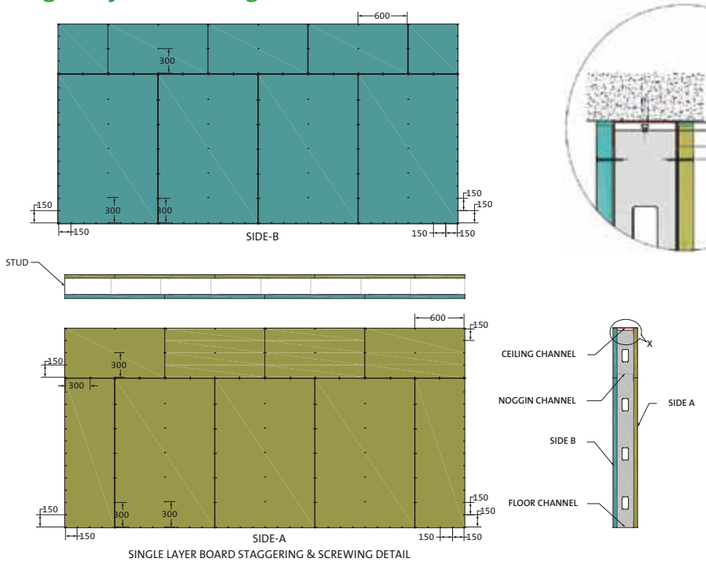
This section explains in detail about tiling and service management and correct ways of installing the drywalls which are expected to bear loads of fixtures, stone/marble cladding. Also the WC fixing details and the typical details to install drywall in wet areas have been explained.

Along with construction, jointing and finishing details have also been included under this section. Jointing and finishing is an imperative process in order to create 'the' seamless and beautiful wall which is a true performer. Jointing and finishing primarily hides the screws and joints on the wall, which gives a complete smooth and finished look to the wall. In order to achieve the best finish, this section includes the right way of jointing and finishing at various levels to achieve the desired performance.

For further details and understanding about the drywall construction, please contact our Gyproc Solution Centre at gyprocindia@saint-gobain.com.

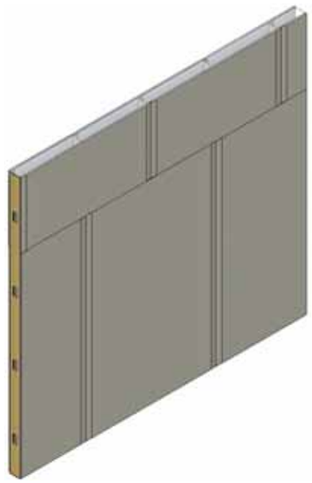
Gypwall Robust

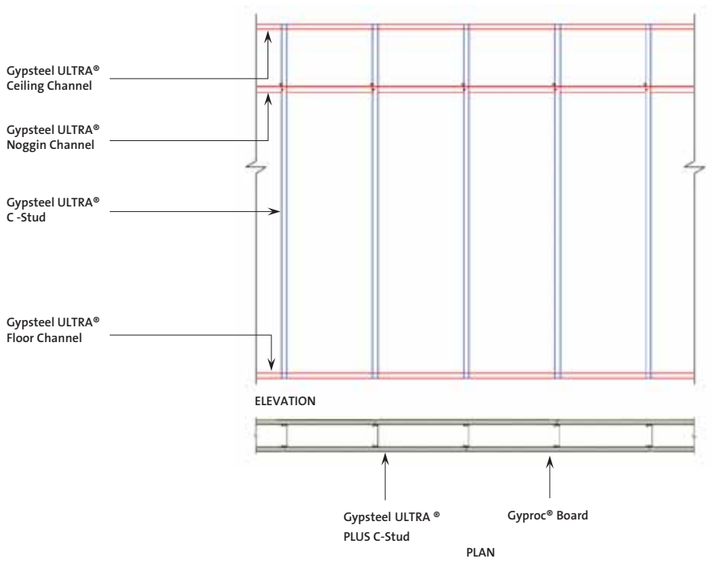
Single Layer Boarding



SINGLE LAYER BOARD STAGGERING & SCREWING DETAIL

Board Staggering Detail For Single Layer Drywall

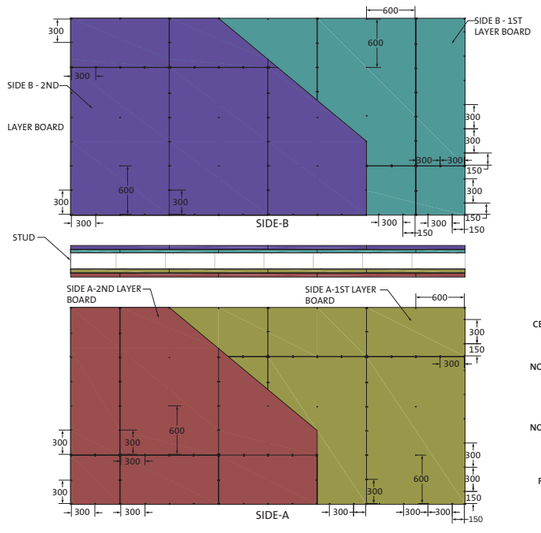


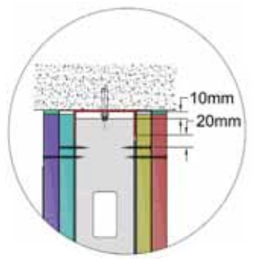


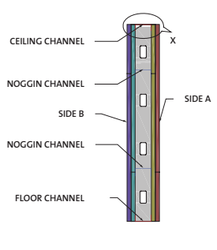
NOTE:-

- Fix the drywall screw 20mm below ceiling channel flange.(See Fig.)
- Type of the board will be as per the system proposed

Double Layer Boarding

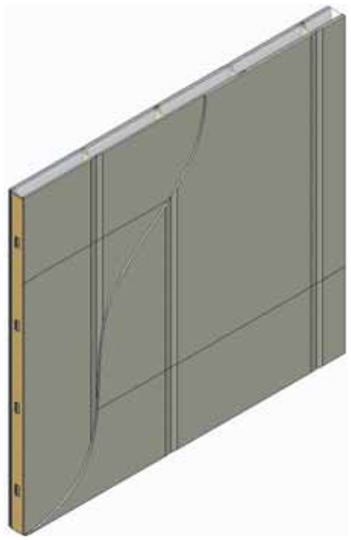


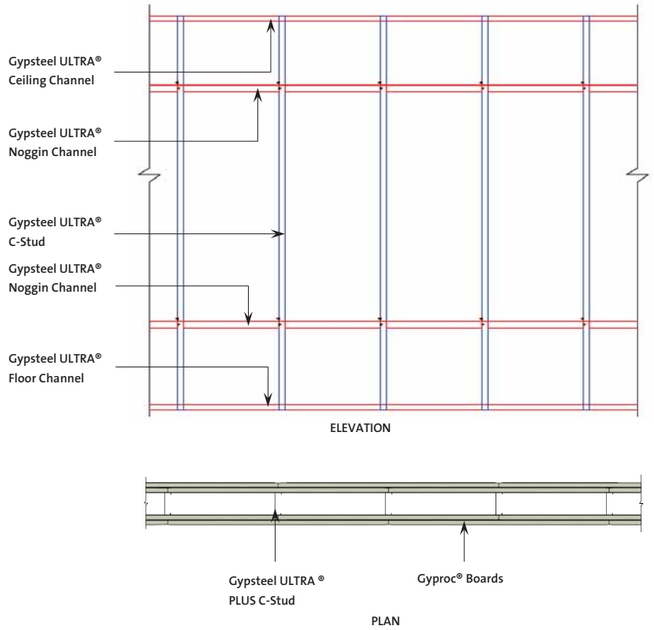




DOUBLE LAYER BOARD STAGGERING & SCREWING DETAIL

Board Staggering Detail For Double Layer Drywall



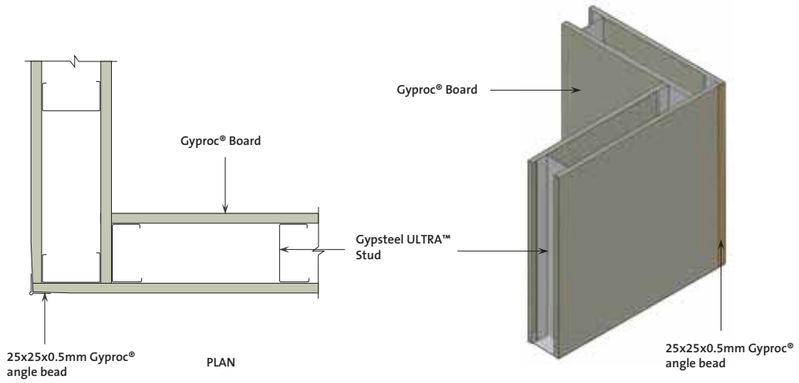


NOTE:-

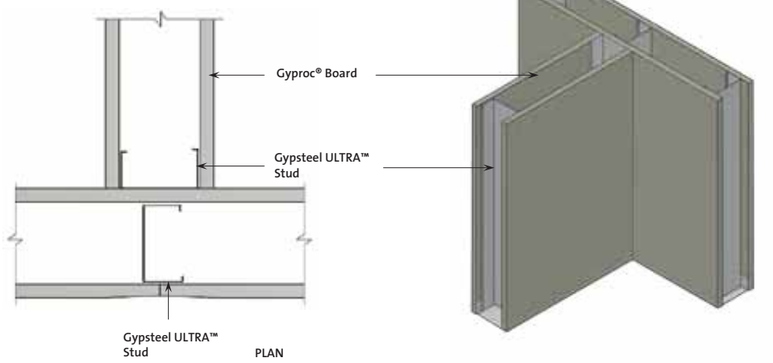
- Fix the drywall screw 20mm below ceiling channel flange.(SeeFig.)
- Type of the board will be as per the system proposed

Junction Details

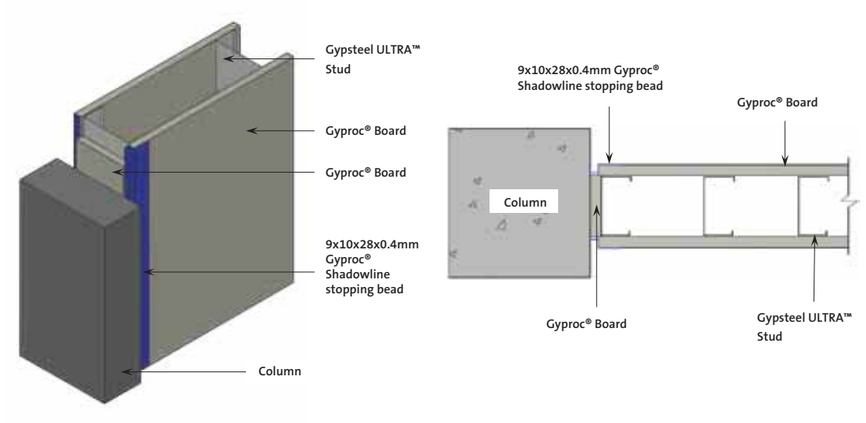
L - Junction Details



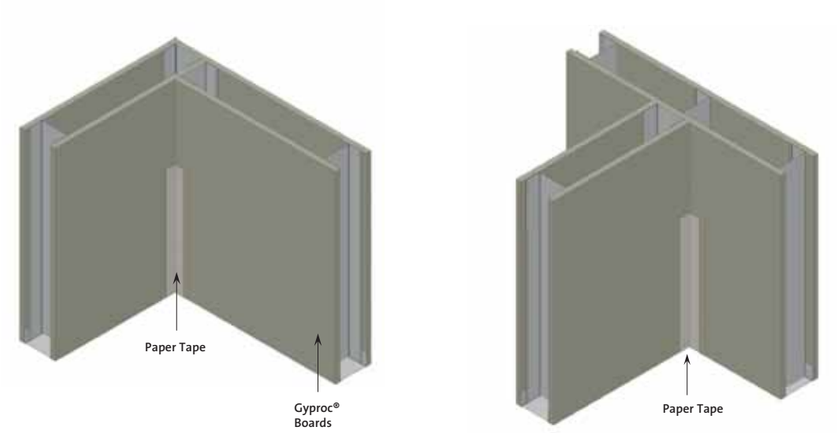
T - Junction Details



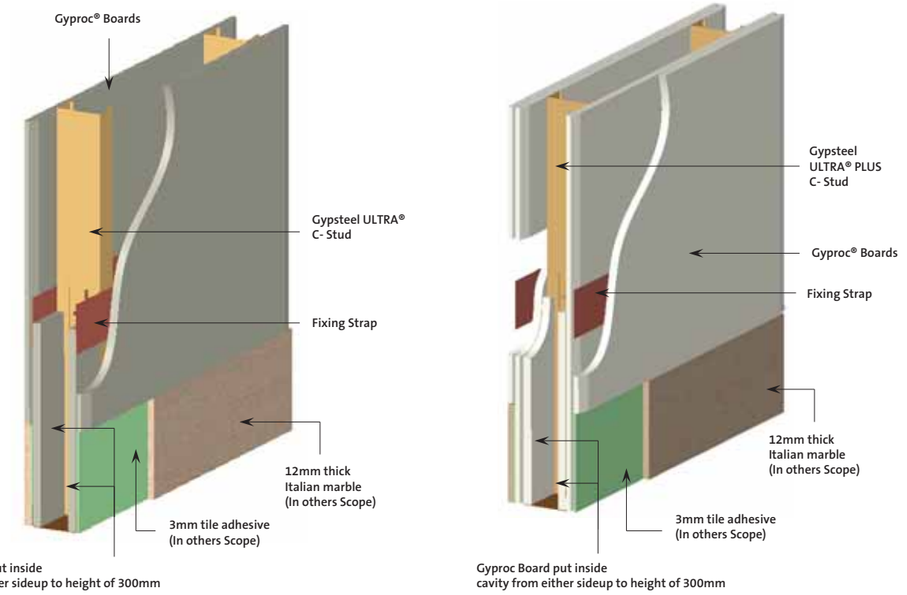
Column - Junction Details



Internal corner finish with paper tape



Skirting details

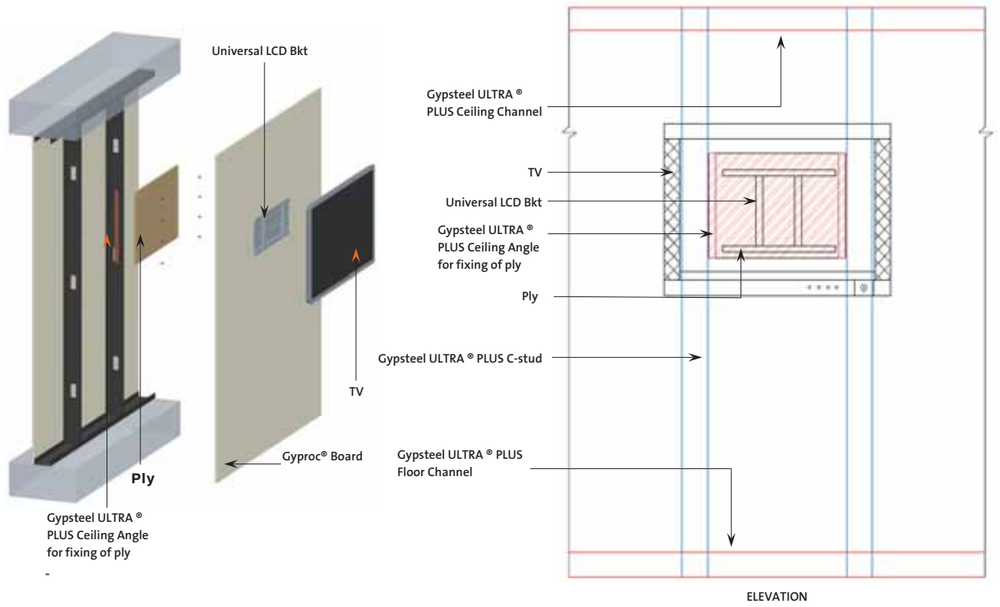


NOTE:-

- Type of the board will be as per the system proposed

Loading Details

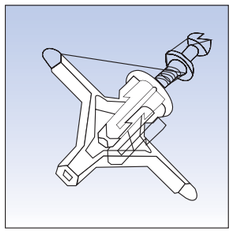
Planned Loading (Heavy Objects)

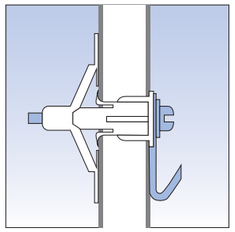


ELEVATION

NOTE:- Type of the board will be as per the system proposed Commercial will depend upon actual specifications of plywood

Unplanned Loading (Light objects)





ELEVATION

For Single layer board 12.5 mm thickness

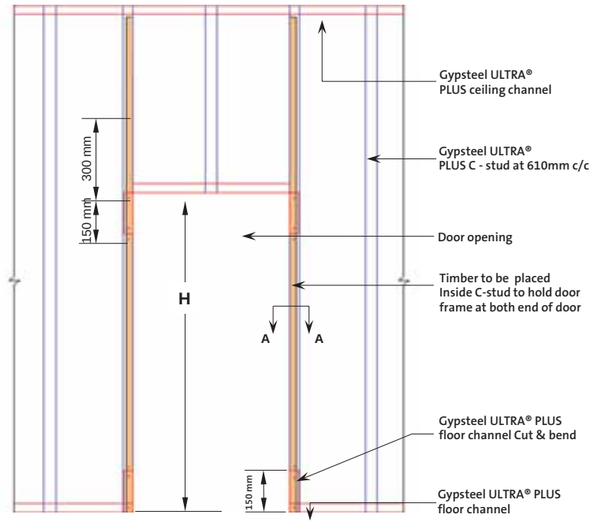
SECTION

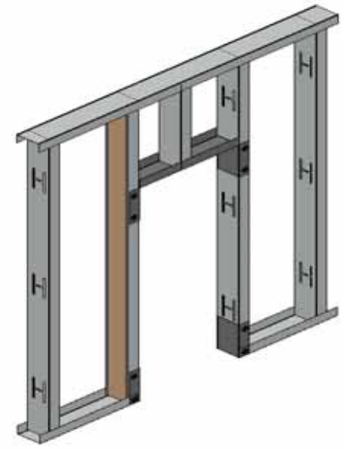
For double layer board 25-30 mm thickness

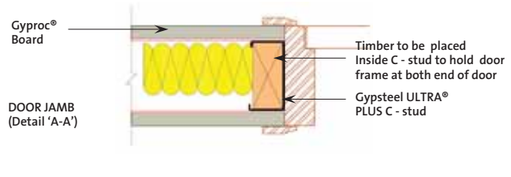
NOTE:- For more details, kindly get in touch with Gyproc team

Door/Window Opening Details

Door Opening

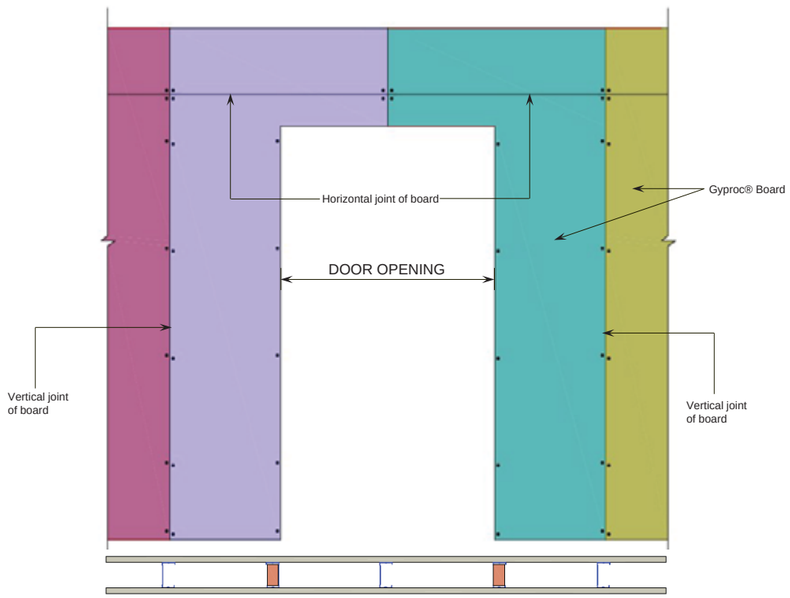




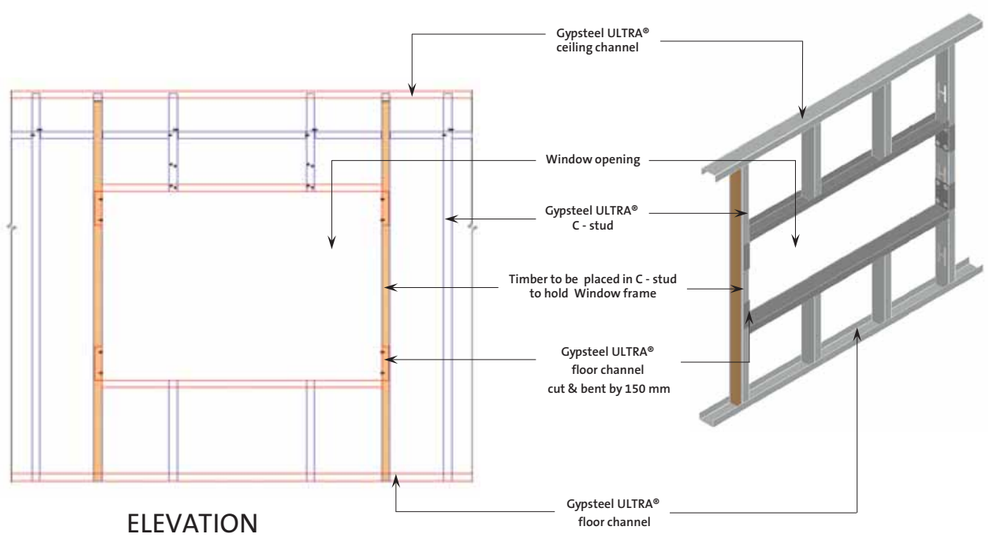


DOOR JAMB
(Detail 'A-A')

Board Staggering detail for Door

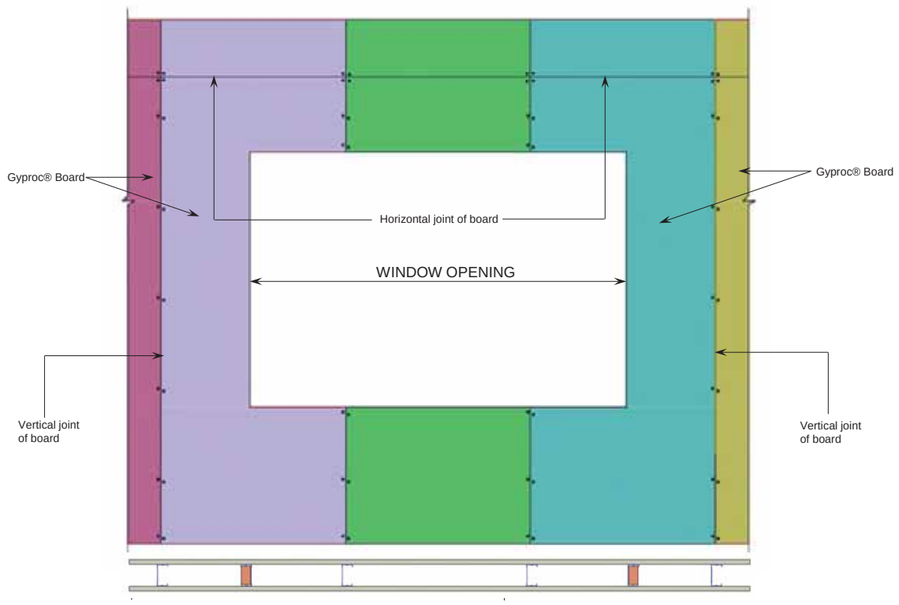


Window Opening



ELEVATION

Board Staggering detail for Window

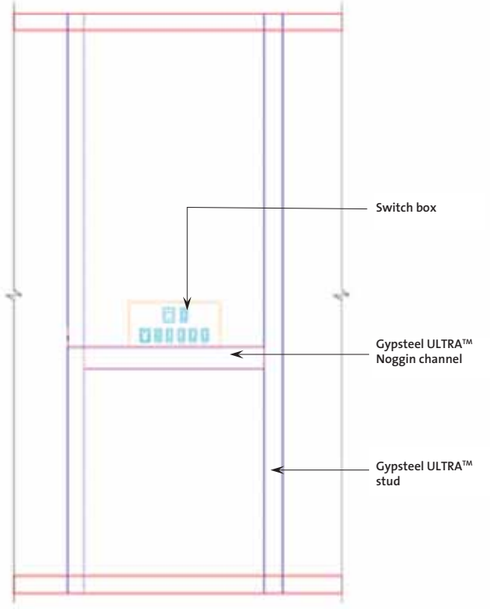


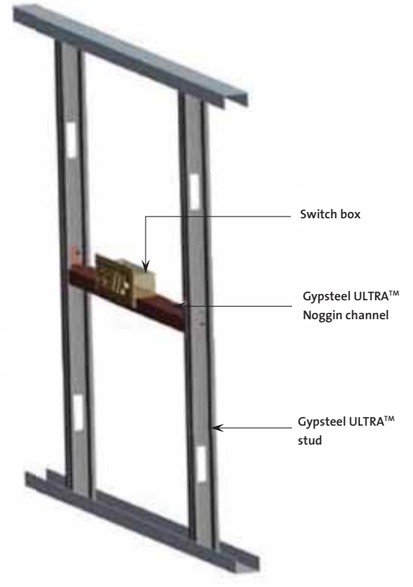
NOTE:-

• Type of the board will be as per the system proposed

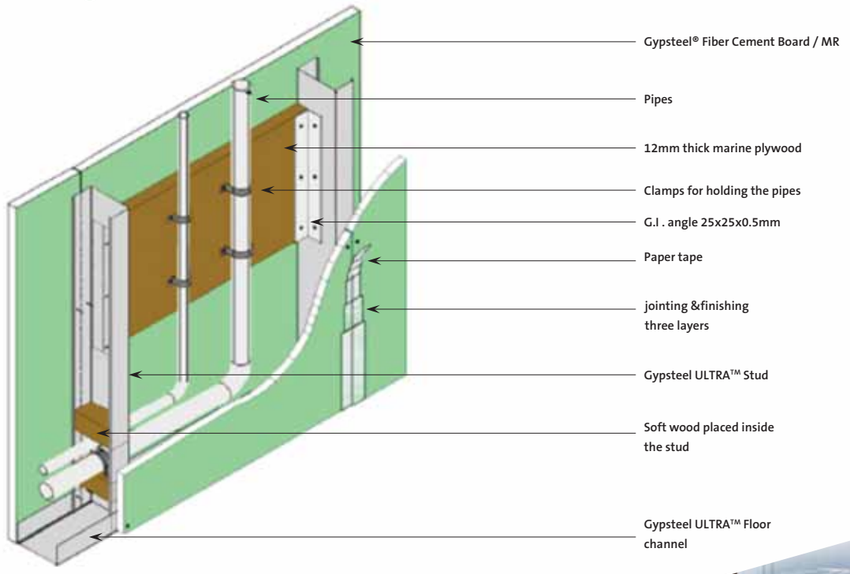
Service Management

Switch Box

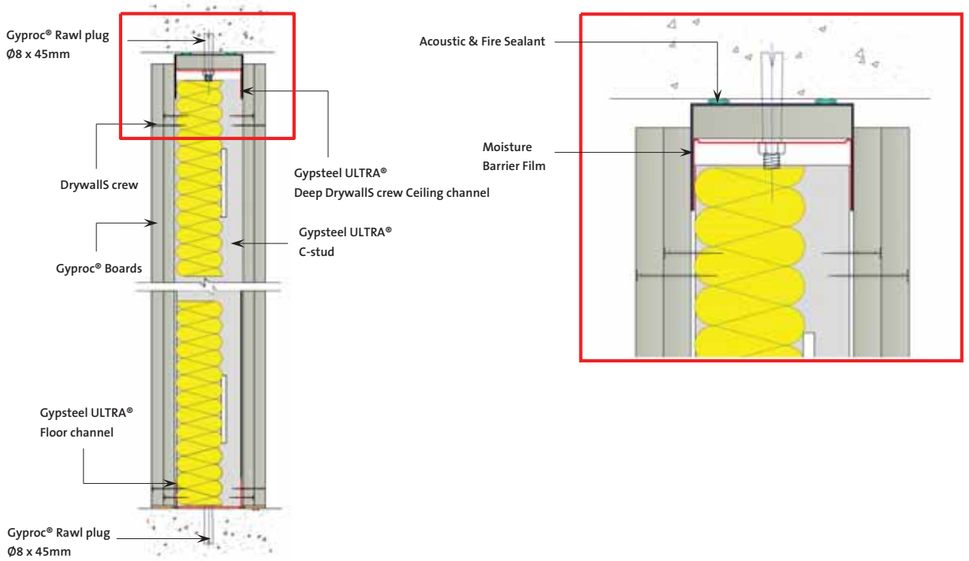




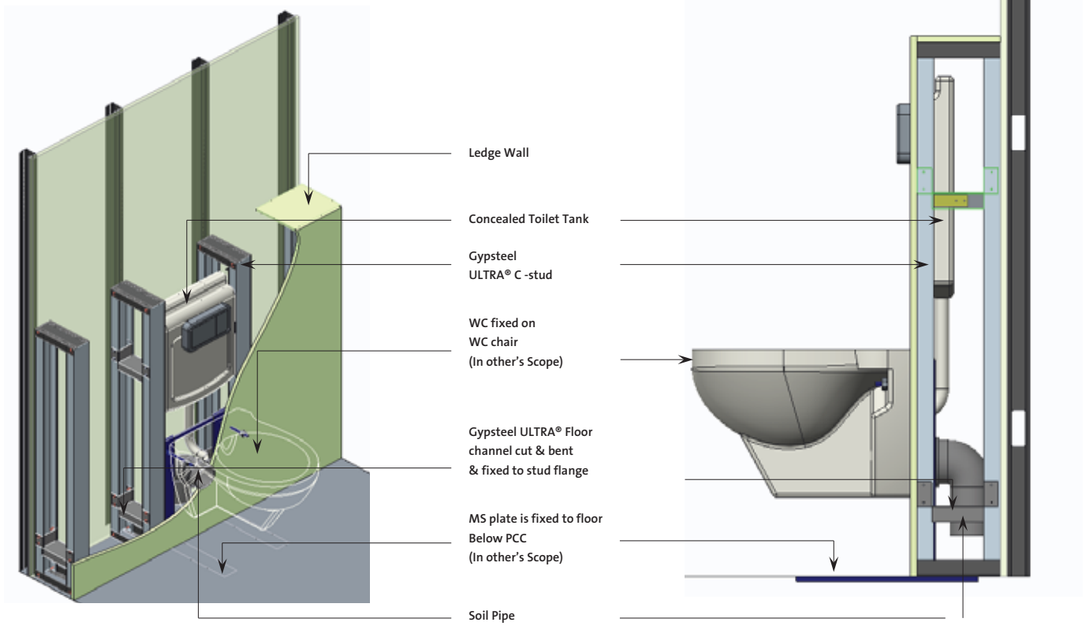
Plumbing Service



Deflection head detail

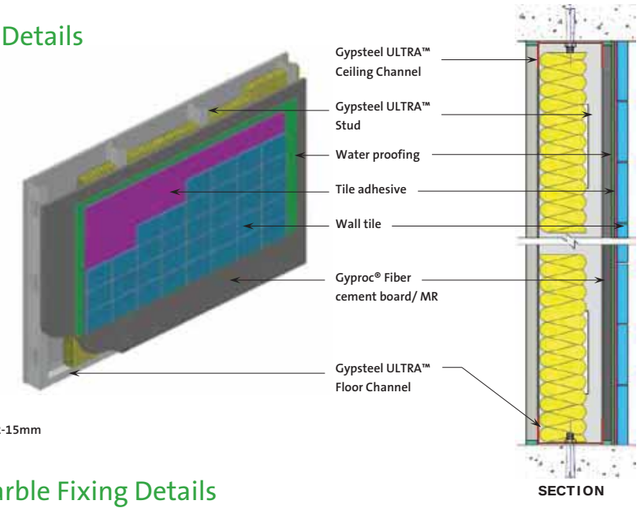


Ledge Wall with Concealed Tank Details



NOTE:-
- Type of the board will be as per the system proposed.
- Commercial will depend upon actual Specifications of ledge wall.

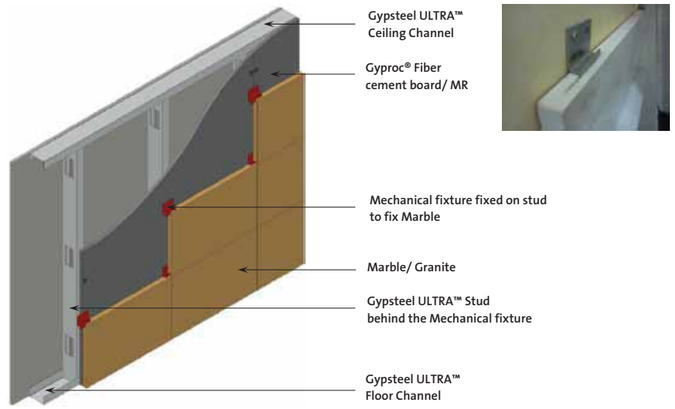
Wet Area Details



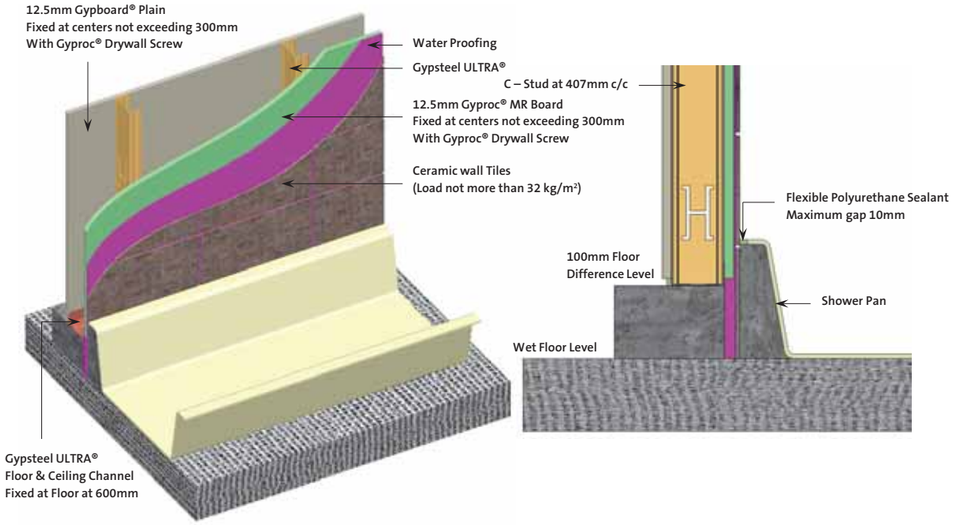
SECTION

* Tile thickness between 12-15mm

Stone/Marble Fixing Details



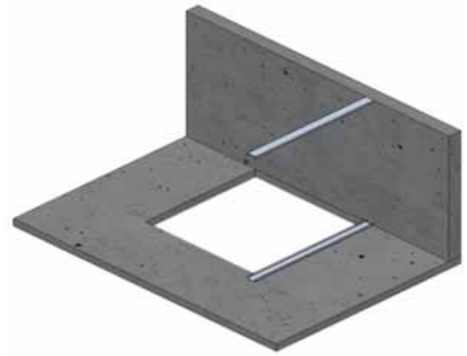
DryWall Wet Area Typical Details



Shaft Wall

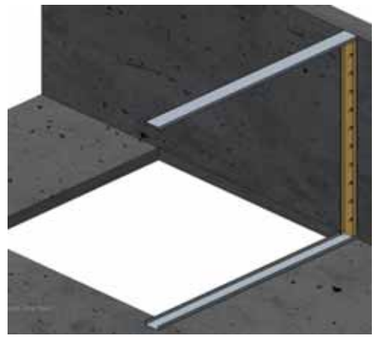
1

Fixing of floor & Ceiling channel



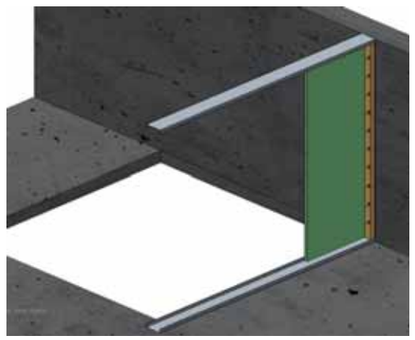
2

Fixing of starter channel



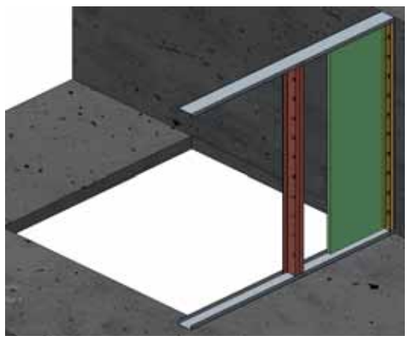
3

Inserting of Core board



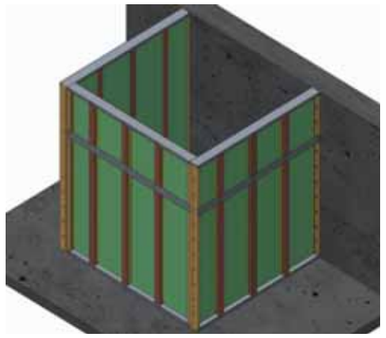
4

Placing of I-stud



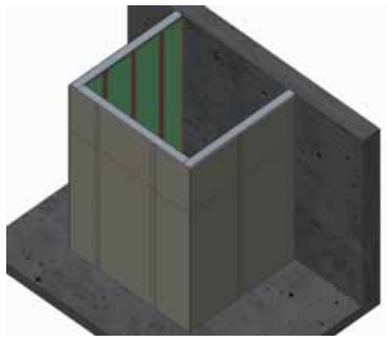
5

Fixing of Fixing strap

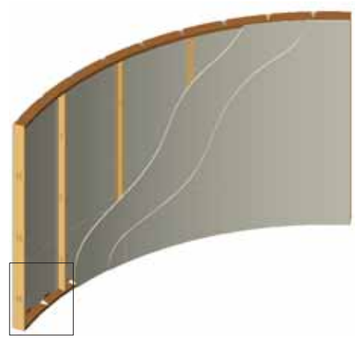


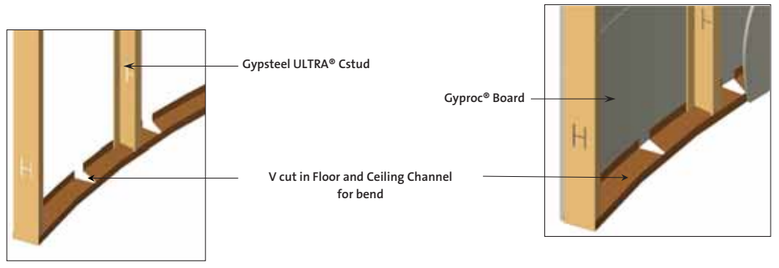
6

Other side boarding

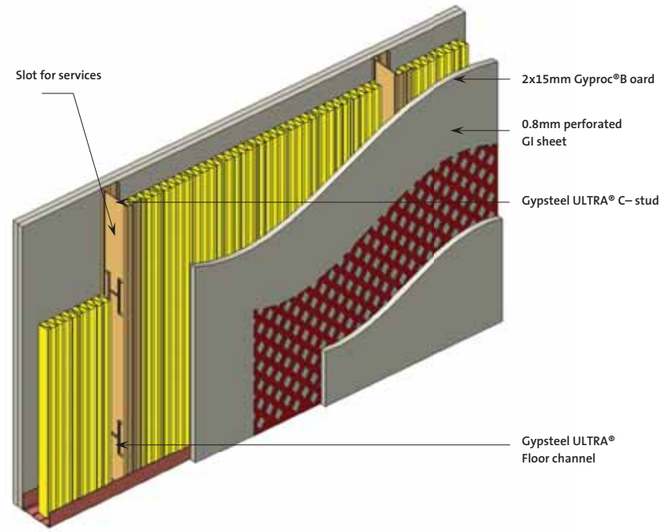


Curve Partition Detail



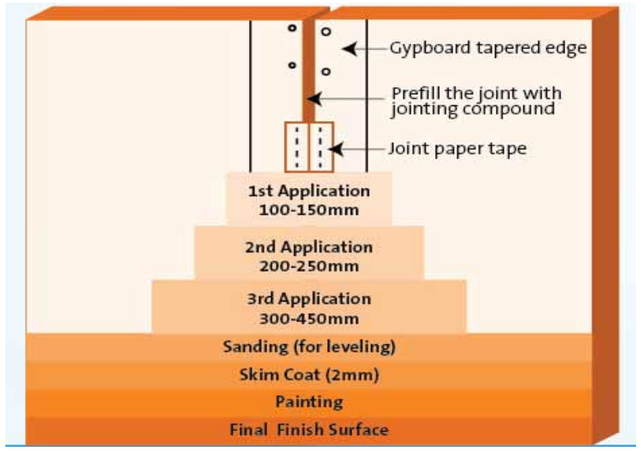


Secure Wall



Jointing and Finishing

Embed Tape | First coat | Second coat | Third Coat | Sanding of compound



Gyproc Jointing Products

Easi -Fill Jointing Compound

Pro - Fill Jointing Compound

Pro-Top Ready Mix Jointing Compound

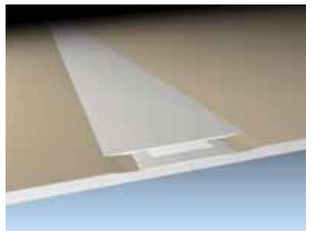
Joint paper Tape

Self - adhesive Drywall joint Tape

Jointing and Finishing Details

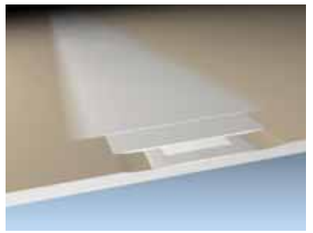
Jointing level 1 (Q1):

- The basic filling of plasterboard joints (Q1) recommend for jointing of internal layer of Gypsum boards for a double layer partition
- Jointing Level 1 includes
- Filling of the joints between boards Taping
- Covering of screw heads
- Tool marks, groovesand ridges are allowed



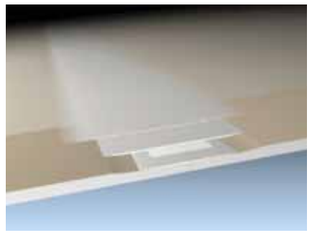
Jointing level 2 (Q2):

- Jointing Level 2 (Q2) involves Q1+leveling the joint to the board surface with help of Pro-Fill / Easi-Fill
- Jointing Level 2 includes:
- Basic filling (Q1); plus
- Finishing towards a continuous transition to the board surface
- Application marks or ridges may not be totally eliminated



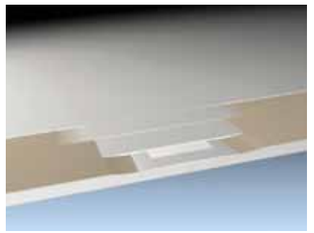
Finishing level 3 (Q3):

- Jointing and finishing in accordance with Finishing Level 3 (Q3) includes:
- Jointing and finishing to Q2; plus
- Wider finishing of the joint (400 to 450mm) and a tight coat of Pro-Fill / Easi-Fill (< 1mm) to the entire plasterboard surface
- Physical ridges and grooves are not acceptable, except the ones showing under the effect of shallow light



Finishing level 4 (Q4)

- High-end drywall surface where the entire drywall surface must be fully covered with a layer of a skimming plaster (thickness > 1mm)
- Quality Level 4 includes:
- Jointing and finishing to Q2 plus
- Complete surface covering of Gyproc Champion Skimming Putty (thickness > 1 mm)
- The undesirable effects of shallow lighting are reduced large extent; however some arising out of natural lighting may be acceptable under the limits of manual workmanship
- This job would normally be ordered separately by the client



7

GYPROC® STANDARDS

Green Credentials

www.gyproc.in | e-mail: gyprocindia@saint-gobain.com

Member of:

Green Credentials

Green Building is a representative of sustainable building environments. This approach ensures health and comfort of the building occupants through the use of sustainable building materials. The information inside highlights the credentials of Saint - Gobain Gyproc India Ltd. products & systems and its contribution to the Green Building rating system (LEED) Leadership in Energy and Environmental Design, Indian Green Building Council (IGBC) and Green Rating for Integrated Habitat Assessment (GRIHA) as specified by the Indian Green Building Council.

Highlights

Energy & Atmosphere	:	High insulating properties, Low embodied energy
Material Resources	:	Reduces environmental impact due to local transportation, Life cycle Approach
High recycled content		
Indoor Environmental Quality	:	Improves indoor environment air quality non voc emitting
Water Efficiency	:	Dry construction (Water free)

Energy & Atmosphere

Embodied energy

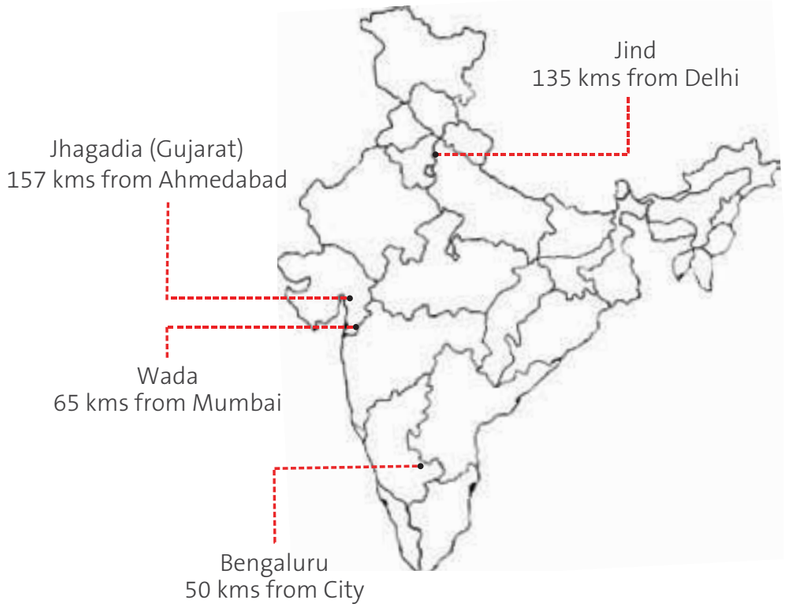
Gypsum plasterboards & plasters have relatively low embodied energy as compared to all other traditional building materials (Energy consumed in manufacturing the same)

High insulation properties

Energy savings - ASHRAE STD 90.1/2010

Thermal Conductivity (K value of Plasterboard) = 0.16 w/mk

Systems	Thermal Transmittance (U value of system)
Wall Panelling System on 4.5 inch brickwall	0.432 W/m^2K - 0.503 W/m^2K
Wall Panelling System on 9 inch brickwall	0.407 W/m^2K - 0.469 W/m^2K
Ceiling system	0.0391 W/m^2K - 0.04 W/m^2K



Materials & Resources : Recyclable products, Regional materials

Recyclable products

Gypsum plasterboard, metal sections and jointing compound all are technically 100% recyclable.

Regional materials

With four manufacturing facilities located close to the major construction hubs of the country, most cities in North, West & South of India fall under the 800 kms maximum radius of transportation. Also the raw materials for manufacturing the various products are also in most cases procured locally within a radius of 800 kms from both the manufacturing and project site thus optimizing the negative environmental impact related to transportation. The total raw material used for manufacturing the boards approx 2% is procured locally within a radius of 400 kms from the manufacturing plant.

Recycled contents

Gypsum plasterboard, Metal range of products & Jointing compound are technically 100% recyclable

Gyproc® Plain Board : The post consumer content in plasterboard is 3.8%

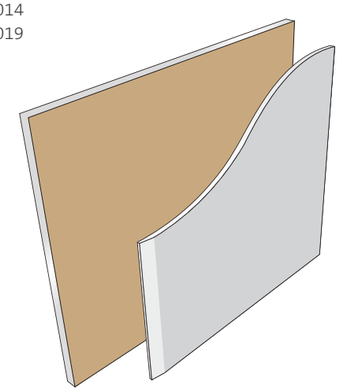
Other Value Added Gypsum Board – 5.5%

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 and ISO 14025

12.5 mm Gypboard® Plain

Date of issue: January 2014
Valid until: January 2019



EPD VERIFIED

The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental product Declaration has been verified by an independent third party.

EPD®

Gyproc SAINT-GOBAIN

GRIHA
Association for Development and Research of Sustainable Habitats

This is to certify that the products

“Gyproc-Plasterboard ”
Gypboard ® Plain, Gyproc ® Duraline, Gyproc ®Sound Bloc,
Gyproc ®- Fibre Cement Board

have been included in the GRIHA Product Catalogue
under the following category :

GRIHA Criteria: 29

These products can be used in GRIHA registered projects to meet the GRIHA norms, respectively. This is valid only for the products which have been mentioned above.

Mili Majumdar
Secretary cum Treasurer

Note : This evaluation has been done based on the documentation - in the form of 3rd party test results and/or declarations - submitted by the manufacturer to ADARSH.

ADARSH is a joint initiative of Ministry of New and Renewable Energy, Government of India and The Energy anf Resources Institute (TERI) to Implement GRIHA (Green Rating for Integrated Habitat Assessment), India’s National Rating System for Sustainable Habitats. www.grihaindia.orgv

Gyproc ® India - Plaster Board Manufactured at Wada are ISI Certified

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

मानक चिन्ह लगाने की अनुज्ञप्ति
License for the use of STANDARD MARK

अनुज्ञप्ति (अनुज्ञप्ति सं. सीएमएल- 7700117516
LICENCE NO. CML- 7700117516

यह अनुज्ञप्ति, भारतीय मानक अधिनियम, 1986 (1986 का 63) द्वारा प्रदत्त शक्तियों के अनुसार एतद्

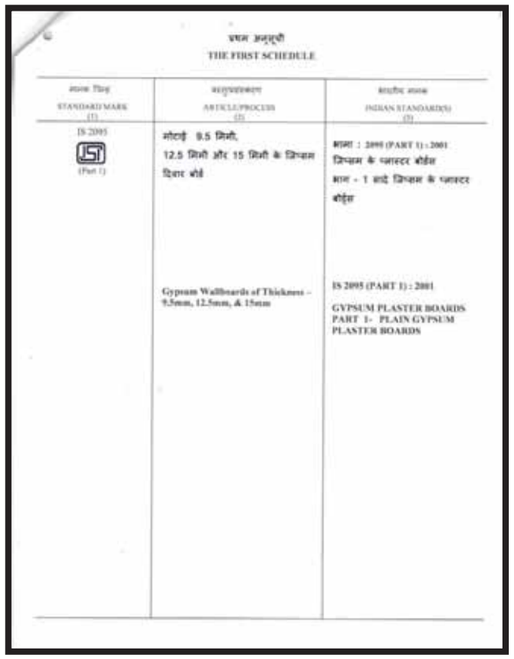
मैसर्स सेंट गोबेन इंडिया प्रा. लि.
वाडे एवं वडावली गाँव
पो. ऑ. उचाट, वाडा,
जिला : पालघर 421312
महाराष्ट्र

को (जिसे इसमें इसके अनुज्ञप्तिधारी कहा गया है) इसकी अगली अनुसूची के पहले कालम में दिखाए गए मानक चिन्ह का उपयोग करने की अनुज्ञप्ति (अनुज्ञप्ति) प्रदान करती है। इस मानक चिन्ह का उपयोग ऐसी वस्तु/प्रक्रियाओं के संबंध में किया जाएगा जिसका उल्लेख इसकी अगली अनुसूची के दूसरे कालम में किया गया है। यह अनुज्ञप्तिधारक इस अनुज्ञप्ति के तीसरे कालम में उल्लिखित संबंधित भारतीय मानक के अनुरूप निर्धारित क्वालिटी अनुपाल होगा।

1. By virtue of the power conferred on it by the BUREAU OF INDIAN STANDARDS ACT, 1986(63 of 1986) the BUREAU hereby grants to

M/s SAINT GOBAIN INDIA PVT LTD
NARE & VADAVALI VILLAGE
P.O. UCHAT
WADA,
DIST. PALGHAR 421 312
MAHARASHTRA

(hereinafter called 'the licensee') this licence to use the Standard Mark set out in the first column of the First Schedule hereto, upon or in respect of the article/process set out in the second column of the said Schedule which is manufactured in accordance with/conforms to the relevant Indian Standard(s) referred to in the third column of the said Schedule as from time to time amended or revised.



प्रथम अनुसूची
THE FIRST SCHEDULE

मानक चिन्ह STANDARD MARK (1)	अनुप्रयोगक्रम ARTICLE/PROCESS (2)	संबंधित मानक INDIAN STANDARD(S) (3)
IS 2095 (Part 1)	मोटाई 9.5 मिमी, 12.5 मिमी और 15 मिमी के जिप्सम प्लैस्टर बोर्ड	भाग : 2095 (PART 1) : 2001 जिप्सम के प्लास्टर बोर्ड्स भाग - 1 सादे जिप्सम के प्लास्टर बोर्ड्स
	Gypsum Wallboards of Thickness – 9.5mm, 12.5mm, & 15mm	IS 2095 (PART 1) : 2001 GYPSUM PLASTER BOARDS PART 1- PLAIN GYPSUM PLASTER BOARDS

CII
Confederation of Indian Industry

CII-Green Products and Services Council

hereby certifies that

Gyproc® Plain Board (Gyproc Plasterboard)

manufactured by Saint-Gobain India Pvt. Ltd. -
Gyproc Business, Bangalore, Karnataka meets the required standards of
GreenPro Certification and qualifies as ***Green Product.***
This certification is valid till December 2019.

Jamshyd N Godrej
Chairman
CII-Godrej GBC

ParasuRaman R
Chairman
CII-Green Products & Services Council

K S Venkatagiri
Executive Director
CII-Godrej GBC

Supporting Council and programmes

Knowledge Partner

October 2017

8

PROJECT REFERENCES

- Residential
- Hospital
- Education
- Hotel
- Industrial

www.gyproc.in | e-mail: gyprocindia@saint-gobain.com

LODHA WORLD TOWER, MUMBAI

Project Name: Lodha World Towers

City: Mumbai

Project Details: The world's tallest residential towers with designs from Armani Casa consisting of 2 towers, World One - 117 storeys & World Crest - 84 storeys

Project Highlights: Complete Gyproc performance drywall systems in all internal areas including bathrooms and shaft walls. The highlight of this project is the installation of Secure Wall (high security drywalls with a GI sheet layer in between) for the room to corridor drywalls.

ST. REGIS, MUMBAI

Project Name: St. Regis

City: Mumbai

Project Details: St. Regis (Shangri-La) Mumbai is a 5 Star Hotel with 400+guest rooms, service apartments, banquet halls, spa, Gymnasium & BOH areas across 44 stories.
It is a landmark project as a hotel made completely by drywall construction. It stands above a shopping mall, light weight construction was a key design criteria in all areas

Project Highlights: All the spaces have been made using Gypsum drywall & ceiling construction is first of its kind in India. Banquets walls are fire rated drywalls of 9.5 meter height. Gyproc metal ceiling haven in used in BOH area.

CROWNE PLAZA, COCHIN

Project Name: Crowne Plaza

City: Cochin

Project Details: 270 + room of deluxe hotel, which is operated by IHG group & owned by KGA Group.

Project Highlights: Gyproc performance drywall & ceiling systems have been used in all the guestrooms & banquet halls as well. This is one of the 1st drywall projects of india in the hospitality industry.

J.W. MARRIOTT, NEW DELHI

Project Name: J.W. Marriott

City: New Delhi

Project Details: J.W. Marriott , New Delhi is a 5 star luxury hotel located closest to the international airport. Best suited for business and leisure travellers across the world.

Project Highlights: J.W. Marriott has 550 rooms, Complete guest rooms are constructed with Gypsum Drywall. Ceilings in the common area and shaft closure in certain areas has been done by Gyproc

HILTON GARDEN INN, TRIVANDRUM

Project Name: Hilton Garden Inn

City: Trivandrum

Project Details: Old Hotel property was reconstructed along with new building. Both the blocks are done with Gyproc drywall systems.

Project Highlights: Hilton Garden Inn is a 4 star hotel with 180 rooms. Complete Gyproc performance drywall system and shaft closure have been used in all internal areas.

BEAMS HOSPITAL

Project Name: Beams Hospital

City: Bengaluru and Hyderabad

Project Details: Beams Hospital aims at providing international quality surgical expertise, supported by pleasing ambience, world-class facilities and state-of-the-art equipment to its patrons.

Project Highlights: Complete Gyproc performance drywall systems in all internal areas including wet areas.

FORTIS HEALTHCARE, KOLKATA

Project Name: Fortis Healthcare

City: Kolkata

Project Details: The 10-storied, sprawling 3 lakh square feet facility is equipped with the latest in the medical world. The 400 bedded hospital is easily accessible too, located on EM Bypass road.

Project Highlights: Complete Gyproc performance drywall systems in all internal areas except the wet areas. The performance rating adheres to all the International standards for Healthcare environment.

ASIAN HEART INSTITUTE, MUMBAI

Project Name: Asian Heart Institute

City: Mumbai

Project Details: The hospital has a Patient-centric design with stress on safety and comfort of Patients. All Patient areas have been designed to minimize the risk of infection.

Project Highlights: Complete Gyproc performance drywall systems in all internal areas including wet areas. The highlight of this project is that, Drywalls were preferred to conventional system because of the reduction in dead load.

DRML DELHI

Project Name: Dr. Ram Manohar Lohia Hospital (DRML)

City: Delhi

Project Details: An entirely new building based on the PEB concept in the premises of the famous DRML hospital in Delhi.

Project Highlights: Complete Gyproc performance Drywall systems have been used in all internal areas except the wet areas. First comprehensive Drywall project in the government sector.

LEBUA DWARKA, NEW DELHI

Project Name: Lebua Dwarka

City: New Delhi

Project Details: Lebua Hotels & Resorts has made an entry in india with 400 rooms property. This hotel exhibits complete Gyproc range for walls & ceilings.

Project Highlights: Complete Drywall Partition system has been used in all the internal guestroom areas including corridor, wet areas. Duraline board are in corridor to give higher impact resistance to the wall. Ceilings of public area and back of house area have also been done by the Gyproc. Lounge area is used with Gyproc Acoustic ceiling. Gyproc Metal ceiling is used in Kitchens

COURTYARD MARRIOTT, HYDERABAD

Project Name: Courtyard Marriott

City: Hyderabad

Project Details: Overlooking Husaain Sagar Lake. This is an extension of existing Marriott hotel which is completely done in drywall construction.

Project Highlights: Complete 115 Guestrooms are constructed with Gyproc drywall systems. False ceiling in all the areas is with Gypsum ceiling.

ISB, HYDERABAD & MOHALI

Project Name: ISB

City: Hyderabad & Mohali

Project Details: This is one of the premium management institutes of India, which provides best of facilities to their students.

Project Highlights: Gyproc drywalls have been used widely in both the campuses. Hyderabad campus Class room have used Gyproc fire line system. Gyproc high impact resistance systems(98 mm) have been used in classrooms for room to room & complete corridor walls in Mohali campus. Gypsum ceiling is widely used in complete common area such as corridors, pantry, administrative buildings in both the campuses.

M/S SASI BUSINESS SCHOOL, CHENNAI

Project Name: M/s Sasi Business School

City: Chennai

Project Details: Seminar Cum Multipurpose Auditorium, done with double layer duraline system for isolation.

Project Highlights: The highlight of this project is that, this B-School required rapid construction with 70mm ultra stud with double layer Duraline board.

CUMMINS, PUNE

Project Name: Cummins

City: Pune

Project Details: The Company takes pride in manufacturing engines, generators, filters and related products that serve the varied needs of its customers worldwide

Project Highlights: A remarkable project in terms of greater height. Drywall systems showcasing a 13.5 meter high Drywall Partition system.

FIAT INDIA, PUNE

Project Name: Fiat India

City: Pune

Project Details: The state-of-the-art facility at Ranjangaon, which is owned by FIAT, a joint venture company, is capable of producing 200,000 cars and 350,000 engines, besides 300,000 parts & accessories.

Project Highlights: A remarkable project in terms of greater height Drywall systems showcasing a 12 meter high Drywall Partition systems spanning the length and breadth of the facility.

CATER PILLAR INDIA, CHENNAI

Project Name: Cater Pillar India

City: Chennai

Project Details: Cater pillar is a global leading manufacturer of construction and mining equipment.

Project Highlights: Complete Gyproc performance drywall systems in all internal areas including wet areas. The highlight of this project is that, it required 8m high industrial Partition done by 46mm ultra stud with double layer Duraline board.

DELHI T3 AIRPORT TERMINAL, DELHI

Project Name: Delhi International Airport Ltd.

City: Delhi

Project Details: This is one of the largest infrastructure project of recent years. which is one of biggest airport in the country catering heavy air traffic.

Project Highlights: Gyproc has been key contributor in the faster delivery of this project. Gyproc drywalls & ceilings have been extensively used in the project. Gypsum ceiling (plain, two hour fire rated & grid ceiling) have been used in pier levels, PTB areas. Gypsum drywall have been used Retail showrooms (shop to shop), airport services building.

Ascentis

1 May 2017

M/s. Saint-Gobain India Pvt
Bangalore.

Courtyard Marriot & Fairfield Marriot Hotels was constructed in Bellandur, Outer Ring Road at Bangalore.

339 numbers of Guest Rooms were built with Gypsum Drywall of M/s Saint Gobain India Pvt Ltd (Gyproc). Drywalls system was used to construct Room to Room Partition Walls, Bath Rooms, Corridor Walls & Shaft Walls.

The benefits received by using drywall partition system, instead of conventional block wall construction, can be summarized as below:

1. **Saving in Construction Water** - Saving of 1.29 Mn Liters of water, which is equivalent to Water requirement for 100 Households for a period of one month
2. **Lesser Unskilled Worker Force** - Reduction in average labour requirement by 77 workers/day, for a period of 9 months (Installation + Material Handling). Also, with less crowding of manpower at site, the risk of safety related incidents was reduced
3. **Lighter Foundations/Saving in Structure** - Potential of saving of around 170 Tons of Steels on Slab & Beams only
4. **Faster Construction** - Contributed in timely completion of project ~saving of 3-4 months of fit out period.

The work was executed by interior contractors with Saint Gobin team supporting on Quality Assurance and method statements.

The project was completed and opened commercial operation in Dec 2015.

We as project managers appreciate the efforts by M/s. Saint-Gobain India Pvt Ltd for proactive support at each stage of the project, starting from Design Solutions to the successful execution at the site.

We wish them success in their future projects and recommend Drywall system as a modern construction material for internal masonry.

With best wishes!

Salil Khare
Project Director

HPD CONSULTANTS

19 May 2017

M/s Saint Gobain India Pvt Ltd
Chennai,

Mercure Hotel - Oragadam Chennai , is an Accor brand business class hotel. The construction was managed by M/s HPD Consultants. M/s Saint Gobain India Pvt Ltd (Gyproc) 122mm drywall partition system was used for constructing partitions between the guest rooms nd other areas of the hotel.Scope of Saint Gobain drywall system is 100 guest rooms of 1210sqm drywall area. By using drywall partition system vs conventional block wall construction, the advantages are summarized below.

1. **Lesser Unskilled Workforce** - Material handling and labour cost saving of seven lakh rupees which is equivalent to reduction in labour requirement by 20 workers/day, for a period of 3 months (installation + Material Handling)
2. **Saving in Construction Water** - Water saving of 1,13,535 litres which is equivalent to 30,000 gallons of water (or) requirement of water for 10 households for a period of one month (or) Rs. 20,436.
3. **Faster Construction** - Project time saving of over 2 months
4. Space saving of 11.555 Sqm contributed by lesser thick walls
5. Dead Load saving of 243 metric tons due to lighter thick walls
6. If building was designed for drywall, there could have been an additional saving of 17 metric tons of steel in Slab & Beams , resulting in structural cost saving. Saving may be higher if foundations are also considered.

Usage of drywall has provided better Sound Insulation and Thermal Insulation, thus energy saving compared to block wall. Ease of MEP working & dry construction helped us in maintaining a clean construction site and reduced safety risks at site during construction.

We as Project Managers appreciate the efforts by M/S Saint Gobain India Pvt Ltd for their excellent support at each stage of the project , staring from Design Solutions to the completion of drywall construction at the site.

We wish them success in their future projects and recommend Drywall as a modern construction material for internal masonry.

For HPD Consultants

Hashmat Masood
Director

18th August 2017

M/s Saint Gobain Gyproc India Pvt Ltd.

Ginger is a hotel project situated in Lucknow comprising of 50 rooms if different types on G+5 floors. All the internal walls are made of Saint Gobain Gyproc drywalls of different type. Saint Gobain has designed the drywalls and provided technical support on site.

The benefits received by using drywalls instead of conventional wall construction can be summarized as below:

1. **Saving of Water** - Water Saving of 1.21 lac litter which is equivalent to 1031 barrel or requirement of 10 houses for 30 days.
2. **Space Saving** - Bigger rooms and increased carpet area in the hotel rooms because of less thickness of walls. As per calculation of walls 5% spaces increased in the rooms.
3. **Structural Cost Saving** - The structure was designed considering the weight of drywall which derived considerable saving quantity of steel in column and Beam.
4. **Time Saving** - Drywall is a faster construction work and surely it does save time once phasing/sequencing of construction is done. For a hotel of this magnitude an overall saving in time by 1.5 months was possible.
5. **Dead load saving** - Drywall has saved 150 tons due to its light weight.

Usage of Drywall has provided some other benefits like

1. Flexibility in repairing in case of need.
2. Easy to find water leakage source in wet area.
3. Heat and Sound insulation is achieved far better than block work.
4. Future alterations of walls are very easy and faster.

We appreciate Saint Gobain Gyproc Team and their support in every stage of project starting from design solution to completion of Drywall execution.

We wish them success in their future projects and recommend drywall as a modern construction technique for internal walls.

For REPL
S. K. ROY
Sr Vice President (Engineering)

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round floor,YUVA Bhawan
Lucknow, Uttar Pradesh - 226001, India
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DRYWALL PROJECT EXECUTED ACROSS INDIA

- DW Penetration across 9 Metros and 35+ Non Metros
- DW Project references in 20 States