



**RESISTANT**  
BUILDING PRODUCTS LTD

# PASSIVE FIRE PROTECTION GUIDE

THE ESSENTIAL HANDBOOK FROM RESISTANT BUILDING  
PRODUCTS FOR SPECIFYING APPROVED AND TESTED  
FIRE RATED SOLUTIONS.

# INDUSTRY LEADING PASSIVE FIRE PROTECTION SOLUTIONS BY RESISTANT BUILDING PRODUCTS.

THIS GUIDEBOOK CONTAINS A RANGE OF FULLY ACCREDITED & CERTIFIED TESTS CARRIED OUT BY THE INDUSTRY EXPERTS IN FIRE TESTING FOR CONSTRUCTION PRODUCTS.



# CONTENTS

PRINCIPLES OF PASSIVE FIRE PROTECTION	01
ABOUT RESISTANT	02
PRODUCT RANGE	02
PARTITIONS & EXTERNAL WALLS	03
INTRODUCTION TO TIMBER FRAME	03
LOAD BEARING APPLICATION	04
NON-LOAD BEARING APPLICATION	06
INTRODUCTION TO STEEL FRAME	07
LOAD BEARING APPLICATION	07
NON-LOAD BEARING APPLICATION	08
CEILINGS & FLOORS	11
LOAD BEARING APPLICATION	12

# Principles of Passive Fire Protection

Passive fire protection is the use of fire resistant walls, floors, ceilings and doors to contain or slow the spread of fire. These methods are integral to maintain the safety of the building and its occupants when works are complete. Resistant Building Products have carried out a number of wall and ceiling fire resistance tests and assessments to achieve various performance ratings, using a range of products. If the wall or ceiling is constructed in the same manner using the same materials as those described in the reports, it should be expected to achieve the corresponding fire resistance rating. The reports **must** be referenced to understand the complete build-up of the system, the diagrams shown within this document are for summary purposes only.

## Fire Resistance Classifications

CLASSIFICATION	DEFINITION	DESCRIPTION
A1	Non-Combustible	No contribution to fire
A2	Limited Combustibility	Very limited contribution to fire
B	Combustible	Limited contribution to fire
C	Combustible	Minor contribution to fire
D	Combustible	Medium contribution to fire
E	Combustible	High contribution to fire
F	Combustible	Easily flammable

The BS EN 13501-1 classification is a Euroclass rating, which will be the letter A1, A2, B, C, D, E or F. A1 is the highest level of performance, while F is the lowest level. *Resistant Building Products range of Magnesium Oxide & Fibre Cement boards are rated as A1 non-combustible, which denotes the highest possible performance.*

## Fire Testing Standards & Performance

Resistant Building Products' fire tests have been carried out to British and European standards for varying applications using the testing standards shown. The pass/fail criteria for the fire resistance tests is based on three things:

- Load bearing Capacity:** Ability of the test structure to support its load without deforming or failing.
- Integrity:** Ability of test structure to resist cracking or sustained flaming on the unexposed face.
- Insulation:** Ability of a test structure to prevent the temperature of the unexposed face exceeding a specified level.

### General

TEST STANDARD	APPLICATION
BS EN 1363-1	Fire resistance tests, general requirements
BS EN 1363-2	Fire resistance tests, alternative and additional procedures
BS EN 1363-3	Verification of furnace performance

### Non load-bearing

TEST STANDARD	APPLICATION
BS EN 1364-1	Walls
BS EN 1364-2	Ceilings

### Load-bearing

TEST STANDARD	APPLICATION
BS EN 1365-1	Walls
BS EN 1365-2	Ceilings
BS 476 Part 21	Fire resistance of loadbearing elements of construction

## About Resistant

Resistant Building Products are committed to providing high performing boards which suit a range of applications requiring certified fire protection. With a strenuous quality assurance process, as audited by the British Board of Agrément, Resistant can guarantee that boards of impeccable standard are produced every time. Resistant have been awarded STA Gold accreditation for maintaining these high standards of manufacture, production and service. As well as offering a range of BBA certified products, Resistant are also founding members of the Magnesium Oxide Board Trading Association (MOBBTA), which is working to support the wider construction industry in ensuring good practice and appropriate use of the boards.

SOME OF OUR NOTABLE  
ACCREDITATIONS INCLUDE:



Magnesium Oxide  
Building Board  
Trading Association

## Product Range

Resistant Building Products have developed a diverse range of boards to suit varying requirements. With both Magnesium Oxide & Fibre Cement boards on offer, we provide a wealth of robust, durable solutions to suit any project needs. Please refer to [www.resistant.co.uk](http://www.resistant.co.uk) for further details on our full range.

Below are the boards from Resistant's collection of products which have been certified and tested for use as fire rated wall partitions or ceiling panels, **please refer to the test certificates for full details.**



**20-20**  
Fibre Cement Board



**multi-proXS**



**multi-pro**



**BASE BOARD**

# Fire Resistant Partitions & External Walls



Passive Fire Protection is the use of 'designed-in' fire protection methods to control and slow the spread of fire. Fire resistant walls assist with the compartmentation of fires within buildings, safeguarding the occupants in adjacent rooms/areas. Walls not meeting the required fire rating will fail and subsequently increase the risk factor and danger to human life and property. Resistant Building Products fire walls & ceilings have passed insulation, integrity and loading criteria to meet required standards ranging from 30 to 120 minutes fire resistance. The choice of construction methods and materials will be dependant on your project requirements. Our technical team can provide detailed fire test reports and guidance to help ensure you always select and fit Resistant's range of building boards in thoroughly proven solutions.

## Introduction to Timber Frame

### *Why does Resistant test using Timber Frame?*

**Timber frame construction provides an efficient, convenient and cost-effective alternative to traditional construction methods using brick and block. The popularity and increased use of timber frame in housing development & other projects is linked to the benefits of off-site construction.**

**Modern timber frame structures are precision engineered, robust and durable, with the build method relying on factory produced timber frame as a means of structural support. Around a quarter of all new homes built in the UK have utilised this method of construction using pre-fabricated wall panels, floors & roof panels.**

**The following section outlines the various timber frame structures which Resistant Building Products have tested to provide between 60 to 120 minutes fire resistance.**

# LOAD BEARING WALL

REF: 004\_9XS\_TI\_LB\_WALL\_60MIN

TIMBER  
FRAME



## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on unexposed face

## 89 x 38mm C16 stud

Studs fitted at 600mm centres

## 90mm Knauf ECOSE

A1 non-combustible insulation, friction fit between studs

## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on internal frame

## 45 x 45mm timber batten

Battens fitted at 600mm centres

## 15mm Fireline Plasterboard

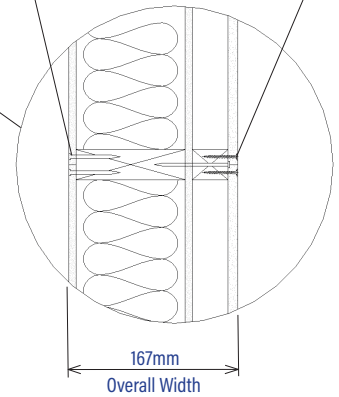
Plasterboard layer fitted as exposed face

## 2.9mm x 50mm nails

Located at 300mm vertical centres

## 3.5mm x 32mm screws

Located at 300mm vertical centres



## ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 2700mm

TESTED BY: Exova Warringtonfire

TEST STANDARD: BS 476 Part 21:1987

# LOAD BEARING WALL

REF: 002\_9XS\_TI\_LB\_WALL\_60MIN

TIMBER  
FRAME



## 12.5mm Fireline Plasterboard

Plasterboard layer fitted as internal board on unexposed face

## 95 x 35mm C16 stud

Studs fitted at 600mm centres

## Vapour Control Layer

Thermasheet foil membrane

## 100mm Rockwool RWA45

A1 non-combustible insulation, friction fit between studs

## 9mm Multi-proXS

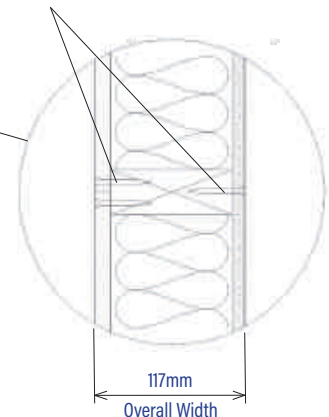
A1 non-combustible Magnesium Oxide board on exposed face

## 0.5mm Plastisol Steel

Plastisol steel facing on exposed face

## 30mm long nails

Located at 300mm vertical centres



## ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 2700mm

TESTED BY: Chiltern International Fire

TEST STANDARD: BS 476 Part 21:1987

# LOAD BEARING WALL

REF: 001\_9XS\_TI\_LB\_WALL\_60MIN

TIMBER  
FRAME



## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on unexposed face

## 89 x 38mm C16 stud

Studs fitted at 400mm centres, noggins placed mid-height of frame

## 100mm Rockwool RollBatt

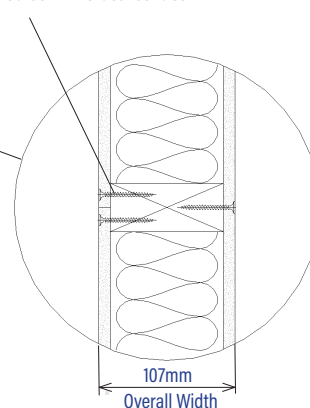
A1 non-combustible insulation, friction fit between studs

## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on exposed face

## 3.5mm x 50mm drywall screws

Located at 150mm vertical centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 2700mm

TESTED BY: Exova Warringtonfire

TEST STANDARD: BS 476 Part 21:1987



# LOAD BEARING WALL

003\_9XS\_TI\_LB\_WALL\_90MIN

TIMBER  
FRAME



## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on unexposed face

## 138 x 38mm C16 stud

Studs fitted at 600mm centres

## 140mm Knauf ECOSE

A1 non-combustible insulation, friction fit between studs

## 9mm Multi-proXS

A1 non-combustible Magnesium Oxide board on internal frame

## 45 x 45mm timber batten

Battens fitted at 600mm centres

## 12.5mm Fireline Plasterboard

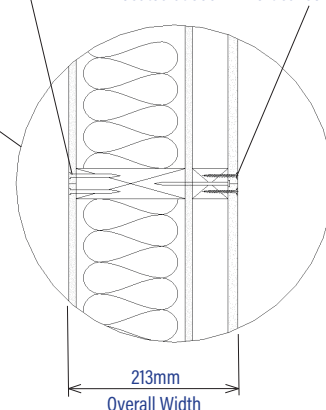
Plasterboard layer fitted as exposed face

## 2.9mm x 50mm nails

Located at 300mm vertical centres

## 3.5mm x 32mm screws

Located at 300mm vertical centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 2700mm

TESTED BY: Chiltern International Fire

TEST STANDARD: BS 476 Part 21:1987



# NON-LOAD BEARING WALL

REF: 010\_12MP\_TI\_NLB\_SPAN\_60MIN

TIMBER  
FRAME



## 2no. 38 x 89mm C16 timber stud frames

Studs fitted at 600mm centres, noggins placed mid-height of frame

## 50mm Air gap

Air gap between frames of spandrel panel

## 12mm Multi-pro strip

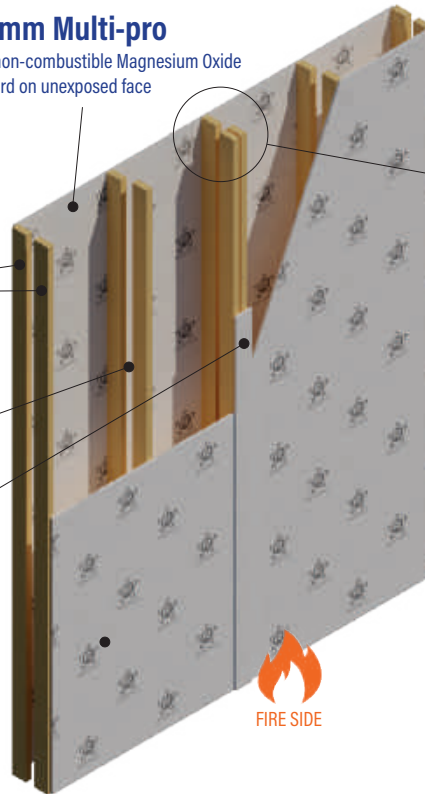
100mm wide cover strip representing where frames butt together

## 12mm Multi-pro

A1 non-combustible Magnesium Oxide board on exposed face

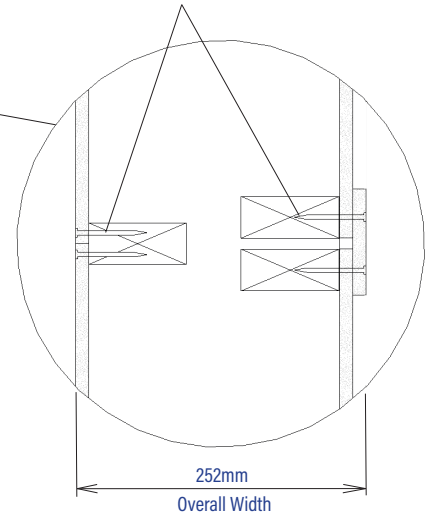
## 12mm Multi-pro

A1 non-combustible Magnesium Oxide board on unexposed face



## 2.9mm x 50mm nails

Located at 150mm perimeter centres & 300mm stud centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Effectis

TEST STANDARD: BS EN 1363-1:2012

# NON-LOAD BEARING WALL

REF: 005\_12XS\_TI\_NLB\_WALL\_120MIN

TIMBER  
FRAME



## 12mm Multi-proXS

A1 non-combustible Magnesium Oxide board on unexposed face

## 60 x 48mm C16 stud

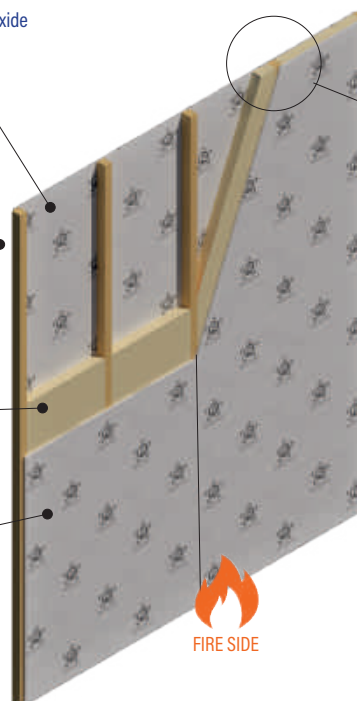
Studs fitted at 400mm centres, noggins placed mid-height of frame

## 60mm Rocksilk Slab

A1 non-combustible insulation, friction fit between studs

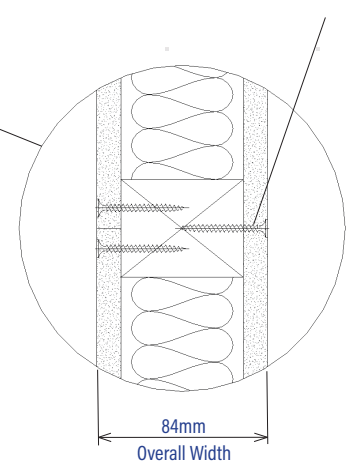
## 12mm Multi-proXS

A1 non-combustible Magnesium Oxide board on exposed face



## 3.5mm x 38mm drywall screws

Located at 300mm vertical centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Exova Warringtonfire

TEST STANDARD: BS EN 1364-1:1999

# Introduction to Steel Frame

## Why does Resistant test using Steel Frame?

Steel frame can be used in load bearing and non-load bearing construction applications in a variety of sectors including industrial, commercial and social. Steel tends to be used in larger scale buildings due to its cost, light weight and high strength for loaded structural applications.

Resistant have worked with leading steel frame manufacturers to develop a series of tests suited to various internal and external wall constructions ranging across multiple sectors.

The following section outlines the various steel frame structures which Resistant Building Products have tested to provide between 60 to 120 minutes fire resistance.

## LOAD BEARING WALL

REF: 011\_12MP\_ST\_LB\_WALL\_90MIN

STEEL  
FRAME



### 15mm Fireline Plasterboard

Plasterboard layer fitted as internal board on exposed face



# NON-LOAD BEARING WALL

REF: 015\_12XS\_ST\_NLB\_WALL\_120MIN

STEEL  
FRAME



## 2No. layers 12mm Multi-ProXS

A1 non-combustible Magnesium Oxide boards on exposed face

## 70 x 50 x 0.7mm C section

Studs fitted at 600mm centres

## Cellulose Fibre Insulation

Insulation pumped to fill cavity between studs

## 12.5mm Type A Plasterboard

Plasterboard layer fitted as internal board on exposed face

## 12mm Multi-ProXS

A1 non-combustible Magnesium Oxide board as external layer on exposed face

Internal Layers

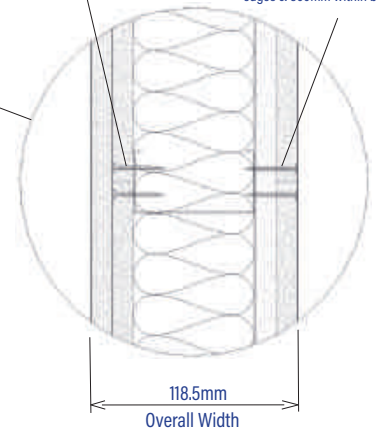
## 3.5mm x 32mm screws

Located at 600mm centres

External Layers

## 3.5mm x 38mm screws

Located at 200mm on perimeter vertical edges & 300mm within board field



## ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Efectis

TEST STANDARD: BS EN 1364-1:2015

# NON-LOAD BEARING WALL

REF: 009\_12BB\_ST\_NLB\_WALL\_60MIN

STEEL  
FRAME



## 12mm Base Board

A1 non-combustible Magnesium Oxide board on unexposed face

## 90 x 48 x 1.2mm C section

Studs fitted at 600mm centres, noggins placed mid-height of frame

## 60mm Rockwool RWA45

A1 non-combustible insulation, friction fit between studs

## Vapour Control Layer

Tyvek Housewrap behind plasterboard

## 15mm TE Fireline Plasterboard

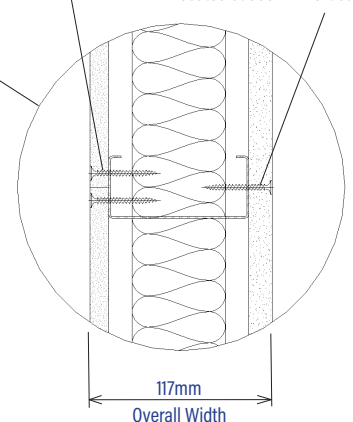
Plasterboard layer fitted as exposed face

## 4.8mm x 38 mm screws

Located at 300mm vertical centres

## 3.5mm x 25mm screws

Located at 300mm vertical centres



## ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Efectis

TEST STANDARD: BS EN 1364-1:2015

# NON-LOAD BEARING WALL

REF: 006\_12XS\_ST\_NLB\_WALL\_60MIN

STEEL  
FRAME



## 12mm Multi-proXS

A1 non-combustible Magnesium Oxide board on unexposed face

## 70 x 36 x 0.5mm C section

Studs fitted at 600mm centres, with strapping across board joints

## 60mm Rockwool RollBatt

A1 non-combustible insulation, friction fit between studs

## 6 x 50mm Multi-proXS

Strips fitted along studs as added protection

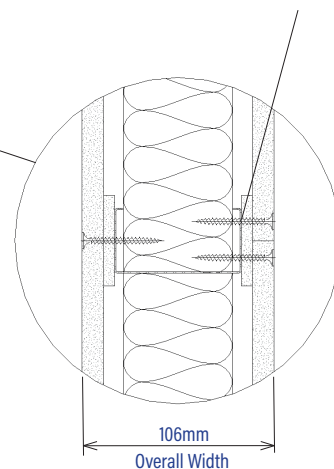
## 12mm Multi-proXS

A1 non-combustible Magnesium Oxide board on exposed face



## 3.5mm x 38mm drywall screws

Located at 300mm vertical centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Exova Warringtonfire

TEST STANDARD: BS EN 1364-1:1999

# NON-LOAD BEARING WALL

REF: 008\_12BB\_ST\_NLB\_WALL\_60MIN

STEEL  
FRAME



## 15mm Type F Plasterboard

Plasterboard layer fitted as exposed face

## 70 x 30 x 0.55mm C section

Studs fitted at 600mm centres

## Vapour Control Layer

Tyvek Housewrap

## 60mm Rockwool RWA45

A1 non-combustible insulation, friction fit between studs

## 12mm Base Board

A1 non-combustible Magnesium Oxide on unexposed face

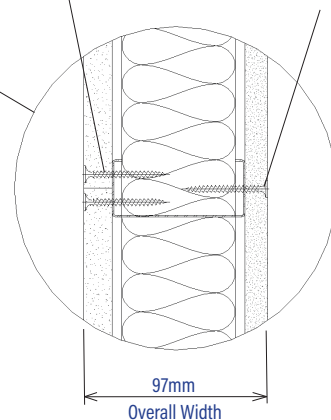


## 3.5mm x 25mm screws

Located at 300mm vertical centres

## 4.8mm x 38mm screws

Located at 300mm vertical centres



### ADDITIONAL INFORMATION

TEST PANEL HEIGHT: 3000mm

TESTED BY: Exova Warringtonfire

TEST STANDARD: BS EN 1364-1:2015

# NON-LOAD BEARING WALL

REF: 014\_9FCB\_ST\_NLB\_WALL\_60MIN  
REF: 015\_9FCB\_ST\_NLB\_WALL\_60MIN

STEEL  
FRAME

## 9mm 20-20 FCB

9mm A1 non-combustible fibre cement board on outward face of partition

## 90 x 50 x 1.2mm C section

Studs fitted at 600mm centres

## 4.8mm x 38mm wing-tipped screws

Located at 300mm vertical centres

## Second board layer 4.2mm x 60mm screws

Located at 300mm centres

## First board layer 3.9mm x 41mm screws

Located at 300mm vertical centres

124mm  
Overall Width

## 2No. Layers 12.5mm Plasterboard

Plasterboard layers fitted to room side of partition

## 100mm Rockwool RWA45

A1 non-combustible insulation, friction fit between studs

### ADDITIONAL INFORMATION FOR BOTH TESTS

TEST PANEL HEIGHT: 3000mm

TESTED BY: Efectis

TEST STANDARD: BS EN 1364-1:2015



**FIRE RESISTANCE  
IN BOTH DIRECTIONS!**  
**OUT**  **IN**

**20-20**

Fibre Cement Board

**NEW  
BOARD!**

# Fire Resistant Ceilings & Floors

A vital element in the construction phase is incorporating passive ceilings & floor constructions into the fabric of the building to ensure safety-of-life if there was a serious fire.

Resistant have embarked on the process of developing high strength, high performance fire resistant ceiling/floor constructions for use in residential and non-residential applications.

The following section outlines the various timber frame ceiling/floor structures which Resistant Building Products have tested to provide between 30 to 90 minutes fire resistance.



# LOAD BEARING CEILING

REF: 012\_12MP\_TI\_LB\_CEIL\_90MIN

TIMBER  
FRAME



**22mm T&G chipboard**  
Structural decking on unexposed face

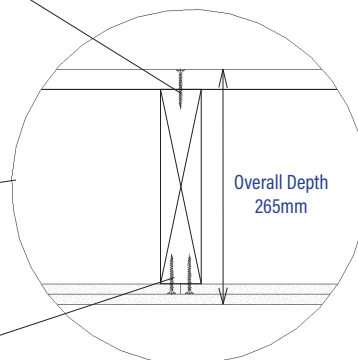
**219mm x 45mm C24 joist**  
Joists fitted at 600mm centres, noggins placed mid-length of frame

Chipboard layer  
**4mm x 70mm drywall screws**  
Located at 300mm centres

First board layer  
**4mm x 50mm drywall screws**  
Located at each board corner

Second board layer  
**4mm x 70mm drywall screws**  
Located at 300mm centres

**2no. layers 12mm Multi-pro**  
A1 non-combustible Magnesium Oxide board on exposed face



# LOAD BEARING CEILING

REF: 013\_12MP\_TI\_LB\_CEIL\_30MIN

TIMBER  
FRAME



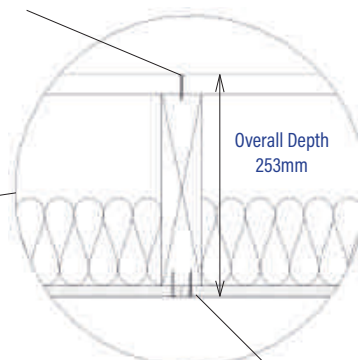
**22mm T&G chipboard**  
Structural decking on unexposed face

**219mm x 45mm C24 joist**  
Joists fitted at 600mm centres, noggins placed mid-length of frame

Chipboard layer  
**4mm x 70mm drywall screws**  
Located at 300mm centres

**100mm Rockwool RollBatt**  
A1 non-combustible insulation, friction fit between studs

**12mm Multi-pro**  
A1 non-combustible Magnesium Oxide board on exposed face



**4mm x 50mm drywall screws**  
Located at 300mm centres





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